

**Assessing the Population Health Effects of Camel SNUS and Its
Proposed Marketing as a Modified-Risk Tobacco Product
Statistical Modeling Using the Dynamic Population Modeler
Execution 2 Final Report**

January 27, 2017

Prepared for:

RAI Services Company

Prepared By:

Ramboll Environ

Contact:

Sandra Sulsky, MPH, PhD

Principal

Ramboll Environ

28 Amity Street, Suite 2A

Amherst, MA 01002

Phone: (413) 835-4362

Email: ssulsky@ramboll.com

This research was conducted on behalf of RAIS in support of tobacco product-related regulatory submissions, and will only be used and/or disseminated for such purposes.

Table of Contents

Executive summary.....	1
1. Introduction.....	8
1.1 Rationale	8
1.2 Statistical models	9
Models based on a single birth cohort	10
Models based on a cross-section of the population.....	11
1.3 Objectives	13
2. Methods.....	14
2.1 Overview of the DPM(+1).....	14
2.2 Use of projected purchase probabilities as DPM(+1) input for transitions in tobacco exposures	17
Camel SNUS initiation.....	17
Switching to Camel SNUS use.....	19
2.3 Research questions and corresponding DPM(+1) transition probabilities.....	21
Population health effects based on combined beneficial and harmful transitions	22
Population health effects due to individual beneficial and harmful transitions.....	29
Population health effects based on ‘switching’ combined with extreme scenarios for harmful transitions	33
Population health effects based on systematically increased first age category of Camel SNUS use.....	35
3. Detailed description of results from the DPM(+1)-based analyses.....	35
Population health effects based on combined beneficial and harmful transitions	35
Population health effects due to individual beneficial and harmful transitions.....	44
Population health effects based on ‘switching’ combined with extreme scenarios for harmful transitions	49
Population health effects based on systematically increased first age category of Camel SNUS use.....	59
4. Conclusions.....	62

List of Appendices

Appendix A: Complete Descriptions of Transition Probabilities (by Research Question) for Replication of Analyses

Appendix B: Adjusting U.S. Smoking Initiation and Cessation Rates and Mortality Rates from the Kaiser-Permanente Cohort Study for Use in the DPM(+1)

Appendix C: Methods Used for Sensitivity Analyses for the Secondary Harmful Transition ‘Relapse’

Appendix D: Results from Life Expectancy (LE) and Quality-Adjusted Life Expectancy (QALE) Analyses

Appendix E: Results from Analyses of Numbers of Survivors for All Age Intervals

Appendix F: Tipping Point Extrapolations

Appendix G: Assessing the Cumulative Effects of Exposure Transitions of ‘Switching’, ‘Diversion from Quitting’ and ‘Additional Initiation’

Appendix H: Tipping Point Analysis for Women

Executive summary

Those responsible for evaluating and implementing tobacco control policies intended to reduce population harm must assess the potential for both intended and unintended consequences associated with those policies. Such assessments should be based on the combined dimensions of (1) magnitude, and thus likelihood, of shifts in exposure patterns needed to produce a population benefit or harm, and (2) magnitude of the expected population benefit or harm. The Dynamic Population Modeler, DPM(+1), was developed to address this assessment need, and employs a 'birth cohort' framework to estimate the effects on all-cause mortality, life expectancy (LE) and quality-adjusted life expectancy (QALE) if tobacco exposure patterns in a population shift from cigarettes to a lower-, or modified-risk tobacco product (MRTP) in specified ways.

The key benefit of using models such as the DPM(+1) to assess the population health effects likely to result from changes in tobacco exposure patterns is the ability to hold constant all assumptions and factors other than the distribution of exposures and/or the comparative risk estimates. Model outputs can thus be used to test hypotheses regarding the possible magnitude of benefit or harm that might follow from specified exposure distributions under conditions that are otherwise the same. Analyses based on the DPM(+1) should not be viewed as providing absolute predictions of differences in survival due to changes in exposure patterns. Instead, such analyses estimate the magnitude of behaviour change(s) that must occur in order to result in either benefit or harm to a population, and thus allow researchers and policy makers to rank the likelihood, and thus the importance for prevention, of various unintended consequences.

Alternative analytic frameworks have been suggested for assessing the population benefit or harm that may result from specified shifts in tobacco exposure patterns. In particular, some researchers have suggested models that employ a 'cross-sectional' (versus 'birth cohort') framework, whereby simulations start with a population stratified by age, gender and tobacco use status (never users, former users by years since quitting, and current users). Birth cohorts contained in the initial cross-section are followed over time (based on calendar year and age), with new members added through births and existing members removed through deaths; transitions in exposure patterns can increase or decrease the population. While such models purport to predict future smoking prevalence and mortality under the assumption that an MRTP is introduced during the follow-up period, use of a 'cross-sectional' framework to assess population health in this manner is methodologically unsound. In particular, models based on a 'cross-sectional' framework are limited by short follow-up periods. Given the decades-long induction periods for tobacco-related causes of death, it is very unlikely that the introduction of an MRTP to a population will have a sizeable impact within a short follow-up period, especially if one considers that initiation of, or switching to the new product is likely to occur throughout the follow-up period and not just in the beginning. Moreover, because estimates for the cross-sectional population are affected by survivor bias, results are not generalizable.

To address recommendations provided in the Food and Drug Administration's (FDA) draft guidance to industry for submitting an MRTP application, and in compliance with Section 911 of the Family Smoking Prevention and Tobacco Control Act (FSPTCA), RAI Services Company (RAIS) conducted a series of 'likelihood of use' studies to assess the potential population health effects of Camel SNUS and its proposed modified-risk messaging. Each execution of RAIS's 'likelihood of use' study differed in terms of the stimulus shown to study participants (U.S. adult tobacco users and non-users), including differently worded modified-risk messaging.

For the current analyses, a hypothetical population of one-million 12 year-old never tobacco users was followed from age 13 years, in 5-year intervals, through age 102 years, when the number of survivors is approximately 0 in both the base case (where population members may use cigarettes) and counterfactual scenario (which includes exposure to both cigarettes and Camel SNUS). Age-specific mortality rates for never, current and former smokers were calculated based on data from the Kaiser-Permanente Cohort

Study and 2000 U.S. Census. For current and former MRTTP users, these mortality rates were reduced based on an excess relative risk (ERR) that compares excess mortality among current and former MRTTP users to current and former cigarette smokers, respectively. ERRs of 0.08 and 0.11, used for the current analyses, were based on consensus estimates for the mortality risks associated with long-term use of a low-nitrosamine smokeless tobacco product, relative to conventional cigarettes and no tobacco use.

The base case specified transition probabilities that were based on 2009 U.S. cigarette smoking initiation rates and 2005-2008 U.S. smoking cessation rates. For the counterfactual scenarios, RAIS's 'likelihood of use' studies provided empirical data – in the form of projected purchase probabilities – that were used as 'best estimates' for Camel SNUS initiation and switching from smoking to Camel SNUS use, as well as starting points for sensitivity analyses. Cessation of Camel SNUS use was suspended (the probability of Camel SNUS cessation was set to 0), as a worst-case scenario. For transitions that were not directly assessed in RAIS's 'likelihood of use' studies, hypothetical probabilities were used. Results comparing the number of survivors in the counterfactual scenario and base case are presented for the cohort at the end of age category 68-72 years; results at much older ages are increasingly uninformative (the number of survivors in both the base case and counterfactual scenario approaches zero).

The DPM(+1)-based analyses described in the current report addressed three primary objectives:

1. To estimate the 'net' population health effect of changes in tobacco exposure patterns expected to result from Camel SNUS and its proposed marketing as a modified-risk tobacco product;
2. To more closely assess the influence of specific changes in tobacco exposure patterns - expected to result from Camel SNUS and its proposed modified-risk messaging - on the overall 'net' population health effect; and
3. To assess whether Camel SNUS and its proposed modified-risk messaging is likely to have a beneficial effect on population health, or at a minimum is unlikely to have an adverse effect on population health, even if unintended changes in tobacco exposure transitions are extreme.

The **first objective** was to estimate the 'net' population health effect of changes in tobacco exposure patterns expected to result from Camel SNUS and its proposed marketing as a modified-risk tobacco product. This objective was addressed by collectively examining all primary and secondary exposure transitions, intended and unintended, using population survival as a surrogate for population health. Primary exposure transitions examined for these analyses included: (1) some base case never tobacco users initiate Camel SNUS use instead of remaining never tobacco users ('additional initiation'); (2) some base case never tobacco users initiate Camel SNUS use instead of initiating cigarette smoking ('alternative initiation'); (3) some base case current smokers switch to Camel SNUS use instead of continuing to use cigarettes ('switching'); and, (4) some base case current smokers switch to Camel SNUS use instead of quitting all tobacco use ('diversion from quitting'). Probabilities for these primary transitions were based on the second execution of RAIS's 'likelihood of use' study.¹ Secondary exposure transitions included: (5) some portion of 'additional initiation' Camel SNUS users transition to cigarette smoking ('gateway effect'); (6) some portion of 'alternative initiation' Camel SNUS users transition to cigarette smoking ('delayed smoking'); (7) some portion of 'switching' Camel SNUS users resume cigarette smoking ('resumed smoking'); and, (8) some portion of 'diversion from quitting' Camel SNUS users relapse to cigarette smoking ('relapse'). These secondary transitions were not directly investigated by RAIS's 'likelihood of use' studies, and were thus modeled using hypothetical probabilities that, in many instances, represented extreme scenarios.

¹ "Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - *Second Execution of Consumer Testing* - Amended Final Report", dated October 4, 2016. Analyses based on the other two executions of RAIS's 'likelihood of use' study, with different modified-risk messaging, are reported separately.

The 'net' population health effect of Camel SNUS and its proposed modified-risk messaging was evaluated in a series of counterfactual scenarios, using different combinations of primary beneficial and harmful transitions combined with secondary harmful transitions. Based on U.S. rates, cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. Empirical data on primary beneficial and harmful transitions were based on projected purchase probabilities, as provided by the second execution of RAIS's 'likelihood of use' study. Specifically, the probability that base case cigarette initiators would instead initiate tobacco use with Camel SNUS ('alternative initiation') was projected to be 0.85%; this transition occurred in the first three age categories. 'Switching' to Camel SNUS use instead of continuing to use cigarettes among base case smokers was projected to range from 2.0% to 16.0%, depending on age category. The probability that base case never tobacco users would initiate Camel SNUS use instead of remaining never users ('additional initiation') was projected to be 0.3%; similar to 'alternative initiation', this transition occurred in the first three age categories. Finally, the probability that base case smokers would switch to using Camel SNUS instead of quitting tobacco use ('diversion from quitting') was projected to range from 1.8%-22.1%, depending on the age category.

In the absence of empirical data on secondary harmful transitions from RAIS's 'likelihood of use' studies, the effects of these unintended changes in tobacco exposure patterns were evaluated using hypothetical transition probabilities that, in many instances, represented extreme scenarios. Specifically, both 'gateway effect' (the probability that some portion of 'additional initiation' Camel SNUS users would transition to cigarette use) and 'delayed smoking' (the probability that some portion of 'alternative initiation' Camel SNUS users would transition to cigarette use) were evaluated using extreme scenarios, whereby 50% of all Camel SNUS initiators transition to cigarette smoking in the age category following initiation (ages 18-22, 23-27 and 28-32 years). In addition, the harmful transition of 'resumed smoking' was evaluated using a scenario whereby 50% of those base case smokers who switched to Camel SNUS use instead of continuing to smoke resumed cigarette use. Under the assumption that 'resumed smoking' would likely occur in the same 5-year age category as 'switching', this transition was modeled by reducing by 50% the transition probabilities for 'switching' from smoking to Camel SNUS by 50%. Finally, sensitivity analyses evaluated the effect of an extreme scenario for 'relapse', whereby 50% of base case smokers who would have quit tobacco but instead switched to Camel SNUS use ('diversion from quitting') subsequently relapsed to smoking.

The 'net' population health effect of all primary beneficial transitions ('alternative initiation' and 'switching'), all primary harmful transitions ('additional initiation' and 'diversion from quitting'), and the secondary harmful transitions of 'gateway effect', 'delayed smoking' and 'resumed smoking' – from here on referred to as the 'master model' - was a survival benefit at the end of age category 68-72 years, of about 7,400 and 6,800 additional survivors for ERRs of 0.08 and 0.11, respectively.² Sensitivity analyses for the 'master model' that additionally included the secondary harmful transition, 'relapse', showed a smaller survival benefit, with approximately 6,180 and 5,680 additional survivors based on an ERR of 0.08 and 0.11, respectively. Omitting the primary beneficial transition, 'alternative initiation', had very little effect on the estimated number of survivors for the 'master model', while the added exclusion of all secondary harmful transitions increased the survival benefit in the counterfactual scenario to about 14,200 and 13,300 additional survivors for ERRs of 0.08 and 0.11, respectively.

² Modeling results for the current analyses are always presented as the difference in the number of survivors for the counterfactual scenario compared to the based case at the end of age interval 68-72 years; more complete results for the numbers of survivors across all age intervals are provided in [Appendix E](#).

The transition probabilities for 'switching' and 'diversion from quitting' from RAIS's 'likelihood of use' study were high. However, further sensitivity testing of the 'master model' showed that reduction of all primary beneficial and harmful transition probabilities by 75% - while retaining probabilities for the secondary harmful transitions - still resulted in a survival benefit, with an estimated 2,000 and 1,800 additional survivors in the counterfactual scenarios at the end of age category 68-72 years, for ERRs of 0.08 and 0.11, respectively. Lastly, sensitivity analyses that assessed a range of ERRs indicated that ERRs for Camel SNUS relative to cigarettes of 0.46 or lower would provide a 'net' population health benefit. This was the case even though smoking cessation was allowed to occur throughout life (based on U.S. cessation rates) but MRTP cessation was suspended; as a result, 'switching' replaced smokers, some of whom eventually became former smokers, with MRTP users who could not quit.

Beneficial and harmful transitions were also evaluated within the context of 'tipping point' analyses, used to estimate the magnitude of a beneficial transition required to offset the population health effects of one or more harmful transitions. Tipping points evaluated for the current analyses were between the primary beneficial transition, 'switching', and different combinations of primary and secondary harmful transitions. Based on an ERR of 0.08 and absent the beneficial primary transition of 'switching', the survival deficit in a counterfactual scenario that included 0.3% 'additional initiation' with 50% 'gateway effect', and 1.8%-22.1% 'diversion from quitting' (depending on age category) was estimated to be about 800 fewer survivors. 'Tipping point' analyses indicated that a concurrent increase in 'switching' of about 0.5% (in each age category, for ages 18+ years) provided a point estimate for the difference in the number of survivors (counterfactual scenario versus base case) that was 'near zero'. Introducing the extreme scenario of a 50% relapse to smoking among base case smoking quitters who instead switched to using Camel SNUS ('relapse', coupled to 'diversion from quitting') provided a point estimate that was 'near zero' when there was a concurrent 1.4% increase in 'switching'. Finally, a 50% resumption of smoking among base case continuing smokers who switched to Camel SNUS ('resumed smoking', coupled to 'switching') doubled the 'tipping point' estimates. Choosing a slightly higher ERR of 0.11 had a nominal effect on the 'tipping point' estimates. These results demonstrate that complete switching to an MRTP that presents substantially lower mortality risks than cigarettes, when it occurs in each age category among a small proportion of smokers who otherwise would have continued to smoke, would be expected to offset the population harm caused by the collective effects of unintended, harmful changes in tobacco use behaviours that may be associated with widespread availability of an MRTP.³

The next series of DPM(+1)-based analyses addressed the **second objective**, to more closely assess the influence of specific changes in tobacco exposure patterns - expected to result from Camel SNUS and its proposed modified-risk messaging - on the overall 'net' population health effect. This objective was achieved by examining the population-level effects of changes in beneficial and harmful tobacco exposure patterns, individually and in limited combinations, based largely on projected purchase probabilities from the second execution of RAIS's 'likelihood of use' study.⁴ Population survival was used as a surrogate for population health. Exposure transitions examined using the DPM(+1) included the same primary and secondary transitions as described for the first objective and the same ERRs of 0.08 and 0.11.

³ While the results presented here were based on mortality rates for men, tipping points for 'switching' were almost identical for men and women. Using mortality rates for women in the 'master model' (with or without 'alternative initiation'), the 'net' population effect at the end of age category 68-72 years was about 20% lower than for men. Detailed results are shown in [Appendix H](#).

⁴ "Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - *Second Execution of Consumer Testing* - Amended Final Report", dated October 4, 2016. Analyses based on the other two executions of RAIS's 'likelihood of use' study, with different modified-risk messaging, are reported separately.

'Best estimates' for primary beneficial and harmful transitions, based on projected purchase probabilities, indicated that only 'switching' demonstrates a sizable population-level effect. Based on transition probabilities for 'switching', which were projected to range from 2.0% to 16.0% and generally decreased from younger to older age categories, the survival benefit at the end of age category 68-72 years in the counterfactual scenario was estimated to be about 14,600 additional survivors for an ERR of 0.08, and about 13,900 additional survivors for an ERR of 0.11. Reducing the transition probabilities for 'switching' by 50% to examine the secondary harmful transition of 50% 'resumed smoking' (50% of base case continuing smokers who switched to Camel SNUS use resumed smoking in the same 5-year age category) indicated a reduced survival benefit of nearly 8,100 additional survivors for an ERR of 0.08; choosing a slightly different ERR of 0.11 had a nominal effect on the number of survivors.

For the other primary beneficial transition, 'alternative initiation', and using purchase probabilities projected by RAIS's 'likelihood of use' study – whereby 0.85% of base case cigarette initiators instead initiate tobacco use with Camel SNUS (ages 13-17, 18-22 and 23-27 years) - the overall survival benefit at the end of age category 68-72 years in the counterfactual scenario was estimated to be fewer than 160 additional survivors, irrespective of the ERR (0.8 or 0.11). This small effect is due to the very small number of base case cigarette initiators who become Camel SNUS users in the counterfactual scenario. To examine the effect of 'delayed smoking', 50% of those who initiated tobacco use with Camel SNUS instead of cigarettes ('alternative initiation') then switched to cigarette smoking in the next age category (ages 18-22, 23-27 and 28-32 years). For this counterfactual scenario, the survival benefit was reduced to about 80 additional survivors, at the end of age category 68-72 years, irrespective of the ERR.

For the primary harmful transition, 'additional initiation', purchase probabilities projected by RAIS's 'likelihood of use' study suggested that 0.3% of base case never tobacco users may initiate tobacco use with Camel SNUS (ages 13-17, 18-22 and 23-27 years). As a result, the survival deficit at the end of age category 68-72 years in the counterfactual scenario would be expected to be less than 150 fewer survivors for an ERR of 0.08, and near 200 fewer survivors for an ERR of 0.11. These small effects are due to the small increase in risk among Camel SNUS users compared to never tobacco users, as reflected by the small ERRs, which in turn affects a moderate number of base case never tobacco users who initiate Camel SNUS use. Moreover, Camel SNUS initiation among base case never tobacco users in a particular age category reduces slightly the pool of those available to initiate cigarette use in the next age category. Related analyses examined the harmful secondary transition, 'gateway effect', based on an extreme scenario whereby 50% of Camel SNUS initiators ('additional initiation', in age categories 13-17, 18-22 and 23-27 years) switched to cigarette smoking in the next age category (ages 18-22, 23-27 and 28-32 years). These analyses indicated an overall survival deficit approximating 400 fewer survivors in the counterfactual scenario, at the end of age category 68-72 years, irrespective of the ERR.

For the remaining primary harmful transition, 'diversion from quitting', and using purchase probabilities projected by RAIS's 'likelihood of use' study that ranged from 1.8% to 22.1% (generally decreasing from younger to older age categories), the overall survival deficit at the end of age category 68-72 years in the counterfactual scenario was estimated to be near 390 fewer survivors for an ERR of 0.08, and near 530 fewer survivors for an ERR of 0.11. Analyses examining the harmful secondary transition of 50% 'relapse', whereby 50% of those who switched to Camel SNUS use instead of quitting tobacco ('diversion from quitting') subsequently relapsed to smoking in the same age interval, suggested a survival deficit in the counterfactual scenario of nearly 1,900 fewer survivors for an ERR of 0.08, and nearly 1,970 fewer survivors for an ERR of 0.11.

DPM(+1)-based analyses were also used to address a **third objective**, assessing whether Camel SNUS and its proposed modified-risk messaging is likely to have a beneficial effect on population health, or at a minimum is unlikely to have an adverse effect on population health, even if unintended changes in tobacco exposure transitions are extreme. These assessments were based on a series of analyses that estimated the proportion of current smokers who must completely switch to using Camel SNUS instead of continuing to smoke ('switching') to fully offset any unintended population harm that may occur due to extreme scenarios for the primary harmful transitions of 'additional initiation' and 'diversion from quitting', and the secondary harmful transition of 'gateway effect'. Population survival was used as a surrogate for population health.

The first set of analyses estimated the proportion of base case cigarette smokers who must switch completely to using Camel SNUS instead of continuing to smoke ('switching') to fully offset the population harm expected from an extreme scenario whereby a large proportion of base case never tobacco users initiate Camel SNUS use ('additional initiation'). Specifically, the probability of 'additional initiation' with Camel SNUS by base case never tobacco users (ages 13-17, 18-22 and 23-27 years) was set equal to U.S. cigarette smoking initiation rates, almost doubling tobacco use incidence within the population.⁵ For an ERR of 0.08, and absent the population health benefit of 'switching', this extreme exposure scenario resulted in a survival deficit in the counterfactual scenario of about 3,800 fewer survivors at the end of age category 68-72 years. 'Tipping point' analyses indicated that a concurrent increase of about 2.6% in the proportion of current smokers who switch completely to Camel SNUS use instead of continuing to smoke ('switching', in each age category, for ages 18+ years) provided a point estimate of 'near zero' for the difference in the number of survivors between the counterfactual scenario and the base case. The survival deficit was projected to be larger (~5,550 fewer survivors) for this extreme scenario of 'additional initiation' when the ERR was set to 0.11, with the 'tipping point' corresponding to a 'near zero' point estimate for the difference in the number of survivors estimated to be near 4.1%.

Subsequent analyses estimated the proportion of base case cigarette smokers who must switch completely to using Camel SNUS instead of continuing to smoke ('switching') to offset the population harm expected from a scenario whereby an elevated proportion of base case never tobacco users initiated Camel SNUS use ('additional initiation'), and then some of those Camel SNUS initiators switched to cigarette smoking in the next age category ('gateway effect'). Specifically, the probability of 'additional initiation' with Camel SNUS by base case never tobacco users (ages 13-17, 18-22 and 23-27 years) was set to 3.0%, or 10 times the purchase probability projected for 'additional initiation' by RAIS's 'likelihood of use' study. To examine an extreme scenario for the secondary harmful transition, 'gateway effect', 50% of Camel SNUS initiators ('additional initiation') were then transitioned to cigarette smoking in the next age category (ages 18-22, 23-27 and 28-32 years). For an ERR of 0.08, and absent the population health benefit of 'switching', this extreme exposure scenario resulted in a survival deficit of 3,720 fewer survivors in the counterfactual scenario at the end of age category 68-72 years. 'Tipping point' analyses indicated that a concurrent 2.4% increase in 'switching' provided a point estimate for the difference in the number of survivors between the counterfactual scenario and the base case that was 'near zero'. The survival deficit was projected to be larger (near 4,050 fewer survivors) for this extreme scenario of 'additional initiation' coupled with 'gateway effect' when the ERR was set to 0.11, with the 'tipping point' expected to provide a 'near zero' point estimate for the difference in the number of survivors estimated to be 2.8%.

⁵ In each age category of tobacco initiation (age categories 13-17, 18-22 and 23-27 years), Camel SNUS initiation occurs only among never tobacco users who have not already initiated smoking in that age category.

The last set of 'tipping point' analyses estimated the proportion of current cigarette smokers who must switch completely to using Camel SNUS use instead of continuing to smoke ('switching') to fully offset the population harm expected from an extreme scenario whereby a large proportion of base case smokers who would have quit tobacco use instead switch to using Camel SNUS ('diversion from quitting'). Specifically, the level of smoking cessation in the counterfactual scenario was set to 50% of levels specified in the base case (i.e., 50% of those who would have quit smoking in the base case instead transition to Camel SNUS use). For an ERR of 0.08, and absent the population health benefit of 'switching', this extreme scenario resulted in a survival deficit of nearly 1,500 fewer survivors in the counterfactual scenario. 'Tipping point' analyses indicated that a concurrent 0.9% increase in 'switching' provided a point estimate for the difference in the number of survivors between the counterfactual scenario and the base case that was 'near zero'. For an ERR of 0.11, and absent the population health benefit of 'switching', the survival deficit was projected to be near 2,000 fewer survivors, with a 'tipping point' of 1.3% 'switching' expected to provide a 'near zero' point estimate for the difference in the number of survivors.

Finally, sensitivity analyses assessed the population health impact of Camel SNUS and its proposed modified-risk messaging among birth cohorts for which Camel SNUS is available at increasing ages. For birth cohorts for which Camel SNUS was available in age categories 18-22 years, with age category-specific transition probabilities as projected by RAIS's 'likelihood of use' study, the survival benefit in the counterfactual scenario was estimated to be more than 7,500 additional survivors for an ERR of 0.08, and more than 6,900 additional survivors for an ERR of 0.11. The survival benefit in the counterfactual scenario decreased as the first age category in which Camel SNUS became available increased, and became negligible when Camel SNUS was introduced late in life (after age 55 years).

Collectively, these DPM(+1)-based analyses demonstrate that 'switching', whereby some base case continuing smokers switch completely to using a tobacco product that presents significantly less risk for mortality than cigarettes, is the most influential of the changes in tobacco exposure patterns that might occur within a population, as operationalized within a single birth cohort. This determination was based on the magnitude, and thus likelihood, of shifts in tobacco exposure patterns needed to produce a population benefit or harm; and, the consideration that 'switching' exerts a substantial beneficial effect on population health, individually and in combination with primary and secondary harmful transitions. The population health benefit for 'switching' exceeds that expected for the other primary beneficial transition, 'alternative initiation', because tobacco initiation rarely occurs beyond young adulthood, whereas 'switching' can occur in all subsequent age categories. Thus, there is more time for smokers to switch to Camel SNUS use than there is for non-users of tobacco to initiate tobacco use with Camel SNUS rather than cigarettes. Likewise, 'additional initiation' is unlikely to occur beyond young adulthood; the small population health effect for this primary harmful transition is also due to the nominal increase in risk among Camel SNUS users compared to never tobacco users, as reflected by the small ERR. Although 'diversion from quitting' can occur across a large range of age categories, the small effect resulting from this primary harmful transition is due to the nominal increase in risk among Camel SNUS users compared to tobacco quitters, again reflected by the small ERR.

Estimates from the 'tipping point' analysis for the 'master model' without 'alternative initiation' provide strong evidence that Camel SNUS and its proposed marketing as a modified-risk tobacco product is unlikely to adversely impact population health. To the contrary, 'best estimates' for transition probabilities, based on projected purchase probabilities from the second execution of RAIS's 'likelihood of use' study, and corresponding sensitivity analyses indicate the potential for a sizable 'net' population health benefit for Camel SNUS and its proposed modified-risk messaging.

1. Introduction

1.1 Rationale

Section 911 ('Modified Risk Tobacco Products') of the Family Smoking Prevention and Tobacco Control Act (FSPTCA)⁶, Public Law 111-31 states that a tobacco product may be designated as a modified-risk product if, among other conditions, the applicant has demonstrated that "a measurable and substantial reduction in morbidity or mortality among individual tobacco users is reasonably likely in subsequent [epidemiologic] studies". The applicant must take into account the "increased or decreased likelihood that existing users of tobacco products who would otherwise stop using such products will switch to the tobacco product that is the subject of the application", as well as the "increased or decreased likelihood that persons who do not use tobacco products will start using the tobacco product that is the subject of the application".

Projecting likelihood of use for a tobacco product prior to that product being in the market requires either (1) use of an uptake algorithm based on sales of existing products; or, (2) development of a tobacco product-specific algorithm by surveying consumers about a product prior to market launch, and then re-interviewing those same consumers with regard to whether or not they purchased the product following market launch. To project 'likelihood of use' for a tobacco product prior to that product being in the market, RAI Services Company (RAIS)⁷ commissioned two-wave survey research⁸ to create a ratings conversion algorithm that translates continuous 'likelihood to purchase for personal trial' ratings into projected purchase probabilities. The basis for the algorithm is a survey-weighted logistic regression model that uses ratings from an initial survey wave (prior to market launch) and actual purchase incidence from self-reported survey data collected among those same respondents nine months after market launch.

To assess 'likelihood of use' prior to market launch of Camel SNUS as a modified-risk tobacco product (MRTP), RAIS conducted a series of 'likelihood of use' studies in compliance with Section 911 of the FSPTCA. Each execution differed in terms of the stimulus shown to study participants, U.S. adult tobacco users and non-users, including differently worded modified-risk messaging. Projected purchase probabilities were used as 'best estimates' for transitions in tobacco exposures, as well as starting points for sensitivity analyses in Dynamic Population Modeler (DPM(+1))-based analyses.

Statistical models and simulation programs can be used to provide estimates of the health effects expected to result from changes in the distribution of beneficial and/or harmful exposures in a given population. If the projected changes are due to regulatory action, then modeled results allow direct assessment of the population health impact of alternative policies, thus supporting the selection of one policy over another (Levy et al. 2006)⁹. 'Best estimates' for transitions in tobacco exposures from 'likelihood of use' studies can be used as starting points for sensitivity analyses in statistical model-based analyses that quantify the magnitude, and thus likelihood, of shifts in tobacco exposure patterns needed to produce a population benefit or harm, as well as the magnitude of the expected benefit or harm. They can also be used to assess whether specified shifts in tobacco exposure patterns are likely to produce a population benefit or harm by

⁶ Family Smoking Prevention and Tobacco Control Act. 2009. (Public Law 111-31 [H.R.1256]).

⁷ RAIS is a wholly owned subsidiary of Reynolds American Inc. (RAI) that bears primary responsibility for coordinating implementation of the Family Smoking Prevention and Tobacco Control Act for itself and RAI's FDA-regulated tobacco operating companies, namely R.J. Reynolds Tobacco Company, American Snuff Company, LLC, Santa Fe Natural Tobacco Company, Inc., Kentucky Bioprocessing, LLC, and R.J. Reynolds Vapor Company.

⁸ The initial survey wave of the "algorithm development" research was conducted from December 23, 2009 through January 6, 2010, and 9-month follow-up wave was conducted from September 16, 2010 through October 5, 2010; "New Tobacco Product "Likelihood" Study: An Algorithm to Predict Usage of New Tobacco Products Prior to Market Launch".

⁹ Levy DT, Mumford EA, Cummings KM. The potential impact of a low-nitrosamine smokeless tobacco product on cigarette smoking in the United States: Estimates of a panel of experts. *Addictive Behaviors*. 2006; 31:1190–1200.

estimating ‘tipping points’, defined as the proportion of the population that must choose a less risky exposure to overcome the harm arising from a proportion of the population choosing a more harmful exposure, or vice versa.

1.2 Statistical models

Dynamic models for assessing the risks associated with tobacco product use were initially developed to estimate the population-level benefit or harm due to changes in the proportions of never, current and former smokers; in particular, changes that would result from increasing smoking cessation rates and/or decreasing smoking initiation rates.^{10 11 12 13 14 15} These initial models were not designed to assess the effect of introducing a new product to a population. Two subsequent models^{16 17} were suggested to assess the population-level effects of introducing a new product to a population of never, current and former smokers; however, both models were limited by the range of questions that could be addressed, as smoking initiation and cessation rates were held constant and transition probabilities were not influenced by age. In addition to these shortcomings, both models allowed for very few transitions, and assumed that mortality risk depended only on current tobacco exposure status and no other exposure metric. The model proposed by Mejia et al. further quantified the risk of tobacco-related health effects by a health index that was assumed to be the same regardless of duration of tobacco use or cessation, and was not based on empirical data. A detailed critique of the Mejia et al. model is published elsewhere.¹⁸

To our knowledge, only five published dynamic population models have been specifically designed to estimate the effects of introducing an MRTP to a population. These models can be most easily distinguished by their study populations and time variables. DPM(+1)¹⁹ and the model described by Levy et al.²⁰ are both based on a single birth cohort that is followed as it ages. Weitkunat et al.²¹, Vugrin et al.²², and Poland et

¹⁰ Kulik MC, et al. Comparison of tobacco control scenarios: Quantifying estimates of long-term health impact using the DYNAMO-HIA modeling tool. *PLoS.One*. 2012; 7(2): e32363.

¹¹ Levy DT, Friend K. Examining the effects of tobacco treatment policies on smoking rates and smoking related deaths using the SimSmoke computer simulation model. *Tob Control*. 2002; 11(1): 47-54.

¹² Tengs TO, et al. Federal policy mandating safer cigarettes: A hypothetical simulation of the anticipated population health gains or losses. *J Policy Anal Manage*, 2004; 23(4): 857-872.

¹³ Tengs TO, et al. The AMA proposal to mandate nicotine reduction in cigarettes: A simulation of the population health impacts. *Prev Med*. 2005; 40(2): 170-180.

¹⁴ Tengs TO, Osgood ND, Lin TH. Public health impact of changes in smoking behavior: Results from the Tobacco Policy Model. *Med Care*. 2001; 39(10): 1131-1141.

¹⁵ Hoogenveen R.T, et al. Dynamic effects of smoking cessation on disease incidence, mortality and quality of life: The role of time since cessation. *Cost Eff Resour Alloc*. 2008; 6: 1.

¹⁶ Apelberg BJ, et al. Estimating the risks and benefits of nicotine replacement therapy for smoking cessation in the United States. *Am J Public Health*. 2010; 100(2): 341-348.

¹⁷ Mejia AB, Ling PM, Glantz SA. Quantifying the effects of promoting smokeless tobacco as a harm reduction strategy in the USA. *Tob Control*. 2010; 19: 297-305.

¹⁸ Bachand AM and Sulsky S. Critique of "Quantifying the effects of promoting smokeless tobacco as a harm reduction strategy in the USA" by Mejia AB, Ling PM, Glantz SA. *Tobacco Control Online*. 2011.

¹⁹ Bachand AM and Sulsky SI. A dynamic population model for estimating all-cause mortality due to lifetime exposure history. *Regul Toxicol Pharmacol*. 2013; 67(2): 246-51.

²⁰ Levy DT et al. The application of a decision-theoretic model to estimate the public health impact of vaporized nicotine product initiation in the United States. *Nicotine Tob Res*. 2016; doi: 10.1093/ntr/ntw158.

²¹ Weitkunat R, et al. A novel approach to assess the population health impact of introducing a modified risk tobacco product. *Regul Toxicol Pharmacol*. 2015; 72(1): 87-93.

²² Vugrin ED, et al. Modeling the potential effects of new tobacco products and policies: A dynamic population model for multiple product use and harm. *PLoS One*. 2015; 10(3): e0121008.

al.²³ each have proposed models where simulations start with a cross-section of an actual population that is then followed over time, based on two time variables (age and calendar year). All five models allow modelling of a range of probabilities for each transition of interest, to determine the potential magnitude and likelihood of a population benefit or harm that may be expected to result from the introduction of an MRTP to a population.

All models must be built on simplifying assumptions. The five models discussed below share the following: (1) they compare the effects of using only two types of tobacco products; (2) only the direct effects of exposure to higher- and lower-risk tobacco products are considered, with no accounting for changes to second-hand smoke exposures that may occur due to changes in the proportions of cigarette smokers in a population; and, (3) the models require the analyst to specify values for the relevant input data.

Models based on a single birth cohort

To our knowledge, two existing models are based on the single birth cohort approach. As described elsewhere²⁴ and in some detail below, the DPM(+1) is a comprehensive and flexible dynamic model that estimates all-cause mortality for a hypothetical birth cohort which is followed as it ages. All model input is specified by the model user, and can be based on either empirical data or hypothetical values. In the base case, members of the cohort may be exposed to a high-risk tobacco product (e.g., cigarettes) as they age. The counterfactual scenario includes exposure to both the high-risk product and a lower-risk product (e.g., an MRTP). The model sorts the study population into age and exposure categories, and applies mortality rates specific to age, duration of exposure, and duration of exposure cessation to each category. The model tracks individual exposure histories, and estimates - at the end of each modeled age category - the number of survivors in the two exposure scenarios (base case and counterfactual), and the difference between those scenarios. Markov chain Monte Carlo (MCMC) techniques are used to estimate the variability of the results.

The main strengths of the DPM(+1) are its flexibility, its ability to account for uncertainty in the model input and output, its comprehensiveness, and its demonstrated validity. All model inputs can be changed by the analyst, and the level of uncertainty in model inputs can be specified - and is accounted for - by posterior intervals around the estimated differences in the numbers of survivors. There are no restrictions on age, time of initiation, or time of cessation of exposure. The DPM(+1) can be used to assess the potential magnitude and likelihood of population-level benefit or harm, and to estimate 'tipping points'. In addition, results from the DPM(+1) can provide insight into the effect of introducing an MRTP to a cross-sectional population, if population members of different ages are recognized as members of different birth cohorts. It cannot, however, directly provide absolute predictions of differences in survival in a cross-sectional population resulting from changes in tobacco exposure patterns.

The DPM(+1) is executed in the R language,²⁵ both as a desk-top version and as the back end to an internet-accessible platform with a user-friendly interface that simplifies the recreation of existing analyses and testing of new scenarios. Post-market survey data can be easily incorporated. Expansions that are under way or have been completed include modeling exposure histories with more than two products, and modeling the removal of a tobacco exposure from a population.

²³ Poland B, Teischinger F. Population modeling of modified risk tobacco products accounting for effects of cigarettes per day. Poster, Society for Research on Nicotine & Tobacco Annual Meeting: Chicago, IL. 2016.

²⁴ Bachand AM, Sulsky SI. A dynamic population model for estimating all-cause mortality due to lifetime exposure history. *Regul Toxicol Pharmacol*, 2013; 67(2): 246-51.

²⁵ R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, <http://www.R-project.org>: Vienna, Austria. 2015.

A model described recently by Levy et al.²⁶ follows a birth cohort of 15-year olds in 2012 (the 1997 birth cohort) until follow-up ends, in 2083 (age 85 years). Only cigarettes are available for use in the base case, while different rates of trial and established use of a Vaporized Nicotine Product (VNP) - either alone or in combination with cigarettes - can occur in the counterfactual scenario. Model output includes the proportion of the cohort in each exposure category (at various ages), smoking-attributable deaths, and life-years lost and gained; rates are provided in the published supplementary materials, but details on the calculations are not provided. The authors completed sensitivity analyses by altering the estimated excess risks and rates of VNP trial and use. However, the model does not account for variability of the model input, and variability of the results is not estimated.

While results from models based on a single birth cohort can provide insight into the likely effect of introducing an MRTP to an actual cross-sectional population, they do not provide direct predictions of changes in smoking prevalence or mortality in the cross-sectional population expected to result from changes in tobacco exposure patterns - unless all birth cohorts in the population are included in the simulations.

Models based on a cross-section of the population

An alternative, conceptually appealing but ultimately flawed approach, whereby a cross-sectional population of mixed ages and tobacco exposures is followed into the future, has been proposed by some authors (Weitkunat et al.,²⁷ Vugrin et al.,²⁸ Poland et al.²⁹). These models compare mortality between a counterfactual scenario, where an MRTP is introduced during the follow-up period, and a base case, where only cigarettes are available for use. These models sort the study population into calendar year, age and exposure categories, and track individual exposures during follow-up; for smokers in the initial cross-sectional population, age at onset of smoking and years smoked are unknown. The Weitkunat et al. model is restricted to members of the initial cross-section, and deaths do not occur until the end of follow-up. The Poland et al. and Vugrin et al. models allow changes to the study population throughout follow-up, through births and deaths; the Vugrin et al. model also takes migration into account. While all models estimate total deaths in the base case and counterfactual scenario, two models (Vugrin et al.; Weitkunat et al.) estimate smoking-attributable deaths in the base case and the reduction in smoking-attributable deaths in the counterfactual scenario; one model (Poland et al.) estimates the reduction in total deaths. None of these models account for uncertainty in the model input values, or provide variability estimates for the model outcome measures. Underlying assumptions are easily assessed for the Weitkunat et al. and Poland et al. models, but are not easily assessed for the considerably more complex Vugrin et al. model.

In any simulation analysis, model results are highly dependent on the input data selected by the analyst, and should be substantiated by population data to the extent possible. Two of the three models based on an initial cross-section of a population require a large number of unobservable estimates for birth and death rates and, in one case, rates of in- and out-migration. All three models require age- and gender-specific smoking initiation and cessation rates corresponding to each year of follow-up into the future, as specified by the analysis.

²⁶ Levy DT, et al. A framework for evaluating the public health impact of e-cigarettes and other vaporized nicotine products. *Addiction*. 2016.

²⁷ Weitkunat R, et al. A novel approach to assess the population health impact of introducing a modified risk tobacco product. *Regul Toxicol Pharmacol*. 2015; 72(1): 87-93.

²⁸ Vugrin ED, et al. Modeling the potential effects of new tobacco products and policies: A dynamic population model for multiple product use and harm. *PLoS One*. 2015; 10(3): e0121008.

²⁹ Poland B, Teischinger F. Population modeling of modified risk tobacco products accounting for effects of cigarettes per day. Poster, Society for Research on Nicotine & Tobacco Annual Meeting: Chicago, IL. 2016.

Weitkunat et al. and Poland et al. suggest several potential expansions of their model to take post-market survey data into account, and the models appear simple and flexible enough to allow for the suggested adaptations. The model proposed by Vugrin et al. is very complex, and requires large amounts of input data that, in turn, make expansions difficult. Published validation and calibration exercises for all three models are incomplete and/or show results that do not lend credence to the approach.

Each of the three models has specific strengths and limitations, but their utility in the regulatory context is very limited due to the inherent shortcomings of the cross-sectional approach that affect the validity of the resulting predictions. First, neither the effect of MRTP initiation nor the effect of MRTP initiation followed by smoking ('gateway effect') can be assessed validly. This is because the study population consists of a large number of birth cohorts, one for each year of current age represented in the initial cross-section, and one for each year during the follow-up interval when births are added. Births, migration, exposure, and mortality rates for a large number of birth cohorts cannot be predicted far into the future, so follow-up must necessarily be short (follow-up periods of 20-50 years have been suggested). As a result, tobacco-related mortality may not take place until after the end of follow-up for a sizeable proportion of the study population, due to the decades-long induction period for the most important tobacco-related diseases (lung cancer, heart disease and non-malignant respiratory disease). This is specifically the case for younger members of the initial cross-sectional population and for members of birth cohorts added during follow-up. The incomplete follow-up for mortality results in artificially low mortality risks among the younger subsets of the study population, i.e., those persons most likely to initiate tobacco use with an MRTP. In addition, for current smokers in the initial cross-sectional population or for those added through in-migration, neither age at smoking initiation nor the number of years of smoking is known. As a result, mortality rates - which depend heavily on these factors - cannot be validly estimated.^{30 31 32 33 34}

A second shortcoming of the cross-sectional approach is that neither the effect of switching from smoking to MRTP use, nor the effect of smokers adding MRTP use (becoming dual users) can be assessed. This is because the follow-up period is too short for current smokers who add or switch to MRTP use later in the follow-up period to experience a change in risk, again due to the follow-up period being shorter than the induction period for smoking-related diseases. For those who switch to an MRTP completely, follow-up may also be shorter than the interval needed for risk to be reduced after quitting.

Third, the initial cross-sectional population only contains survivors. As a consequence, current and former smokers in the initial cross-section who have a large amount of accumulated smoking exposure (many pack-years of smoking history) are less likely to be affected by tobacco-related mortality, as susceptible members of the cohort will have died prior to initiation of the simulation. Therefore, the effect of switching to, adding, or initiating MRTP use is artificially reduced in this sub-population, and the mortality risks estimated on the basis of their experience is lower than risks experienced by subsequent cohorts.

³⁰ Peto R. Influence of dose and duration of smoking on lung cancer rates. IARC Sci Publ. 1986; 74: 23-33.

³¹ Flanders WD, et al. Lung cancer mortality in relation to age, duration of smoking, and daily cigarette consumption: Results from Cancer Prevention Study II. Cancer Res. 2003; 63(19): 6556-6562.

³² Knoke JD, et al. Lung cancer mortality is related to age in addition to duration and intensity of cigarette smoking: An analysis of CPS-I data. Cancer Epidemiol Biomarkers Prev. 2004; 13(6): 949-957.

³³ Meade TW, Imeson J, Stirling Y. Effects of changes in smoking and other characteristics on clotting factors and the risk of ischaemic heart disease. Lancet. 1987; 2(8566): 986-8.

³⁴ Thun MJ, et al. Age and the exposure-response relationships between cigarette smoking and premature death in Cancer Prevention Study II, in Smoking and Tobacco Control Monograph No. 8. National Institutes of Health, National Cancer Institute. 1997; 383-413.

Finally, the need to incorporate two time variables, age and calendar year, into the cross-sectional approach increases complexity compared with the single birth cohort approach. Specifically, model input values stratified by two time variables are more difficult to obtain, necessitating the use of age and calendar year restrictions and estimated input values that are not substantiated by the literature.

1.3 Objectives

The DPM(+1) was developed to specifically address the regulatory requirements for an MRTP application (Section 911 of the FSPTCA), and does not have the limitations previously noted for other published statistical models/simulation programs. The DPM(+1) produces estimates of the effects on all-cause mortality, life expectancy (LE) and quality-of-life-adjusted life expectancy (QALE) if exposure patterns in the population shift from cigarettes to a lower-, or modified-risk tobacco product in specified ways. Based on 'best estimates' for the likely use of cigarettes and an MRTP, DPM(+1)-based analyses can estimate the likelihood of an intended benefit from a proportion of the population choosing a less harmful exposure offsetting or exceeding the unintentional harm from a proportion of the population choosing a more harmful exposure. Sensitivity analyses for transitions in tobacco behaviour patterns can be used to further examine the potential for a 'net' population benefit versus harm. Finally, DPM(+1)-based analyses can be accessed on a web portal, such that the Food and Drug Administration's (FDA) Center for Tobacco Products (CTP) scientific staff can verify the model output based on the associated input and assumptions.

The DPM(+1)-based analyses described in the current report address three primary objectives. The **first objective** was to estimate the 'net' population health effect of changes in tobacco exposure patterns expected to result from Camel SNUS and its proposed marketing as a modified-risk tobacco product. This objective was addressed by collectively examining all primary and secondary exposure transitions, intended and unintended, using population survival as a surrogate for population health. Primary exposure transitions examined for these analyses included: (1) some base case never tobacco users initiate Camel SNUS use instead of remaining never tobacco users ('additional initiation'); (2) some base case never tobacco users initiate Camel SNUS use instead of initiating cigarette smoking ('alternative initiation'); (3) some base case current smokers switch to Camel SNUS use instead of continuing to use cigarettes ('switching', the intended change); and, (4) some base case current smokers switch to Camel SNUS use instead of quitting all tobacco use ('diversion from quitting'). These primary transition probabilities were based on the second execution of RAIS's 'likelihood of use' study.³⁵ Secondary exposure transitions included: (5) some portion of 'additional initiation' Camel SNUS users transition to cigarette smoking ('gateway effect'); (6) some portion of 'alternative initiation' Camel SNUS users transition to cigarette smoking ('delayed smoking'); (7) some portion of 'switching' Camel SNUS users resume cigarette smoking ('resumed smoking'); and, (8) some portion of 'diversion from quitting' Camel SNUS users relapse to cigarette smoking ('relapse'). These secondary transitions were not directly investigated by RAIS's 'likelihood of use' study, and were modeled using hypothetical probabilities that, in many instances, represented extreme scenarios. The effect of using different excess relative risks (ERRs) was addressed in sensitivity analyses.

The next series of DPM(+1)-based analyses addressed the **second objective**, to more closely assess the influence of specific changes in tobacco exposure patterns - expected to result from Camel SNUS and its proposed modified-risk messaging - on the overall 'net' population health effect. This objective was achieved by examining the population-level effects of changes in beneficial and harmful tobacco exposure patterns, individually and in limited combinations, based largely on projected purchase probabilities from

³⁵ "Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - *Second Execution of Consumer Testing* - Amended Final Report", dated October 4, 2016. Analyses based on the other two executions of RAIS's 'likelihood of use' study, with different modified-risk messaging, are reported separately.

the second execution of RAIS's 'likelihood of use' study.³⁶ Population survival was used as a surrogate for population health. Exposure transitions examined using the DPM(+1) included the same primary and secondary transitions as described for the first objective and the same ERRs of 0.08 and 0.11 for the mortality risks associated with long-term use of a low-nitrosamine smokeless tobacco product relative to conventional cigarettes.

Finally, DPM(+1)-based analyses further address a **third objective**, assessing whether Camel SNUS and its proposed modified-risk messaging is likely to have a beneficial effect on population health, or at a minimum is unlikely to have an adverse effect on population health, even if unintended changes in tobacco exposure transitions are extreme. These assessments were based on a series of analyses that estimated the proportion of current smokers who must completely switch to using Camel SNUS instead of continuing to smoke ('switching') to fully offset any unintended population harm that may occur due to extreme scenarios for the primary harmful transitions of 'additional initiation' and 'diversion from quitting', and the secondary harmful transition of 'gateway effect'. Population survival was used as a surrogate for population health.

2. Methods

2.1 Overview of the DPM(+1)

The DPM(+1) allows for age-specific changes, or transitions in tobacco exposure to occur at age intervals of identical widths throughout the duration of follow-up; the proportion transitioning (transition probability), age category widths, and duration of follow-up are all specified by the analyst. As a first step, a hypothetical population of individuals who have never used tobacco is defined, and initialized to the same age. Transition probabilities define the exposure patterns to be compared in the base case and counterfactual scenarios, where only one tobacco product is available for use in the base case (cigarettes) and one new product (an MRTP) is added in the counterfactual scenario ([Figure 1](#)).

In the base case, never tobacco users can remain never users or they can begin cigarette smoking; and, cigarette smokers can continue to smoke or they can quit and then relapse to smoking ([Figure 1](#), bolded transitions). The counterfactual exposure scenario assumes that an additional tobacco product (an MRTP) is available for the population to use ([Figure 1](#), all transitions). Tobacco initiation, switching, cessation and relapse rates are specified by the analyst, according to either completely hypothetical rates or population rates based on empirical data. The identified rates are entered as either fixed probabilities or as probabilities with some degree of uncertainty (as random probabilities from a normal distribution, truncated at 0 and 1, with the point estimate of the probability as the mean and an analyst-specified variance). The probability of transitioning to any exposure pattern that is not of interest can be set to zero. Mortality rates for current and former cigarette smokers are estimated for each age interval of follow-up by a Poisson model, which defines mortality rates by age, duration of exposure, and duration of exposure cessation. For current and former MRTP users, these mortality rates are reduced based on an ERR. The ERR compares excess mortality among current and former MRTP users to current and former cigarette smokers, respectively, and is entered as a fixed value (when comparing cigarettes to an MRTP with a particular, hypothesized risk profile) or as a value with some degree of uncertainty (when a literature-based estimate is used); the latter is

³⁶ "Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - *Second Execution of Consumer Testing* - Amended Final Report", dated October 4, 2016. Analyses based on the other two executions of RAIS's 'likelihood of use' study, with different modified-risk messaging, are reported separately.

generated using a left-truncated normal distribution, with the point estimate of the ERR as the mean and the variance specified by the analyst.

The DPM(+1) provides the number of survivors remaining in the population for each age interval. Survivors move to the next age interval, where they can remain in their current exposure category or transition to a different exposure category. At the end of each age category, the DPM(+1) compares the number of survivors remaining in the population in the counterfactual scenario versus the base case; the maximum lifetime that can be simulated is 102 years of age.³⁷

The coefficients of the Poisson model that are used to define mortality risks are estimated using a Bayesian approach and MCMC techniques. To guarantee that the Markov chains converge, 10,000 sets of model coefficients are generated after a burn-in of 2,000 iterations. For the base case and counterfactual scenario, survivors are estimated as described above for each set of Poisson model coefficients (for each iteration), and means with 95% posterior intervals (95% PI) are reported. The DPM(+1) is executed in the R language.³⁸

Although of great importance and interest, morbidity is less easily measured than mortality – and thus the effects of changes in tobacco exposure patterns are less easily estimated; and because there is no standard definition, there are no methods for effectively measuring or tracking changes in morbidity. QALE approximates population morbidity, and is calculated by multiplying LE - calculated by the DPM(+1) according to actuarial principles - by a factor that accounts for disability, illness or both.^{39 40 41 42 43} Age category-specific EuroQol EQ-5D scores from the Medical Expenditure Panel Survey (MEPS) are used as the adjustment factor to estimate QALE for those surviving to the end of the first age category.⁴⁴ The EQ-5D score is an index score reflecting a person's health status based on a brief, standardized questionnaire.⁴⁵

³⁷ Modeling results for the current analyses are always presented as the difference in the number of survivors for the counterfactual scenario compared to the based case at the end of age interval 68-72 years; more complete results for the numbers of survivors across all age intervals are provided in [Appendix E](#).

³⁸ R Core Team. R: A language and environment for statistical computing Vienna, Austria: R Foundation for Statistical Computing, <http://www.R-project.org>; 2015.

³⁹ Jia H, Lubetkin EI. The statewide burden of obesity, smoking, low income and chronic diseases in the United States. *JPublic Health (Oxf)*. 2009; 31(4): 496-505.

⁴⁰ Jia H, Zack MM, Thompson WW. State quality-adjusted life expectancy for U.S. adults from 1993 to 2008. *QualLife Res*. 2011; 20(6): 853-63.

⁴¹ Stiefel MC, Perla RJ, Zell BL. A healthy bottom line: Healthy life expectancy as an outcome measure for health improvement efforts. *Milbank Q*. 2010; 88(1): 30-53.

⁴² Madans J. Healthy Life Expectancy: Center for Disease Control, US Department of Health & Human Services; http://www.cdc.gov/nchs/ppt/nchs2012/SS-24_MADANS.pdf. 2012; [updated 2012].

⁴³ Weinstein MC, Torrance G, McGuire A. QALYs: The basics. *ValueHealth*. 2009;12 (Suppl 1): S5-S9

⁴⁴ Fleishman JA. Methodology Report #15: Demographic and Clinical Variations in Health Status. January 2005. Rockville, MD: Agency for Healthcare Research and Quality; http://meps.ahrq.gov/data_files/publications/mr15/mr15.shtml; 2005; [updated 2005].

⁴⁵ Group E. About EQ-5D: EuroQol Research Foundation; <http://www.euroqol.org/about-eq-5d.html>; 2014; [updated 2014].

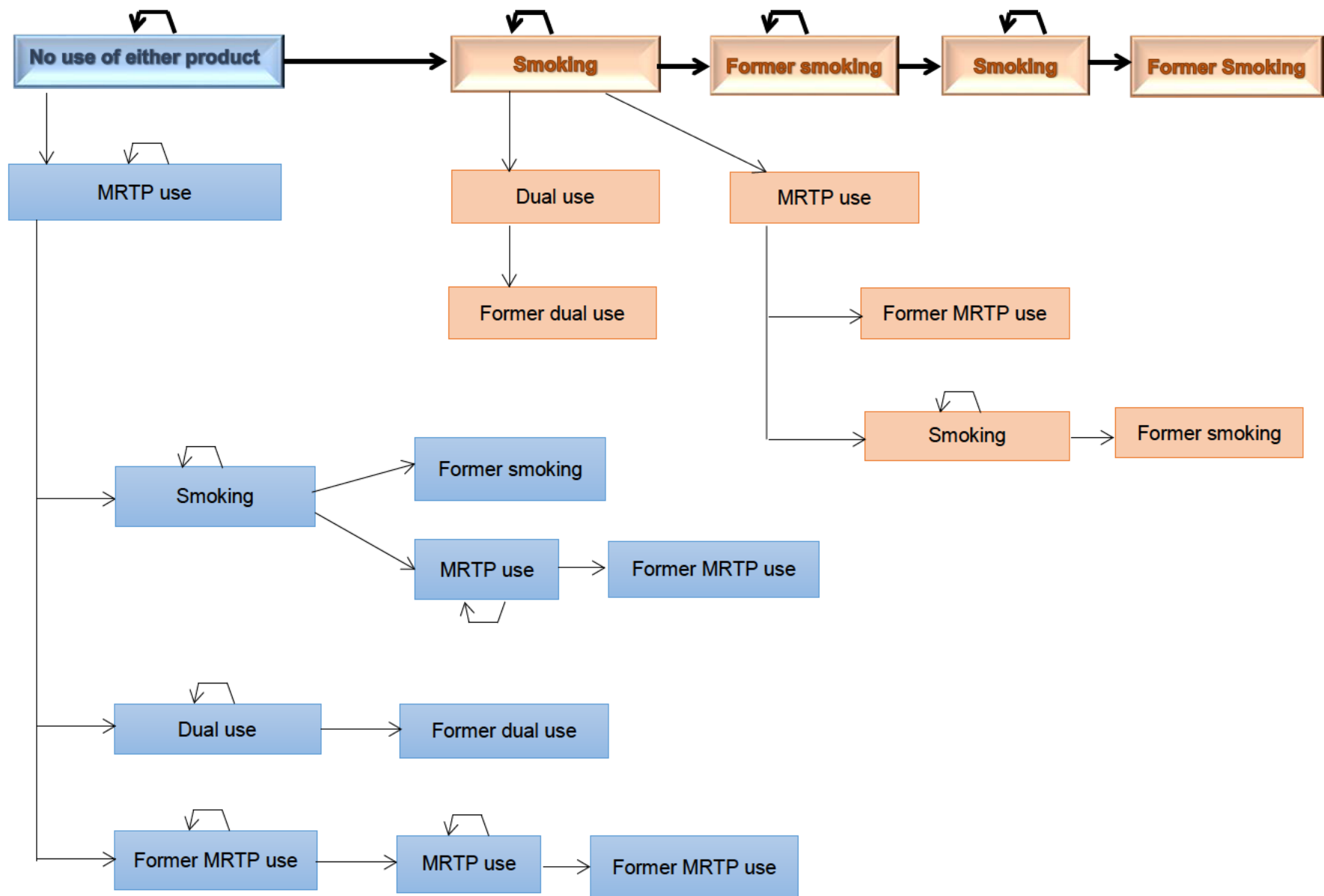


Figure 1: Schematic representation of the distribution of persons into exposure categories by the DPM(+1); transitions for base case (top row) and counterfactual scenario (all rows).

2.2 Use of projected purchase probabilities as DPM(+1) input for transitions in tobacco exposures

The ‘likelihood of use’ studies conducted by RAIS project purchase probabilities for Camel SNUS with modified-risk messaging, based on a cross-sectional survey of U.S. adult tobacco users and non-users. Purchase probabilities are projected across a wide age range, with age-specific projections potentially influenced by four factors (refer to Table 2.1).

Table 2.1: Factors influencing age-specific projections of purchase probabilities

Factor	Potential effect on purchase probabilities
Chronologic age	As never tobacco users age, they may become less likely to initiate use of tobacco products
Cohort effect	Persons born in different years may be inherently different in terms of purchase probabilities or likelihoods of initiating use of tobacco products throughout their lives
Age at which information about the MRTTP was obtained	Some respondents are informed early in life while others are not informed until later in life, modifying the effect of the message due to age and cohort differences in the likelihood of initiating tobacco use, as noted above
Intent	Purchase probabilities are based on an intent to purchase the MRTTP for personal trial and therefore likely overestimate the actual number of MRTTP users

The purchase probabilities projected by RAIS’s ‘likelihood of use’ studies cannot be used directly in the DPM(+1) because calculations in the modeler are not based on a cross-section of a population but rather a single birth cohort - where all persons are of the same age and are followed for a full life-time. The DPM(+1) assumes that all members of the cohort are informed about the MRTTP at the same age; and, transition probabilities in the DPM(+1) reflect the actual proportions of the cohort that transition during a given age category (transition probabilities), rather than transition intent.

As discussed in the following two sections, the purchase probabilities projected by the RAIS’s ‘likelihood of use’ studies can be used as ‘best estimates’ for transitions in tobacco exposures, and provide suitable starting points for sensitivity analyses in the DPM(+1).

Camel SNUS initiation

[Table 2.2](#) summarizes the projected purchase probabilities for Camel SNUS with modified-risk messaging among never regular tobacco users, as provided by the second execution of RAIS’s ‘likelihood of use’ study.⁴⁶ Projected purchase probabilities among never regular tobacco users who were *not likely* to initiate cigarette use were very low (0.2%-0.3%) for all age categories, while purchase probabilities among never regular tobacco users who were *likely* to initiate cigarette use were higher (0.4%-1.2%).

⁴⁶ “Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - *Second Execution of Consumer Testing* - Amended Final Report”, dated October 4, 2016. Analyses based on the other two executions of RAIS’s ‘likelihood of use’ study, with different modified-risk messaging, are reported separately.

Given that projected purchase probabilities among never regular tobacco users who were either *not likely* or *likely* to initiate cigarette use were similar in all age groups ([Table 2.2](#)), the presence of a cohort effect (that would indicate differences between members of a cross-sectional population of different ages) appears unlikely. However, it is likely that respondents who were informed about the lower risk for Camel SNUS at a later age and still indicated an intent to purchase the product for personal trial would not have delayed Camel SNUS use had they received the information at a younger age. Due to the apparent lack of a cohort effect, it can be assumed that purchase probabilities among older respondents would have been similar to the purchase probabilities reported among younger respondents to the study survey.

The projected purchase probabilities from RAIS's 'likelihood of use' study are used as input for the DPM(+1), as follows:

- Camel SNUS initiation in age categories 18-22 and 23-27 years: 0.3% among those *not likely* to initiate cigarette use, and 0.85% among those *likely* to initiate cigarette use;
- Camel SNUS initiation in age category 13-17 years: RAIS's 'likelihood of use' study did not include respondents under age 18 years; given the apparent lack of an age effect, the same probabilities are used as specified for age categories 18-22 and 23-27 years; and,
- Camel SNUS initiation after age 27 years: Camel SNUS initiation among current non-users of tobacco is assumed, like cigarette smoking initiation, to be essentially zero after the mid-20s. Therefore, even though some older members of the cross-sectional population participating in the 'likelihood of use' study endorsed their intention to purchase Camel SNUS for personal trial (purchase probability > 0), the probability of initiating sustained Camel SNUS use for members of the hypothetical cohort followed in the DPM(+1) is assumed to be zero after the cohort attains age 27 years. This is because the older participants in the 'likelihood of use' study likely would have started MRTP use at a younger age, had the MRTP been available.

Table 2.2: Camel SNUS projected purchase probabilities and corresponding DPM(+1) transition probabilities, by age and likelihood of initiating cigarette use among never regular tobacco users, based on the second execution of RAIS's 'likelihood of use' study

Age interval ^a	<i>Likely to initiate cigarette use</i>			<i>Not likely to initiate cigarette use</i>		
	Number of respondents	Camel SNUS purchase probability ^b (%)	DPM(+1) transition probability (%)	Number of respondents	Camel SNUS purchase probability ^c (%)	DPM(+1) transition probability (%)
13-17	-	-	0.85	-	-	0.3
18-22	48	1.2	0.85	123	0.2	0.3
23-27	79	1.0	0.85	211	0.3	0.3
28-32	79	0.9	-	159	0.3	-
33-37	44	0.9	-	127	0.3	-
38-42	36	0.7	-	117	0.3	-
43-47	37	0.5	-	132	0.2	-
48-52	32	0.6	-	146	0.3	-
53-57	16	0.5	-	159	0.3	-
58-62	25	0.4	-	197	0.2	-
63-67	15	0.6	-	208	0.2	-
68+	10	1.2	-	225	0.2	-

^a DPM(+1) age categories

^b Used to estimate the DPM(+1) transition, probability of initiating tobacco use with Camel SNUS among those base case never tobacco users who would otherwise have initiated cigarette use ('alternative initiation')

^c Used to estimate the DPM(+1) transition, probability of initiating tobacco use with Camel SNUS among those base case never tobacco users who would otherwise have remained never users ('additional initiation')

Switching to Camel SNUS use

Table 2.3 summarizes the projected purchase probabilities for Camel SNUS with modified-risk messaging among current regular smokers, as provided by the second execution of RAIS's 'likelihood of use' study.⁴⁷ Projected purchase probabilities among current regular smokers who were *not likely* to quit smoking generally decreased with increasing age, from 16.0% in age category 28-32 years to 2.0% in the age category 68-72 years. Similarly, purchase probabilities among current regular smokers who were *likely* to quit smoking generally decreased with increasing age, from 22.1% in age category 23-37 years to 1.8% in age category 63-67 years.

The observed age effect may have been, at least in part, due to chronologic age, suggesting that switching to a new product (Camel SNUS) becomes increasingly unlikely with increasing age. Also, projected purchase probabilities may reflect a cohort effect if, in fact, more recent birth cohorts are more open to trying a new product throughout their lifetime. In the presence of a cohort effect, it is possible to observe a

⁴⁷ "Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - Second Execution of Consumer Testing - Amended Final Report", dated October 4, 2016. Analyses based on the other two executions of RAIS's 'likelihood of use' study, with different modified-risk messaging, are reported separately.

decrease in purchase probabilities with increasing age even if chronologic age does not affect (or even if it increases) purchase probabilities.

The age at which respondents were informed about Camel SNUS with its proposed modified-risk messaging may also have affected the projected purchase probabilities, as age groups contained current regular smokers who may have switched to Camel SNUS use at a younger age had they been informed, and current regular smokers who may have continued to smoke cigarettes, regardless. Conversely, the corresponding DPM(+1) age groups only contain current smokers who continued to smoke despite having been informed about the lower risks of Camel SNUS at the start of the simulation (age category 13-17 years). For this reason, the purchase probabilities estimated from RAIS's 'likelihood of use' study likely overestimate the probability of completely switching from cigarette use to Camel SNUS use, as modeled by the DPM(+1).

Projected purchase probabilities from the second execution of RAIS's 'likelihood of use' study are used as input for the DPM(+1), as follows:

- Under the assumption of no cohort effect, the projected purchase probabilities likely overestimate the probability of switching from cigarette use to Camel SNUS use in the DPM(+1); thus, age-specific purchase probabilities are used as upper limits (age category 13-17 years is not relevant because switching does not occur in the first age category).

Table 2.3: Camel SNUS projected purchase probabilities and corresponding DPM(+1) transition probabilities, by age and likelihood of quitting smoking among current regular cigarette users, based on the second execution of RAIS's 'likelihood of use' study

Age interval ^a	<i>Likely to quit smoking</i>			<i>Not likely to quit smoking</i>		
	Number of respondents	Camel SNUS purchase probability (%)	DPM(+1) transition probability (%) ^b	Number of respondents	Camel SNUS purchase probability (%)	DPM(+1) transition probability (%) ^c
13-17	-	-	-	-	-	-
18-22	8	15.4	15.4	33	13.4	13.4
23-27	15	22.1	22.1	75	12.9	12.9
28-32	36	13.6	13.6	102	16.0	16.0
33-37	33	11.3	11.3	130	9.1	9.1
38-42	30	11.3	11.3	112	7.3	7.3
43-47	19	5.4	5.4	144	6.5	6.5
48-52	18	7.1	7.1	135	5.9	5.9
53-57	21	5.6	5.6	123	3.3	3.3
58-62	20	2.6	2.6	113	2.6	2.6
63-67	16	1.8	1.8	84	2.8	2.8
68+	10	2.2	2.2	56	2.0	2.0

^a DPM(+1) age categories

^b Used to estimate the DPM(+1) transition, probability of switching to Camel SNUS among those base case current smokers who would otherwise have quit smoking ('diversion from quitting')

^c Used to estimate the DPM(+1) transition, probability of switching to Camel SNUS among those base case current smokers who would otherwise have continued to smoke ('switching')

2.3 Research questions and corresponding DPM(+1) transition probabilities

As discussed above, the purchase probabilities projected by the second execution of RAIS's 'likelihood of use' study⁴⁸ provide 'best estimates' for transitions in tobacco exposure patterns, and likewise provide starting points for sensitivity analyses using the DPM(+1). These purchase probabilities are used to address a series of research questions on the potential population health effects of Camel SNUS and its proposed modified-risk messaging.

For the current analyses, a hypothetical population of one-million 12 year-old never tobacco users is followed from age 13 years, in 5-year intervals, through age 102 years, when the number of survivors is approximately 0 in both the base case and counterfactual scenario. Age-specific mortality rates for never, current, and former smokers are calculated based on data from the Kaiser-Permanente Cohort Study⁴⁹ and the 2000 U.S. Census⁵⁰. Results comparing the number of survivors in the counterfactual scenario and base case are presented for the cohort at the end of age category 68-72 years; results at much older ages are increasingly uninformative (the number of survivors in both the counterfactual and the base cases approaches zero).

The base case specifies transition probabilities based on 2009 U.S. cigarette smoking initiation rates⁵¹ and 2005-2008 U.S. smoking cessation rates⁵² (refer to [Table 2.4](#)). More current smoking cessation estimates have been published, but they include as former smokers individuals who quit smoking less than one year in the past, i.e., they include quit attempts. This definition is incompatible with the mortality data for successful smoking quitters (i.e., those who were former smokers for at least 2 years) from the Kaiser-Permanente Cohort Study. Therefore, the DPM(+1) was calibrated using the 2005-2008 U.S. smoking cessation rates, which are based on successful cessation defined as lasting at least one year. Uncertainty in initiation and cessation rates is accounted for by modeling the transition probabilities as truncated normal random variables, with means equal to the respective estimates and standard deviations equal to 0.01. For the counterfactual scenarios, projected purchase probabilities for Camel SNUS initiation and switching from smoking to Camel SNUS use (primary beneficial and harmful transitions of 'alternative initiation', 'switching', 'additional initiation' and 'diversion from quitting') were used as 'best estimates', as well as starting points for sensitivity analyses. Cessation of Camel SNUS was suspended, with the probability of Camel SNUS cessation set to 0. Secondary harmful transitions ('gateway effect', 'delayed smoking', 'resumed smoking' and 'relapse'), which were not assessed in RAIS's 'likelihood of use' study, were based on hypothetical transition probabilities, that were, in most instances, extreme scenarios. Transition probabilities for the counterfactual scenarios are summarized in the [Section 2](#) tables below, and shown in detail in [Appendix A](#).

⁴⁸ "Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - *Second Execution of Consumer Testing* - Amended Final Report", dated October 4, 2016. Analyses based on the other two executions of RAIS's 'likelihood of use' study, with different modified-risk messaging, are reported separately.

⁴⁹ Friedman G, Tekawa IS, Sadler M, Sidney S. Smoking and mortality: The Kaiser Permanente experience. In: Shopland DR, Burns DM, Garfinkel L, Samet J, editors. *Changes in Cigarette-Related Disease Risks and Their Implication for Prevention and Control*. Rockville, MD: US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute. 1997; 477-99.

⁵⁰ Census Bureau, U.S. Death and Death Rates, by Age and Leading Cause. 2000.

⁵¹ SAMHSA. NSDUH 2010 Table 4.3B: Past Year Initiation of Cigarette Use among Persons Aged 12 or Older, Persons Aged 12 or Older At Risk for Initiation of Cigarette Use, and Past Year Cigarette Users Aged 12 or Older, by Demographic Characteristics: Numbers in Thousands and Percentages, 2009 and 2010. 2010.

⁵² SAMHSA. Recent Smoking Cessation Rockville, MD: Substance Abuse and Mental Health Services Administration. 2010; [updated 4/8/2010]. Available from: <http://www.samhsa.gov/data/2k10/172/172smokingcessation.htm>.

ERRs of 0.08 and 0.11 were used for the current analyses, and are based on consensus estimates for the mortality risk associated with long-term use of a low-nitrosamine smokeless tobacco product relative to conventional cigarettes and no tobacco use. The values of the consensus estimates (adjusted means; smokeless tobacco use compared to cigarette smoking) were 11.0 for those ages 35-49 years and 8.2 for those age 50+ years, based on a 100-point scale.⁵³ Uncertainty in the values of the ERRs was accounted for by modeling the risk estimates as left-truncated normal random variables, with means of 0.08 or 0.11 and standard deviations of 0.01. For the ERR of 0.08, the standard deviation ensured a range of approximately 0.05 to 0.11; and, for the ERR of 0.11, a range of approximately 0.08 to 0.14. Detailed information regarding data sources for smoking initiation and cessation and for mortality rates is provided in [Appendix B](#).

Table 2.4: Estimated U.S. smoking initiation (2009) and cessation (2005-2008) rates

Age interval	5-year smoking initiation (%) ^{a,c}	5-year smoking cessation (%) ^{b,c}
13-17	13.75	N/A ^d
18-22	10.00	9.00
23-27	1.00	9.50
28-32	0.00	14.00
33-37	0.00	14.00
38-42	0.00	14.00
43-47	0.00	14.00
48-52	0.00	14.00
53-57	0.00	14.00
58+	0.00	14.00

^a Based on <http://www.samhsa.gov/data/NSDUH/2K10ResultsTables/NSDUHTables2010R/HTM/Sect4peTabs1to16.htm#Tab4.3B>

^b Based on <http://www.samhsa.gov/data/2k10/172/172smokingcessation.htm>

^c Published annual smoking initiation and cessation rates were adjusted to align with the 5-year age categories used in the DPM(+1), and were multiplied by 2.5 to estimate rates over a 5-year period (to provide a conservative estimate of the average person-time at risk of smoking initiation or cessation in each 5-year age category)

^d No smoking cessation allowed in the first age category, ages 13-17 years

Population health effects based on combined beneficial and harmful transitions

The **first objective** was to estimate the 'net' population health effect of changes in tobacco exposure patterns expected to result from Camel SNUS and its proposed marketing as a modified-risk tobacco product. This objective was addressed by collectively examining all primary and secondary exposure transitions, intended and unintended, using population survival as a surrogate for population health. Primary exposure transitions examined for these analyses included: (1) some base case never tobacco users initiate Camel SNUS use instead of remaining never tobacco users ('additional initiation'); (2) some base case never tobacco users initiate Camel SNUS use instead of initiating cigarette smoking ('alternative initiation'); (3) some base case current smokers switch to Camel SNUS use instead of continuing to use cigarettes

⁵³ Levy DT, Mumford EA, Cummings KM, Gilpin EA, Giovino G, Hyland A, et al. The relative risks of a low-nitrosamine smokeless tobacco product compared with smoking cigarettes: Estimates of a panel of experts. *Cancer Epidemiol Biomarkers Prev.* 2004;13(12): 2035-42.

(‘switching’, the intended change); and, (4) some base case current smokers switch to Camel SNUS use instead of quitting all tobacco use (‘diversion from quitting’). These primary transition probabilities were based on the second execution of RAIS’s ‘likelihood of use’ study.⁵⁴ Secondary exposure transitions included: (5) some portion of ‘additional initiation’ Camel SNUS users transition to cigarette smoking (‘gateway effect’); (6) some portion of ‘alternative initiation’ Camel SNUS users transition to cigarette smoking (‘delayed smoking’); (7) some portion of ‘switching’ Camel SNUS users resume cigarette smoking (‘resumed smoking’); and, (8) some portion of ‘diversion from quitting’ Camel SNUS users relapse to cigarette smoking (‘relapse’). These secondary transitions were not directly investigated by RAIS’s ‘likelihood of use’ study, and were thus modeled using hypothetical probabilities that represented, in most instances, extreme scenarios. Analyses were conducted using ERRs of 0.08 and 0.11, to define the mortality risk of Camel SNUS use relative to cigarette smoking. [Tables 2.5-2.8](#), described in detail in the chart below, present operational research questions, as well as DPM(+1) transition probabilities used to support the corresponding analyses, including sensitivity and ‘tipping point’ analyses. The corresponding results are shown in [Tables 3.1-3.4](#) in [Section 3](#).

Input tables	Result tables	Description	Transition probabilities
2.5	3.1	Net effect of all primary transitions and secondary transitions ‘gateway effect’/‘delayed smoking’ and ‘resumed smoking’ (‘master model’); ‘relapse’ and effect of different ERRs addressed in sensitivity analyses	<ul style="list-style-type: none"> Primary transitions: Projections from ‘likelihood of use’ study ‘Gateway effect’/‘delayed smoking’: Extreme scenario for each (50%) ‘Resumed smoking’ (among ‘switchers’): Age interval-specific ‘switching’ reduced by 50%
2.6	3.2	Net effect of primary transitions ‘additional initiation’, ‘switching’ and ‘diversion from quitting’, and secondary transitions ‘gateway effect’ and ‘resumed smoking’; ‘relapse’ addressed in sensitivity analysis	<ul style="list-style-type: none"> Primary transitions: Projections from ‘likelihood of use’ study ‘Gateway effect’: Extreme scenario (50%) ‘Resumed smoking’ (among ‘switchers’): Age interval-specific ‘switching’ reduced by 50%
2.7	3.3	Net effect of primary transitions ‘additional initiation’, ‘switching’ and ‘diversion from quitting’	<ul style="list-style-type: none"> Primary transitions: Projections from ‘likelihood of use’ study
2.8	3.4	Tipping point for ‘switching’ versus primary transitions ‘additional initiation’ and ‘diversion from quitting’ and secondary transition ‘gateway effect’	<ul style="list-style-type: none"> ‘Switching’: Variable Other primary transitions: Projections from ‘likelihood of use’ study ‘Gateway effect’: Extreme scenario (50%)

⁵⁴ “Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - *Second Execution of Consumer Testing* - Amended Final Report”, dated October 4, 2016. Analyses based on the other two executions of RAIS’s ‘likelihood of use’ study, with different modified-risk messaging, are reported separately.

Table 2.5: Research question and corresponding transition probabilities for assessing the 'net' population health effect of all primary transitions and the secondary transitions 'gateway effect', 'delayed smoking' and 'resumed smoking', combined ('master model')

Research question	DPM(+1) transition probabilities	
‘What is the ‘net’ population health effect if		
<ul style="list-style-type: none">• some never tobacco users who would have remained never users instead initiate Camel SNUS use (‘additional initiation’); and,	Probability of ‘additional initiation’, % (from Table 2.2 ^a)	
	Ages 13-17, 18-22, 23-27	0.3
	Ages 28+	0.0
<ul style="list-style-type: none">• some never tobacco users who would have initiated cigarette use instead initiate Camel SNUS use (‘alternative initiation’); and,	Probability of ‘alternative initiation’, % (from Table 2.2 ^a)	
	Ages 13-17, 18-22, 23-27	0.85
	Ages 28+	0.0
<ul style="list-style-type: none">• some proportion of ‘additional initiators’ transition to cigarette use in the next age category (‘gateway effect’); the same proportion of ‘alternative initiators’ transition to cigarette use in the next age category (‘delayed smoking’); and,	Probability of ‘gateway effect’ or ‘delayed smoking’, %	
	Ages 13-17	No switching
	Ages 18-22, 23-27, 28-32	50 ^b
	Ages 33+	0
<ul style="list-style-type: none">• some current smokers who would have continued to use cigarettes instead switch completely to Camel SNUS use (‘switching’) but 50% of switchers return to smoking in same age category (‘resumed smoking’); and,	50% of probability of ‘switching’, % (based on Table 2.3 ^{a,c})	
	Ages 13-17	No switching
	Ages 18-22	6.7
	Ages 23-27	6.5
	Ages 28-32	8.0
	Ages 33-37	4.5
	Ages 38-42	3.7
	Ages 43-47	3.3
	Ages 48-52	2.9
	Ages 53-57	1.7
	Ages 58-62	1.3
	Ages 63-67	1.4
	Ages 68+	1.0

^a In sensitivity analyses, reduced transition probabilities by 75% to model considerably lower transition probabilities than suggested by 'likelihood of use' study

^b Extreme transition probability, in absence of empirical data

^c Hypothetical transition probabilities, in absence of empirical data; probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking') in same 5-year age category

Cont., next page

Table 2.5, cont.: Research question and corresponding transition probabilities for assessing the 'net' population health effect of all primary transitions and the secondary transitions 'gateway effect', 'delayed smoking' and 'resumed smoking', combined ('master model')

Research question	DPM(+1) transition probabilities	
<ul style="list-style-type: none"> some current smokers who would have quit tobacco use instead switch to Camel SNUS use ('diversion from quitting') 	Probability of 'diversion from quitting', % (from Table 2.3 ^{a,d})	
	Ages 13-17	No switching
	Ages 18-22	15.4
	Ages 23-27	22.1
	Ages 28-32	13.6
	Ages 33-37	11.3
	Ages 38-42	11.3
	Ages 43-47	5.4
	Ages 48-52	7.1
	Ages 53-57	5.6
	Ages 58-62	2.6
	Ages 63-67	1.8
	Ages 68+	2.2

^a In sensitivity analyses, reduced transition probabilities by 75% to model considerably lower transition probabilities than suggested by 'likelihood of use' study

^d In sensitivity analyses, assessed effect of 50% relapse to smoking among base case smoking quitters who switched to Camel SNUS use in counterfactual scenario ('relapse'); see [Appendix C](#) for details

Table 2.6: Research question and corresponding transition probabilities for assessing the ‘net’ population health effect of the primary transitions ‘additional initiation’, ‘switching’ and ‘diversion from quitting’ and the secondary transitions ‘gateway effect’ and ‘resumed smoking’, combined

Research question	DPM(+1) transition probabilities	
‘What is the ‘net’ population health effect if		
<ul style="list-style-type: none">some never tobacco users who would have remained never users instead initiate Camel SNUS use (‘additional initiation’); and,	Probability of ‘additional initiation’, % (from Table 2.2)	
	Ages 13-17, 18-22, 23-27	0.3
	Ages 28+	0.0
<ul style="list-style-type: none">some proportion of ‘additional initiators’ transition to cigarette use in the next age category (‘gateway effect’); and,	Probability of ‘gateway effect’, %	
	Ages 13-17	No switching
	Ages 18-22, 23-27, 28-32	50 ^a
<ul style="list-style-type: none">some current smokers who would have continued to use cigarettes instead switch completely to Camel SNUS use (‘switching’) but 50% of switchers return to smoking in same age category (‘resumed smoking’); and,	50% of probability of ‘switching’, % (based on Table 2.3 ^b)	
	Ages 13-17	No switching
	Ages 18-22	6.7
	Ages 23-27	6.5
	Ages 28-32	8.0
	Ages 33-37	4.5
	Ages 38-42	3.7
	Ages 43-47	3.3
	Ages 48-52	2.9
	Ages 53-57	1.7
	Ages 58-62	1.3
	Ages 63-67	1.4
<ul style="list-style-type: none">some current smokers who would have quit tobacco use instead switch to Camel SNUS use (‘diversion from quitting’)	Probability of ‘diversion from quitting’, % (from Table 2.3 ^c)	
	Ages 13-17	No switching
	Ages 18-22	15.4
	Ages 23-27	22.1
	Ages 28-32	13.6
	Ages 33-37	11.3
	Ages 38-42	11.3
	Ages 43-47	5.4
	Ages 48-52	7.1
	Ages 53-57	5.6
	Ages 58-62	2.6
	Ages 63-67	1.8
Ages 68+	2.2	

^a Extreme transition probability, in absence of empirical data

^b Hypothetical transition probabilities, in absence of empirical data; probabilities from ‘likelihood of use’ study reduced by 50% to model 50% return from Camel SNUS use to smoking (‘resumed smoking’) in same 5-year age category

^c In sensitivity analyses, assessed effect of 50% relapse to smoking among base case smoking quitters who switched to Camel SNUS use in counterfactual scenario (‘relapse’); see [Appendix C](#) for details

Table 2.7: Research question and corresponding transition probabilities for assessing the 'net' population health effect of the primary transitions 'additional initiation', 'switching' and 'diversion from quitting'

Research question	DPM(+1) transition probabilities	
What is the 'net' population health effect if		
• some never tobacco users who would have remained never users instead initiate Camel SNUS use ('additional initiation'); and,	Probability of 'additional initiation', % (from Table 2.2)	
	Ages 13-17, 18-22, 23-27	0.3
	Ages 28+	0.0
• some current smokers who would have continued to use cigarettes instead switch completely to Camel SNUS use ('switching'); and,	Probability of 'switching', % (from Table 2.3)	
	Ages 13-17	No switching
	Ages 18-22	13.4
	Ages 23-27	12.9
	Ages 28-32	16.0
	Ages 33-37	9.1
	Ages 38-42	7.3
	Ages 43-47	6.5
	Ages 48-52	5.9
	Ages 53-57	3.3
	Ages 58-62	2.6
	Ages 63-67	2.8
	Ages 68+	2.0
• some current smokers who would have quit tobacco use instead switch to Camel SNUS use ('diversion from quitting')	Probability of 'diversion from quitting', % (from Table 2.3)	
	Ages 13-17	No switching
	Ages 18-22	15.4
	Ages 23-27	22.1
	Ages 28-32	13.6
	Ages 33-37	11.3
	Ages 38-42	11.3
	Ages 43-47	5.4
	Ages 48-52	7.1
	Ages 53-57	5.6
	Ages 58-62	2.6
	Ages 63-67	1.8
	Ages 68+	2.2

Table 2.8: Research question and corresponding transition probabilities for determining the ‘tipping point’ related to the primary beneficial transition, ‘switching’, versus the primary transitions ‘additional initiation’ and ‘diversion from quitting’ and the secondary transition ‘gateway effect’, combined

Research question	DPM(+1) transition probabilities	
‘What is the ‘net’ population health effect if		
<ul style="list-style-type: none">some never tobacco users who would have remained never users instead initiate Camel SNUS use (‘additional initiation’); and,	Probability of ‘additional initiation’, % (from Table 2.2)	
	Ages 13-17, 18-22, 23-27	0.3
	Ages 28+	0.0
<ul style="list-style-type: none">some proportion of ‘additional initiators’ transition to cigarette use in the next age category (‘gateway effect’); and,	Probability of ‘gateway effect’, %	
	Ages 13-17	No switching
	Ages 18-22, 23-27, 28-32	50 ^a
<ul style="list-style-type: none">some current smokers who would have continued to use cigarettes instead switch completely to Camel SNUS use (‘switching’); and,	Ages 33+	0
	Probability of ‘switching’, % Ages 18+	Varied to find tipping point
<ul style="list-style-type: none">some current smokers who would have quit tobacco use instead switch to Camel SNUS use (‘diversion from quitting’)	Probability of ‘diversion from quitting’, % (from Table 2.3 ^b)	
	Ages 13-17	No switching
	Ages 18-22	15.4
	Ages 23-27	22.1
	Ages 28-32	13.6
	Ages 33-37	11.3
	Ages 38-42	11.3
	Ages 43-47	5.4
	Ages 48-52	7.1
	Ages 53-57	5.6
	Ages 58-62	2.6
	Ages 63-67	1.8
	Ages 68+	2.2

^a Extreme transition probability, in absence of empirical data

^b In sensitivity analyses, assessed effect of 50% relapse to smoking among base case smoking quitters who switched to Camel SNUS use in counterfactual scenario (‘relapse’); see [Appendix C](#) for details

Population health effects due to individual beneficial and harmful transitions

The next series of DPM(+1)-based analyses addressed the **second objective**, to more closely assess the influence of specific changes in tobacco exposure patterns - expected to result from Camel SNUS and its proposed modified-risk messaging - on the overall 'net' population health effect. This objective was achieved by examining the population-level effects of changes in beneficial and harmful tobacco exposure patterns, individually and in limited combinations, based largely on projected purchase probabilities from the second execution of RAIS's 'likelihood of use' study.⁵⁵ Population survival was used as a surrogate for population health. Tobacco exposure transitions examined using the DPM(+1) included the primary transitions (1) 'alternative initiation', whereby some never tobacco users initiate Camel SNUS use instead of initiating cigarette smoking; (2) 'switching', whereby some current smokers switch completely to Camel SNUS use instead of continuing to use cigarettes; (3) 'additional initiation', whereby some never tobacco users initiate Camel SNUS use instead of remaining never tobacco users; and/or, (4) 'diversion from quitting', whereby some current smokers switch to Camel SNUS use instead of quitting cigarettes. A second set of analyses included primary transitions followed by the secondary transitions (5) 'gateway effect', whereby some portion of 'additional initiators' transition to cigarette smoking; (6) 'delayed smoking', whereby some portion of 'alternative initiators' transition to cigarette smoking; (7) 'resumed smoking', whereby some portion of 'switchers' return to cigarette smoking; and (8) 'relapse', whereby some portion of those who 'diverted from quitting' relapse to cigarette smoking. Analyses were conducted using ERRs of 0.08 and 0.11 to define the mortality risk of Camel SNUS use relative to cigarette smoking. [Tables 2.9-2.15](#), described in detail in the chart below, present operational research questions, as well as DPM(+1) transition probabilities used to support the corresponding analyses. The corresponding results are shown in [Tables 3.5-3.11](#) in [Section 3](#).

Input tables	Result tables	Description	Transition probabilities
2.9	3.5	Effect of 'alternative initiation'	<ul style="list-style-type: none"> Projections from 'likelihood of use' study
2.10	3.6	Effect of 'switching'	<ul style="list-style-type: none"> Projections from 'likelihood of use' study
2.11	3.7	Effect of 'additional initiation'	<ul style="list-style-type: none"> Projections from 'likelihood of use' study
2.12	3.8	Effect of 'diversion from quitting'; 'relapse' addressed in sensitivity analysis	<ul style="list-style-type: none"> Projections from 'likelihood of use' study
2.13	3.9	Effect of 'additional initiation', followed by extreme 'gateway effect'	<ul style="list-style-type: none"> 'Additional initiation': Projections from 'likelihood of use' study 'Gateway effect': Extreme scenario (50%)
2.14	3.10	Effect of 'alternative initiation', followed by extreme 'delayed smoking'	<ul style="list-style-type: none"> 'Alternative initiation': Projections from 'likelihood of use' study 'Delayed smoking': Extreme scenario (50%)
2.15	3.11	Effect of 'switching', followed by 'resumed smoking'	<ul style="list-style-type: none"> 'Switching': Projections from 'likelihood of use' study 'Resumed smoking' (among 'switchers'): Age interval-specific 'switching' reduced by 50%

⁵⁵ "Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - *Second Execution of Consumer Testing* - Amended Final Report", dated October 4, 2016. Analyses based on the other two executions of RAIS's 'likelihood of use' study, with different modified-risk messaging, are reported separately.

Table 2.9: Research question and corresponding transition probabilities for assessing the population health effect of the primary beneficial transition, 'alternative initiation'

Research question	DPM(+1) transition probabilities	
What is the expected population health benefit if some never tobacco users who would have initiated cigarette use instead initiate Camel SNUS use ('alternative initiation')?	Probability of 'alternative initiation', % (from Table 2.2)	
	Ages 13-17, 18-22, 23-27	0.85
	Ages 28+	0.0

Table 2.10: Research question and corresponding transition probabilities for assessing the population health effect of the primary beneficial transition, 'switching'

Research question	DPM(+1) transition probabilities	
What is the expected population health benefit if some current smokers who would have continued to use cigarettes instead switch completely to Camel SNUS use ('switching')?	Probability of 'switching', % (from Table 2.3)	
	Ages 13-17	No switching
	Ages 18-22	13.4
	Ages 23-27	12.9
	Ages 28-32	16.0
	Ages 33-37	9.1
	Ages 38-42	7.3
	Ages 43-47	6.5
	Ages 48-52	5.9
	Ages 53-57	3.3
	Ages 58-62	2.6
	Ages 63-67	2.8
	Ages 68+	2.0

Table 2.11: Research question and corresponding transition probabilities for assessing the population health effect of the primary harmful transition, 'additional initiation'

Research question	DPM(+1) transition probabilities	
What is the expected population health harm if some never tobacco users who would have remained never users instead initiate Camel SNUS use ('additional initiation')?	Probability of 'additional initiation', % (from Table 2.2)	
	Ages 13-17, 18-22, 23-27	0.3
	Ages 28+	0.0

Table 2.12: Research question and corresponding transition probabilities for assessing the population health effect of the primary harmful transition, 'diversion from quitting'

Research question	DPM(+1) transition probabilities	
What is the expected population health harm if some current smokers who would have quit tobacco use instead switch to Camel SNUS use ('diversion from quitting')?	Probability of 'diversion from quitting', % (from Table 2.3 ^a)	
	Ages 13-17	No switching
	Ages 18-22	15.4
	Ages 23-27	22.1
	Ages 28-32	13.6
	Ages 33-37	11.3
	Ages 38-42	11.3
	Ages 43-47	5.4
	Ages 48-52	7.1
	Ages 53-57	5.6
	Ages 58-62	2.6
	Ages 63-67	1.8
	Ages 68+	2.2

^a In sensitivity analyses, assessed effect of 50% relapse to smoking among base case smoking quitters who switched to Camel SNUS use in counterfactual scenario ('relapse'); see [Appendix C](#) for details

Table 2.13: Research question and corresponding transition probabilities for assessing the population health effect of the primary harmful transition, 'additional initiation', combined with the secondary harmful transition, 'gateway effect'

Research question	DPM(+1) transition probabilities	
What is the expected population health harm if some never tobacco users who would have remained never users instead initiate Camel SNUS use ('additional initiation'), and then some initiators transition to cigarette use in the next age category ('gateway effect')?	Probability of 'additional initiation', % (from Table 2.2)	
	Ages 13-17, 18-22, 23-27	0.3
	Ages 28+	0.0
	Probability of 'gateway effect', %	
	Ages 13-17	No switching
	Ages 18-22, 23-27, 28-32	50 ^a
	Ages 33+	0

^a Extreme transition probability, in absence of empirical data

Table 2.14: Research question and corresponding transition probabilities for assessing the population health effect of the primary beneficial transition, 'alternative initiation', combined with the secondary harmful transition, 'delayed smoking'

Research question	DPM(+1) transition probabilities	
What is the expected population health effect if some never tobacco users who would have initiated cigarette use instead initiate Camel SNUS use ('alternative initiation'), and then some initiators transition to cigarette use in the next age category ('delayed smoking')?	Probability of 'alternative initiation', % (from Table 2.2)	
	Ages 13-17, 18-22, 23-27	0.85
	Ages 28+	0.0
	Probability of 'delayed smoking', %	
	Ages 13-17	No switching
	Ages 18-22, 23-27, 28-32	50 ^a
	Ages 33+	0

^a Extreme transition probability, in absence of empirical data

Table 2.15: Research question and corresponding transition probabilities for assessing the population health effect of the primary beneficial transition, 'switching', combined with the secondary harmful transition, 'resumed smoking'

Research question	DPM(+1) transition probabilities	
What is the expected population health effect if some current smokers who would have continued to use cigarettes instead switch completely to Camel SNUS use ('switching') but 50% of switchers return to smoking in same age category ('resumed smoking')?	50% of probability of 'switching', % (based on Table 2.3 ^a)	
	Ages 13-17	No switching
	Ages 18-22	6.7
	Ages 23-27	6.5
	Ages 28-32	8.0
	Ages 33-37	4.5
	Ages 38-42	3.7
	Ages 43-47	3.3
	Ages 48-52	2.9
	Ages 53-57	1.7
	Ages 58-62	1.3
	Ages 63-67	1.4
	Ages 68+	1.0

^a Hypothetical transition probabilities, in absence of empirical data; probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking') in same 5-year age category

Population health effects based on 'switching' combined with extreme scenarios for harmful transitions

Lastly, DPM(+1)-based analyses addressed a **third objective**, assessing whether Camel SNUS and its proposed modified-risk messaging is likely to have a beneficial effect on population health, or at a minimum is unlikely to have an adverse effect on population health, even if unintended changes in tobacco exposure transitions are extreme. These assessments were based on a series of analyses that estimated the proportion of current smokers who must completely switch to using Camel SNUS instead of continuing to smoke ('switching') to fully offset any unintended population harm that may occur due to extreme scenarios for the primary harmful transitions of 'additional initiation' and 'diversion from quitting', and the secondary harmful transition of 'gateway effect'. Population survival was used as a surrogate for population health. Analyses were conducted using ERRs of 0.08 and 0.11, to define the mortality risk of Camel SNUS use relative to cigarette smoking. *Tables 2.16-2.18*, described in detail in the chart below, present operational research questions, as well as DPM(+1) transition probabilities used to support the corresponding analyses. The corresponding results are shown in *Tables 3.12-3.14* in *Section 3*.

Input tables	Result tables	Description	Transition probabilities
2.16	3.12	Tipping point for 'switching' versus extreme scenario for 'additional initiation'	<ul style="list-style-type: none"> 'Switching': Variable 'Additional initiation': Extreme scenario; same age interval-specific rates as U.S. smoking initiation
2.17	3.13	Tipping point for 'switching' versus scenario for elevated 'additional initiation' followed by extreme scenario for 'gateway effect'	<ul style="list-style-type: none"> 'Switching': Variable 'Additional initiation': Projections from 'likelihood of use' study multiplied by factor of 10 'Gateway effect': Extreme scenario (50%)
2.18	3.14	Tipping point for 'switching' versus extreme scenario for 'diversion from quitting'	<ul style="list-style-type: none"> 'Switching': Variable 'Diversion from quitting': Extreme scenario (50%)

Table 2.16: Research question and corresponding transition probabilities for determining the 'tipping point' related to 'switching' versus an extreme scenario for the primary harmful transition, 'additional initiation'

Research question	DPM(+1) transition probabilities	
What proportion of current smokers must switch completely to Camel SNUS use instead of continuing to use cigarettes ('switching') to fully offset the population health harm expected from an extreme scenario whereby a large proportion of never tobacco users initiate Camel SNUS use instead of remaining non-tobacco users ('additional initiation')?	Probability of 'additional initiation', % (assume same % as U.S. smoking initiation, from Table 2.4) ^a	
	Ages 13-17	13.75
	Ages 18-22	10.00
	Ages 23-27	1.00
	Ages 28+	0.00
	Probability of 'switching'	
	Ages 18+	Varied to find tipping point

^a Sensitivity analysis employed extreme scenario for 'additional initiation', almost doubling tobacco use incidence (counterfactual compared to base case)

Table 2.17: Research question and corresponding transition probabilities for determining the ‘tipping point’ related to ‘switching’ versus a scenario with elevated rates for the primary harmful transition, ‘additional initiation’, combined with an extreme scenario for the secondary harmful transition, ‘gateway effect’

Research question	DPM(+1) transition probabilities	
‘What proportion of current smokers must switch completely to Camel SNUS use instead of continuing to use cigarettes (‘switching’) to fully offset the population health harm expected from an extreme scenario whereby a larger than projected proportion of never tobacco users who would have remained never users instead initiate Camel SNUS use, (‘additional initiation’) and then some initiators transition to cigarette use in the next age category (‘gateway effect’)?	10-fold probability of ‘additional initiation’, % (from Table 2.2)	
	Ages 13-17, 18-22, 23-27	3.0 ^a
	Ages 28+	0.0
	Probability of ‘gateway effect’, %	
	Ages 13-17	No switching
	Ages 18-22, 23-27, 28-32	50 ^b
	Ages 33+	0
	Probability of ‘switching’	
	Ages 18+	Varied to find tipping point

^a Sensitivity analysis employed 10-fold higher estimate for ‘additional initiation’ than suggested by purchase probabilities projected from ‘likelihood of use’ study

^b Extreme transition probability, in absence of empirical data

Table 2.18: Research question and corresponding transition probabilities for determining the ‘tipping point’ related to ‘switching’ versus an extreme scenario for the primary harmful transition, ‘diversion from quitting’

Research question	DPM(+1) transition probabilities	
What proportion of current smokers must switch completely to Camel SNUS use instead of continuing to use cigarettes (‘switching’) to fully offset the population health harm expected from an extreme scenario whereby a large proportion of current smokers switch to Camel SNUS use instead of quitting tobacco use (‘diversion from quitting’)?	Probability of ‘diversion from quitting’, %	
	Ages 18+	50 ^a
	Probability of ‘switching’	
	Ages 18+	Varied to find tipping point

^a Sensitivity analysis employed extreme scenario for ‘diversion from quitting’, whereby quitting was reduced by 50%

Population health effects based on systematically increased first age category of Camel SNUS use

The impact of Camel SNUS and its proposed modified-risk messaging on population health, in particular among current smokers of different ages, was assessed by examining the effect of the primary beneficial transitions of ‘alternative initiation’ and ‘switching’, the primary harmful transitions of ‘additional initiation’ and ‘diversion from quitting’ and the secondary harmful transitions of ‘gateway effect’/‘delayed smoking’ and ‘resumed smoking’, while systematically increasing the first age category in which these transitions could occur. These analyses were conducted using multiple birth cohorts and with ERRs of 0.08 and 0.11 to define the mortality risk of Camel SNUS use relative to cigarette smoking.

3. Detailed description of results from the DPM(+1)-based analyses

Population health effects based on combined beneficial and harmful transitions

The **first objective** was to estimate the ‘net’ population health effect of changes in tobacco exposure patterns expected to result from Camel SNUS and its proposed marketing as a modified-risk tobacco product. This objective was addressed by collectively examining all primary and secondary exposure transitions, intended and unintended, using population survival as a surrogate for population health. Primary exposure transitions examined for the current analyses (described in detail, [Section 2.3](#) and [Tables 2.5-2.8](#)) were based on the second execution of RAIS’s ‘likelihood of use’ study.⁵⁶ Secondary transitions were not directly investigated by RAIS’s ‘likelihood of use’ study, and were thus modeled using hypothetical probabilities that, in many instances, represented extreme scenarios ([Section 2.3](#) and [Tables 2.5-2.8](#)).

Analyses were conducted using ERRs of 0.08 and 0.11, to define the mortality risk of Camel SNUS use relative to cigarette smoking. The results for differences between the counterfactual scenarios and the base case at the end of age category 68-72 years are presented in [Tables 3.1-3.4](#).⁵⁷

‘Net’ population health effect of all primary beneficial and harmful transitions, and secondary harmful transitions of ‘gateway effect’/‘delayed smoking’ and ‘resumed smoking’, combined; secondary harmful transition ‘relapse’ addressed in sensitivity analyses, as is effect of different ERRs [refer to [Table 2.5](#)]

These analyses evaluated the ‘net’ population health effect of all primary beneficial transitions (‘alternative initiation’ and ‘switching’), all primary harmful transitions (‘additional initiation’ and ‘diversion from quitting’) and the secondary harmful transitions of ‘gateway effect’, ‘delayed smoking’ and ‘resumed smoking’ – referred to as the ‘master model’. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

⁵⁶ “Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users – *Second Execution of Consumer Testing - Amended Final Report*”, dated October 4, 2016. Analyses based on the other two executions of RAIS’s ‘likelihood of use’ study, with different modified-risk messaging, are reported separately.

⁵⁷ Results for LE and QALE are presented in [Tables D3.1-D3.4](#) in *Appendix D*. The total numbers of survivors in the counterfactual scenario and the base case, and the differences between them are shown for all age categories in [Tables E3.1-E3.4](#) in *Appendix E*.

Empirical data on primary beneficial and harmful transitions were based on projected purchase probabilities, as provided by the second execution of RAIS's 'likelihood of use' study. Specifically, the probability that base case cigarette initiators would instead initiate tobacco use with Camel SNUS ('alternative initiation') was projected to be 0.85% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. 'Switching' to the use of Camel SNUS instead of continuing to use cigarettes among base case current smokers was projected to range from 2.0% to 16.0%, depending on age category (refer to [Table 2.3](#)). The probability that base case never tobacco users would initiate use of Camel SNUS instead of remaining never users ('additional initiation') was projected to be 0.3% (refer to [Table 2.2](#)); similar to 'alternative initiation', this transition occurs in the first three age categories. Finally, the probability that base case current smokers would switch to using Camel SNUS instead of quitting tobacco use ('diversion from quitting') was projected to range from 1.8%-22.1%, depending on the age category (refer to [Table 2.3](#)).

In the absence of empirical data on secondary harmful transitions from RAIS's 'likelihood of use' studies, the effect of these unintended changes in tobacco exposure patterns were evaluated using hypothetical and, in many instances, extreme scenarios. Specifically, both 'gateway effect' (the probability that some portion of 'additional initiation' Camel SNUS users would transition to cigarette use) and 'delayed smoking' (the probability that some portion of 'alternative initiation' Camel SNUS users would transition to cigarette use) were evaluated using scenarios whereby 50% of all Camel SNUS initiators transition to cigarette smoking in the age category following initiation (ages 18-22, 23-27 and 28-32 years). In addition, the secondary harmful transition of 'resumed smoking' was evaluated using a scenario whereby 50% of those smokers who switched to using Camel SNUS instead of continuing to smoke subsequently resumed cigarette use. Under the assumption that 'resumed smoking' would likely occur in the same 5-year age category as 'switching', this transition was modeled by reducing the transition probabilities for 'switching' from smoking to Camel SNUS use by 50%. Finally, sensitivity analyses conducted within the context of the 'master model' evaluated (1) the 'net' population health effect of an extreme scenario for 'relapse', whereby 50% of base case current smokers who would have quit tobacco use but instead switched to Camel SNUS use ('diversion from quitting') subsequently relapsed to smoking; and, (2) the 'net' population health effect of reducing all primary beneficial and harmful transitions, as provided by RAIS's 'likelihood of use' study, by 75% (probabilities for harmful secondary transitions were retained); and, (3) the 'net' population health effect of using incrementally increased ERRs.

For ERRs of 0.08 and 0.11, the 'net' population health effect of all primary beneficial and harmful transitions and the secondary harmful transitions of 'gateway effect'/'delayed smoking' and 'resumed smoking' ('master model') was a survival benefit in the counterfactual scenario of almost 7,380 and 6,820 additional survivors, respectively (refer to [Table 3.1](#)). Sensitivity analyses for the 'master model' that additionally included the secondary harmful transition of 'relapse' provided a smaller survival benefit of approximately 6,180 and 5,680 additional survivors for ERRs of 0.08 and 0.11, respectively (refer to [Table C3 in Appendix C](#)). Reduction of all primary beneficial and harmful transition probabilities by 75% – while retaining probabilities for the secondary harmful transitions, as specified for the 'master model' – still resulted in a survival benefit, with an estimated 2,000 and 1,850 additional survivors in the counterfactual scenario, for ERRs of 0.08 and 0.11, respectively (refer to [Table 3.1_2](#)). Finally, sensitivity analyses that assessed a range of ERRs within the context of the 'master model' indicated that ERRs for Camel SNUS relative to cigarettes of 0.46 or lower would provide a 'net' population health benefit (refer to [Table 3.1_3](#)). This was the case even though smoking cessation was allowed to occur throughout life (based on U.S. cessation rates) but MRTP cessation was suspended. As a result, 'switching' replaced smokers, some of whom eventually became former smokers, while MRTP users could not quit.

Table 3.1: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking' ('master model')

ERR	Additional Initiation ^a (%)	Alternative Initiation ^a (%)	Gateway effect/ Delayed Smoking ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Mean	95% PI	
0.08	0.3	0.85	50	1.8-22.1	1.0-8.0	7,374	6,416	8,346
0.11	0.3	0.85	50	1.8-22.1	1.0-8.0	6,819	5,919	7,743

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking'); refer to [Table 2.3](#) for age interval-specific probabilities

Table 3.1_2: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking'; probabilities for all primary beneficial and harmful transitions reduced by 75%, while probabilities for secondary harmful transitions retained at 100%

ERR	Additional Initiation ^a (%)	Alternative Initiation ^a (%)	Gateway effect/ Delayed Smoking ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Mean	95% PI	
0.08	0.08	0.21	50	0.45-5.53	0.25-2.0	1,998	1,739	2,262
0.11	0.08	0.21	50	0.45-5.53	0.25-2.0	1,848	1,603	2,098

^a Probability from 'likelihood of use' study reduced by 75% (applied to age intervals 13-17, 18-22 and 23-27 years)

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Probabilities from 'likelihood of use' study reduced by 75%; refer to [Table 2.3](#) for age interval-specific probabilities

^d Probabilities from 'likelihood of use' study reduced by 75%, and further reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking'); refer to [Table 2.3](#) for age interval-specific probabilities

Table 3.1_3: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking', using different ERRs

Additional Initiation ^a (%)	Alternative Initiation ^a (%)	Gateway effect/ Delayed Smoking ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	ERR	Mean	95% PI	
0.3	0.85	50	1.8-22.1	1.0-8.0	0.1	7,005	6,083	7,944
					0.2	5,127	4,382	5,899
					0.3	3,206	2,627	3,813
					0.4	1,251	813	1,716
					0.5	-728	-1,103	-344
					0.6	-2,722	-3,146	-2,320
					0.7	-4,720	-5,272	-4,209
					0.8	-6,715	-7,426	-6,040
					0.9	-8,695	-9,581	-7,832
					1.0	-10,654	-11,715	-9,598

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking'); refer to [Table 2.3](#) for age interval-specific probabilities

'Net' population health effect of primary beneficial transition 'switching', all primary harmful transitions, and secondary harmful transitions of 'gateway effect'/'delayed smoking' and 'resumed smoking', combined; secondary harmful transition 'relapse' addressed in sensitivity analyses [refer to [Table 2.6](#)]

To assess the 'net' population health effect of omitting the primary beneficial transition of 'alternative initiation' from the 'master model', these analyses evaluated the primary beneficial transition of 'switching', all primary harmful transitions ('additional initiation' and 'diversion from quitting'), and the secondary harmful transitions of 'gateway effect', 'delayed smoking' and 'resumed smoking'. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on primary beneficial and harmful transitions were based on projected purchase probabilities, as provided by the second execution of RAIS's 'likelihood of use' study. Specifically, 'switching' to Camel SNUS use instead of continuing to use cigarettes among base case smokers was projected to range from 2.0% to 16.0%, depending on age category (refer to [Table 2.3](#)). The probability that

base case never tobacco users would initiate Camel SNUS use instead of remaining never users ('additional initiation') was projected to be 0.3% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. Finally, the probability that base case current smokers would switch to using Camel SNUS instead of quitting tobacco use ('diversion from quitting') was projected to range from 1.8%-22.1%, depending on the age category (refer to [Table 2.3](#)).

In the absence of empirical data on secondary harmful transitions from RAIS's 'likelihood of use' studies, the effect of these unintended changes in tobacco exposure patterns were evaluated using hypothetical scenarios, which were extreme in many instances. Specifically, 'gateway effect' was evaluated using an extreme scenario whereby 50% of Camel SNUS initiators ('additional initiation') transitioned to cigarette smoking in the age category following initiation (ages 18-22, 23-27 and 28-32 years). In addition, the secondary harmful transition of 'resumed smoking' was evaluated using a scenario whereby 50% of those smokers who switched to using Camel SNUS instead of continuing to use cigarettes subsequently resumed smoking. Under the assumption that 'resumed smoking' would likely occur in the same 5-year age category as 'switching', this transition was modeled by reducing the transition probabilities for 'switching' from smoking to Camel SNUS by 50%. Finally, sensitivity analyses evaluated the effect of an extreme scenario for 'relapse', whereby 50% of base case current smokers who would have quit tobacco use but instead switched to using Camel SNUS ('diversion from quitting') subsequently relapsed to smoking.

Omitting 'alternative initiation' as a possible beneficial exposure transition had a nominal effect on the 'net' population health benefit, as projected by the 'master model'. For ERRs of 0.08 and 0.11, the survival benefit in the counterfactual scenario was estimated to be about 7,350 and 6,800 additional survivors, respectively (refer to [Table 3.2](#)). Sensitivity analyses that additionally included the secondary harmful transition, 'relapse', indicated that the survival benefit was slightly decreased to an estimated 6,140 and 5,650 additional survivors for ERRs of 0.08 and 0.11, respectively (refer to [Table C4 in Appendix C](#)).

Table 3.2: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'additional initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking'

ERR	Additional Initiation ^a (%)	Gateway Effect ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Mean	95% PI	
0.08	0.3	50	1.8-22.1	1.0-8.0	7,353	6,401	8,318
0.11	0.3	50	1.8-22.1	1.0-8.0	6,804	5,905	7,720

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking'); refer to [Table 2.3](#) for age interval-specific probabilities

‘Net’ population health effect of primary beneficial transition, ‘switching’, and all primary harmful transitions [refer to [Table 2.7](#)]

These analyses examined the ‘net’ population health effects of the three primary exposure transitions, ‘switching’, ‘additional initiation’ and ‘diversion from quitting’. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on primary beneficial and harmful transitions were based on projected purchase probabilities, as provided by the second execution of RAIS’s ‘likelihood of use’ study. Specifically, ‘switching’ to Camel SNUS use instead of continuing to use cigarettes among base case smokers was projected to range from 2.0% to 16.0%, depending on age category (refer to [Table 2.3](#)). The probability that base case never tobacco users would initiate Camel SNUS use instead of remaining never users (‘additional initiation’) was projected to be 0.3% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. Finally, the probability that base case smokers would switch to using Camel SNUS instead of quitting tobacco use (‘diversion from quitting’) was projected to range from 1.8%-22.1%, depending on the age category (refer to [Table 2.3](#)).

For ERRs of 0.08 and 0.11, the ‘net’ population health effect for ‘switching’, ‘additional initiation’ and ‘diversion from quitting’ combined was a survival benefit in the counterfactual scenario, estimated to be about 14,200 and 13,300 additional survivors, respectively (refer to [Table 3.3](#)).

Table 3.3: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of ‘additional initiation’, ‘diversion from quitting’, and ‘switching’

ERR	Additional Initiation ^a (%)	Diversion from Quitting ^b (%)	Switching ^b (%)	Mean	95% PI	
0.08	0.3	1.8-22.1	2.0-16.0	14,162	12,434	15,904
0.11	0.3	1.8-22.1	2.0-16.0	13,277	11,637	14,939

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Refer to [Table 2.3](#) for age interval-specific probabilities

‘Tipping point’ related to the primary beneficial transition, ‘switching’, versus all primary harmful transitions and secondary harmful transition ‘gateway effect’ [refer to [Table 2.8](#)]

Beneficial and harmful transitions were also evaluated within the context of ‘tipping point’ analyses, used to estimate the magnitude of a beneficial change in tobacco exposure required to offset the population health effects of one or more harmful exposure changes. The analyses described here estimated tipping points between the primary beneficial transition of ‘switching’ and a combination of primary and secondary harmful transitions (‘additional initiation’ with ‘gateway effect’, and ‘diversion from quitting’).

Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on primary beneficial and harmful transitions were based on projected purchase probabilities, as provided by the second execution of RAIS's 'likelihood of use' study. Specifically, the probability that base case never tobacco users would initiate Camel SNUS use instead of remaining never users ('additional initiation') was projected to be 0.3% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. In the absence of empirical data on secondary harmful transitions, 'gateway effect' was evaluated using an extreme scenario, whereby 50% of Camel SNUS initiators transition to cigarette smoking in the next age category (in age categories 18-22, 23-27 and 28-32 years). Finally, the probability that base case smokers would switch to using Camel SNUS instead of quitting tobacco use ('diversion from quitting') was projected to range from 1.8%-22.1%, depending on the age category (refer to [Table 2.3](#)).

The beneficial exposure pattern, 'switching' from cigarettes to Camel SNUS among base case current smokers who would have continued to smoke, was increased incrementally, starting in the second age category (ages 18-22 years) and continuing until the end of follow-up. For ERRs of 0.08 and 0.11, absent the beneficial primary transition of 'switching', the survival deficit in the counterfactual scenario (0.3% 'additional initiation' with 50% 'gateway effect'; and, 1.8%-22.1% 'diversion from quitting', depending on age category) was estimated to be 770 and 940 fewer survivors, respectively (refer to [Table 3.4](#)). 'Tipping point' analyses indicated that for a concurrent increase in 'switching' of 0.42% and 0.55% (in each age category, ages 18+ years) for ERRs of 0.08 and 0.11, respectively, a decrease in survivors was still observed between the counterfactual scenario and base case but that the decrease was no longer statistically significant. A concurrent increase in 'switching' of 0.48% and 0.61% ERRs of 0.08 and 0.11, respectively, provided a point estimate for the difference in the number of survivors that was 'near zero'; and, a concurrent increase in 'switching' of 0.53% and 0.68% ERRs of 0.08 and 0.11, respectively, provided a population health benefit – as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario (refer to [Figure 3.1](#) below and [Table F2 in Appendix F](#)). Introducing the extreme scenario of a 50% relapse to smoking among base case smoking quitters who instead switched to using Camel SNUS ('relapse', coupled to 'diversion from quitting') provided a point estimate that was 'near zero' when there was a concurrent 1.37% and 1.50% increase in 'switching' for ERRs of 0.08 and 0.11, respectively (refer to [Table F3 in Appendix F](#)).⁵⁸ Under the assumption of 50% 'resumed smoking', all tipping points for 'switching' must necessarily be doubled. This is because a 50% resumption of smoking among base case continuing smokers who switched to Camel SNUS ('resumed smoking') was modeled by reducing transition probabilities for 'switching' by 50%.

⁵⁸ Detailed results for differences in survivors are shown in [Table C6 in Appendix C](#).

Table 3.4: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

ERR	Additional Initiation ^a (%)	Gateway Effect ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Mean	95% PI	
0.08	0.3	50	1.8-22.1	0.0	-771	-812	-731
				0.5	39	-46	132
				1.0	832	655	1,016
				1.5	1,607	1,337	1,884
				2.0	2,365	2,006	2,733
				2.5	3,107	2,659	3,566
				3.0	3,832	3,297	4,380
				3.5	4,542	3,921	5,176
				4.0	5,236	4,533	5,956
0.11	0.3	50	1.8-22.1	0.0	-943	-1,002	-888
				0.5	-169	-248	-84
				1.0	587	425	759
				1.5	1,328	1,078	1,586
				2.0	2,051	1,717	2,397
				2.5	2,760	2,341	3,191
				3.0	3,452	2,951	3,967
				3.5	4,130	3,546	4,726
				4.0	4,792	4,133	5,470

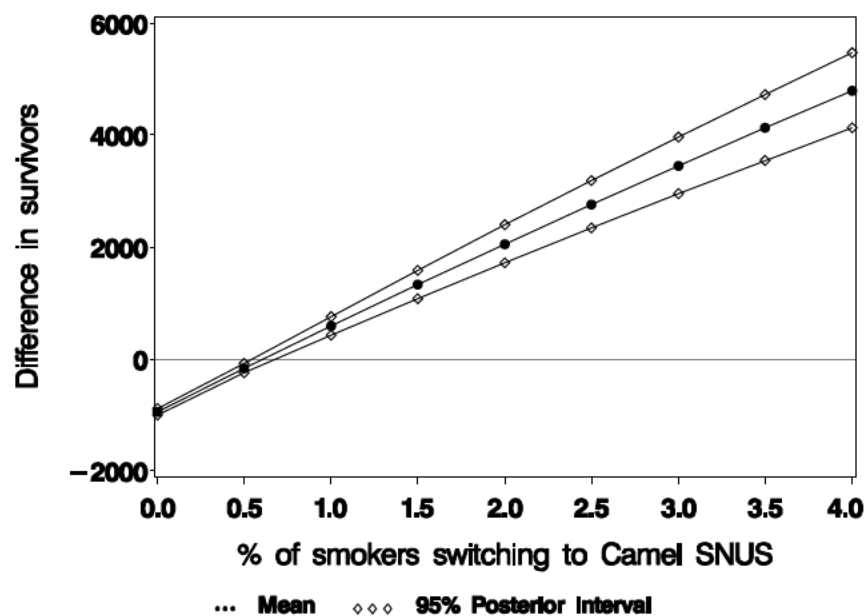
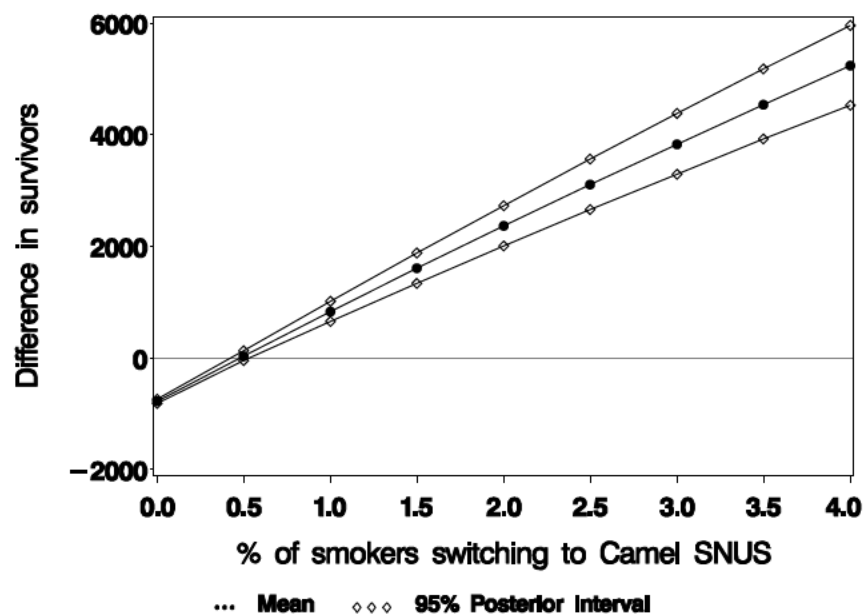
^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probability applied to age intervals 18+ years

Figure 3.1: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting' (top: ERR=0.08; bottom: ERR=0.11)



Population health effects due to individual beneficial and harmful transitions

The next series of DPM(+1)-based analyses addressed the **second objective**, to more closely assess the influence of specific changes in tobacco exposure patterns - expected to result from Camel SNUS and its proposed modified-risk messaging - on the overall 'net' population health effect. This objective was achieved by examining the population-level effects of changes in beneficial and harmful tobacco exposure patterns, individually and in limited combinations, using population survival as a surrogate for population health. Primary exposure transitions for the current analyses (described in detail, [Section 2.3](#) and [Tables 2.9-2.15](#)) were based on the second execution of RAIS's 'likelihood of use' study.⁵⁹ Secondary transitions were not directly investigated by RAIS's 'likelihood of use' study, and were thus modeled using hypothetical probabilities that, in many instances, represented extreme scenarios ([Section 2.3](#) and [Tables 2.9-2.15](#)). Analyses were conducted using ERRs of 0.08 and 0.11, to define the mortality risk of Camel SNUS use relative to cigarette smoking. The results for the difference in survivors between the counterfactual scenarios and the base case at the end of age category 68-72 years are presented in [Tables 3.5-3.11](#).⁶⁰

Population health effect of primary beneficial transition, 'alternative initiation' [refer to [Table 2.9](#)]

These analyses evaluated the 'net' population health effect if some base case never tobacco users who would have initiated cigarette use instead initiate Camel SNUS use. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on this primary beneficial transition were based on projected purchase probabilities, as provided by the second execution of RAIS's 'likelihood of use' study. Specifically, the probability that base case cigarette initiators would instead initiate tobacco use with Camel SNUS ('alternative initiation') was projected to be 0.85% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. Irrespective of the ERR used for the analysis (0.08 or 0.11), the survival benefit in the counterfactual scenario compared to the base case was estimated to be small (<160 additional survivors; [Table 3.5](#)). The small effect is due to the very small number of base case cigarette initiators who become Camel SNUS users in the counterfactual scenario.

Table 3.5: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transition of 'alternative initiation'

ERR	Alternative	Mean	95% PI	
	Initiation ^a (%)			
0.08	0.85	155	132	178
0.11	0.85	136	116	158

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

⁵⁹ "Camel SNUS Modified Risk Messaging: Likelihood of Use among Tobacco Users and Non-Users - *Second Execution of Consumer Testing* - Amended Final Report", dated October 4, 2016. Analyses based on the other two executions of RAIS's 'likelihood of use' study, with different modified-risk messaging, are reported separately.

⁶⁰ Results for LE and QALE are presented in [Tables D3.5-D3.11](#) in *Appendix D*. The total numbers of survivors in the counterfactual scenario and the base case, and the differences between them are shown for all age categories in [Tables E3.5-E3.11](#) in *Appendix E*.

Population health effect of primary beneficial transition, ‘switching’ [refer to [Table 2.10](#)]

These analyses evaluated the population health effect if some base case current cigarette smokers who would have continued to use cigarettes instead switch completely to Camel SNUS use (‘switching’). Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Among the primary beneficial and harmful transitions, as projected by RAIS’s ‘likelihood of use’ study, only ‘switching’ demonstrated a sizable population-level effect. Based on transition probabilities for ‘switching’, which were projected to range from 2.0% to 16.0% and generally decreased from younger to older age categories, the survival benefit in the counterfactual scenario compared to the base case was estimated to be approximately 14,600 additional survivors for an ERR of 0.08, and 13,900 additional survivors for an ERR of 0.11 (refer to [Table 3.6](#)).

Table 3.6: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transition of ‘switching’

ERR	Switching ^a (%)	Mean	95% PI	
0.08	2.0-16.0	14,639	12,892	16,396
0.11	2.0-16.0	13,925	12,261	15,611

^a Refer to [Table 2.3](#) for age interval-specific probabilities

Population health effect of primary harmful transition, ‘additional initiation’ [refer to [Table 2.11](#)]

These analyses evaluated the population health effect if some base case never tobacco users initiate Camel SNUS use instead of remaining never tobacco users. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on this primary harmful transition were based on projected purchase probabilities, as provided by the second execution of RAIS’s ‘likelihood of use’ study. Specifically, the probability that base case never tobacco users would initiate tobacco use with Camel SNUS instead of remaining never users (‘additional initiation’) was projected to be 0.3% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. The survival deficit in the counterfactual scenario compared to the base case was estimated to be less than 150 fewer survivors for an ERR of 0.08, and near 200 fewer survivors for an ERR of 0.11 (refer to [Table 3.7](#)). The small effect is due to the small increase in risk among Camel SNUS users compared to never tobacco users, as reflected by the small ERRs, which in turn affects a moderate number of base case never tobacco users who initiate Camel SNUS use. In addition, Camel SNUS initiation among base case never tobacco users in a particular age category reduces slightly the pool of those available to initiate tobacco use with cigarettes in the next age category.

Table 3.7: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transition of 'additional initiation'

ERR	Additional initiation ^a (%)	Mean	95% PI	
0.08	0.3	-145	-155	-134
0.11	0.3	-205	-217	-193

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

Population health effect of primary harmful transition, 'diversion from quitting', with sensitivity analyses for 'relapse' [refer to [Table 2.12](#)]

These analyses evaluated the population health effect if some base case current cigarette smokers switch to Camel SNUS use instead of quitting tobacco use. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on this primary harmful transition were based on projected purchase probabilities, as provided by the second execution of RAIS's 'likelihood of use' study. Specifically, the probability that base case current cigarette smokers would switch to Camel SNUS instead of quitting ('diversion from quitting') was projected to range from 1.8% to 22.1% and generally decreased from younger to older age categories (refer to [Table 2.3](#)). The survival deficit in the counterfactual scenario compared to the base case was estimated to near 390 fewer survivors for an ERR of 0.08, and near 530 fewer survivors for an ERR of 0.11 (refer to [Table 3.8](#)). Analyses examining the secondary harmful transition of 50% 'relapse', whereby 50% of those who switched to Camel SNUS instead of quitting tobacco use ('diversion from quitting') subsequently relapsed to smoking in the same age interval, suggested a survival deficit in the counterfactual scenario of nearly 1,900 fewer survivors for an ERR of 0.08, and nearly 1,970 fewer survivors for an ERR of 0.11 (refer to [Table C5 in Appendix C](#)).

Table 3.8: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transition of 'diversion from quitting'

ERR	Diversion from Quitting ^a (%)	Mean	95% PI	
0.08	1.8-22.1	-390	-440	-341
0.11	1.8-22.1	-529	-597	-463

^a Refer to [Table 2.3](#) for age interval-specific probabilities

Population health effect of the primary harmful transition, ‘additional initiation’, combined with the secondary harmful transition, ‘gateway effect’ [refer to [Table 2.13](#)]

These analyses evaluated the population health effect if some base case never tobacco users initiate Camel SNUS use instead of remaining never tobacco users, and then some of these Camel SNUS initiators switch to cigarette smoking in the next age category. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Based on empirical data from RAIS’s ‘likelihood of use’ study, the probability that base case never tobacco users would initiate tobacco use with Camel SNUS instead of remaining never users (‘additional initiation’) was projected to be 0.3% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. In the absence of empirical data on the secondary harmful transition of ‘gateway effect’, the probability that some portion of ‘additional initiation’ Camel SNUS users would transition to cigarette use during the next age interval was modeled based on an extreme scenario of 50% (ages 18-22, 23-27 and 28-32 years). The survival deficit in the counterfactual scenario compared to the base case was estimated to be less than 400 fewer survivors for an ERR of 0.08, and near 420 fewer survivors for an ERR of 0.11 (refer to [Table 3.9](#)).

Table 3.9: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transitions of ‘additional initiation’ and ‘gateway effect’

ERR	Additional Initiation ^a (%)	Gateway Effect ^b (%)	Mean	95% PI	
0.08	0.3	50	-382	-400	-364
0.11	0.3	50	-415	-435	-397

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

Population health effect of primary beneficial transition, ‘alternative initiation’, combined with the secondary harmful transition, ‘delayed smoking’ [refer to [Table 2.14](#)]

These analyses evaluated the population health effect if some base case never tobacco users initiate tobacco use with Camel SNUS instead of cigarettes, and some of those Camel SNUS initiators subsequently switch to cigarette use in the next age category. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Based on empirical data from RAIS's 'likelihood of use' study, the probability that base case cigarette initiators would instead initiate tobacco use with Camel SNUS ('alternative initiation') was projected to be 0.85% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. In the absence of empirical data on the secondary harmful transition of 'delayed smoking', the probability that some portion of those base case cigarette initiators who instead initiated tobacco use with Camel SNUS would subsequently transition to cigarette use during the next age interval was modeled based on an extreme scenario of 50% (ages 18-22, 23-27 and 28-32 years). The survival benefit in the counterfactual scenario compared to the base case was estimated to be about 80 additional survivors, irrespective of the ERR (0.08 or 0.11) used for the analysis (refer to [Table 3.10](#)). Differences between the counterfactual scenario and base case are small because only a very small number of base case cigarette initiators become Camel SNUS users in the counterfactual scenario; and, because few Camel SNUS users are available to switch to smoking.

Table 3.10: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transitions of 'alternative initiation' and 'delayed smoking'

ERR	Alternative Initiation ^a (%)	Delayed Smoking ^b (%)	Mean	95% PI	
0.08	0.85	50	87	70	105
0.11	0.85	50	77	61	94

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

Population health effect of primary harmful transition, 'switching', combined with the secondary harmful transition, 'resumed smoking' [refer to [Table 2.15](#)]

These analyses evaluated the population health effect if some base case current smokers switch to Camel SNUS instead of continuing to smoke, and some of those Camel SNUS switchers resume cigarette use in the same age category. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on the primary beneficial transition of 'switching', were based on projected purchase probabilities, as provided by the second execution of RAIS's 'likelihood of use' study. Specifically, 'switching' to the use of Camel SNUS instead of continuing to use cigarettes among base case smokers was projected to range from 2.0% to 16.0%, depending on age category (refer to [Table 2.3](#)). In the absence of empirical data on secondary harmful transitions from RAIS's 'likelihood of use' studies, the effect of 'resumed smoking' was evaluated using a scenario whereby 50% of those smokers who switched to using Camel SNUS instead of continuing to smoke subsequently resumed cigarette use. Under the assumption that 'resumed smoking' would likely occur in the same 5-year age category as 'switching', this transition was modeled by reducing the transition probabilities for 'switching' from smoking to Camel SNUS by 50%. The survival benefit in the counterfactual scenario compared to the base case was estimated to be almost 8,100 additional survivors for an ERR of 0.08, and near 7,700 additional survivors for an ERR of 0.11 (refer to [Table 3.11](#)).

Table 3.11: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transitions of ‘switching’ and ‘resumed smoking’

ERR	Switching ^a (%)	Mean	95% PI	
0.08	1.0-8.0	8,093	7,127	9,063
0.11	1.0-8.0	7,702	6,779	8,630

^a Probabilities from ‘likelihood of use’ study reduced by 50% to model 50% return from Camel SNUS use to smoking (‘resumed smoking’); refer to [Table 2.3](#) for age interval-specific probabilities

Population health effects based on ‘switching’ combined with extreme scenarios for harmful transitions

DPM(+1)-based analyses also addressed a **third objective**, assessing whether Camel SNUS and its proposed modified-risk messaging is likely to have a beneficial effect on population health, or at a minimum is unlikely to have an adverse effect on population health, even if unintended changes in tobacco exposure transitions are extreme. These assessments were based on a series of analyses that estimated the proportion of current smokers who must completely switch to using Camel SNUS instead of continuing to smoke (‘switching’) to fully offset any unintended population harm that may occur due to extreme scenarios for the primary harmful transitions of ‘additional initiation’ and ‘diversion from quitting’, and the secondary harmful transition of ‘gateway effect’. Population survival was used as a surrogate for population health. The analyses were conducted using ERRs of 0.08 and 0.11, to define the mortality risk of Camel SNUS use relative to cigarette smoking. The results for the difference in survivors between the counterfactual scenarios and the base case at the end of age category 68-72 years are presented in [Tables 3.12-3.14](#).⁶¹

‘Tipping point’ related to primary beneficial transition, ‘switching’, versus an extreme scenario for primary harmful transition, ‘additional initiation’ [refer to [Table 2.16](#)]

These analyses evaluated what proportion of current cigarette smokers must switch completely to Camel SNUS use instead of continuing to smoke (‘switching’) to fully offset the population harm expected from an extreme scenario whereby a large proportion of never tobacco users initiate Camel SNUS use instead of remaining non-tobacco users (‘additional initiation’). Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario). For the extreme scenario of ‘additional initiation’, the probability that base case never tobacco users instead initiated tobacco use with Camel SNUS was set equal to cigarette smoking initiation rates (ages 13-17, 18-22 and 23-27 years; refer to [Tables 2.2](#)). The probability that base case current smokers who would have continued to smoke instead switch completely to using Camel SNUS (‘switching’) was increased incrementally, starting in the second age category (ages 18-22 years) and continuing until the end of follow-up.

⁶¹ Results for LE and QALE are presented in [Tables D3.12-D3.14](#) in *Appendix D*. The total numbers of survivors in the counterfactual scenario and the base case, and the differences between them are shown for all age categories in [Tables E3.12-E3.14](#) in *Appendix E*.

For an ERR of 0.08, absent the beneficial primary transition of 'switching', the survival deficit in a counterfactual scenario that included an extreme scenario for 'alternative initiation' was estimated to be about 3,800 fewer survivors (refer to [Table 3.12](#)). 'Tipping point' analyses indicated that a concurrent increase in 'switching' of 2.09% (in each age category, ages 18+ years) provided a decrease in survivors between the counterfactual scenario and base case that was no longer statistically significant; a concurrent increase in 'switching' of 2.60% provided a point estimate for the difference in the number of survivors that was 'near zero'; and, a concurrent increase in 'switching' of 3.23% provided a population health benefit – as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario (refer to [Figure 3.2](#) below and [Table F2 in Appendix F](#)).

For an ERR of 0.11, absent the beneficial primary transition of 'switching', the survival deficit in a counterfactual scenario that included the same extreme scenario for 'alternative initiation' was estimated to be near 5,560 fewer survivors (refer to [Table 3.12](#)). 'Tipping point' analyses indicated that a concurrent increase in 'switching' of 3.39% (in each age category, ages 18+ years) provided a decrease in survivors between the counterfactual scenario and base case that was no longer statistically significant; a concurrent increase in 'switching' of 4.12% provided a point estimate for the difference in the number of survivors that was 'near zero'; and, a concurrent increase in 'switching' of 5.05% provided a population health benefit – as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario (refer to [Figure 3.2](#) below and [Table F2 in Appendix F](#)).

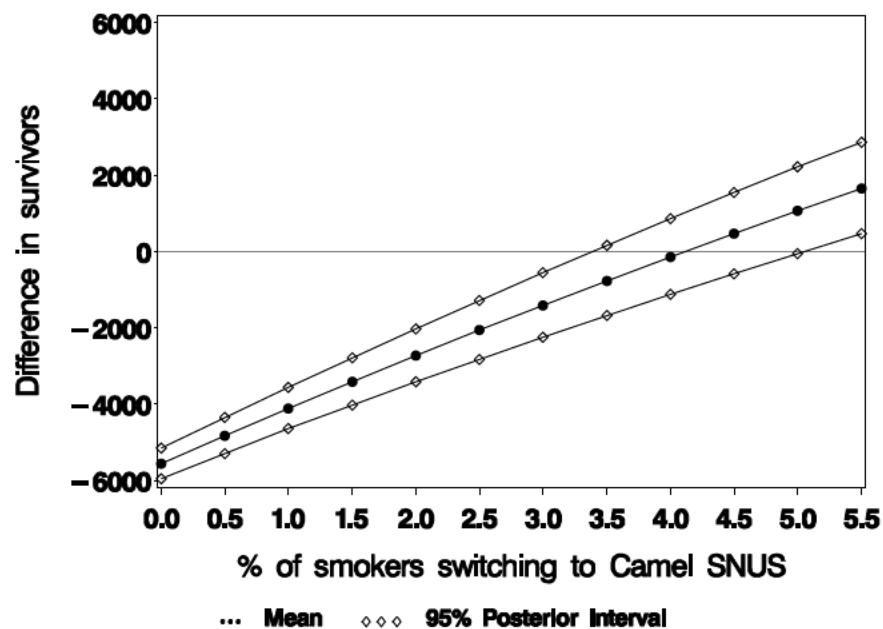
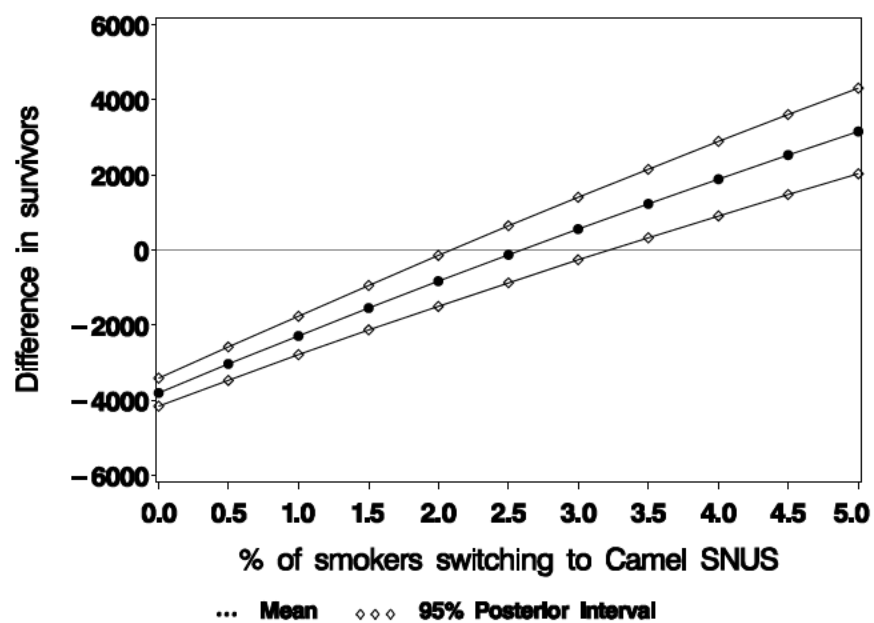
Table 3.12: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

ERR	Additional Initiation ^a (%)	Switching ^b (%)	Mean	95% PI	
0.08	0.0-13.75	0.0	-3,800	-4,162	-3,414
		0.5	-3,033	-3,467	-2,579
		1.0	-2,283	-2,788	-1,759
		1.5	-1,550	-2,136	-944
		2.0	-833	-1,500	-145
		2.5	-132	-878	635
		3.0	554	-269	1,400
		3.5	1,225	327	2,147
		4.0	1,881	906	2,881
		4.5	2,523	1,474	3,598
		5.0	3,151	2,029	4,300
0.11	0.0-13.75	0.0	-5,557	-5,948	-5,150
		0.5	-4,827	-5,290	-4,353
		1.0	-4,112	-4,644	-3,563
		1.5	-3,413	-4,024	-2,789
		2.0	-2,730	-3,417	-2,026
		2.5	-2,061	-2,827	-1,281
		3.0	-1,408	-2,246	-548
		3.5	-769	-1,679	161
		4.0	-144	-1,124	858
		4.5	468	-581	1,543
		5.0	1,066	-52	2,213
		5.5	1,651	466	2,864

^a Extreme scenario, whereby probabilities applied to age intervals 13-17, 18-22 and 23-27 years were 13.75, 10.00 and 1.00, respectively [refer to [Table 2.4](#)]

^b Probability applied to age intervals 18+ years

Figure 3.2: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transitions of 'switching' versus an extreme scenario for 'additional initiation' (top: ERR=0.08; bottom: ERR=0.11)



‘Tipping point’ related to primary beneficial transition, ‘switching’, versus a scenario with elevated rates for the primary harmful transition, ‘additional initiation’, and an extreme scenario for the secondary harmful transition, ‘gateway effect’ [refer to [Table 2.17](#)]

These analyses evaluated what proportion of current cigarette smokers must switch completely to Camel SNUS use instead of continuing to smoke (‘switching’) to fully offset the population harm expected from a scenario whereby an elevated proportion of never tobacco users initiate Camel SNUS use instead of remaining non-tobacco users (‘additional initiation’), and then some of those Camel SNUS initiators switch to cigarette smoking in the next age category (‘gateway effect’). Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

For the scenario with elevated rates for ‘additional initiation’, the probability that base case never tobacco users instead initiated tobacco use with Camel SNUS (ages 13-17, 18-22 and 23-27 years) was set equal to 3.0%, or 10 times the purchase probability projected for ‘additional initiation’ by RAIS’s ‘likelihood of use’ study (refer to [Table 2.2](#)). In the absence of empirical data on the secondary harmful transition of ‘gateway effect’, the probability that some portion of ‘additional initiation’ Camel SNUS users would transition to cigarette use during the next age interval was modeled based on an extreme scenario of 50% (in age categories 18-22, 23-27 and 28-32 years). Finally, the probability that base case current smokers who would have continued to smoke instead switch completely to using Camel SNUS (‘switching’) was increased incrementally, starting in the second age category (ages 18-22 years) and continuing until the end of follow-up.

For an ERR of 0.08, absent the beneficial primary transition of ‘switching’, the survival deficit in a counterfactual scenario that included extreme scenarios for ‘alternative initiation’ and ‘gateway effect’ was estimated to be near 3,700 fewer survivors at the end of age category 68-72 years (refer to [Table 3.13](#)). ‘Tipping point’ analyses indicated that a concurrent increase in ‘switching’ of 2.06% (in each age category, ages 18+ years) provided a decrease in survivors between the counterfactual scenario and base case that was no longer statistically significant; a concurrent increase in ‘switching’ of 2.43% provided a point estimate for the difference in the number of survivors that was ‘near zero’; and, a concurrent increase in ‘switching’ of 2.90% provided a population health benefit – as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario (refer to [Figure 3.3](#) below and [Table F2 in Appendix F](#)).

For an ERR of 0.11, absent the beneficial primary transition of ‘switching’, the survival deficit in a counterfactual scenario that included the same extreme scenarios for ‘alternative initiation’ and ‘gateway effect’ was estimated to be near 4,050 fewer survivors (refer to [Table 3.13](#)). ‘Tipping point’ analyses indicated that a concurrent increase in ‘switching’ of 2.37% (in each age category, ages 18+ years) provided a decrease in survivors between the counterfactual scenario and base case that was no longer statistically significant; a concurrent increase in ‘switching’ of 2.80% provided a point estimate for the difference in the number of survivors that was ‘near zero’; and, a concurrent increase in ‘switching’ of 3.35% provided a population health benefit – as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario (refer to [Figure 3.3](#) below and [Table F2 in Appendix F](#)).

Table 3.13: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

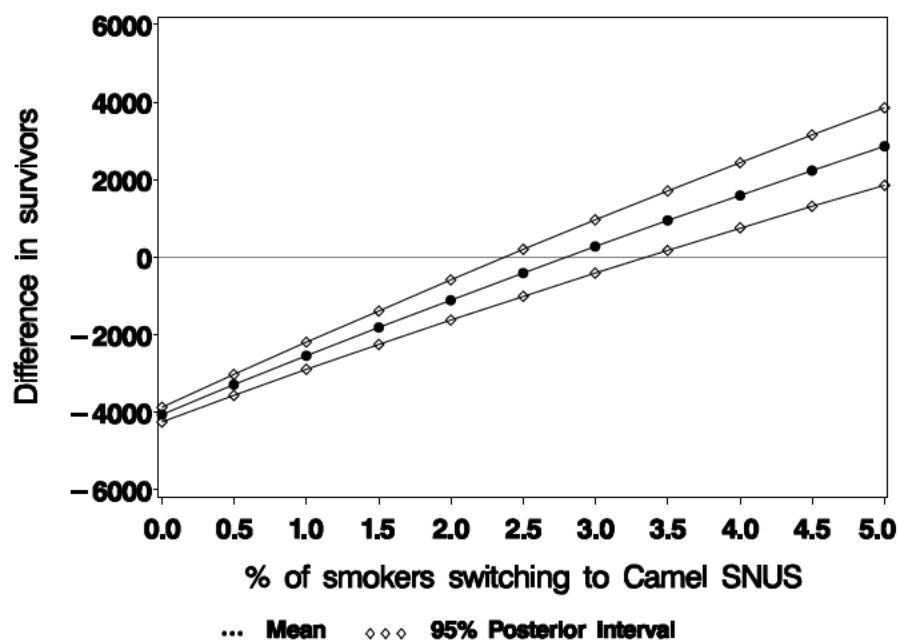
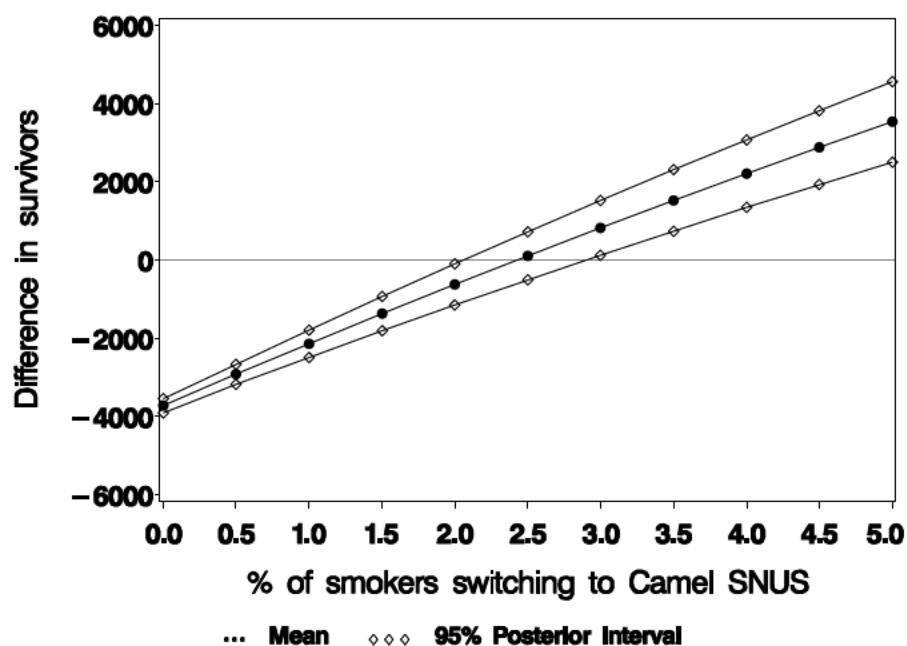
ERR	Additional Initiation ^a (%)	Gateway Effect ^b (%)	Switching ^c (%)	Mean	95% PI	
0.08	3.0	50	0.0	-3,720	-3,901	-3,546
			0.5	-2,922	-3,182	-2,662
			1.0	-2,141	-2,487	-1,790
			1.5	-1,377	-1,811	-939
			2.0	-630	-1,153	-102
			2.5	101	-513	719
			3.0	816	121	1,519
			3.5	1,515	732	2,300
			4.0	2,199	1,335	3,066
			4.5	2,868	1,921	3,813
			5.0	3,523	2,497	4,544
0.11	3.0	50	0.0	-4,049	-4,237	-3,866
			0.5	-3,287	-3,552	-3,022
			1.0	-2,543	-2,890	-2,192
			1.5	-1,814	-2,246	-1,379
			2.0	-1,102	-1,617	-581
			2.5	-406	-1,005	199
			3.0	275	-406	962
			3.5	942	181	1,708
			4.0	1,593	752	2,437
			4.5	2,231	1,312	3,150
			5.0	2,854	1,860	3,845

^a Elevated probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Probabilities applied to age intervals 18+ years

Figure 3.3: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and extreme scenario for 'gateway effect' (top: ERR=0.08; bottom: ERR=0.11)



‘Tipping point’ related to primary beneficial transition, ‘switching’, versus an extreme scenario for primary harmful transition, ‘diversion from quitting’ [refer to [Table 2.18](#)]

These analyses evaluated what proportion of current cigarette smokers must switch completely to Camel SNUS use instead of continuing to smoke (‘switching’) to fully offset the population harm expected from an extreme scenario whereby a large proportion of base case current smokers switch to Camel SNUS use instead of quitting tobacco use (‘diversion from quitting’). Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

For the extreme scenario of ‘diversion from quitting’, the probability that base case current cigarette smokers would switch to Camel SNUS use instead of quitting tobacco use was set equal to 50% (quitting among base case smokers was reduced by 50%, beginning in age category 18-22 years and continuing until the end of follow-up; refer to [Table 2.4](#)). The probability that base case current smokers who would have continued to smoke instead switch completely to using Camel SNUS (‘switching’) was increased incrementally, starting in age category 18-22 years and continuing until the end of follow-up.

For an ERR of 0.08, absent the beneficial primary transition of ‘switching’, the survival deficit in a counterfactual scenario that included extreme scenarios for ‘alternative initiation’ and ‘gateway effect’ was estimated to be near 1,500 fewer survivors (refer to [Table 3.14](#)). ‘Tipping point’ analyses indicated that a concurrent increase in ‘switching’ of 0.82% (in each age category, ages 18+ years) provided a decrease in survivors between the counterfactual scenario and base case that was no longer statistically significant; a concurrent increase in ‘switching’ of 0.90% provided a point estimate for the difference in the number of survivors that was ‘near zero’; and, a concurrent increase in ‘switching’ of 0.99% provided a population health benefit – as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario (refer to [Figure 3.4](#) below and [Table F2](#) in *Appendix F*).

For an ERR of 0.11, absent the beneficial primary transition of ‘switching’, the survival deficit in a counterfactual scenario that included the same extreme scenarios for ‘alternative initiation’ and ‘gateway effect’ was estimated to be near 2,000 fewer survivors (refer to [Table 3.14](#)). ‘Tipping point’ analyses indicated that a concurrent increase in ‘switching’ of 1.17% (in each age category, ages 18+ years) provided a decrease in survivors between the counterfactual scenario and base case that was no longer statistically significant; a concurrent increase in ‘switching’ of 1.29% provided a point estimate for the difference in the number of survivors that was ‘near zero’; and, a concurrent increase in ‘switching’ of 1.41% provided a population health benefit – as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario (refer to [Figure 3.4](#) below and [Table F2](#) in *Appendix F*).

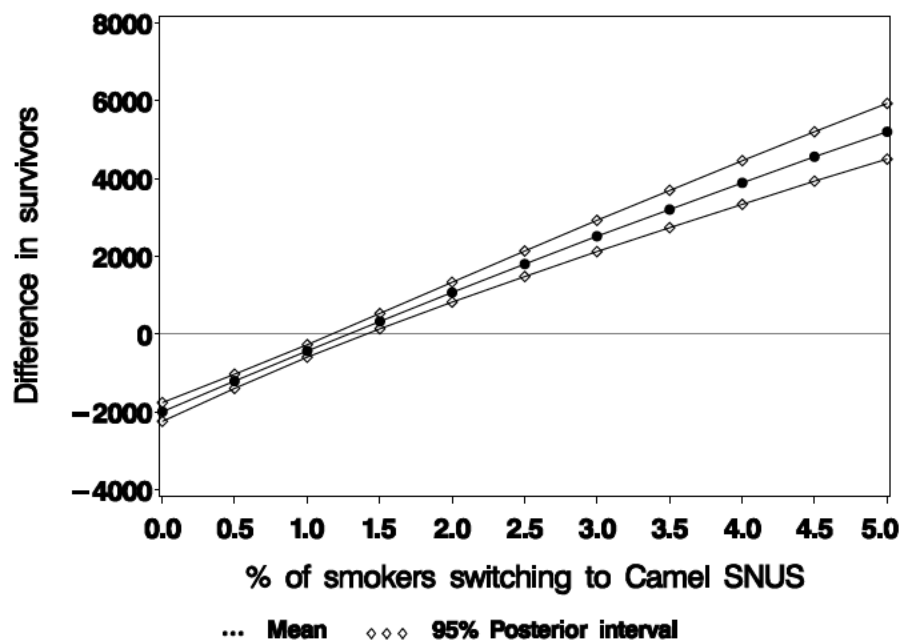
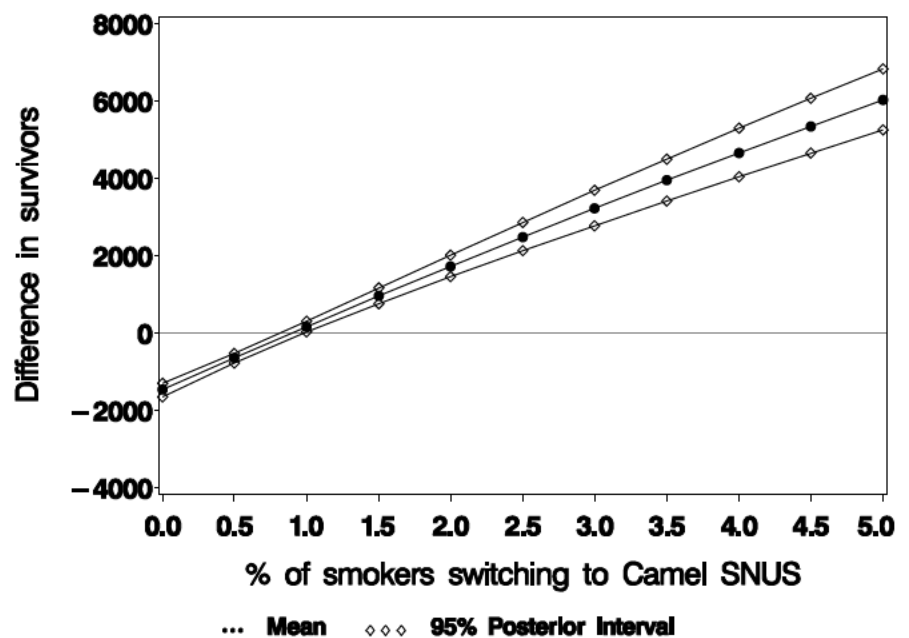
Table 3.14: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

ERR	Diversion from Quitting ^a (%)	Switching ^b (%)	Mean	95% PI	
0.08	50	0.0	-1,477	-1,655	-1,303
		0.5	-652	-781	-534
		1.0	155	19	293
		1.5	944	749	1,151
		2.0	1,716	1,442	2,007
		2.5	2,471	2,113	2,846
		3.0	3,210	2,765	3,675
		3.5	3,934	3,406	4,486
		4.0	4,641	4,033	5,278
		4.5	5,333	4,641	6,053
		5.0	6,010	5,238	6,809
0.11	50	0.0	-2,002	-2,244	-1,766
		0.5	-1,209	-1,397	-1,037
		1.0	-433	-599	-272
		1.5	326	136	522
		2.0	1,069	824	1,329
		2.5	1,795	1,478	2,131
		3.0	2,505	2,113	2,919
		3.5	3,201	2,730	3,692
		4.0	3,881	3,330	4,455
		4.5	4,546	3,920	5,201
		5.0	5,197	4,496	5,931

^a Extreme probability applied to age intervals 18+ years

^b Probability applied to age intervals 18+ years

Figure 3.4: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting' (top: ERR=0.08; bottom: ERR=0.11)



Population health effects based on systematically increased first age category of Camel SNUS use

The impact of Camel SNUS and its proposed modified-risk messaging on population health, in particular among current smokers of different ages, was assessed by examining the effect of the primary beneficial transitions of ‘alternative initiation’ and ‘switching’, the primary harmful transitions of ‘additional initiation’ and ‘diversion from quitting’ and the secondary harmful transitions of ‘gateway effect’/‘delayed smoking’ and ‘resumed smoking’ while systematically increasing the first age category in which these transitions could occur. These analyses were conducted using multiple birth cohorts and with ERRs of 0.08 and 0.11 to define the mortality risk of Camel SNUS use relative to cigarette smoking.

“Net’ population health effect of all primary beneficial and harmful transitions, and secondary harmful transitions of ‘gateway effect’/‘delayed smoking’ and resumed smoking, combined [refer to [Table 2.5](#)]; results from multiple birth cohorts with systematic increase in first age category of Camel SNUS use

These analyses evaluated the population health effects on birth cohorts for which Camel SNUS becomes available at different ages. The first age category where the primary beneficial transitions of ‘alternative initiation’ and ‘switching’, the primary harmful transitions of ‘additional initiation’ and ‘diversion from quitting’ and the secondary harmful transition of ‘resumed smoking’ are allowed to occur was systematically increased. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on primary beneficial and harmful transitions were based on projected purchase probabilities, as provided by the first execution of RAIS’s ‘likelihood of use’ study. Specifically, the probability that base case cigarette initiators would instead initiate tobacco use with Camel SNUS (‘alternative initiation’) was projected to be 0.85% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. ‘Switching’ to the use of Camel SNUS instead of continuing to use cigarettes among base case current smokers was projected to range from 2.0% to 16.0%, depending on age category (refer to [Table 2.3](#)). The probability that base case never tobacco users would initiate use of Camel SNUS instead of remaining never users (‘additional initiation’) was projected to be 0.3% (refer to [Table 2.2](#)); similar to ‘alternative initiation’, this transition occurs in the first three age categories. Finally, the probability that base case current smokers would switch to using Camel SNUS instead of quitting tobacco use (‘diversion from quitting’) was projected to range from 1.8%-22.1%, depending on the age category (refer to [Table 2.3](#)).

In the absence of empirical data on secondary harmful transitions from RAIS’s ‘likelihood of use’ studies, the effect of these unintended changes in tobacco exposure patterns were evaluated using hypothetical and, in many instances, extreme scenarios. Specifically, both ‘gateway effect’ (the probability that some portion of ‘additional initiation’ Camel SNUS users would transition to cigarette use) and ‘delayed smoking’ (the probability that some portion of ‘alternative initiation’ Camel SNUS users would transition to cigarette use) were evaluated using scenarios whereby 50% of all Camel SNUS initiators transition to cigarette smoking in the age category following initiation (ages 18-22, 23-27 and 28-32 years). In addition, the secondary harmful transition of ‘resumed smoking’ was evaluated using a scenario whereby 50% of those smokers who switched to using Camel SNUS instead of continuing to smoke subsequently resumed cigarette use. Under the assumption that ‘resumed smoking’ would likely occur in the same 5-year age category as ‘switching’, this transition was modeled by reducing the transition probabilities for ‘switching’ from smoking to Camel SNUS use by 50%.

For a birth cohort for which Camel SNUS is available starting in age category 13-17, 'additional initiation' and 'alternative initiation' can begin in age category 13-17 years; however, because 'switching', 'resumed smoking' and 'diversion from quitting' follow smoking initiation, these transitions cannot begin until age category 18-22 years. With age category-specific transition probabilities as projected by RAIS's 'likelihood of use' study, the survival benefit in the counterfactual scenario was estimated to be about 7,300 additional survivors for an ERR of 0.08, and about 6,850 additional survivors for an ERR of 0.11 (refer to [Table 3.15](#)); this result corresponds to the difference in survivors presented in [Table 3.1](#). For a birth cohort for which Camel SNUS is available starting in age category 18-22, all transitions can occur in age category 18-22 years and thereafter. With age category-specific transition probabilities as projected by RAIS's 'likelihood of use' study, the survival benefit in the counterfactual scenario was estimated to be about 7,500 additional survivors for an ERR of 0.08, and about 6,900 additional survivors for an ERR of 0.11. As the first age category of MRTP use was systematically increased, the survival benefit in the counterfactual scenario decreased, becoming negligible for birth cohorts for which MRTP use began after age 55 years.

Table 3.15: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

ERR	First Age Category of Camel SNUS availability		Mean	95% PI	
	For 'Alternative initiation' and 'additional initiation' ^a	For 'switching' ^b and 'diversion from quitting' ^c			
0.08	13-17	18-22	7,374	6,416	8,346
	18-22	18-22	7,511	6,562	8,473
	23-27	23-27	6,248	5,466	7,048
	N/A	28-32	4,481	3,914	5,066
	N/A	33-37	2,345	2,046	2,655
	N/A	38-42	1,385	1,208	1,571
	N/A	43-47	779	678	885
	N/A	48-52	370	322	422
	N/A	53-57	130	112	148
	N/A	58-62	45	39	52
	N/A	63-67	12	10	14
0.11	13-17	18-22	6,819	5,919	7,743
	18-22	18-22	6,972	6,078	7,888
	23-27	23-27	5,813	5,075	6,568
	N/A	28-32	4,195	3,660	4,747
	N/A	33-37	2,196	1,913	2,490
	N/A	38-42	1,301	1,134	1,478
	N/A	43-47	737	641	838
	N/A	48-52	350	304	399
	N/A	53-57	123	106	140
	N/A	58-62	43	37	50
	N/A	63-67	12	10	13

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking'); refer to [Table 2.3](#) for age interval-specific probabilities

^c Refer to [Table 2.3](#) for age interval-specific probabilities

4. Conclusions

The DPM(+1)-based analyses described in the current report addressed three primary objectives. The first objective was to estimate the 'net' population health effect of changes in tobacco exposure patterns expected to result from Camel SNUS and its proposed marketing as a modified-risk tobacco product. This objective was addressed by collectively examining all primary and secondary exposure transitions, intended and unintended, based largely on empirical data from RAIS's 'likelihood of use' study. The second objective was to more closely assess the influence of specific changes in tobacco exposure patterns - expected to result from Camel SNUS and its proposed modified-risk messaging - on the overall 'net' population health effect. This objective was achieved by examining the population-level effects of changes in beneficial and harmful tobacco exposure patterns, individually and in limited combinations. The third objective was to assess whether Camel SNUS and its proposed modified-risk messaging is likely to have a beneficial effect on population health, or at a minimum is unlikely to have an adverse effect on population health, even if unintended changes in tobacco exposure patterns are extreme. This last objective was addressed by undertaking a series of analyses that estimated the proportion of current smokers who must completely switch to using Camel SNUS instead of continuing to smoke to fully offset any unintended population harm that may occur due to extreme scenarios for unintended, harmful tobacco exposure patterns. For all three objectives, population survival was used as a surrogate for population health.

With regard to the first objective, DPM(+1)-based analyses for the 'master model' demonstrated that the 'net' population health effect of all primary beneficial transitions ('alternative initiation' and 'switching'), all primary harmful transitions ('additional initiation' and 'diversion from quitting') and the secondary harmful transitions of 'gateway effect', 'delayed smoking' and 'resumed smoking' was a survival benefit in the counterfactual scenario at the end of age category 68-72 years, of about 7,000 additional survivors. Excluding the primary beneficial transition of 'alternative initiation' had a nominal effect on the estimated number of survivors, while the additional exclusion of all secondary harmful transitions increased the survival benefit in the counterfactual scenario to about 14,000 additional survivors. 'Tipping point' analyses – based on the 'master model' but excluding 'alternative initiation' - indicated that a nominal level of switching (about 0.6% in each age category, ages 18+ years) from cigarettes to a tobacco product that presents significantly less risk than cigarettes among current smokers who would have continued to smoke provided a population health benefit, as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario.⁶²

In the 'master model', the primary beneficial transition of 'switching' reduced the pool of continuing smokers in the counterfactual scenario, as smokers switched to Camel SNUS use in each age category. Specifically, the number of current smokers remaining at the end of age category 68-72 years was reduced by 32% (15,393 remaining current smokers in the 'master model' compared to 22,610 remaining current smokers in a model equivalent to the 'master model' but without 'switching') (refer to [Tables G1 and G2](#) (for ERRs of 0.08 and 0.11, respectively) in [Appendix G](#)).⁶³ Under the assumption of no 'resumed smoking', 'switching' reduced the number of remaining current smokers at the end of age category 68-72 years by about 54%.

⁶² While the results presented here were based on mortality rates for men, tipping points for 'switching' were almost identical for men and women. Using mortality rates for women in the 'master model' (with or without 'alternative initiation'), the 'net' population effect at the end of age category 68-72 years was about 20% lower than for men. Detailed results are shown in [Appendix H](#).

⁶³ [Appendix G](#) provides detailed results for the cumulative effect of 'switching' on the numbers of current and former smokers and current Camel SNUS users at the end of age category 68-72 years ([Tables G1](#) (ERR=0.08) and [G2](#) (ERR=0.11)); the cumulative effect of 'diversion from quitting' on the numbers of current and former smokers and current Camel SNUS users at the end of age category 68-72 years ([Tables G3](#) (ERR=0.08) and [G4](#) (ERR=0.11)); and,

Sensitivity analyses for the 'master model' that additionally included the secondary harmful transition of 'relapse' showed a smaller survival benefit in the counterfactual scenario of about 6,000 additional survivors. Reduction of all primary beneficial and harmful transition probabilities within the 'master model' by 75% – while retaining at 100% the probabilities for all secondary harmful transitions – still resulted in a survival benefit, with about 2,000 additional survivors in the counterfactual scenario at the end of age category 68-72 years. Additional sensitivity analyses indicated that ERRs for Camel SNUS relative to cigarettes of 0.46 or lower would provide a 'net' population health benefit. This was the case even though smoking cessation was allowed to occur throughout life (based on U.S. cessation rates) but MRTP cessation was suspended and, as a result, 'switching' replaced smokers, some of whom eventually became former smokers in the base case, with MRTP users who could not quit.

DPM(+1)-based analyses used to address the second objective demonstrated that 'switching', whereby some current smokers switch completely to the use of a tobacco product that presents significantly less risk than cigarettes instead of continuing to smoke, is the most influential transition that might occur within a population; this is based on magnitude, and thus likelihood, of shifts in tobacco exposure patterns needed to produce a population benefit or harm. 'Switching' exerted a beneficial effect on population health; when modeled by itself, 'switching' resulted in a survival benefit of about 14,000 additional survivors. Analyses examining the secondary harmful transition of 50% 'resumed smoking', whereby 50% of those current smokers who switched to Camel SNUS instead of continuing to smoke subsequently returned to smoking in the same age interval, suggested a survival benefit in the counterfactual scenario of about 8,000 additional survivors. For 'alternative initiation', whereby some base case cigarette initiators instead initiate tobacco use with Camel SNUS, the survival benefit in the counterfactual scenario was small with less than 200 additional survivors. A greater population health impact for 'switching' compared to 'alternative initiation' is due to the consideration that tobacco initiation rarely occurs beyond young adulthood, whereas continuing smokers exist in all subsequent age categories. Thus, there is more time for smokers to switch to Camel SNUS use than there is for non-users of tobacco to initiate tobacco use with Camel SNUS rather than cigarettes.

DPM(+1)-based analyses used to address the second objective further demonstrated that for 'diversion from quitting', whereby some base case current smokers switch to Camel SNUS use instead of quitting tobacco use, the survival deficit in the counterfactual scenario was about 450 fewer survivors. Analyses examining the secondary harmful transition of 50% 'relapse', whereby 50% of those who switched to Camel SNUS instead of quitting tobacco use ('diversion from quitting') subsequently relapsed to smoking in the same age interval, suggested a survival deficit in the counterfactual scenario of about 1,900 fewer survivors. For 'additional initiation', whereby some base case never tobacco users initiate Camel SNUS use instead of remaining never users, the survival deficit in the counterfactual scenario was about 200 fewer survivors with no 'gateway effect' and about 400 fewer survivors under the assumption of a 50% 'gateway effect'. 'Diversion from quitting' has a more influential impact than 'additional initiation' because tobacco initiation rarely occurs beyond young adulthood, whereas smoking cessation occurs all subsequent age categories. As a result, there is more time for smoking quitters to switch to Camel SNUS use than there is for non-users of tobacco to initiate tobacco use with Camel SNUS rather than remaining non-users.

'Tipping point' analyses used to address the third objective demonstrated that for an extreme scenario of 'additional initiation' (age interval-specific initiation rates for Camel SNUS set equal to U.S. smoking initiation rates), concurrent 'switching' of about 2.6% and 4.1% for ERRs of 0.08 and 0.11, respectively, resulted in a point estimate for the difference in the number of survivors between the counterfactual scenario and base case that was 'near zero'. Concurrent 'switching' of about 3.2% and 5.1% for ERRs of 0.08 and

the cumulative effect of 'additional initiation' on the total number of current and former tobacco users at the end of age category 68-72 years ([Tables G5](#) (ERR=0.08) and [G6](#) (ERR=0.11)) for all relevant counterfactual scenarios.

0.11, respectively, provided a population health benefit as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario.

For a scenario with elevated rates for the primary harmful transition of 'additional initiation' (rates for Camel SNUS initiation set to 10-fold as high as projected from the 'likelihood of use' study), and an extreme scenario for the secondary harmful transition of 'gateway effect' (50%), concurrent 'switching' of about 2.4% and 2.8% for ERRs of 0.08 and 0.11, respectively, resulted in a point estimate for the difference in the number of survivors between the counterfactual scenario and base case that was 'near zero'. Concurrent 'switching' of about 2.9% and 3.4% for ERRs of 0.08 and 0.11, respectively, provided a statistically significant population health benefit.

Sensitivity analyses also assessed the population health impact of Camel SNUS and its proposed modified-risk messaging among birth cohorts for which Camel SNUS is available at increasing ages. As would be expected, systematically increasing the first age category in which Camel SNUS use could occur in the 'master model' had a considerable impact on the population health benefit. For birth cohorts for which Camel SNUS was available in age categories 13-17 years or 18-22 years, the survival benefit in the counterfactual scenario was estimated to be more than 6,000 additional survivors for an ERR of 0.08, and more than 5,700 additional survivors for an ERR of 0.11. The survival benefit in the counterfactual scenario decreased as the first age category in which Camel SNUS became available increased, and became negligible when Camel SNUS was introduced late in life (after age 55 years).

We developed the DPM(+1) to assess the effects of different tobacco exposure scenarios, with the goal of informing regulatory decision-making as outlined in the FSPTCA regarding MRTPs.⁶⁴ Models are useful in this context to predict the magnitude, and thus likelihood, of changes in exposure patterns needed to produce a population benefit and/or likely to produce a population harm. While reducing a harmful exposure in individuals (due to product switching to an MRTP) logically should lead to reduced population harm, increases in population harm might nonetheless occur if more people begin using tobacco and/or if fewer people stop using tobacco because of the availability of the MRTP. The DPM(+1) can be used to explore what would happen to a hypothetical population at different attained ages, under different counterfactual exposure scenarios. A range of probabilities can be modeled for each transition of interest to determine the potential magnitude, and thus likelihood, of a population benefit or harm.

Modeling results are highly dependent on the input data selected by the analyst. For these analyses, transition probabilities for the base case were selected based on U.S. cigarette smoking initiation rates from 2009 and U.S. smoking cessation rates for 2005-2008, with age- and tobacco exposure-specific all-cause mortality risks proportional to those of males who participated in the Kaiser-Permanente Cohort Study⁶⁵. More current smoking cessation estimates have been published, but they include as former smokers individuals who quit smoking less than one year in the past, i.e., they include quit attempts. This definition is incompatible with the mortality data for successful smoking quitters (i.e., those who were former smokers for at least 2 years) from the Kaiser-Permanente Cohort Study. Therefore, the DPM(+1) was calibrated using the 2005-2008 U.S. smoking cessation rates, which are based on successful cessation defined as lasting at least one year. While net results based on mortality rates for women (at the end of age category

⁶⁴ Family Smoking Prevention and Tobacco Control Act of 2009. Public Law 111-31 [H.R. 1256 (2009).

⁶⁵ Friedman G, Tekawa IS, Sadler M, Sidney S. Smoking and mortality: The Kaiser Permanente experience. In: Shopland DR, Burns DM, Garfinkel L, Samet J, editors. Changes in Cigarette-Related Disease Risks and Their Implication for Prevention and Control. Rockville, MD: US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute. 1997; 477-99.

68-72 years) differed from those for men due to different mortality risks for men and women in the Kaiser-Permanente cohort, 'tipping point' estimates for the 'master model' were almost identical for both genders.

A 'likelihood of use' study conducted by RAIS served to provide projected purchase probabilities for Camel SNUS with modified-risk messaging, based on cross-sectional surveys of U.S. adult tobacco users and non-users. Data were collected from never regular tobacco users who reported whether or not they were likely to initiate tobacco use, which in turn were used as 'best estimates' for 'alternative initiation' (likely to initiate tobacco use) and 'additional initiation' (not likely to initiate tobacco use). Data were also collected from current regular cigarette users who reported whether or not they were likely to quit smoking; these data were used as 'best estimates' for 'switching' (unlikely to quit tobacco use) and 'diversion from quitting' (likely to quit tobacco use). The purchase probabilities from the 'likelihood of use' study were also used as starting points for sensitivity analyses. Secondary harmful transitions were not directly investigated by RAIS's 'likelihood of use' studies, and were thus modeled using hypothetical probabilities that, in many instances, represented extreme scenarios.

Like all models, the DPM(+1) is built on simplifying assumptions, as follows: (1) it compares the effects of using only two types of tobacco products; (2) it assumes that the rates of risk reduction associated with quitting different types of tobacco use (e.g., cigarettes and MRTP) are proportional; for the current analyses, MRTP cessation was suspended; (3) mortality rates are dependent on the overall duration of product use or quitting, but not on either the amount of each product used or on the sequence of products used; (4) only the direct effects of exposure to higher- and lower-risk tobacco products are considered; hence, the current analyses do not account for changes to second-hand smoke exposures, for example, that are due to changes in the proportions of cigarette smokers in the population; and, (5) the model requires the analyst to specify values of the relevant input data. Because the outcome measures depend on the precision of the input data, precision is estimated for differences in the numbers of survivors in the base case and counterfactual scenarios by way of 95% posterior intervals. Additionally, the DPM(+1) uses population survival as a surrogate for population health.

The main strengths of the DPM(+1) are its flexibility, its ability to account for uncertainty in the model inputs and output, its comprehensiveness, and its demonstrated validity.⁶⁶ All model inputs can be changed by the analyst, and the level of uncertainty in model inputs can be specified and is accounted for by the posterior intervals around the estimated differences in the output measures. There are no restrictions on age, time of initiation, or time of cessation of exposure.

The key benefit of using models, such as the DPM(+1), is their ability to hold constant all assumptions and factors other than the distribution of exposure or the comparative risk estimates. The model outputs can thus be used to test hypotheses regarding the possible magnitude of benefit or harm that might follow from specified exposure distributions under conditions that are otherwise the same. Analyses based on the DPM(+1) do not provide absolute predictions of differences in survival due to changes in tobacco exposure patterns, but they do show the magnitude of behaviour changes that must occur in order to result in either benefit or harm to a population. They also allow for researchers and policy makers to rank the likelihood, and thus the importance for promotion and/or prevention, of various intended and/or unintended consequences. DPM(+1)-based analyses presented in the current report support a determination that the proposed marketing of Camel SNUS as a modified-risk tobacco product is likely to result in a population health benefit, even when taking into account the potential for unintended changes in tobacco exposures.

⁶⁶ Bachand AM, Sulsky SI. A dynamic population model for estimating all-cause mortality due to lifetime exposure history. *Regul Toxicol Pharmacol*. 2013. doi: S0273-2300(13)00120-7 [pii];10.1016/j.yrtph.2013.08.003 [doi].

Appendix A: Complete Descriptions of Transition Probabilities (by Research Question) for Replication of Analyses

Table A2.5: Research question and corresponding transition probabilities for assessing the 'net' population health effect of all primary transitions and the secondary transitions 'gateway effect'/'delayed smoking' and 'resumed smoking', combined

Question	Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	Smoking initiation	Ages 13-17	13.75	Table 2.4
			Ages 18-22	10.00	
			Ages 23-27	1.00	
			Ages 28+	0.00	
2	Base case: Among smokers,	Smoking cessation	Ages 13-17	No quitting	Table 2.4
			Ages 18-22	9.00	
			Ages 23-27	9.50	
			Ages 28+	14.00	
3	Base case: Among former smokers,	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	Additional initiation	Ages 13-17	0.30	Table 2.2
			Ages 18-22	0.30	
			Ages 23-27	0.30	
			Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	Alternative initiation	Ages 13-17	0.85	Table 2.2
			Ages 18-22	0.85	
			Ages 23-27	0.85	
			Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	Gateway effect / Delayed smoking among new MRTP users, next age category	Ages 13-17	No switching	Scenario assumption
			Ages 18-22	50.00	
			Ages 23-27	50.00	
			Ages 28-32	50.00	
			Ages 33+	0.00	
	7c	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
	7d	MRTP cessation	Ages 13-17 Ages 18+	No cessation 0.00	Scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect Delayed smoking among continuing MRTP users, all age categories	Ages 13-22 Ages 23+	No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+	No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use	Ages 13-22 Ages 23+	No return 0.00	Scenario assumption
		9c	What proportion quit all tobacco use?	Smoking cessation	Ages 13-22 Ages 23-27 Ages 28+	No quitting 9.50 14.00	Table 2.4
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32	No switching 6.7 6.5 8.0	Table 2.3 / scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
					Ages 33-37	4.5	
					Ages 38-42	3.7	
					Ages 43-47	3.3	
					Ages 48-52	2.9	
					Ages 53-57	1.7	
					Ages 58-62	1.3	
					Ages 63-67	1.4	
					Ages 68+	1.0	
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62 Ages 63-67 Ages 68+	No switching 15.4 22.1 13.6 11.3 11.3 5.4 7.1 5.6 2.6 1.8 2.2	Table 2.3
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.5_2: Research question and corresponding transition probabilities for assessing the 'net' population health effect of all primary transitions and the secondary transitions 'gateway effect'/'delayed smoking' and 'resumed smoking', combined. Transition probabilities are reduced by 75% to model considerably lower transition probabilities than suggested by the 'likelihoods of use' study

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	Smoking initiation	Ages 13-17	13.75	Table 2.4
				Ages 18-22	10.00	
				Ages 23-27	1.00	
				Ages 28+	0.00	
2	Base case: Among smokers,	2a	Smoking cessation	Ages 13-17	No quitting	Table 2.4
				Ages 18-22	9.00	
				Ages 23-27	9.50	
				Ages 28+	14.00	
3	Base case: Among former smokers,	3a	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	Additional initiation	Ages 13-17	0.08	Table 2.2 / Scenario assumption
				Ages 18-22	0.08	
				Ages 23-27	0.08	
				Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	Alternative initiation	Ages 13-17	0.21	Table 2.2 / Scenario assumption
				Ages 18-22	0.21	
				Ages 23-27	0.21	
				Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	Gateway effect / Delayed smoking among new MRTP users, next age category	Ages 13-17	No switching	Scenario assumption
				Ages 18-22	50.00	
				Ages 23-27	50.00	
				Ages 28-32	50.00	
				Ages 33+	0.00	
		7c	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
		7d	MRTP cessation	Ages 13-17 Ages 18+	No cessation 0.00	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect Delayed smoking among continuing MRTP users, all age categories	Ages 13-22 Ages 23+	No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+	No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use	Ages 13-22 Ages 23+	No return 0.00	Scenario assumption
		9c	What proportion quit all tobacco use?	Smoking cessation	Ages 13-22 Ages 23-27 Ages 28+	No quitting 9.50 14.00	Table 2.4
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32	No switching 1.68 1.61 2.00	Table 2.3 / scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
					Ages 33-37	1.14	
					Ages 38-42	0.91	
					Ages 43-47	0.81	
					Ages 48-52	0.74	
					Ages 53-57	0.41	
					Ages 58-62	0.33	
					Ages 63-67	0.35	
					Ages 68+	0.25	
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62 Ages 63-67 Ages 68+	No switching 3.85 5.53 3.40 2.83 2.83 1.35 1.78 1.40 0.65 0.45 0.55	Table 2.3 / scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.5_3: Research question and corresponding transition probabilities for assessing the 'net' population health effect of all primary transitions and the secondary transitions 'gateway effect'/'delayed smoking' and 'resumed smoking', combined. The effect of a 50% return to smoking among base case smoking quitters who switched to Camel SNUS use in the counterfactual scenario ('relapse') is investigated

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	What proportion initiate smoking?	Smoking initiation	Ages 13-17	13.75	Table 2.4
					Ages 18-22	10.00	
					Ages 23-27	1.00	
					Ages 28+	0.00	
2	Base case: Among smokers,	2a	What proportion quit smoking?	Smoking cessation	Ages 13-17	No quitting	Table 2.4, scenario assumption
					Ages 18-22	8.30	
					Ages 23-27	8.50	
					Ages 28-32	13.00	
					Ages 33-37	13.20	
					Ages 38-42	13.20	
					Ages 43-47	13.60	
					Ages 48-52	13.50	
					Ages 53-57	13.60	
					Ages 58-62	13.80	
					Ages 63-67	13.90	
					Ages 68+	13.80	
3	Base case: Among former smokers,	3a	What proportion-relapse to smoking?	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	What proportion quit smoking again?	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	What proportion instead initiate MRTP in the counterfactual?	Additional initiation	Ages 13-17	0.30	Table 2.2
					Ages 18-22	0.30	
					Ages 23-27	0.30	
					Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	What proportion instead initiate MRTP in the counterfactual?	Alternative initiation	Ages 13-17	0.85	Table 2.2
					Ages 18-22	0.85	
					Ages 23-27	0.85	
					Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	What proportion switch to smoking?	Gateway effect / Delayed smoking among new MRTP users, next age category	Ages 13-17	No switching	Scenario assumption
					Ages 18-22	50.00	
					Ages 23-27	50.00	
					Ages 28-32	50.00	
					Ages 33+	0.00	

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
		7c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-17 Ages 18+ No dual use 0.00	Scenario assumption
		7d	What proportion quit MRTP use?	MRTP cessation	Ages 13-17 Ages 18+ No cessation 0.00	Scenario assumption
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect / Delayed smoking among continuing MRTP users, all age categories	Ages 13-22 Ages 23+ No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+ No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+ No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use	Ages 13-22 Ages 23+ No return 0.00	Scenario assumption
		9c	What proportion quit all tobacco use?	Smoking cessation	Ages 13-22 Ages 23-27 Ages 28+ No quitting 9.50 14.00	Table 2.4
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation	Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco	Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP	Transition not modeled	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62 Ages 63-67 Ages 68+	No switching 6.65 6.43 7.91 4.46 3.67 3.29 2.88 1.69 1.30 1.40 1.00	Table 2.3, scenario assumption
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62 Ages 63-67 Ages 68+	No switching 8.3 12.4 7.3 6.0 6.0 2.8 3.7 2.9 1.3 0.9 1.1	Table 2.3, scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
		17c	What proportion quit all tobacco use?	M RTP cessation	Ages 13-22 Ages 23+ No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to M RTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation	Transition not modeled	

Table A2.6: Research question and corresponding transition probabilities for assessing the 'net' population health effect of the primary transitions 'additional initiation', 'switching' and 'diversion from quitting' and the secondary transitions 'gateway effect' and 'resumed smoking', combined

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	What proportion initiate smoking?	Smoking initiation	Ages 13-17	13.75	Table 2.4
					Ages 18-22	10.00	
					Ages 23-27	1.00	
					Ages 28+	0.00	
2	Base case: Among smokers,	2a	What proportion quit smoking?	Smoking cessation	Ages 13-17	No quitting	Table 2.4
					Ages 18-22	9.00	
					Ages 23-27	9.50	
					Ages 28+	14.00	
3	Base case: Among former smokers,	3a	What proportion-relapse to smoking?	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	What proportion quit smoking again?	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	What proportion instead initiate MRTP in the counterfactual?	Additional initiation	Ages 13-17	0.30	Table 2.2
					Ages 18-22	0.30	
					Ages 23-27	0.30	
					Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	What proportion instead initiate MRTP in the counterfactual?	Alternative initiation	Ages 13-17	0.00	Scenario assumption
					Ages 18-22	0.00	
					Ages 23-27	0.00	
					Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	What proportion switch to smoking?	Gateway effect among new MRTP users, next age category	Ages 13-17	No switching	Scenario assumption
					Ages 18-22	50.00	
					Ages 23-27	50.00	
					Ages 28-32	50.00	
					Ages 33+	0.00	
		7c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
		7d	What proportion quit MRTP use?	MRTP cessation	Ages 13-17 Ages 18+	No cessation 0.00	Scenario assumption

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect among continuing MRTP users, all age categories	Ages 13-22 Ages 23+ No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+ No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+ No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use	Ages 13-22 Ages 23+ No return 0.00	Scenario assumption
		9c	What proportion quit all tobacco use?	Smoking cessation	Ages 13-22 Ages 23-27 Ages 28+ No quitting 9.50 14.00	Table 2.4
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation	Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco	Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP	Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation	Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 No switching 6.7 6.5 8.0 4.5 3.7	Table 2.3 / scenario assumption

Question	Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source		
			Ages 43-47	3.3			
			Ages 48-52	2.9			
			Ages 53-57	1.7			
			Ages 58-62	1.3			
			Ages 63-67	1.4			
			Ages 68+	1.0			
			14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?		Dual use	Ages 13-17 Ages 18+
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17	No switching	Table 2.3
					Ages 18-22	15.4	
					Ages 23-27	22.1	
					Ages 28-32	13.6	
					Ages 33-37	11.3	
					Ages 38-42	11.3	
					Ages 43-47	5.4	
					Ages 48-52	7.1	
					Ages 53-57	5.6	
					Ages 58-62	2.6	
					Ages 63-67	1.8	
					Ages 68+	2.2	
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco	Transition not modeled		
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation	Transition not modeled		

Table A2.6_2: Research question and corresponding transition probabilities for assessing the 'net' population health effect of the primary transitions 'additional initiation', 'switching' and 'diversion from quitting' and the secondary transitions 'gateway effect' and 'resumed smoking', combined. The effect of a 50% return to smoking among base case smoking quitters who switched to Camel SNUS use in the counterfactual scenario ('relapse') is investigated

Question	Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	Smoking initiation	Ages 13-17	13.75	Table 2.4
			Ages 18-22	10.00	
			Ages 23-27	1.00	
			Ages 28+	0.00	
2	Base case: Among smokers,	Smoking cessation	Ages 13-17	No quitting	Table 2.4, scenario assumption
			Ages 18-22	8.30	
			Ages 23-27	8.50	
			Ages 28-32	13.00	
			Ages 33-37	13.20	
			Ages 38-42	13.20	
			Ages 43-47	13.60	
			Ages 48-52	13.50	
			Ages 53-57	13.60	
			Ages 58-62	13.80	
			Ages 63-67	13.90	
			Ages 68+	13.80	
3	Base case: Among former smokers,	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	Additional initiation	Ages 13-17	0.30	Table 2.2
			Ages 18-22	0.30	
			Ages 23-27	0.30	
			Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	Alternative initiation	Ages 13-17	0.00	Scenario assumption
			Ages 18-22	0.00	
			Ages 23-27	0.00	
			Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	Gateway effect among new MRTP users, next age category	Ages 13-17	No switching	Scenario assumption
			Ages 18-22	50.00	
			Ages 23-27	50.00	
			Ages 28-32	50.00	
			Ages 33+	0.00	

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
		7c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-17 Ages 18+ No dual use 0.00	Scenario assumption
		7d	What proportion quit MRTP use?	MRTP cessation	Ages 13-17 Ages 18+ No cessation 0.00	Scenario assumption
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect among continuing MRTP users, all age categories	Ages 13-22 Ages 23+ No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+ No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+ No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use	Ages 13-22 Ages 23+ No return 0.00	Scenario assumption
		9c	What proportion quit all tobacco use?	Smoking cessation	Ages 13-22 Ages 23-27 Ages 28+ No quitting 9.50 14.00	Table 2.4
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation	Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco	Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP	Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with	13a	What proportion quit MRTP use?	MRTP cessation	Transition not modeled	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,						
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17	No switching	Table 2.3, scenario assumption
					Ages 18-22	6.65	
					Ages 23-27	6.43	
					Ages 28-32	7.91	
					Ages 33-37	4.46	
					Ages 38-42	3.67	
					Ages 43-47	3.29	
					Ages 48-52	2.88	
					Ages 53-57	1.69	
					Ages 58-62	1.30	
					Ages 63-67	1.40	
					Ages 68+	1.00	
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17	No dual use	Scenario assumption
					Ages 18+	0.00	
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17	No switching	Table 2.3, scenario assumption
					Ages 18-22	8.3	
					Ages 23-27	12.4	
					Ages 28-32	7.3	
					Ages 33-37	6.0	
					Ages 38-42	6.0	
					Ages 43-47	2.8	
					Ages 48-52	3.7	
					Ages 53-57	2.9	
					Ages 58-62	1.3	
					Ages 63-67	0.9	
					Ages 68+	1.1	
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation	Transition not modeled	

Table A2.7: Research question and corresponding transition probabilities for assessing the 'net' population health effect of the primary transitions 'additional initiation', 'switching' and 'diversion from quitting'

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	Smoking initiation	Ages 13-17	13.75	Table 2.4
				Ages 18-22	10.00	
				Ages 23-27	1.00	
				Ages 28+	0.00	
2	Base case: Among smokers,	2a	Smoking cessation	Ages 13-17	No quitting	Table 2.4
				Ages 18-22	9.00	
				Ages 23-27	9.50	
				Ages 28+	14.00	
3	Base case: Among former smokers,	3a	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	Additional initiation	Ages 13-17	0.30	Table 2.2
				Ages 18-22	0.30	
				Ages 23-27	0.30	
				Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	Alternative initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	Gateway effect among new MRTP users, next age category	Ages 13-17 Ages 18+	No switching 0.00	Scenario assumption
		7c	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
		7d	MRTP cessation	Ages 13-17 Ages 18+	No cessation 0.00	Scenario assumption
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use	8b	Gateway effect among continuing	Ages 13-22 Ages 23+	No switching 0.00	Scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	and neither switched to smoking nor quit all tobacco use	8c	What proportion add smoking (i.e. start dual use)?	MRTP users, all age categories Dual use	Ages 13-22 Ages 23+	No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use		Transition not modeled	
		9c	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57	No switching 13.4 12.9 16.0 9.1 7.3 6.5 5.9 3.3	Table 2.3

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
					Ages 58-62	2.6	
					Ages 63-67	2.8	
					Ages 68+	2.0	
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62 Ages 63-67 Ages 68+	No switching 15.4 22.1 13.6 11.3 11.3 5.4 7.1 5.6 2.6 1.8 2.2	Table 2.3
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.8: Research question and corresponding transition probabilities for determining the 'tipping point' related to the primary beneficial transition, 'switching', versus the primary transitions 'additional initiation', 'switching' and 'diversion from quitting' and the secondary transition 'gateway effect', combined

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	Smoking initiation	Ages 13-17	13.75	Table 2.4
				Ages 18-22	10.00	
				Ages 23-27	1.00	
				Ages 28+	0.00	
2	Base case: Among smokers,	2a	Smoking cessation	Ages 13-17	No quitting	Table 2.4
				Ages 18-22	9.00	
				Ages 23-27	9.50	
				Ages 28+	14.00	
3	Base case: Among former smokers,	3a	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	Additional initiation	Ages 13-17	0.30	Table 2.2
				Ages 18-22	0.30	
				Ages 23-27	0.30	
				Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	Alternative initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	Gateway effect among new MRTP users, next age category	Ages 13-17	No switching	Scenario assumption
				Ages 18-22	50.00	
				Ages 23-27	50.00	
				Ages 28-32	50.00	
				Ages 33+	0.00	
		7c	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
		7d	MRTP cessation	Ages 13-17 Ages 18+	No cessation 0.00	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect among continuing MRTP users, all age categories	Ages 13-22 Ages 23+	No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+	No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use	Ages 13-22 Ages 23+	No return 0.00	Scenario assumption
		9c	What proportion quit all tobacco use?	Smoking cessation	Ages 13-22 Ages 23-27 Ages 28+	No quitting 9.50 14.00	Table 2.4
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18+	No switching Varied to find tipping point	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62 Ages 63-67 Ages 68+	No switching 15.4 22.1 13.6 11.3 11.3 5.4 7.1 5.6 2.6 1.8 2.2	Table 2.3
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.9: Research question and corresponding transition probabilities for assessing the expected population health effect of the primary beneficial transition, 'alternative initiation'

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	Smoking initiation	Ages 13-17	13.75	Table 2.4
				Ages 18-22	10.00	
				Ages 23-27	1.00	
				Ages 28+	0.00	
2	Base case: Among smokers,	2a	Smoking cessation	Ages 13-17	No quitting	Table 2.4
				Ages 18-22	9.00	
				Ages 23-27	9.50	
				Ages 28+	14.00	
3	Base case: Among former smokers,	3a	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	Additional initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	Alternative initiation	Ages 13-17	0.85	Table 2.2
				Ages 18-22	0.85	
				Ages 23-27	0.85	
				Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	Delayed smoking among new MRTP users, next age category	Ages 13-17 Ages 18+	No switching 0.00	Scenario assumption
		7c	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
		7d	MRTP cessation	Ages 13-17 Ages 18+	No cessation 0.00	Scenario assumption
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use	8b	Delayed smoking among continuing	Ages 13-22 Ages 23+	No switching 0.00	Scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	and neither switched to smoking nor quit all tobacco use	8c	What proportion add smoking (i.e. start dual use)?	MRTP users, all age categories Dual use	Ages 13-22 Ages 23+	No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use		Transition not modeled	
		9c	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking		Transition not modeled	
		17c	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.10: Research question and corresponding transition probabilities for assessing the expected population health effect of the primary beneficial transition, 'switching'

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	Smoking initiation	Ages 13-17	13.75	Table 2.4
				Ages 18-22	10.00	
				Ages 23-27	1.00	
				Ages 28+	0.00	
2	Base case: Among smokers,	2a	Smoking cessation	Ages 13-17	No quitting	Table 2.4
				Ages 18-22	9.00	
				Ages 23-27	9.50	
				Ages 28+	14.00	
3	Base case: Among former smokers,	3a	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	Additional initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	Alternative initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	Gateway effect / Delayed smoking among new MRTP users, next age category		Transition not modeled	
		7c	Dual use		Transition not modeled	
		7d	MRTP cessation		Transition not modeled	
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use	8b	Gateway effect / Delayed smoking among continuing		Transition not modeled	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	and neither switched to smoking nor quit all tobacco use	8c	What proportion add smoking (i.e. start dual use)?	MRTP users, all age categories Dual use		Transition not modeled	
		8d	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use		Transition not modeled	
		9c	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62	No switching 13.4 12.9 16.0 9.1 7.3 6.5 5.9 3.3 2.6	Table 2.3

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
					Ages 63-67 Ages 68+	2.8 2.0	
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.11: Research question and corresponding transition probabilities for assessing the expected population health effect of the primary harmful transition, 'additional initiation'

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	What proportion initiate smoking?	Smoking initiation	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28+	13.75 10.00 1.00 0.00	Table 2.4
2	Base case: Among smokers,	2a	What proportion quit smoking?	Smoking cessation	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28+	No quitting 9.00 9.50 14.00	Table 2.4
3	Base case: Among former smokers,	3a	What proportion-relapse to smoking?	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	What proportion quit smoking again?	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	What proportion instead initiate MRTP in the counterfactual?	Additional initiation	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28+	0.30 0.30 0.30 0.00	Table 2.2
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	What proportion instead initiate MRTP in the counterfactual?	Alternative initiation	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28+	0.00 0.00 0.00 0.00	Scenario assumption
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	What proportion switch to smoking?	Gateway effect among new MRTP users, next age category	Ages 13-17 Ages 18+	No switching 0.00	Scenario assumption
		7c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
		7d	What proportion quit MRTP use?	MRTP cessation	Ages 13-17 Ages 18+	No cessation 0.00	Scenario assumption
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use	8b	What proportion switch to smoking?	Gateway effect among continuing	Ages 13-22 Ages 23+	No switching 0.00	Scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	and neither switched to smoking nor quit all tobacco use	8c	What proportion add smoking (i.e. start dual use)?	MRTP users, all age categories Dual use	Ages 13-22 Ages 23+	No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use		Transition not modeled	
		9c	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking		Transition not modeled	
		17c	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.12: Research question and corresponding transition probabilities for assessing the expected population health effect of the primary harmful transition, 'diversion from quitting'

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	Smoking initiation	Ages 13-17	13.75	Table 2.4
				Ages 18-22	10.00	
				Ages 23-27	1.00	
				Ages 28+	0.00	
2	Base case: Among smokers,	2a	Smoking cessation	Ages 13-17	No quitting	Table 2.4
				Ages 18-22	9.00	
				Ages 23-27	9.50	
				Ages 28+	14.00	
3	Base case: Among former smokers,	3a	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	Additional initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	Alternative initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	Gateway effect / Delayed smoking among new MRTP users, next age category		Transition not modeled	
		7c	Dual use		Transition not modeled	
		7d	MRTP cessation		Transition not modeled	
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use	8b	Gateway effect / Delayed smoking among continuing		Transition not modeled	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	and neither switched to smoking nor quit all tobacco use	8c	What proportion add smoking (i.e. start dual use)?	MRTP users, all age categories Dual use		Transition not modeled	
		8d	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use		Transition not modeled	
		9c	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18-22	No switching 15.4	Table 2.3

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	smoking but quit smoking in the base case,				Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62 Ages 63-67 Ages 68+	22.1 13.6 11.3 11.3 5.4 7.1 5.6 2.6 1.8 2.2	
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.12_2: Research question and corresponding transition probabilities for assessing the expected population health effect of the primary harmful transition, 'diversion from quitting'. The effect of a 50% return to smoking among base case smoking quitters who switched to Camel SNUS use in the counterfactual scenario ('relapse') is investigated

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	What proportion initiate smoking?	Smoking initiation	Ages 13-17	13.75	Table 2.4
					Ages 18-22	10.00	
					Ages 23-27	1.00	
					Ages 28+	0.00	
2	Base case: Among smokers,	2a	What proportion quit smoking?	Smoking cessation	Ages 13-17	No quitting	Table 2.4, scenario assumption
					Ages 18-22	8.30	
					Ages 23-27	8.50	
					Ages 28-32	13.00	
					Ages 33-37	13.20	
					Ages 38-42	13.20	
					Ages 43-47	13.60	
					Ages 48-52	13.50	
					Ages 53-57	13.60	
					Ages 58-62	13.80	
					Ages 63-67	13.90	
					Ages 68+	13.80	
3	Base case: Among former smokers,	3a	What proportion-relapse to smoking?	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	What proportion quit smoking again?	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	What proportion instead initiate MRTP in the counterfactual?	Additional initiation	Ages 13-17	0.00	Scenario assumption
					Ages 18-22	0.00	
					Ages 23-27	0.00	
					Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	What proportion instead initiate MRTP in the counterfactual?	Alternative initiation	Ages 13-17	0.00	Scenario assumption
					Ages 18-22	0.00	
					Ages 23-27	0.00	
					Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	What proportion switch to smoking?	Gateway effect / Delayed smoking among new MRTP users, next age category		Transition not modeled	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
		7c	What proportion add smoking (i.e. start dual use)?	Dual use		Transition not modeled	
		7d	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect / Delayed smoking among continuing MRTP users, all age categories		Transition not modeled	
		8c	What proportion add smoking (i.e. start dual use)?	Dual use		Transition not modeled	
		8d	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use		Transition not modeled	
		9c	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	smoking and continued smoking in the base case,	14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62 Ages 63-67 Ages 68+	No switching 8.3 12.4 7.3 6.0 6.0 2.8 3.7 2.9 1.3 0.9 1.1	Table 2.3, scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.13: Research question and corresponding transition probabilities for assessing the expected population health effect of the primary harmful transition, 'additional initiation', combined with the secondary harmful transition, 'gateway effect'

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	What proportion initiate smoking?	Smoking initiation	Ages 13-17	13.75	Table 2.4
					Ages 18-22	10.00	
					Ages 23-27	1.00	
					Ages 28+	0.00	
2	Base case: Among smokers,	2a	What proportion quit smoking?	Smoking cessation	Ages 13-17	No quitting	Table 2.4
					Ages 18-22	9.00	
					Ages 23-27	9.50	
					Ages 28+	14.00	
3	Base case: Among former smokers,	3a	What proportion-relapse to smoking?	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	What proportion quit smoking again?	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	What proportion instead initiate MRTP in the counterfactual?	Additional initiation	Ages 13-17	0.30	Table 2.2
					Ages 18-22	0.30	
					Ages 23-27	0.30	
					Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	What proportion instead initiate MRTP in the counterfactual?	Alternative initiation	Ages 13-17	0.00	Scenario assumption
					Ages 18-22	0.00	
					Ages 23-27	0.00	
					Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	What proportion switch to smoking?	Gateway effect among new MRTP users, next age category	Ages 13-17	No switching	Scenario assumption
					Ages 18-22	50.00	
					Ages 23-27	50.00	
					Ages 28-32	50.00	
					Ages 33+	0.00	
		7c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-17	No dual use	Scenario assumption
					Ages 18+	0.00	
7d	What proportion quit MRTP use?	MRTP cessation	Ages 13-17 Ages 18+	No cessation 0.00	Scenario assumption		

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect among continuing MRTP users, all age categories	Ages 13-22 Ages 23+	No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+	No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use	Ages 13-22 Ages 23+	No return 0.00	Scenario assumption
		9c	What proportion quit all tobacco use?	Smoking cessation	Ages 13-22 Ages 23-27 Ages 28+	No quitting 9.50 14.00	Table 2.4
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+ No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18+ No switching 0.0	Scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco	Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Transition not modeled	
		17c	What proportion quit all tobacco use?	MRTP cessation	Transition not modeled	
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation	Transition not modeled	

Table A2.14: Research question and corresponding transition probabilities for assessing the expected population health effect of the primary beneficial transition, 'alternative initiation', combined with the secondary harmful transition, 'delayed smoking'

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	What proportion initiate smoking?	Smoking initiation	Ages 13-17	13.75	Table 2.4
					Ages 18-22	10.00	
					Ages 23-27	1.00	
					Ages 28+	0.00	
2	Base case: Among smokers,	2a	What proportion quit smoking?	Smoking cessation	Ages 13-17	No quitting	Table 2.4
					Ages 18-22	9.00	
					Ages 23-27	9.50	
					Ages 28+	14.00	
3	Base case: Among former smokers,	3a	What proportion-relapse to smoking?	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	What proportion quit smoking again?	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	What proportion instead initiate MRTP in the counterfactual?	Additional initiation	Ages 13-17	0.00	Scenario assumption
					Ages 18-22	0.00	
					Ages 23-27	0.00	
					Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	What proportion instead initiate MRTP in the counterfactual?	Alternative initiation	Ages 13-17	0.85	Scenario assumption
					Ages 18-22	0.85	
					Ages 23-27	0.85	
					Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	What proportion switch to smoking?	Delayed smoking among new MRTP users, next age category	Ages 13-17	No switching	Scenario assumption
					Ages 18-22	50.00	
					Ages 23-27	50.00	
					Ages 28-32	50.00	
					Ages 33+	0.00	
	7c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption	
				7d	What proportion quit MRTP use?		MRTP cessation

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Delayed smoking among continuing MRTP users, all age categories	Ages 13-22 Ages 23+	No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+	No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use	Ages 13-22 Ages 23+	No return 0.00	Scenario assumption
		9c	What proportion quit all tobacco use?	Smoking cessation	Ages 13-22 Ages 23-27 Ages 28+	No quitting 9.50 14.00	Table 2.4
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+ No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18+ No switching 0.0	Scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco	Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Transition not modeled	
		17c	What proportion quit all tobacco use?	MRTP cessation	Transition not modeled	
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation	Transition not modeled	

Table A2.15: Research question and corresponding transition probabilities for assessing the expected population health effect of the primary harmful transition, 'switching', combined with the secondary harmful transition, 'resumed smoking'

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	Smoking initiation	Ages 13-17	13.75	Table 2.4
				Ages 18-22	10.00	
				Ages 23-27	1.00	
				Ages 28+	0.00	
2	Base case: Among smokers,	2a	Smoking cessation	Ages 13-17	No quitting	Table 2.4
				Ages 18-22	9.00	
				Ages 23-27	9.50	
				Ages 28+	14.00	
3	Base case: Among former smokers,	3a	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	Additional initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	Alternative initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	Gateway effect / Delayed smoking among new MRTP users, next age category		Transition not modeled	
		7c	Dual use		Transition not modeled	
		7d	MRTP cessation		Transition not modeled	
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use	8b	Gateway effect / Delayed smoking among continuing		Transition not modeled	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	and neither switched to smoking nor quit all tobacco use	8c	What proportion add smoking (i.e. start dual use)?	MRTP users, all age categories Dual use		Transition not modeled	
		8d	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use		Transition not modeled	
		9c	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18-22 Ages 23-27 Ages 28-32 Ages 33-37 Ages 38-42 Ages 43-47 Ages 48-52 Ages 53-57 Ages 58-62	No switching 6.7 6.5 8.0 4.5 3.7 3.3 2.9 1.7 1.3	Table 2.3

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
					Ages 63-67 Ages 68+	1.4 1.0	
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.16: Research question and corresponding transition probabilities for determining the ‘tipping point’ related to ‘switching’ versus an extreme scenario for the primary harmful transition, ‘additional initiation’

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	Smoking initiation	Ages 13-17	13.75	Table 2.4
				Ages 18-22	10.00	
				Ages 23-27	1.00	
				Ages 28+	0.00	
2	Base case: Among smokers,	2a	Smoking cessation	Ages 13-17	No quitting	Table 2.4
				Ages 18-22	9.00	
				Ages 23-27	9.50	
				Ages 28+	14.00	
3	Base case: Among former smokers,	3a	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	Additional initiation	Ages 13-17	13.75	Table 2.4 / Scenario assumption
				Ages 18-22	10.00	
				Ages 23-27	1.00	
				Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	Alternative initiation	Ages 13-17	0.00	Scenario assumption
				Ages 18-22	0.00	
				Ages 23-27	0.00	
				Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	Gateway effect among new MRTP users, next age category	Ages 13-17 Ages 18+	No switching 0.00	Scenario assumption
		7c	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
		7d	MRTP cessation	Ages 13-17 Ages 18+	No cessation 0.00	Scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect among continuing MRTP users, all age categories	Ages 13-22 Ages 23+	No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+	No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use		Transition not modeled	
		9c	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17	No switching	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	smoking and continued smoking in the base case,				Ages 18+	Varied to find tipping point	
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.17: Research question and corresponding transition probabilities for determining the ‘tipping point’ related to ‘switching’ versus an extreme scenario for the primary harmful transition, ‘additional initiation’, combined with the secondary harmful transition, ‘gateway effect’

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	1a	What proportion initiate smoking?	Smoking initiation	Ages 13-17	13.75	Table 2.4
					Ages 18-22	10.00	
					Ages 23-27	1.00	
					Ages 28+	0.00	
2	Base case: Among smokers,	2a	What proportion quit smoking?	Smoking cessation	Ages 13-17	No quitting	Table 2.4
					Ages 18-22	9.00	
					Ages 23-27	9.50	
					Ages 28+	14.00	
3	Base case: Among former smokers,	3a	What proportion-relapse to smoking?	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	4a	What proportion quit smoking again?	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	5a	What proportion instead initiate MRTP in the counterfactual?	Additional initiation	Ages 13-17	3.00	Table 2.2; scenario assumption
					Ages 18-22	3.00	
					Ages 23-27	3.00	
					Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	6a	What proportion instead initiate MRTP in the counterfactual?	Alternative initiation	Ages 13-17	0.00	Scenario assumption
					Ages 18-22	0.00	
					Ages 23-27	0.00	
					Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	7b	What proportion switch to smoking?	Gateway effect among new MRTP users, next age category	Ages 13-17	No switching	Scenario assumption
					Ages 18-22	50.00	
					Ages 23-27	50.00	
					Ages 28-32	50.00	
					Ages 33+	0.00	
	7c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption	

Question		Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
		7d	What proportion quit MRTP use?	MRTP cessation	Ages 13-17 Ages 18+ No cessation 0.00	Scenario assumption
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect among continuing MRTP users, all age categories	Ages 13-22 Ages 23+ No switching 0.00	Scenario assumption
		8c	What proportion add smoking (i.e. start dual use)?	Dual use	Ages 13-22 Ages 23+ No dual use 0.00	Scenario assumption
		8d	What proportion quit MRTP use?	MRTP cessation	Ages 13-22 Ages 23+ No cessation 0.00	Scenario assumption
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use	Ages 13-22 Ages 23+ No return 0.00	Scenario assumption
		9c	What proportion quit all tobacco use?	Smoking cessation	Ages 13-22 Ages 23-27 Ages 28+ No quitting 9.50 14.00	Table 2.4
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation	Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco	Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP	Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit	13a	What proportion quit MRTP use?	MRTP cessation	Transition not modeled	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
	MRTP use but subsequently restarted MRTP use,						
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18+	No switching Varied to find tipping point	
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18+	No switching 0.0	Scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Table A2.18: Research question and corresponding transition probabilities for determining the ‘tipping point’ related to ‘switching’ versus an extreme scenario for the primary harmful transition, ‘diversion from quitting’

Question	Sub-question	Transition	Age category	DPM(+1) transition probability (%)	Source
1	Base case: In the study population,	Smoking initiation	Ages 13-17	13.75	Table 2.4
			Ages 18-22	10.00	
			Ages 23-27	1.00	
			Ages 28+	0.00	
2	Base case: Among smokers,	Smoking cessation	Ages 13-17	No quitting	Table 2.4
			Ages 18-22	9.00	
			Ages 23-27	9.50	
			Ages 28+	14.00	
3	Base case: Among former smokers,	Relapse quit to smoking	Ages 13-22 Ages 22+	No relapse 0.00	Scenario assumption
4	Base case: Among former smokers, who relapsed to smoking,	Second time smoking cessation		Transition not modeled	
5	Counterfactual: Among persons who remained never tobacco users in the base case,	Additional initiation	Ages 13-17	0.00	Scenario assumption
			Ages 18-22	0.00	
			Ages 23-27	0.00	
			Ages 28+	0.00	
6	Counterfactual: Among persons who initiated smoking in the base case,	Alternative initiation	Ages 13-17	0.00	Scenario assumption
			Ages 18-22	0.00	
			Ages 23-27	0.00	
			Ages 28+	0.00	
7	Counterfactual: Among persons who initiated tobacco use with the MRTP in the previous age category,	Gateway effect / Delayed smoking among new MRTP users, next age category		Transition not modeled	
		Dual use		Transition not modeled	
		MRTP cessation		Transition not modeled	

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
8	Counterfactual: Among persons who initiated tobacco use with the MRTP, continued MRTP use and neither switched to smoking nor quit all tobacco use	8b	What proportion switch to smoking?	Gateway effect / Delayed smoking among continuing MRTP users, all age categories		Transition not modeled	
		8c	What proportion add smoking (i.e. start dual use)?	Dual use		Transition not modeled	
		8d	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
9	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually switched to smoking	9b	What proportion switch back to MRTP?	Return smoking to MRTP use		Transition not modeled	
		9c	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	
10	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually switched to smoking and subsequently switched back to the MRTP,	10a	What proportion quit all tobacco use?	MRTP cessation		Transition not modeled	
11	Counterfactual: Among persons who initiated tobacco use with the MRTP and eventually added smoking (i.e. started dual use),	11a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
12	Counterfactual: Among persons who initiated tobacco use with the MRTP but eventually quit MRTP use,	12a	What proportion relapse to MRTP use?	Relapse, quit to MRTP		Transition not modeled	
13	Counterfactual: Among persons who initiated tobacco use with the MRTP, eventually quit MRTP use but subsequently restarted MRTP use,	13a	What proportion quit MRTP use?	MRTP cessation		Transition not modeled	
14	Counterfactual: Among persons who initiated tobacco use with smoking and continued smoking in the base case,	14b	What proportion instead switch to MRTP in the counterfactual?	Switching	Ages 13-17 Ages 18+	No switching Varied to find tipping point	Scenario assumption

Question		Sub-question		Transition	Age category	DPM(+1) transition probability (%)	Source
		14c	What proportion instead add MRTP (i.e. start dual use) in the counterfactual?	Dual use	Ages 13-17 Ages 18+	No dual use 0.00	Scenario assumption
15	Counterfactual: Among persons who initiated tobacco use with smoking but quit smoking in the base case,	15a	What proportion switch to MRTP in the counterfactual instead of quitting?	Diversion from quitting	Ages 13-17 Ages 18+	No switching 50.0	Scenario assumption
16	Counterfactual: Among persons who initiated tobacco use with smoking and eventually added MRTP use (i.e. started dual use),	16a	What proportion quit all tobacco use?	Cessation, all tobacco		Transition not modeled	
17	Counterfactual: Among persons who initiated tobacco use with smoking and eventually switched to MRTP use,	17b	What proportion switch to smoking?	Relapse MRTP to smoking	Ages 13-22 Ages 23+	No relapse 0.00	Scenario assumption
		17c	What proportion quit all tobacco use?	MRTP cessation	Ages 13-22 Ages 23+	No cessation 0.00	Scenario assumption
18	Counterfactual: Among persons who initiated tobacco use with smoking, eventually switched to MRTP use, but subsequently switched back to smoking,	18a	What proportion quit all tobacco use?	Smoking cessation		Transition not modeled	

Appendix B: Adjusting U.S. Smoking Initiation and Cessation Rates and Mortality Rates from the
Kaiser-Permanente Cohort Study for Use in the DPM(+1)

Estimation of base case transition probabilities

Exposure transition probabilities in the base case consist of base case product initiation and cessation rates as well as relapse rates from former use to current use.

Age-specific cigarette smoking initiation was based on 2009 cigarette smoking initiation rates published by the Substance Abuse and Mental Health Services Administration's (SAMHSA) National Surveys on Drug Use and Health, 2009¹. To align the 5-year age categories we chose to use in the DPM with those used by NHSDA, we slightly adjusted the population smoking initiation rates (*Table B1*). To obtain initiation rates for 5-year periods, we multiplied each annual rate by 2.5 to provide a conservative estimate of the average person-time at risk of smoking initiation in each 5-year age category.

Table B1: Cigarette smoking initiation (%), US 2009 (males and females, any race)

SAMHSA age category	NHSDA initiation (%)	DPM age category	Corrected initiation (%)	Correction and reason for correction	Corrected 5-year initiation (%)
12-17	5.1	13-17	5.5	Increased initiation rate • 12 year olds (lower initiation rates) are part of SAMHSA age category but are not part of model age category	13.75
18-20	6.9	18-22	4.0	Decreased initiation rate • 21 and 22 year olds (lower initiation rates) are not part of SAMHSA age category but are part of model age category	10.00
21-25	1.0	23-27	0.4	Decreased initiation rate • 21 and 22 year olds (higher initiation rates) are part of SAMHSA age category but are not part of model age category • 26 and 27 year olds (lower initiation rates) are not part of SAMHSA age category but are part of model age category	1.00
Above 25	0.1	28-32	0.0	Decreased initiation rate • 26 and 27 year olds (higher initiation rates) are part of SAMHSA age category but are not part of model age category	0.00
		Above 32	0.0		0.00

¹ <http://www.samhsa.gov/data/NSDUH/2k10ResultsTables/NSDUHTables2010R/HTM/Sect4peTabs1to16.htm#Tab4>.
3B

Annual age-specific cigarette smoking cessation rates for 2005-2008 were based on cigarette smoking cessation rates published by SAMHSA's National Surveys on Drug Use and Health, 2005-2008 ². More current smoking cessation estimates have been published, but they include as former smokers individuals who quit smoking less than one year in the past, i.e., they include quit attempts. This definition is incompatible with the mortality data for successful smoking quitters (i.e., those who were former smokers for at least 2 years) from the Kaiser-Permanente Cohort Study. Therefore, the DPM(+1) was calibrated using the 2005-2008 U.S. smoking cessation rates, which are based on successful cessation defined as lasting at least one year. Rates were adjusted to match the age categories used in the DPM, and multiplied by 2.5 to estimate initiation rates over a 5-year period (i.e., to provide a conservative estimate of the average person-time at risk of smoking cessation in each 5-year age category; *Table B2*).

Table B2: Cigarette smoking cessation (%), US 2005-2008 (white males and females)

SAMHSA age category	NHSDA cessation (%)	DPM age category	Corrected cessation (%)	Correction and reason for correction	Corrected 5-year cessation (%)
12-17	3.8	13-17	3.8	None	9.5
18-25	3.6	18-22	3.6	None	9.0
		23-27	3.8	Increased cessation rate • 26 and 27 year olds (higher cessation rates) are not part of SAMHSA age category but are part of model age category	9.5
26-34	5.6	28-32	5.6	None	14.00
Above 34	3.8	Above 32	5.6	Increased cessation rate 32 and 33 year olds (higher cessation rates) are not part of SAMHSA age category but are part of model age category	14.00

To our knowledge, there are no US population data on rates of relapse to smoking among former smokers. For simplicity, we treated smoking cessation as final and assumed no relapse to smoking.

² <http://www.samhsa.gov/data/2k10/172/172smokingcessation.htm>

Estimation of mortality rates for the base case

A Poisson model embedded within the DPM estimates the number of deaths among persons with a particular exposure history involving only the base case product. The estimates are based on person-years and deaths by age, years of exposure and years since cessation of exposure as entered by the model user. Only survivors move on to the next age category.

Mortality rates for the base case - men

To estimate mortality rates, the DPM user must supply age- and exposure-specific numbers of person-years and numbers of deaths for a relevant population. To calibrate the DPM, we used data from the Kaiser Permanente (KP) cohort study, which included about 24,000 men ages 35 and older, who entered the cohort between 1979 and 1986 and were followed for mortality through 1987. Published data provided person-years and deaths stratified separately by a) categories of age and years of smoking; and b) categories of age and years since quitting smoking (Friedman et al., 1997)³. For the prior distributions of the core Poisson model coefficients, we used non-informative normal distributions with mean 0 and standard deviation 100. While the KP data were used to develop the structure of the Poisson model, mortality data by age, years of exposure (in this example, to smoking) and years since exposure cessation (i.e., quitting smoking) from any population can be used in the DPM.

To use the KP data with the DPM, some adjustments were necessary. The published KP data are shown in [Table B3](#). We substituted zero person-years for current smokers aged 65-74 and >75 years with <20 years of smoking. There were small numbers of person-years and deaths in these categories in the KP, and it seemed unreasonable to require the DPM to account for the unusual situation of persons over the age of 45 initiating tobacco use.

³ Friedman G, Tekawa IS, Sadler M, Sidney S. Smoking and mortality: the Kaiser Permanente experience. In: Shopland DR, Burns DM, Garfinkel L, Samet J, editors. *Changes in Cigarette-Related Disease Risks and Their Implication for Prevention and Control*. Rockville, MD: US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute. 1997; 477-99.

Table B3: Age-specific person-years, deaths and mortality rates in never smokers and current smokers by duration of smoking, based on data for men who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Person-years	Number of deaths	Mortality rate
35-49	Never	-	29,916	49	163.8
	Current	<20	5,940	16	269.4
	Current	20-39	14,563	48	329.6
50-64	Never	-	24,020	97	403.8
	Current	<20	1,174	7	596.3
	Current	20-39	10,205	80	783.9
	Current	40+	4,367	74	1694.5
65-74	Never	-	11,466	161	1404.2
	Current	<20	212 ^a	0	0.0
	Current	20-39	963	23	2388.4
	Current	40+	3,285	80	2435.3
75+	Never	-	4,486	203	4525.2
	Current	<20	90 ^b	0	0.0
	Current	20-39	138	12	8695.7
	Current	40+	740	42	5675.7

^a Few men aged 65-74 will have smoked for <20 years; the category only contained 212 person-years and no deaths. For the DPM input, we substituted zero person-years.

^b Few men aged 75+ will have smoked for <20 years; the category only contained 90 person-years and no deaths. For the DPM input, we substituted zero person-years.

[Table B4](#) shows the KP data by age and categories of years since quitting smoking as published by Friedman et al. For the DPM input, we adjusted inconsistencies in the mortality rates for two categories as described in the footnotes, below.

Table B4: Age-specific person-years, deaths and mortality rates in never smokers and former smokers by duration of quitting, based on data for men who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years quit	Person-years	Number of deaths	Mortality rate
35-49	Never	-	29,916	49	163.8
	Former	2-10	5,571	12	215.4
	Former	11-20	6,210	5 (9 ^a)	80.5 (144.9 ^a)
	Former	>20	1,149	3 (2 ^b)	261.1 (174.1 ^b)
50-64	Never	-	24,020	97	403.8
	Former	2-10	3,625	26	717.2
	Former	11-20	6,107	29	474.9
	Former	>20	4,670	19	406.9
65-74	Never	-	11,466	161	1404.2
	Former	2-10	977	14	1433.0
	Former	11-20	2,548	52	2040.8
	Former	>20	3,507	43	1226.1
75+	Never	-	4,486	203	4525.2
	Former	2-10	253	16	6324.1
	Former	11-20	671	40	5961.3
	Former	>20	1,442	67	4646.3

^a Friedman et al. reported 5 deaths (mortality rate = 80.5). However, this rate among former smokers of 11-20 years is much lower than the mortality rate among never smokers in the same age category. For DPM input, we increased the number of deaths to 9.

^b Friedman et al. reported 3 deaths (mortality rate = 261.1). However, this rate among former smokers of > 20 years is much higher than the mortality rate among former smokers of < 20 years in the same age category. For DPM input, we decreased the number of deaths to 2.

To create narrower age categories, we divided each of the first two age categories (35-49 and 50-64 years) along the respective category midpoints. The resulting categories were 35-42, 43-49, 50-56 and 57-64. Additionally, we divided the “years of smoking” categories (2-10 and 11-20 and >20 years) into smaller intervals along the respective category midpoints (1-10; 11-19; 20-29 and 30-39 years). The results are shown in [Table B5](#). With a few exceptions (see [footnotes to Table B5](#)), we allocated 40% of deaths to the younger age and shorter duration of smoking categories, and 60% of deaths to the older age and longer duration of smoking categories.

Table B5: Age-specific person-years and deaths in never smokers and current smokers by duration of smoking (divided age and smoking categories), based on data for men who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Person-years	Number of deaths
35-42	Never	-	14,958.0	19.6
	Current	1-10 ^a	-	-
	Current	11-19 ^a	2,970.0	6.4
	Current	20-29 ^b	7,281.5	19.2
	Current	30-39 ^b	-	-
43-49	Never	-	14,958.0	29.4
	Current	1-10 ^a	-	-
	Current	11-19 ^a	2970.0	9.6
	Current	20-29 ^b	7,281.5	28.8
	Current	30-39 ^b	-	-
50-56	Never	-	12,010.0	38.8
	Current	1-10 ^c	-	-
	Current	11-19 ^{c,d}	1,174.0	7.0
	Current	20-29 ^e	5,102.5	32.0
	Current	30-39	2551.3	19.2
	Current	40+	-	-
57-64	Never	-	12,010.0	58.2
	Current	1-10 ^c	-	-
	Current	11-19 ^{c,d}	-	-
	Current	20-29 ^e	-	-
	Current	30-39	2551.3	28.8
	Current	40+	4,367.0	74.0
65-74	Never	-	11,466.0	161.0
	Current	1-10	-	-
	Current	11-19	-	-
	Current	20-29 ^f	-	-
	Current	30-39 ^f	963.0	23.0
	Current	40+	3,285.0	80.0
75+	Never	-	4,486.0	203.0
	Current	1-10	-	-
	Current	11-19	-	-
	Current	20-29 ^f	-	-
	Current	30-39 ^f	138.0	12.0
	Current	40+	740.0	42.0

^a Person-years and deaths not divided between "years of smoking" categories 1-10 and 11-19. We assigned all to "years of smoking" category 11-19 years because few 35-49 year old men will have smoked for 10 or fewer years.

^b Person-years and deaths not divided between "years of smoking" categories 20-29 and 30-39. We assigned all to "years of smoking" category 20-29 years because few 35-49 year old men will have smoked for 30 or more years.

^c Person-years and deaths not divided between "years of smoking" categories 1-10 and 11-19. We assigned all to "years of smoking" category 11-19 years because few men aged 50-56 will have smoked for 10 or fewer years.

^d Person-years and deaths not divided between age categories 50-56 and 57-64. We assigned all to age category 50-56 because few 57-64 year old men will have smoked for less than 20 years.

^e Person-years and deaths not divided between age categories 50-56 and 57-64. We assigned all to age category 50-56 because few 57-64 year old men will have smoked for less than 30 years.

^f Person-years and deaths not divided between "years of smoking" categories 20-29 and 30-39. We assigned all to "years of smoking" category 30-39 years because few men aged 65 or above will have smoked for only 20-29 years.

To match age categories among current and former smokers, we also divided each of the first two age categories (35-49 and 50-64 years) along the respective category midpoints for the table containing results for former smokers. The results are shown in *Table B6*. With one exception (see footnote to *Table B6*), we allocated 40% of deaths to the younger age categories, and 60% of deaths to the older age categories.

Table B6: Age-specific person-years and deaths in never smokers and former smokers by duration of quitting (divided age categories), based on data for men who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years quit	Person-years	Number of deaths
35-42	Never	-	14,958.0	19.6
	Former	2-10	2,785.5	4.8
	Former	11-20	3,105.0	3.6
	Former	>20 ^a	-	-
43-49	Never	-	14,958.0	29.4
	Former	2-10	2,785.5	7.2
	Former	11-20	3,105.0	5.4
	Former	>20 ^A	1,149.0	2.0
50-56	Never	-	12,010.0	38.8
	Former	2-10	1,812.5	10.4
	Former	11-20	3,053.5	11.6
	Former	>20	2,335.0	7.6
57-64	Never	-	12,010.0	58.2
	Former	2-10	1,812.5	15.6
	Former	11-20	3,053.5	17.4
	Former	>20	2,335.0	11.4
65-74	Never	-	11,466.0	161.0
	Former	2-10	977.0	14.0
	Former	11-20	2,548.0	52.0
	Former	>20	3,507.0	43.0
75+	Never	-	4,486.0	203.0
	Former	2-10	253.0	16.0
	Former	11-20	671.0	40.0
	Former	>20	1,442.0	67.0

^a Person-years and deaths not divided between age categories 35-42 and 43-49; we assigned all to age category 43-49 because few 35-42 year old men will have quit for more than 20 years.

The KP data were not stratified by age-, duration of smoking- *and* years since quitting smoking. Therefore, we did the following:

- Excluded hypothetical category combinations that were likely to contain very few person-years or were impossible (shown as strikethroughs in [Table B7](#)). For example, a person who had smoked for 40+ years and had quit for more than 20 years could not be in the youngest age category.
- Within each remaining age and “years since quit” category, at most two categories of duration of smoking were likely or possible. If only one category of duration of smoking was possible, all deaths and person-years were counted toward that category. Otherwise, we split person-years evenly and allocated 40% of deaths to the shorter duration of smoking category and 60% of deaths to the longer duration of smoking category.
- Within each remaining category of age and “years since quit”, at most two age categories were likely or possible. If only one age category was possible, all deaths and person-years were counted toward that category. Otherwise, we split person-years evenly and allocated 40% of deaths to the younger age category and 60% of deaths to the older age category.
- For age, smoking duration and “years since quit” categories with upper bounds in the KP data, we entered the category midpoints.
- For the open-ended age category (75+ years) in the KP data, we entered age 80. This was because the life expectancy for US men who had reached the age of 75 in 2006 was 10 years; we used half that number as the category “midpoint”.
- The KP data included one open-ended category for duration of smoking, 40+ years. We omitted this category for persons aged <57 years. For age category 57-64 years, we used 45 years of smoking in the DPM; for age category 65-74 we used 50 years of smoking; and for ages 75+ we used 55 years of smoking, because men in the oldest age group are likely to have smoked for more than 40 years.
- For the open-ended “years since quitting” category in the KP data (>20 years), we used 26 years in the DPM.

Table B7: Age-specific person-years and deaths in never smokers and current smokers by age, duration of smoking *and* duration of quitting, (divided age and smoking categories, unlikely categories omitted^a), based on data for men who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Years quit	Person-years	Number of deaths
35-42	Never	-	-	14,958.0	19.6
	Current	1-10	-	-	-
	Former		2-10	1,392.8	1.9
	Former		11-20	3105.0	3.6
	Former		≥20	-	-
	Current	11-19	-	2,970.0	6.4
	Former		2-10	1,392.8	2.9
	Former		11-20	-	-
	Former		≥20	-	-
	Current	20-29	-	7,281.5	19.2
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	30-39	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
43-49	Never	-	-	14,958.0	29.4
	Current	1-10	-	-	-
	Former		2-10	1,392.8	2.9
	Former		11-20	3,105.0	5.4
	Former		>20	1,149.0	2.0
	Current	11-19	-	2,970.0	9.6
	Former		2-10	1,392.8	4.3
	Former		11-20	-	-
	Former		≥20	-	-
	Current	20-29	-	7,281.5	28.8
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	30-39	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
50-56	Never	-	-	12,010.0	38.8
	Current	1-10	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	11-19	-	1,174.0	7.0
	Former		2-10	-	-
	Former		11-20	1,526.8	4.6
	Former		>20	2,335.0	7.6

^a Crossed out categories were not used as input for the DPM.

Table B7, cont.: Age-specific person-years and deaths in never smokers and current smokers by age, duration of smoking *and* duration of quitting, (divided age and smoking categories, unlikely categories omitted^a), based on data for men who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Years quit	Person-years	Number of deaths
50-56	Current	20-29	-	5,102.5	32.0
	Former		2-10	906.3	4.2
	Former		11-20	1526.8	7.0
	Former		>20	-	-
	Current	30-39	-	2,551.3	19.2
	Former		2-10	906.3	6.2
	Former		11-20	-	-
	Former		>20	-	-
	Current	40+	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		>20	-	-
57-64	Never	-	-	12,010.0	58.2
	Current	1-10	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		>20	-	-
	Current	11-19	-	-	-
	Former		2-10	-	-
	Former		11-20	1,526.8	7.0
	Former		>20	2,335.0	11.4
	Current	20-29	-	-	-
	Former		2-10	906.3	6.2
	Former		11-20	1,526.8	10.4
	Former		>20	-	-
	Current	30-39	-	2551.3	28.8
	Former		2-10	906.3	9.4
	Former		11-20	-	-
	Former		>20	-	-
	Current	40+	-	4,367.0	74.0
	Former		2-10	-	-
	Former		11-20	-	-
	Former		>20	-	-
65-74	Never	-	-	11,466.0	161.0
	Current	1-10	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		>20	-	-
	Current	11-19	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		>20	-	-

^a Crossed out categories were not used as input for the DPM.

Table B7, cont.: Age-specific person-years and deaths in never smokers and current smokers by age, duration of smoking *and* duration of quitting, (divided age and smoking categories, unlikely categories omitted^a), based on data for men who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Years quit	Person-years	Number of deaths
75+	Current	20-29	-	-	-
	Former		2-10	-	-
	Former		11-20	1,274.0	20.8
	Former		>20	3,507.0	43.0
	Current	30-39	-	963.0	23.0
	Former		2-10	977.0	14.0
	Former		11-20	1,274.0	31.2
	Former		>20	-	-
	Current	40+	-	3,285.0	80.0
	Former		2-10	-	-
	Former		11-20	-	-
	Former		>20	-	-
	Never	-	-	4,486.0	203.0
	Current	1-10	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		>20	-	-
	Current	11-19	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		>20	-	-
	Current	20-29	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		>20	-	-
	Current	30-39	-	138.0	12.0
	Former		2-10	-	-
	Former		11-20	335.5	16.0
	Former		>20	1,442.0	67.0
	Current	40+	-	740.0	42.0
	Former		2-10	253.0	16.0
	Former		11-20	335.5	24.0
	Former		>20	-	-

^a Crossed out categories were not used as input for the DPM.

Follow-up in the KP cohort study was short, and age-specific mortality rates were low compared to age-specific mortality rates reported by the US Census for 2000⁴. To adjust for this, we calculated the ratio of the US and KP-based mortality rates in each age category (*Table B8*). Within each age category, we multiplied all smoking-specific deaths by the resulting factor as follows: For the first 3 age categories, we used a common value of 1.7 as the multiplier; for the last age category we used the actual value of 1.2.

Table B8: US and KP-based age-specific mortality rates and their ratio for men

US		KP		US rates for KP age categories		Ratio of US mortality rates (for KP categories) to KP-based mortality rates
Age	Mortality rate (per 100,000)	Age	Mortality rate (per 100,000) ^a	Age	Mortality rate (per 100,000)	
25-44	269.8					
		35-49	214.7	35-49	488.0 ^b	2.3
45-64	924.5	50-64	612.9	50-64	1,100.0 ^c	1.8
		65-74	1,639.9	65-74	2835.3 ^d	1.7
65+	5,670.6	75+	4,915.9	75+	5,670.6 ^e	1.2

^aBased on deaths and person-years from *Table B7* (136/63,349.2=214.7 per 100,000; 332/54,168.5=612.9 per 100,000; 373/22,746=1,639.9 per 100,000; 380/7,730=4,915.8 per 100,000)

^bKP age category 35-49 overlaps with US age categories 25-44 and 45-64; we used the weighted average of US mortality rates 269.8 and 924.5 with weights proportional to the time of overlap (10×269.8+5×924.5)/15=488).

^cKP category 50-64 does not include ages 45-49, where mortality rates are lower; we increased the US mortality rate of 924.5 by ≈20%.

^dUS category 65+ includes persons older than 74 with higher mortality rates; we used 50% of the US mortality rate of 5,670.6.

^eWe used the US mortality rate of 5,670.6 for KP category 75+.

Table B9 shows the final adjusted KP-based data set used as input to calculate mortality rates for the base case in the DPM.

⁴ http://www.allcountries.org/uscensus/129_death_and_death_rates_by_age.html

Table B9: DPM input data for men: Deaths from [Table B7](#) increased by 170% for age categories 35-49, 50-64 and 65-74 and 120% for age categories 65-74 and 75+

Age (years)	Cigarette smoking status	Years smoked	Years quit	Person-years	Number of deaths
39.0	Never	0	0	14,958.0	33.3
	Former	5	6	1,392.8	3.2
	Former	5	16	3,105.0	6.1
	Current	15	0	2,970.0	10.9
	Former	15	6	1,392.8	4.9
	Current	25	0	7,281.5	32.6
46.5	Never	0	0	14,958.0	50.0
	Former	5	6	1,392.8	4.9
	Former	5	16	3,105.0	9.2
	Former	5	26	1,149.0	3.4
	Current	15	0	2,970.0	16.3
	Former	15	6	1,392.8	7.3
	Current	25	0	7,281.5	49.0
53.5	Never	0	0	12,010.0	66.0
	Current	15	0	1,174.0	11.9
	Former	15	16	1,526.8	7.8
	Former	15	26	2,335.0	12.9
	Current	25	0	5,102.5	54.4
	Former	25	6	906.3	7.1
	Former	25	16	1,526.8	11.9
	Current	35	0	2,551.3	32.6
	Former	35	6	906.3	10.5
61.0	Never	0	0	12,010.0	98.9
	Former	15	16	1,526.8	11.9
	Former	15	26	2,335.0	19.4
	Former	25	6	906.3	10.5
	Former	25	16	1,526.8	17.7
	Current	35	0	2,551.3	49.0
	Former	35	6	906.3	16.0
	Current	45	0	4,367.0	125.8
70.0	Never	0	0	11,466.0	273.7
	Former	25	16	1,274.0	35.4
	Former	25	26	3,507.0	73.1
	Current	35	0	963.0	39.1
	Former	35	6	977.0	23.8
	Former	35	16	1,274.0	53.0
	Current	50	0	3,285.0	136.0
80.0	Never	0	0	4,486.0	243.6
	Current	35	0	138.0	14.4
	Former	35	16	335.5	19.2
	Former	35	26	1,442.0	80.4
	Current	55	0	740.0	50.4
	Former	55	6	253.0	19.2
	Former	55	16	335.5	28.8

Mortality rates for the base case – women

To calibrate the DPM for women, we used data from the Kaiser Permanente (KP) cohort study, which included about 36,000 women ages 35 and older, who entered the cohort between 1979 and 1986 and were followed for mortality through 1987. Published data provided person-years and deaths stratified separately by a) categories of age and years of smoking; and b) categories of age and years since quitting smoking (Friedman et al., 1997)⁵. For the prior distributions of the core Poisson model coefficients, we again used non-informative normal distributions with mean 0 and standard deviation 100. As a reminder, while the KP data were used to develop the structure of the Poisson model, mortality data by age, years of exposure (in this example, to smoking) and years since exposure cessation (i.e., quitting smoking) from any population can be used in the DPM.

As for men, to use the KP data for women with the DPM, some adjustments were necessary. The published KP data are shown in [Table B10](#) and our adjustments are described in the footnotes.

⁵ Friedman G, Tekawa IS, Sadler M, Sidney S. Smoking and mortality: the Kaiser Permanente experience. In: Shopland DR, Burns DM, Garfinkel L, Samet J, editors. Changes in Cigarette-Related Disease Risks and Their Implication for Prevention and Control. Rockville, MD: US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute. 1997; 477-99.

Table B10: Age-specific person-years, deaths and mortality rates in never smokers and current smokers by duration of smoking, based on data for women who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Person-years	Number of deaths	Mortality rate (per 100,000)
35-49	Never	-	45,768.0	37	80.8
	Current	<20	8,962.0	8	89.3
	Current	20-39	15,162.0	28	184.7
50-64	Never	-	49,744.0	118	237.2
	Current	<20	2,454.0	5 (6 ^a)	203.7 (244.5)
	Current	20-39	14,115.0	56	396.7
	Current	40+	3,761.0	40	1063.5
65-74	Never	-	24,159.0	171	707.8
	Current	<20	502.0	6	1,195.2
	Current	20-39	2,125.0	39	1,835.3
	Current	40+	4,236.0	64	1,510.9
75+	Never	-	12,285.0	299	2,433.9
	Current	<20	100.0	3	3,000.0
	Current	20-39	366.0	10	2,732.2
	Current	40+	830.0	30	3,614.5

^a Friedman et al. reported 5 deaths (mortality rate=203.7). However, this rate among current smokers of <20 years is lower than the mortality rate among never smokers in the same age category. For DPM input, we increased the number of deaths to 6 resulting in a mortality rate of 244.5.

[Table B11](#) shows the KP data for women by age and categories of years since quitting smoking as published by Friedman et al. For the DPM input, we adjusted inconsistencies in the mortality rates for several categories as described in the footnotes, below.

Table B11: Age-specific person-years, deaths and mortality rates in never smokers and former smokers by duration of quitting, based on data for women who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years quit	Person-years	Number of deaths	Mortality rate (per 100,000)
35-49	Never	-	45,768.0	37	80.8
	Former	2-10	5,493.0	0 (4 ^a)	0 (72.8)
	Former	11-20	6,027.0	4 (5 ^b)	66.4 (83.0)
	Former	>20	1,279.0	2 (1 ^c)	156.4 (78.2)
50-64	Never	-	49,744.0	118	237.2
	Former	2-10	3,750.0	15	400.0
	Former	11-20	5,467.0	16	292.7
	Former	>20	4,405.0	7 (11 ^d)	158.9 (249.7)
65-74	Never	-	24,159.0	171	707.8
	Former	2-10	1,572.0	15	954.2
	Former	11-20	2,505.0	21	838.3
	Former	>20	2,641.0	20	757.3
75+	Never	-	12,285.0	299	2,433.9
	Former	2-10	394.0	15	3,807.1
	Former	11-20	722.0	23	3,185.6
	Former	>20	852.0	27	3,169.0

^a Friedman et al. reported 0 deaths. However, this rate among former smokers of 2-10 years is lower than the mortality rate among never smokers in the same age category. For DPM input, we increased the number of deaths to 4.

^b Friedman et al. reported 4 deaths (mortality rate=66.4). However, this rate among former smokers of 11-20 years is lower than the mortality rate among former smokers of >20 years in the same age category. For DPM input, we increased the number of deaths to 5.

^c Friedman et al. reported 2 deaths (mortality rate=156.4). However, this rate among former smokers of >20 years is much higher than the mortality rate among former smokers of 2-10 years in the same age category. For DPM input, we decreased the number of deaths to 1.

^d Friedman et al. reported 7 deaths (mortality rate=158.9). However, this rate among former smokers of >20 years is lower than the mortality rate among never smokers in the same age category. For DPM input, we increased the number of deaths to 11.

As for the men, to create narrower age categories for the women, we divided each of the first two age categories along the respective category midpoints. Additionally, we divided the “years of smoking” categories into smaller intervals along the respective category midpoints. The results are shown in [Table B12](#). With a few exceptions (see [footnotes](#) to [Table B12](#)), we allocated 40% of deaths to the younger age and shorter duration of smoking categories, and 60% of deaths to the older age and longer duration of smoking categories.

Table B12: Age-specific person-years and deaths in never smokers and current smokers by duration of smoking (divided age and smoking categories), based on data for women who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Person-years	Number of deaths
35-42	Never	-	22,884.0	14.8
	Current	1-10 ^a	-	-
	Current	11-19 ^a	4,481.0	3.2
	Current	20-29 ^b	7,581.0	11.2
	Current	30-39 ^b	-	-
43-49	Never	-	22,884.0	22.2
	Current	1-10 ^a	-	-
	Current	11-19 ^a	4,481.0	4.8
	Current	20-29 ^b	7,581.0	16.8
	Current	30-39 ^b	-	-
50-56	Never	-	24,872.0	47.2
	Current	1-10 ^c	-	-
	Current	11-19 ^{c,d}	2,454.0	6.0
	Current	20-29 ^e	7,057.5	22.4
	Current	30-39	3,528.8	13.4
	Current	40+	-	-
57-64	Never	-	24,872.0	70.8
	Current	1-10 ^c	-	-
	Current	11-19 ^{c,d}	-	-
	Current	20-29 ^e	-	-
	Current	30-39	3,528.8	20.2
	Current	40+	3,761.0	40.0
65-74	Never	-	24,159.0	171.0
	Current	1-10 ^f	-	-
	Current	11-19 ^{f,g}	502.0	6.0
	Current	20-29 ^h	-	-
	Current	30-39 ^h	2,125.0	39.0
	Current	40+	4,236.0	64.0
75+	Never	-	12,285.0	299.0
	Current	1-10 ^f	-	-
	Current	11-19 ^{f,g}	100.0	3.0
	Current	20-29 ^h	-	-
	Current	30-39 ^h	366.0	10.0
	Current	40+	830.0	30.0

^a Person-years and deaths not divided between “years of smoking” categories 1-10 and 11-19. We assigned all to “years of smoking” category 11-19 years because few 35-49 year old women will have smoked for 10 or fewer years.

^b Person-years and deaths not divided between “years of smoking” categories 20-29 and 30-39. We assigned all to “years of smoking” category 20-29 years because few 35-49 year old women will have smoked for 30 or more years.

^c Person-years and deaths not divided between “years of smoking” categories 1-10 and 11-19. We assigned all to “years of smoking” category 11-19 years because few 50-56 year old women will have smoked for 10 or fewer years.

^d Person-years and deaths not divided between age categories 50-56 and 57-64. We assigned all age category 50-56 because few 57-64 year old women will have smoked for less than 20 years.

^e Person-years and deaths not divided between age categories 50-56 and 57-64. We assigned all age category 50-56 because few 57-64 year old women will have smoked for less than 30 years.

^f Person-years and deaths not divided between "years of smoking" categories 1-10 and 11-19. We assigned all to "years of smoking" category 11-19 years because few women aged 65 or above will have smoked for only 1-10 years.

^g Very few person years and deaths; very unlikely for older women to have only smoked for 11-20 years; person years and deaths are not used for DPM.

^h Person-years and deaths not divided between "years of smoking" categories 20-29 and 30-39. We assigned all to "years of smoking" category 30-39 years because few women aged 65 or above will have smoked for only 20-29 years.

To match age categories among current and former smokers, we also divided each of the first two age categories (35-49 and 50-64 years) along the respective category midpoints for the table containing results for former smokers. The results are shown in [Table B13](#). With one exception (see [footnote](#) to [Table B13](#)), we allocated 40% of deaths to the younger age categories, and 60% of deaths to the older age categories.

Table B13: Age-specific person-years and deaths in never smokers and former smokers by duration of quitting (divided age categories), based on data for women who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years quit	Person-years	Number of deaths
35-42	Never	-	22,884.0	14.8
	Former	2-10	2,746.5	1.6
	Former	11-20	3,013.5	2.0
	Former	>20 ^a	-	-
43-49	Never	-	22,884.0	22.2
	Former	2-10	2,746.5	2.4
	Former	11-20	3,013.5	3.0
	Former	>20 ^a	1,279.0	1.0
50-56	Never	-	24,872.0	47.2
	Former	2-10	1,875.0	6.0
	Former	11-20	2,733.5	6.4
	Former	>20	2,202.5	4.4
57-64	Never	-	24,872.0	70.8
	Former	2-10	1,875.0	9.0
	Former	11-20	2,733.5	9.6
	Former	>20	2,202.5	6.6
65-74	Never	-	24,159.0	171.0
	Former	2-10	1,572.0	15.0
	Former	11-20	2,505.0	21.0
	Former	>20	2,641.0	20.0
75+	Never	-	12,285.0	299.0
	Former	2-10	394.0	15.0
	Former	11-20	722.0	23.0
	Former	>20	852.0	27.0

^a Person-years and deaths not divided between age categories 35-42 and 43-49. We assigned all to age category 43-49 because few 35-42 year old women will have quit for more than 20 years.

The KP data for women were not stratified by age-, duration of smoking- *and* years since quitting smoking. As for the men, we did the following for the women:

- Excluded hypothetical category combinations that were likely to contain very few person-years or were impossible (shown as strikethroughs in [Table B14](#)). For example, a person who had smoked for 40+ years and had quit for more than 20 years could not be in the youngest age category.
- Within each remaining age and “years since quit” category, at most two categories of duration of smoking were likely or possible. If only one category of duration of smoking was possible, all deaths and person-years were counted toward that category. Otherwise, we split person-years evenly and allocated 40% of deaths to the shorter duration of smoking category and 60% of deaths to the longer duration of smoking category.
- Within each remaining category of age and “years since quit”, at most two age categories were likely or possible. If only one age category was possible, all deaths and person-years were counted toward that category. Otherwise, we split person-years evenly and allocated 40% of deaths to the younger age category and 60% of deaths to the older age category.
- For age, smoking duration and “years since quit” categories with upper bounds in the KP data, we entered the category midpoints.
- For the open-ended age category (75+ years) in the KP data, we entered age 80. This was because the life expectancy for US men who had reached the age of 75 in 2006 was 10 years; we used half that number as the category “midpoint”.
- The KP data included one open-ended category for duration of smoking, 40+ years. We omitted this category for persons aged <57 years. For age category 57-64 years, we used 45 years of smoking in the DPM; for age category 65-74 we used 50 years of smoking; and for ages 75+ we used 55 years of smoking, because men in the oldest age group are likely to have smoked for more than 40 years.
- For the open-ended “years since quitting” category in the KP data (>20 years), we used 26 years in the DPM.

Table B14: Age-specific person-years and deaths in never smokers and current smokers by age, duration of smoking *and* duration of quitting (divided age and smoking categories, unlikely categories omitted^a), based on data for women who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Years quit	Person-years	Number of deaths
35-42	Never	-	-	22,884.0	14.8
	Current	1-10	-	-	-
	Former		2-10	1,373.3	0.6
	Former		11-20	3,013.5	2.0
	Former		≥20	-	-
	Current	11-19	-	4,481.0	3.2
	Former		2-10	1,373.3	1.0
	Former		11-20	-	-
	Former		≥20	-	-
	Current	20-29	-	7,581.0	11.2
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	30-39	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
43-49	Never	-	-	22,884.0	22.2
	Current	1-10	-	-	-
	Former		2-10	1,373.3	1.0
	Former		11-20	3,013.5	3.0
	Former		≥20	1,279.0	1.0
	Current	11-19	-	4,481.0	4.8
	Former		2-10	1,373.3	1.4
	Former		11-20	-	-
	Former		≥20	-	-
	Current	20-29	-	7,581.0	16.8
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	30-39	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-

^a Crossed out categories were not used as input for the DPM.

Table B14 cont.: Age-specific person-years and deaths in never smokers and current smokers by age, duration of smoking *and* duration of quitting (divided age and smoking categories, unlikely categories omitted^a), based on data for women who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Years quit	Person-years	Number of deaths
50-56	Never	-	-	24,872.0	47.2
	Current	1-10	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	11-19	-	2,454.0	6.0
	Former		2-10	-	-
	Former		11-20	1,366.8	2.6
	Former		>20	2,202.5	4.4
	Current	20-29	-	7,057.5	22.4
	Former		2-10	937.5	2.4
	Former		11-20	1,366.8	3.8
	Former		≥20	-	-
	Current	30-39	-	3,528.8	13.4
	Former		2-10	937.5	3.6
	Former		11-20	-	-
	Former		≥20	-	-
	Current	40+	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
57-64	Never	-	-	24,872.0	70.8
	Current	1-10	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	11-19	-	-	-
	Former		2-10	-	-
	Former		11-20	1,366.8	3.8
	Former		>20	2,202.5	6.6
	Current	20-29	-	-	-
	Former		2-10	937.5	3.6
	Former		11-20	1,366.8	5.8
	Former		≥20	-	-

^a Crossed out categories were not used as input for the DPM.

Table B14 cont.: Age-specific person-years and deaths in never smokers and current smokers by age, duration of smoking *and* duration of quitting (divided age and smoking categories, unlikely categories omitted^a), based on data for women who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Years quit	Person-years	Number of deaths
57-64	Current	30-39	-	3,528.8	20.2
	Former		2-10	937.5	5.4
	Former		11-20	-	-
	Former		≥20	-	-
	Current	40+	-	3,761.0	40.0
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
65-74	Never	-	-	24,159.0	171.0
	Current	1-10	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	11-19	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	20-29	-	-	-
	Former		2-10	-	-
	Former		11-20	1,252.5	8.4
	Former		>20	2,641.0	20.0
	Current	30-39	-	2,125.0	39.0
	Former		2-10	1,572.0	15.0
	Former		11-20	1,252.5	12.6
	Former		≥20	-	-
	Current	40+	-	4,236.0	64.0
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
75+	Never	-	-	12,285.0	299.0
	Current	1-10	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-

^a Crossed out categories were not used as input for the DPM.

Table B14 cont.: Age-specific person-years and deaths in never smokers and current smokers by age, duration of smoking *and* duration of quitting (divided age and smoking categories, unlikely categories omitted^a), based on data for women who participated in the Kaiser-Permanente (KP) cohort study

Age (years)	Cigarette smoking status	Years smoked	Years quit	Person-years	Number of deaths
75+	Current	11-19	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	20-29	-	-	-
	Former		2-10	-	-
	Former		11-20	-	-
	Former		≥20	-	-
	Current	30-39	-	366.0	10.0
	Former		2-10	-	-
	Former		11-20	361.0	9.2
	Former		>20	852.0	27.0
	Current	40+	-	830.0	30.0
	Former		2-10	394.0	15.0
	Former		11-20	361.0	13.8
	Former		≥20	-	-

^a Crossed out categories were not used as input for the DPM.

Follow-up in the KP cohort study was short, and age-specific mortality rates were low compared to age-specific mortality rates reported by the US Census for 2000⁶. To adjust for this, we calculated the ratio of the US and KP-based mortality rates in each age category (Table B15). Within each age category, we initially multiplied all smoking-specific deaths by the resulting factor. However, the best model calibration (i.e. the best approximation of population life table values) was achieved for ratios of US mortality rates (for KP categories) to KP-based mortality rates of 1.6 for the first age category and 2.0 for the remaining 3 age categories. Poisson model fit was excellent based on these adjustment factors. Although these ratios are slightly different from the results shown in Table B15, they were used to calculate the values in Table B16.

⁶ http://www.allcountries.org/uscensus/129_death_and_death_rates_by_age.html

Table B15: US and KP-based age-specific mortality rates and their ratio

US		KP		US rates for KP age categories		Ratio of US mortality rates (for KP categories) to KP-based mortality rates
Age	Mortality rate (per 100,000)	Age	Mortality rate (per 100,000)	Age	Mortality rate (per 100,000)	
25-44	114.8					
		35-49	100.4	35-49	256.0 ^a	2.5
45-64	538.5	50-64	313.0	50-64	646.2 ^b	2.1
		65-74	886.2	65-74	2313.3 ^c	2.6
65+	4626.6	75+	2615.1	75+	4626.6 ^d	1.8

^a KP age category 35-49 overlaps with US age categories 25-44 and 45-64; we used the weighted average of US mortality rates 114.8 and 538.5 with weights proportional to the time of overlap.

^b KP age category 50-64 does not include ages 45-49, where mortality rates are lower; we increased the US mortality rate of 538.5 by ≈20%.

^c US category 65+ includes persons older than 74 with higher mortality rates; we used 50% of the US mortality rate of 4626.6. We used the US mortality rate of 4626.6 for KP category 75+

Table B16: DPM input data for women: Deaths from [Table B14](#) increased by 160% for age category 35-49 and 200% for age categories 50-64, 65-74 and 75+

Age (years)	Cigarette smoking status	Years smoked	Years quit	Person-years	Number of deaths
39.0	Never	0	0	22,884.0	23.68
	Former	5	6	1,373.3	0.96
	Former	5	16	3,013.5	3.20
	Current	15	0	4,481.0	5.12
	Former	15	6	1,373.3	1.60
	Current	25	0	7,581.0	17.92
46.5	Never	0	0	22,884.0	35.52
	Former	5	6	1,373.3	1.60
	Former	5	16	3,013.5	4.80
	Former	5	26	1,279.0	1.60
	Current	15	0	4,481.0	7.68
	Former	15	6	1,373.3	2.24
	Current	25	0	7,581.0	26.88
53.5	Never	0	0	24,872.0	94.4
	Current	15	0	2,454.0	12.0
	Former	15	16	1,366.8	5.2
	Former	15	26	2,202.5	8.8
	Current	25	0	7,057.5	44.8
	Former	25	6	937.5	4.8
	Former	25	16	1,366.8	7.6
	Current	35	0	3,528.8	26.8
	Former	35	6	937.5	7.2
61.0	Never	0	0	24,872.0	141.6
	Former	15	16	1,366.8	7.6
	Former	15	26	2,202.5	13.2
	Former	25	6	937.5	7.2
	Former	25	16	1,366.8	11.6
	Current	35	0	3,528.8	40.4
	Former	35	6	937.5	10.8
	Current	45	0	3,761.0	80.0
70.0	Never	0	0	24,159.0	342.0
	Former	25	16	1,252.5	16.8
	Former	25	26	2,641.0	40.0
	Current	35	0	2,125.0	78.0
	Former	35	6	1,572.0	30.0
	Former	35	16	1,252.5	25.2
	Current	50	0	4,236.0	128.0
80.0	Never	0	0	12,285.0	598.0
	Current	35	0	366.0	20.0
	Former	35	16	361.0	18.4
	Former	35	26	852.0	54.0
	Current	55	0	830.0	60.0
	Former	55	6	394.0	30.0
	Former	55	16	361.0	27.6

Appendix C: Methods Used for Sensitivity Analyses for the Secondary Harmful Transition 'Relapse'

Introduction

Modeling 'relapse' from MRTP use to smoking among base case smoking quitters in the same age category in which switching to MRTP use occurred is not possible in the DPM(+1). Here, we provide a brief overview of the approach we used to approximate this transition.

Methods

A portion of base case smoking quitters who instead switch to MRTP use in the counterfactual scenario may 'relapse' to smoking within the same age interval. The resulting effect on survival cannot be directly assessed within DPM(+1) models because individuals can transition between exposure states only once in each age interval. Instead, the effect can be estimated by comparing survival in two counterfactual scenarios. The first counterfactual scenario models 'relapse' by treating those base case smoking quitters who instead switch to MRTP use and then relapse to smoking within the same age category as never having quit smoking. Because the decrease in smoking cessation affects the counterfactual scenario and the base case, comparisons between them are uninformative. Instead, survival in the counterfactual scenario is compared directly to survival in a second counterfactual scenario where no 'relapse' takes place. Specifically,

- Model A: Model of interest (e.g., the master model); no 'relapse'
- Model B: Model A with 'relapse'
 - Implemented by reducing smoking cessation
 - Because smoking cessation is reduced and, therefore, the number of former smokers is decreased compared to model A, other transition probabilities must also be adjusted
 - Results for the base case and results for the difference between the counterfactual scenario and the base case are ignored
- The number of survivors is compared between the two counterfactual scenarios, model A versus model B
- In this way, the effect of 'relapse' on the results for model A is estimated
 - Note that this approach does not provide variability estimates for the comparison between the two counterfactual scenarios

Derivation of the transition probabilities for model B

Results for the counterfactual scenario in model B must approximate results from a hypothetical model run, where a portion of base case smoking quitters who switch to MRTP use in the counterfactual scenario relapse to smoking within the same age category. A simple illustration is shown below.

Illustrative example 1

This example assumes that it is possible to model switching from smoking to MRTP use among base case smoking quitters followed by relapse to smoking in the same age category. Hypothetical transition probabilities are defined for illustrative purposes.

Hypothetical transition probabilities affecting base case and counterfactual scenario

- $1 - (\text{smoking cessation}) = (\text{continued smoking}) = 0.9$

Hypothetical transition probabilities affecting only the counterfactual scenario

- ('switching') = 0.3
- ('diversion from quitting') = 0.4
- ('relapse') = 0.5¹

The following simplifying assumptions are made:

- The population is followed for three age categories
- 100,000 smokers are added in age category 1; no smokers are added in age categories 2 or 3
- There are no deaths

The results for the counterfactual scenario are shown in [Table C1](#) below. At the end of age category 2, of the $100,000 \times 0.9 = 90,000$ potential continuing smokers, 70% (63,000) continue to smoke but 30% (27,000) switch to MRTP use. Of the $100,000 \times 0.1 = 10,000$ potential smoking quitters, 60% (6,000) quit smoking, 20% (2,000) switch to MRTP use and continue MRTP use and 20% (2,000) switch to MRTP use but 'relapse' in the same age category. Therefore, there are 65,000 smokers (63,000+2,000), 6,000 former smokers, 27,000 MRTP users who would have continued to smoke in the base case and 2,000 MRTP users who would have quit smoking in the base case. At the end of age category 3, of the $0.9 \times 65,000 = 58,500$ potential continuing smokers, 70% (40,950) continue to smoke but 30% (17,550) switch to MRTP use. Of the $0.1 \times 65,000 = 6,500$ potential smoking quitters, 60% (3,900) quit smoking, 20% (1,300) switch to MRTP use and continue MRTP use and 20% (1,300) switch to MRTP use and right back to smoking. Therefore, there are 42,250 smokers (40,950+1,300), 3,900 former smokers, 17,550 MRTP users who would have continued to smoke in the base case and 1,300 MRTP users who would have quit smoking in the base case.

Illustrative example 2

This example assumes that it is not possible to model switching from smoking to MRTP use among base case smoking quitters followed by relapse to smoking in the same age category. Instead, the approach described above for model B is used to match the results from illustrative example 1. This is accomplished by reducing smoking cessation and increasing continued smoking. The same simplifying assumptions are made as in illustrative example 1 and the following transition probabilities are defined:

Hypothetical transition probabilities affecting base case and counterfactual scenario

- $1 - \hat{(\text{smoking cessation})} = \hat{(\text{continued smoking})}$

Hypothetical transition probabilities affecting only the counterfactual scenario

- $\hat{(\text{'diversion from quitting'})}$
- $\hat{(\text{'switching'})}$

To match the number of smokers in illustrative example 1, the probability of continued smoking must incorporate

- The probability of continued smoking in illustrative example 1; and
- The probability of 'relapse' (among base case smoking quitters who diverted to MRTP use) in illustrative example 1

¹ 'Relapse' occurs in the same age category as 'diversion from quitting'

If \hat{p} refers to transition probabilities representing illustrative example 1 and \hat{q} refers to transition probabilities representing illustrative example 2, then the probability of continued smoking in illustrative example 2 can be expressed as

$$\hat{p}(\text{continued smoking}) = (\text{continued smoking}) + (\text{smoking cessation}) \times (\text{'diversion from quitting'}) \times (\text{'relapse'})$$

Using the transition probabilities from illustrative example 1,

$$\hat{p}(\text{continued smoking}) = 0.9 + 0.1 \times 0.4 \times 0.5 = 0.92$$

Therefore, there are $100,000 \times 0.92 = 92,000$ potential continuing smokers and $100,000 \times 0.08 = 8,000$ potential smoking quitters in age category 2. To match the results in illustrative example 1, the 8,000 potential smoking quitters must be divided into 6000 former smokers and 2,000 MRTTP users. This can be accomplished by choosing $\hat{q}(\text{'diversion from quitting'})$ such that

$$8,000 \times \hat{q}(\text{'diversion from quitting'}) = 2,000$$

or,

$$\hat{q}(\text{'diversion from quitting'}) = \frac{2,000}{8,000} = 0.25$$

More generally,

$$\hat{p}(\text{smoking cessation}) \times \hat{q}(\text{'diversion from quitting'}) = (\text{smoking cessation}) \times (\text{'diversion from quitting'}) \times (1 - (\text{'relapse'}))$$

which can be rewritten as

$$\hat{q}(\text{'diversion from quitting'}) = \frac{1}{\hat{p}(\text{smoking cessation})} \times [(\text{smoking cessation}) \times (\text{'diversion from quitting'}) \times (1 - (\text{'relapse'}))]$$

Using the hypothetical transition probabilities defined above,

$$\hat{q}(\text{'diversion from quitting'}) = \frac{1}{0.08} \times [0.1 \times 0.4 \times 0.5] = 0.25$$

Therefore, there are $100,000 \times 0.08 \times 0.25 = 2,000$ MRTTP users (and 6,000 former smokers) at the end of age category 2. This matches the results in illustrative example 1.

Similarly, to match the results in illustrative example 1, the 92,000 potential continuing smokers must be divided into 65,000 continuing smokers and 27,000 MRTTP users. This can be accomplished by choosing $\hat{q}(\text{'switching'})$ such that

$$92,000 \times \hat{q}(\text{'switching'}) = 27,000$$

or,

$$\hat{q}(\text{'switching'}) = \frac{27,000}{92,000} \approx 0.2935$$

More generally,

$$\hat{(continued\ smoking)} \times \hat{('switching')} = (continued\ smoking) \times ('switching')$$

which can be rewritten as

$$\hat{('switching')} = \frac{1}{\hat{(continued\ smoking)}} \times [(continued\ smoking) \times ('switching')]$$

Using the hypothetical transition probabilities defined above,

$$\hat{('switching')} = \frac{1}{0.92} \times [0.9 \times 0.3] \approx 0.2935$$

Therefore, there are $100,000 \times 0.92 \times 0.2935 \approx 27,000$ MRTP users (and 65,000 continuing smokers) at the end of age category 2. This matches the results in illustrative example 1.

At the end of age category 3, of the $65,000 \times 0.92 = 59,800$ potential continuing smokers, 70.65% ($\approx 42,250$) continue to smoke but 29.35% ($\approx 17,550$) switch to MRTP use. Of the $65,000 \times 0.08 = 5,200$ potential smoking quitters, 75% (3,900) quit smoking and 25% (1,300) switch to MRTP use. This matches the results in illustrative example 1.

Using the approach in the DPM(+1)

Transition probabilities for continued smoking, 'switching' and 'diversion from quitting' were calculated based on the formulas derived above under the assumption of 50% 'relapse'² ([Table C2](#)). The resulting transition probabilities were used to estimate the effect of 50% 'relapse' on the number of survivors at the end of age category 68-72 years for the 'master model', the 'master model' without 'alternative initiation', the model containing only 'diversion from quitting' and the tipping point analysis for the 'master model' without 'alternative initiation'. The results are shown in [Tables C3-C6](#) and are interpreted below.³

For the 'master model' (no 'relapse'), for an ERR of 0.08, there were 685,868 survivors in the counterfactual scenario at the end of age category 68-72 years. After incorporating 50% 'relapse', the number of survivors decreased to 684,669 (a difference of 1,199 survivors). Consequently, 50% 'relapse' decreased the survival benefit of the 'master model' from 7,374 to 6,175 additional survivors ([Table C3](#)).

For an ERR of 0.11, there were 685,313 survivors in the counterfactual scenario of the 'master model' at the end of age category 68-72 years. After incorporating 50% 'relapse', the number of survivors decreased to 684,169 (a difference of 1,144 survivors). Consequently, 50% 'relapse' decreased the survival benefit of the 'master model' from 6,819 to 5,675 additional survivors ([Table C3](#)).

For the 'master model' without 'alternative initiation' (no relapse), for an ERR of 0.08, there were 685,847 survivors in the counterfactual scenario at the end of age category 68-72 years. After incorporating 50% 'relapse', the number of survivors decreased to 684,638 (a difference of 1,209 survivors). Consequently, 50% 'relapse' decreased the survival benefit of the 'master model' without 'alternative initiation' from 7,353 to 6,144 additional survivors ([Table C4](#)).

² 'Relapse' occurs in the same age category as 'diversion from quitting'

³ The numbers of survivors are shown for all age categories in [Tables E_C3-E_C6](#) in [Appendix E](#). Results for LE and QALE are available upon request.

For an ERR of 0.11, there were 685,298 survivors in the counterfactual scenario of the 'master model' without 'alternative initiation' at the end of age category 68-72 years. After incorporating 50% 'relapse', the number of survivors decreased to 684,144 (a difference of 1,154 survivors). Consequently, 50% 'relapse' decreased the survival benefit of the 'master model' without 'alternative initiation' from 6,804 to 5,650 ([Table C4](#)).

For the model including only 'diversion from quitting' (no 'relapse'), for an ERR of 0.08, there were 678,104 survivors in the counterfactual scenario at the end of age category 68-72 years. After incorporating 50% 'relapse', the number of survivors decreased to 676,602 (a difference of 1,502 survivors). Consequently, 50% 'relapse' increased the survival deficit of the model including only 'diversion from quitting' from 390 to 1,892 fewer survivors ([Table C5](#)).

For an ERR of 0.11, there were 677,966 survivors in the counterfactual scenario of the model including only 'diversion from quitting' at the end of age category 68-72 years. After incorporating 50% 'relapse', the number of survivors decreased to 676,531 (a difference of 1,435 survivors). Consequently, 50% 'relapse' increased the survival deficit of the model including only 'diversion from quitting' from 529 to 1,964 fewer survivors ([Table C5](#)).

For the tipping point analysis for the 'master model' without 'alternative initiation' (no relapse), for an ERR of 0.08, the number of survivors in the counterfactual scenario at the end of age category 68-72 years ranged from 677,723 for 0% 'switching' to 680,101 for 1.5% 'switching'. After incorporating 50% 'relapse', the number of survivors ranged from 676,223 for 0% 'switching' to 678,713 for 1.5% 'switching' (differences of 1,500 and 1,388, respectively). Consequently, 50% 'relapse' increased the survival deficit for 0% 'switching' from 771 to 2,271 fewer survivors and decreased the survival benefit for 1.5% 'switching' from 1,609 to 219 additional survivors ([Table C6](#)). Higher proportions of switching were not investigated because the tipping point fell below 1.5%.

For an ERR of 0.11, the number of survivors in the counterfactual scenario of the 'master model' without alternative initiation ranged from 677,551 for 0% 'switching' to 679,822 for 1.5% 'switching'. After incorporating 50% 'relapse', the number of survivors ranged from 676,118 for 0% 'switching' to 678,497 for 1.5% 'switching' (differences of 1,433 and 1,325, respectively). Consequently, 50% 'relapse' increased the survival deficit for 0% 'switching' from 943 to 2,376 fewer survivors and decreased the survival benefit for 1.5% 'switching' from 1,328 to 3 additional survivors([Table C6](#)). Higher proportions of switching were not investigated because the tipping point fell below 1.5%.

Conclusions

We developed a method to estimate the effect of 'relapse'⁴ on 'net' population survival by comparing two counterfactual scenarios. We used this approach to estimate the effect of 50% 'relapse' in four models, the 'master model', the 'master model' without 'alternative initiation', the model containing only 'diversion from quitting' and the tipping point analysis for the 'master model' without 'alternative initiation'. 'Relapse' was modeled by treating those base case smoking quitters who switched to MRTP use in the counterfactual scenario and relapsed to smoking within the same age category as never having quit smoking. Because two different counterfactual scenarios were compared, no variability estimates were calculated.

⁴ 'In the same age category as 'diversion from quitting'

Table C1: Number of current and former smokers and number of MRTP users in Illustrative Example 1

Age category	Current smokers	MRTP users (base case smokers)	Former smokers	MRTP users (base case quitters)	MRTP users who 'relapse' (base case quitters)
1	100,000				
2	$100,000 \times p(\text{continued smoking}) \times (1-p(\text{'switching'}))$ $= 100,000 \times 0.9 \times 0.7$ $= 63,000$	$100,000 \times p(\text{continued smoking}) \times p(\text{'switching'})$ $= 100,000 \times 0.9 \times 0.3$ $= 27,000$	$100,000 \times 1-p(\text{continued smoking}) \times 1-p(\text{'diversion from quitting'})$ $= 100,000 \times 0.1 \times 0.6$ $= 6,000$	$100,000 \times 1-p(\text{continued smoking}) \times p(\text{'diversion from quitting'}) \times 1-p(\text{'relapse'})$ $= 100,000 \times 0.1 \times 0.4 \times 0.5$ $= 2,000$	$100,000 \times 1-p(\text{continued smoking}) \times p(\text{'diversion from quitting'}) \times p(\text{'relapse'})$ $= 100,000 \times 0.1 \times 0.4 \times 0.5$ $= 2,000$
3	$(63,000+2,000) \times 0.9 \times 0.7$ $= 40,950$	$(63,000+2,000) \times 0.9 \times 0.3$ $= 17,550$	$(63,000+2,000) \times 0.1 \times 0.6$ $= 3,900$	$(63,000+2,000) \times 0.1 \times 0.4 \times 0.5 = 1,300$	$(63,000+2,000) \times 0.1 \times 0.4 \times 0.5 = 1,300$

Table C2: Transition probabilities for continued smoking, 'switching' and 'diversion from quitting' used in the 'master model' (with and without 'alternative initiation'), the model containing only 'diversion from quitting' and the tipping point analysis for the 'master model' without 'alternative initiation' and corresponding adjusted transition probabilities under the assumption of 50% 'relapse'⁵

Age	Original transition probabilities			Adjusted transition probabilities ^a		
	(continued smoking)	('switching')	('diversion from quitting')	^(continued smoking)	^('switching')	^('diversion from quitting')
13-17	-	-	-	-	-	-
18-22	0.91	0.067	0.154	0.917	0.0665	0.083
23-27	0.905	0.065	0.221	0.915	0.0643	0.124
28-32	0.86	0.080	0.136	0.870	0.0791	0.073
33-37	0.86	0.045	0.113	0.868	0.0446	0.060
38-42	0.86	0.037	0.113	0.868	0.0367	0.060
43-47	0.86	0.033	0.054	0.864	0.0329	0.028
48-52	0.86	0.029	0.071	0.865	0.0288	0.037
53-57	0.86	0.017	0.056	0.864	0.0169	0.029
58-62	0.86	0.013	0.026	0.862	0.0130	0.013
63-67	0.86	0.014	0.018	0.861	0.0140	0.009
68-72	0.86	0.010	0.022	0.862	0.0100	0.011
73+	0.86	0.010	0.022	0.862	0.0100	0.011

^a Using the formulas for $\hat{p}(\text{continued smoking})$, $\hat{p}(\text{'switching'})$ and $\hat{p}(\text{'diversion from quitting'})$ developed in Illustrative Example 2

⁵ 'Relapse' occurs in the same age category as 'diversion from quitting'

Table C3: Difference in survivors, 'master model' (no 'relapse') versus 'master model' with 50% 'relapse'

	Mean number of survivors, counterfactual		Mean difference in survivors, two counterfactuals	Mean difference in survivors, Counterfactual ^a – base case ^b	Mean difference in survivors ^c , Counterfactual ^d – base case ^e
ERR	No 'relapse'	50% 'relapse'			
0.08	685,868	684,669	1,199	7,374	6,175
0.11	685,313	684,169	1,144	6,819	5,675

^a Counterfactual scenario with no 'relapse'

^b Base case with no 'relapse'

^c Identical to the difference between 'Mean difference in survivors, counterfactual – base case' and 'Mean difference in survivors, two counterfactuals'

^d Counterfactual scenario with 50% 'relapse'

^e Base case with no 'relapse'; base case with 50% 'relapse' must be ignored

Table C4: Difference in survivors, 'master model' without 'alternative initiation' (no 'relapse') versus 'master model' without 'alternative initiation' with 50% 'relapse'

	Mean number of survivors, counterfactual		Mean difference in survivors, two counterfactuals	Mean difference in survivors, Counterfactual ^a – base case ^b	Mean difference in survivors ^c , Counterfactual ^d – base case ^e
ERR	No 'relapse'	50% 'relapse'			
0.08	685,847	684,638	1,209	7,353	6,144
0.11	685,298	684,144	1,154	6,804	5,650

^a Counterfactual scenario with no 'relapse'

^b Base case with no 'relapse'

^c Identical to the difference between 'Mean difference in survivors, counterfactual – base case' and 'Mean difference in survivors, two counterfactuals'

^d Counterfactual scenario with 50% 'relapse'

^e Base case with no 'relapse'; base case with 50% 'relapse' must be ignored

Table C5: Difference in survivors, model containing 'diversion from quitting' (no 'relapse') versus model containing 'diversion from quitting' with 50% 'relapse'

	Mean number of survivors, counterfactual		Mean difference in survivors, two counterfactuals	Mean difference in survivors, Counterfactual ^a – base case ^b	Mean difference in survivors ^c , Counterfactual ^d – base case ^e
ERR	No 'relapse'	50% 'relapse'			
0.08	678,104	676,602	1,502	-390	-1,892
0.11	677,966	676,531	1,435	-529	-1,964

^a Counterfactual scenario with no 'relapse'

^b Base case with no 'relapse'

^c Identical to the difference between 'Mean difference in survivors, counterfactual – base case' and 'Mean difference in survivors, two counterfactuals'

^d Counterfactual scenario with 50% 'relapse'

^e Base case with no 'relapse'; base case with 50% 'relapse' must be ignored

Table C6: Difference in survivors, tipping point analysis for 'master model' without 'alternative initiation' (no 'relapse') versus tipping point analysis for 'master model' without 'alternative initiation' with 50% 'relapse'

ERR	Switching (%) ^a	Mean number of survivors, counterfactual		Mean difference in survivors, two counterfactuals	Mean difference in survivors, Counterfactual ^b – base case ^c	Mean difference in survivors ^d , Counterfactual ^e – base case ^f
		No 'relapse'	50% 'relapse'			
0.08	0.0	677,723	676,223	1,500	-771	-2,271
	0.5	678,533	677,071	1,462	39	-1,423
	1.0	679,326	677,901	1,425	832	-593
	1.5	680,101	678,713	1,388	1,607	219
0.11	0.0	677,551	676,118	1,433	-943	-2,376
	0.5	678,325	676,929	1,396	-169	-1,565
	1.0	679,082	677,722	1,360	588	-772
	1.5	679,822	678,497	1,325	1,328	3

^a Replaces $(\hat{h}) \approx \hat{h}$ in Table C2

^b Counterfactual scenario with no 'relapse'

^c Base case with no 'relapse'

^d Identical to the difference between 'Mean difference in survivors, counterfactual¹ – base case²' and 'Mean difference in survivors, two counterfactuals'

^e Counterfactual scenario with 50% 'relapse'

^f Base case with no 'relapse'; base case with 50% 'relapse' must be ignored

Appendix D: Results from Life Expectancy (LE) and Quality-Adjusted Life Expectancy (QALE) Analyses

The choice of output measures (differences in numbers of survivors, LE or QALE) depends on the question being addressed by a given analysis. Specifically, the difference in the number of survivors under two exposure scenarios can be used as an estimate of the effect on population health. LE estimates can be used to plan for the delivery of health care, while QALE estimates provide a measure that approximates morbidity and is used by economists to choose between medical interventions competing for the same resources^{1 2 3 4}. Because the various output measures produced by the DPM(+1) are calculated from the same default output, i.e., the difference in the number of survivors, each provides a different view on the same information. Nevertheless, interpretation of the different measures requires additional attention, as a seemingly large magnitude difference in one measure (difference in survivors) may seem small when expressed another way (LE or QALE). The current analyses illustrate this issue, and the data presented here are comparable to other analyses of mortality and LE differences. For example, using U.S. data from 1995, Wagener et al. (2001) estimated that a (seemingly large) 5% reduction in age-specific mortality produced only about 0.5 additional years of LE⁵.

¹ Jia H, Lubetkin EI. The statewide burden of obesity, smoking, low income and chronic diseases in the United States. *JPublic Health (Oxf)*. 2009; 31(4): 496-505. doi: fdp012 [pii];10.1093/pubmed/fdp012 [doi].

² Jia H, Zack MM, Thompson WW. State Quality-Adjusted Life Expectancy for U.S. adults from 1993 to 2008. *QualLife Res*. 2011; 20(6): 853-63. doi: 10.1007/s11136-010-9826-y [doi].

³ Weinstein MC, Torrance G, McGuire A. QALYs: the basics. *ValueHealth*. 2009;12 (Suppl 1): S5-S9. doi: VHE515 [pii];10.1111/j.1524-4733.2009.00515.x [doi].

⁴ Feenstra T, van Baal P, Hoogenveen R, Vijgen S, Stolk E, Bemelmans W. Cost-effectiveness of interventions to reduce tobacco smoking in the netherlands. An application of the RIVM Chronic Disease Model. BA Bilthoven: 2005. Report No.: RIVM report 260601003.

⁵ Wagener DK, Molla MT, Crimmins EM, Pamuk E, Madans JH. Summary measures of population health: addressing the first goal of healthy people 2010, improving health expectancy. *Healthy People 2010 StatNotes*. 2001; (22): 1-13.

Table D3.1: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking' ('master model')

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.245	0.213	0.277	58.284	58.156	58.413	58.529	58.418	58.638	0.224	0.195	0.255	58.284	58.156	58.413	58.509	58.397	58.619
QALE	0.176	0.153	0.199	45.744	45.650	45.837	45.919	45.839	45.999	0.161	0.140	0.183	45.744	45.650	45.837	45.905	45.824	45.985

Table D3.1_2: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking'; probabilities for all primary beneficial and harmful transitions reduced by 75%, while probabilities for secondary harmful transitions retained at 100%

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.066	0.058	0.075	58.284	58.156	58.413	58.350	58.228	58.473	0.061	0.053	0.069	58.284	58.156	58.413	58.345	58.222	58.467
QALE	0.047	0.041	0.054	45.744	45.650	45.837	45.791	45.702	45.880	0.044	0.038	0.049	45.744	45.650	45.837	45.787	45.698	45.877

Table D3.1_3: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking', using different ERRs

	ERR=0.1									ERR=0.2								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.231	0.201	0.262	58.284	58.156	58.413	58.515	58.404	58.625	0.164	0.140	0.188	58.284	58.156	58.413	58.448	58.335	58.561
QALE	0.166	0.145	0.188	45.744	45.650	45.837	45.910	45.829	45.990	0.119	0.101	0.136	45.744	45.650	45.837	45.862	45.780	45.944

Table D3.1_3, cont: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking', using different ERRs

	ERR=0.3									ERR=0.4								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.097	0.079	0.116	58.284	58.156	58.413	58.381	58.265	58.498	0.031	0.017	0.045	58.284	58.156	58.413	58.315	58.196	58.435
QALE	0.071	0.058	0.085	45.744	45.650	45.837	45.815	45.730	45.899	0.024	0.014	0.034	45.744	45.650	45.837	45.768	45.680	45.856

Table D3.1_3, cont: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking', using different ERRs

	ERR=0.5									ERR=0.6								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.034	-0.048	-0.022	58.284	58.156	58.413	58.250	58.127	58.374	-0.099	-0.114	-0.084	58.284	58.156	58.413	58.185	58.059	58.314
QALE	-0.023	-0.032	-0.013	45.744	45.650	45.837	45.721	45.631	45.812	-0.069	-0.080	-0.058	45.744	45.650	45.837	45.675	45.582	45.768

Table D3.1_3, cont: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking', using different ERRs

	ERR=0.7									ERR=0.8								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.162	-0.182	-0.143	58.284	58.156	58.413	58.123	57.991	58.255	-0.223	-0.248	-0.199	58.284	58.156	58.413	58.061	57.925	58.198
QALE	-0.114	-0.128	-0.100	45.744	45.650	45.837	45.630	45.534	45.727	-0.158	-0.176	-0.141	45.744	45.650	45.837	45.586	45.487	45.686

Table D3.1_3, cont: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking', using different ERRs

	ERR=0.9									ERR=1.0								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.283	-0.314	-0.253	58.284	58.156	58.413	58.001	57.861	58.142	-0.341	-0.377	-0.306	58.284	58.156	58.413	57.943	57.799	58.089
QALE	-0.201	-0.222	-0.180	45.744	45.650	45.837	45.543	45.441	45.646	-0.243	-0.268	-0.218	45.744	45.650	45.837	45.501	45.396	45.607

Table D3.2: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.244	0.213	0.276	58.284	58.156	58.413	58.528	58.418	58.638	0.224	0.195	0.254	58.284	58.156	58.413	58.508	58.396	58.619
QALE	0.175	0.153	0.198	45.744	45.650	45.837	45.919	45.839	45.999	0.161	0.140	0.183	45.744	45.650	45.837	45.905	45.824	45.985

Table D3.3: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation', 'diversion from quitting', and 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.470	0.413	0.528	58.284	58.156	58.413	58.754	58.654	58.853	0.438	0.384	0.493	58.284	58.156	58.413	58.722	58.622	58.821
QALE	0.338	0.297	0.380	45.744	45.650	45.837	46.082	46.009	46.153	0.315	0.277	0.354	45.744	45.650	45.837	46.059	45.986	46.131

Table D3.4: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

0% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.025	-0.027	-0.023	58.284	58.156	58.413	58.259	58.131	58.388	-0.031	-0.033	-0.029	58.284	58.156	58.413	58.253	58.125	58.382
QALE	-0.018	-0.019	-0.017	45.744	45.650	45.837	45.726	45.632	45.820	-0.022	-0.024	-0.021	45.744	45.650	45.837	45.721	45.627	45.816

Table D3.4, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

0.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.001	-0.001	0.004	58.284	58.156	58.413	58.286	58.160	58.412	-0.006	-0.009	-0.003	58.284	58.156	58.413	58.278	58.152	58.405
QALE	0.001	-0.001	0.003	45.744	45.650	45.837	45.745	45.652	45.837	-0.004	-0.006	-0.002	45.744	45.650	45.837	45.739	45.647	45.832

Table D3.4, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

1% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.027	0.022	0.033	58.284	58.156	58.413	58.311	58.188	58.435	0.018	0.013	0.024	58.284	58.156	58.413	58.303	58.179	58.427
QALE	0.019	0.015	0.024	45.744	45.650	45.837	45.763	45.673	45.854	0.013	0.010	0.017	45.744	45.650	45.837	45.757	45.666	45.848

Table D3.4, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

1.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.052	0.044	0.061	58.284	58.156	58.413	58.337	58.215	58.459	0.042	0.035	0.051	58.284	58.156	58.413	58.327	58.204	58.449
QALE	0.037	0.031	0.044	45.744	45.650	45.837	45.781	45.692	45.871	0.030	0.025	0.036	45.744	45.650	45.837	45.774	45.685	45.864

Table D3.4, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

2% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.077	0.066	0.089	58.284	58.156	58.413	58.361	58.241	58.482	0.066	0.055	0.077	58.284	58.156	58.413	58.350	58.230	58.471
QALE	0.055	0.047	0.064	45.744	45.650	45.837	45.799	45.711	45.887	0.047	0.040	0.055	45.744	45.650	45.837	45.791	45.703	45.880

Table D3.4, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

2.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.101	0.087	0.116	58.284	58.156	58.413	58.385	58.267	58.505	0.089	0.076	0.103	58.284	58.156	58.413	58.373	58.254	58.493
QALE	0.072	0.062	0.083	45.744	45.650	45.837	45.816	45.730	45.903	0.064	0.054	0.074	45.744	45.650	45.837	45.807	45.721	45.894

Table D3.4, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

3% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.125	0.108	0.143	58.284	58.156	58.413	58.409	58.292	58.527	0.111	0.095	0.128	58.284	58.156	58.413	58.395	58.278	58.514
QALE	0.089	0.077	0.102	45.744	45.650	45.837	45.833	45.748	45.918	0.080	0.068	0.092	45.744	45.650	45.837	45.823	45.738	45.909

Table D3.4, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

3.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.148	0.128	0.169	58.284	58.156	58.413	58.432	58.317	58.548	0.133	0.115	0.153	58.284	58.156	58.413	58.417	58.301	58.534
QALE	0.106	0.092	0.121	45.744	45.650	45.837	45.850	45.765	45.934	0.096	0.082	0.109	45.744	45.650	45.837	45.839	45.755	45.924

Table D3.4, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

4% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.171	0.148	0.194	58.284	58.156	58.413	58.455	58.341	58.570	0.155	0.134	0.177	58.284	58.156	58.413	58.439	58.324	58.554
QALE	0.122	0.106	0.139	45.744	45.650	45.837	45.866	45.782	45.949	0.111	0.096	0.127	45.744	45.650	45.837	45.855	45.771	45.938

Table D3.5: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transition of 'alternative initiation'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.004	0.004	0.005	58.284	58.156	58.413	58.288	58.161	58.416	0.004	0.003	0.004	58.284	58.156	58.413	58.288	58.160	58.416
QALE	0.003	0.003	0.004	45.744	45.650	45.837	45.747	45.653	45.840	0.003	0.002	0.003	45.744	45.650	45.837	45.746	45.653	45.840

Table D3.6: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transition of 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.487	0.429	0.546	58.284	58.156	58.413	58.771	58.671	58.870	0.461	0.406	0.517	58.284	58.156	58.413	58.745	58.644	58.844
QALE	0.350	0.308	0.392	45.744	45.650	45.837	46.094	46.021	46.165	0.331	0.292	0.372	45.744	45.650	45.837	46.075	46.002	46.147

Table D3.7: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transition of 'additional initiation'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.005	-0.005	-0.004	58.284	58.156	58.413	58.279	58.152	58.408	-0.007	-0.007	-0.006	58.284	58.156	58.413	58.278	58.150	58.406
QALE	-0.003	-0.004	-0.003	45.744	45.650	45.837	45.740	45.646	45.834	-0.005	-0.005	-0.004	45.744	45.650	45.837	45.739	45.645	45.833

Table D3.8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transition of 'diversion from quitting'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.014	-0.017	-0.013	58.284	58.156	58.413	58.270	58.141	58.399	-0.020	-0.022	-0.017	58.284	58.156	58.413	58.265	58.136	58.394
QALE	-0.010	-0.012	-0.009	45.744	45.650	45.837	45.733	45.639	45.828	-0.014	-0.016	-0.012	45.744	45.650	45.837	45.730	45.635	45.825

Table D3.9: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'additional initiation' and 'gateway effect'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.010	-0.011	-0.010	58.284	58.156	58.413	58.274	58.146	58.402	-0.011	-0.012	-0.011	58.284	58.156	58.413	58.273	58.145	58.401
QALE	-0.008	-0.008	-0.007	45.744	45.650	45.837	45.736	45.642	45.830	-0.008	-0.009	-0.008	45.744	45.650	45.837	45.735	45.641	45.829

Table D3.10: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'alternative initiation' and 'delayed smoking'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.003	0.002	0.003	58.284	58.156	58.413	58.287	58.159	58.415	0.002	0.002	0.003	58.284	58.156	58.413	58.286	58.159	58.415
QALE	0.002	0.002	0.002	45.744	45.650	45.837	45.746	45.652	45.839	0.002	0.001	0.002	45.744	45.650	45.837	45.745	45.652	45.839

Table D3.11: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' and 'resumed smoking'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.268	0.236	0.301	58.284	58.156	58.413	58.552	58.441	58.661	0.254	0.223	0.285	58.284	58.156	58.413	58.538	58.426	58.648
QALE	0.192	0.170	0.216	45.744	45.650	45.837	45.936	45.856	46.016	0.182	0.161	0.204	45.744	45.650	45.837	45.926	45.845	46.006

Table D3.12: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

0% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.125	-0.135	-0.114	58.284	58.156	58.413	58.159	58.037	58.281	-0.180	-0.192	-0.168	58.284	58.156	58.413	58.104	57.983	58.224
QALE	-0.089	-0.097	-0.081	45.744	45.650	45.837	45.654	45.565	45.743	-0.129	-0.137	-0.120	45.744	45.650	45.837	45.615	45.527	45.703

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

0.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.100	-0.113	-0.087	58.284	58.156	58.413	58.184	58.064	58.304	-0.156	-0.170	-0.142	58.284	58.156	58.413	58.128	58.008	58.247
QALE	-0.071	-0.080	-0.062	45.744	45.65	45.837	45.672	45.585	45.760	-0.112	-0.122	-0.102	45.744	45.650	45.837	45.632	45.545	45.719

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

1% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.076	-0.091	-0.060	58.284	58.156	58.413	58.208	58.090	58.326	-0.133	-0.149	-0.117	58.284	58.156	58.413	58.151	58.033	58.268
QALE	-0.054	-0.065	-0.043	45.744	45.650	45.837	45.690	45.604	45.776	-0.095	-0.107	-0.083	45.744	45.650	45.837	45.648	45.563	45.734

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

1.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.052	-	-0.034	58.284	58.156	58.413	58.232	58.116	58.348	-0.111	-0.129	-0.092	58.284	58.156	58.413	58.173	58.058	58.289
QALE	-0.037	-	-0.023	45.744	45.650	45.837	45.707	45.622	45.792	-0.079	-0.092	-0.065	45.744	45.650	45.837	45.665	45.580	45.749

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

2% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.029	-0.049	-0.008	58.284	58.156	58.413	58.256	58.141	58.37	-0.089	-0.110	-0.067	58.284	58.156	58.413	58.196	58.081	58.309
QALE	-0.020	-0.035	-0.005	45.744	45.650	45.837	45.724	45.640	45.807	-0.063	-0.078	-0.048	45.744	45.650	45.837	45.680	45.597	45.763

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

2.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.006	-0.029	0.018	58.284	58.156	58.413	58.278	58.164	58.391	-0.067	-0.090	-0.043	58.284	58.156	58.413	58.217	58.104	58.330
QALE	-0.004	-0.020	0.013	45.744	45.650	45.837	45.740	45.657	45.822	-0.048	-0.065	-0.030	45.744	45.650	45.837	45.696	45.614	45.778

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

3% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.017	-0.009	0.043	58.284	58.156	58.413	58.301	58.188	58.412	-0.046	-0.071	-0.019	58.284	58.156	58.413	58.238	58.126	58.349
QALE	0.012	-0.006	0.031	45.744	45.650	45.837	45.756	45.674	45.837	-0.032	-0.051	-0.014	45.744	45.650	45.837	45.711	45.630	45.792

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

3.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.039	0.011	0.067	58.284	58.156	58.413	58.323	58.212	58.433	-0.025	-0.053	0.004	58.284	58.156	58.413	58.259	58.148	58.369
QALE	0.028	0.008	0.049	45.744	45.650	45.837	45.772	45.691	45.851	-0.018	-0.038	0.003	45.744	45.650	45.837	45.726	45.645	45.806

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

4% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.060	0.030	0.091	58.284	58.156	58.413	58.344	58.234	58.453	-0.005	-0.035	0.0270	58.284	58.156	58.413	58.280	58.170	58.388
QALE	0.044	0.022	0.066	45.744	45.650	45.837	45.787	45.707	45.866	-0.003	-0.025	0.019	45.744	45.650	45.837	45.741	45.661	45.819

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

4.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.081	0.048	0.115	58.284	58.156	58.413	58.365	58.257	58.473	0.015	-0.017	0.049	58.284	58.156	58.413	58.299	58.191	58.407
QALE	0.059	0.035	0.083	45.744	45.650	45.837	45.802	45.723	45.880	0.011	-0.012	0.035	45.744	45.650	45.837	45.755	45.676	45.833

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.102	0.066	0.138	58.284	58.156	58.413	58.386	58.278	58.493	0.035	0.00	0.071	58.284	58.156	58.413	58.319	58.212	58.425
QALE	0.073	0.048	0.099	45.744	45.650	45.837	45.817	45.739	45.894	0.025	0.00	0.051	45.744	45.650	45.837	45.769	45.691	45.846

Table D3.12, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

5.5% 'switching'

	ERR=0.08								ERR=0.11									
	Difference, counterfactual vs. base case			Base case		Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual			
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE				N/A						0.054	0.017	0.092	58.284	58.156	58.413	58.338	58.232	58.444
QALE										0.039	0.012	0.066	45.744	45.650	45.837	45.783	45.705	45.859

Table D3.13: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

0% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.102	-0.108	-0.096	58.284	58.156	58.413	58.182	58.057	58.307	-0.112	-0.118	-0.106	58.284	58.156	58.413	58.172	58.047	58.296
QALE	-0.075	-0.079	-0.071	45.744	45.650	45.837	45.669	45.578	45.760	-0.082	-0.087	-0.078	45.744	45.650	45.837	45.661	45.570	45.752

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

0.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.076	-0.084	-0.067	58.284	58.156	58.413	58.208	58.085	58.331	-0.088	-0.096	-0.079	58.284	58.156	58.413	58.197	58.074	58.319
QALE	-0.056	-0.062	-0.050	45.744	45.650	45.837	45.687	45.597	45.777	-0.065	-0.071	-0.059	45.744	45.650	45.837	45.679	45.589	45.769

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

1% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.050	-0.062	-0.039	58.284	58.156	58.413	58.234	58.113	58.355	-0.064	-0.075	-0.052	58.284	58.156	58.413	58.221	58.100	58.341
QALE	-0.038	-0.046	-0.030	45.744	45.650	45.837	45.705	45.617	45.794	-0.048	-0.056	-0.039	45.744	45.650	45.837	45.696	45.607	45.785

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

1.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.026	-	-0.0110	58.284	58.156	58.413	58.259	58.138	58.379	-0.040	-0.054	-0.026	58.284	58.156	58.413	58.244	58.124	58.364
QALE	-0.020	-	-0.010	45.744	45.650	45.837	45.723	45.636	45.810	-0.031	-0.041	-0.021	45.744	45.650	45.837	45.713	45.625	45.800

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

2% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.001	-0.018	0.016	58.284	58.156	58.413	58.283	58.165	58.401	-0.017	-0.033	0.000	58.284	58.156	58.413	58.267	58.149	58.386
QALE	-0.003	-0.015	0.009	45.744	45.650	45.837	45.741	45.655	45.827	-0.014	-0.026	-0.002	45.744	45.650	45.837	45.729	45.643	45.816

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

2.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.023	0.003	0.043	58.284	58.156	58.413	58.307	58.190	58.424	0.006	-0.013	0.025	58.284	58.156	58.413	58.290	58.173	58.407
QALE	0.014	0.000	0.028	45.744	45.650	45.837	45.758	45.673	45.842	0.002	-0.012	0.016	45.744	45.650	45.837	45.746	45.661	45.831

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

3% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.046	0.024	0.069	58.284	58.156	58.413	58.330	58.215	58.445	0.028	0.006	0.050	58.284	58.156	58.413	58.312	58.196	58.427
QALE	0.031	0.015	0.047	45.744	45.650	45.837	45.774	45.691	45.858	0.018	0.002	0.034	45.744	45.650	45.837	45.761	45.677	45.845

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

3.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.069	0.044	0.094	58.284	58.156	58.413	58.353	58.239	58.466	0.049	0.025	0.074	58.284	58.156	58.413	58.334	58.219	58.447
QALE	0.047	0.029	0.065	45.744	45.650	45.837	45.791	45.708	45.873	0.033	0.016	0.051	45.744	45.650	45.837	45.777	45.694	45.859

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

4% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.091	0.063	0.119	58.284	58.156	58.413	58.375	58.262	58.487	0.071	0.044	0.098	58.284	58.156	58.413	58.355	58.242	58.467
QALE	0.063	0.043	0.083	45.744	45.650	45.837	45.807	45.725	45.888	0.049	0.029	0.068	45.744	45.650	45.837	45.792	45.710	45.873

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

4.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.113	0.083	0.144	58.284	58.156	58.413	58.397	58.285	58.509	0.091	0.062	0.121	58.284	58.156	58.413	58.376	58.263	58.487
QALE	0.079	0.057	0.101	45.744	45.650	45.837	45.823	45.741	45.903	0.063	0.042	0.085	45.744	45.650	45.837	45.807	45.726	45.887

Table D3.13, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.135	0.102	0.168	58.284	58.156	58.413	58.419	58.307	58.529	0.112	0.080	0.144	58.284	58.156	58.413	58.396	58.285	58.506
QALE	0.094	0.071	0.118	45.744	45.650	45.837	45.838	45.758	45.917	0.078	0.055	0.101	45.744	45.650	45.837	45.822	45.741	45.901

Table D3.14: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

0% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.054	-0.061	-0.047	58.284	58.156	58.413	58.230	58.099	58.361	-0.073	-0.083	-0.064	58.284	58.156	58.413	58.211	58.079	58.343
QALE	-0.038	-0.043	-0.033	45.744	45.650	45.837	45.705	45.610	45.802	-0.052	-0.058	-0.045	45.744	45.650	45.837	45.692	45.595	45.789

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

0.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.027	-0.033	-0.022	58.284	58.156	58.413	58.257	58.128	58.386	-0.047	-0.055	-0.040	58.284	58.156	58.413	58.237	58.107	58.367
QALE	-0.019	-0.023	-0.016	45.744	45.650	45.837	45.725	45.631	45.819	-0.033	-0.039	-0.028	45.744	45.650	45.837	45.710	45.615	45.806

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

1% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.001	-0.006	0.004	58.284	58.156	58.413	58.283	58.157	58.410	-0.022	-0.029	-0.016	58.284	58.156	58.413	58.262	58.135	58.390
QALE	0.000	-0.004	0.003	45.744	45.650	45.837	45.743	45.651	45.836	-0.015	-0.020	-0.011	45.744	45.650	45.837	45.728	45.636	45.822

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

1.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.025	0.018	0.031	58.284	58.156	58.413	58.309	58.185	58.434	0.002	-0.004	0.009	58.284	58.156	58.413	58.286	58.162	58.413
QALE	0.018	0.014	0.023	45.744	45.650	45.837	45.762	45.671	45.853	0.003	-0.002	0.007	45.744	45.650	45.837	45.746	45.655	45.838

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

2% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.050	0.041	0.059	58.284	58.156	58.413	58.334	58.212	58.457	0.026	0.018	0.035	58.284	58.156	58.413	58.311	58.188	58.435
QALE	0.036	0.030	0.043	45.744	45.650	45.837	45.780	45.691	45.870	0.020	0.014	0.026	45.744	45.650	45.837	45.763	45.673	45.854

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

2.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.075	0.063	0.086	58.284	58.156	58.413	58.359	58.239	58.480	0.050	0.040	0.061	58.284	58.156	58.413	58.334	58.213	58.457
QALE	0.054	0.046	0.062	45.744	45.650	45.837	45.798	45.710	45.886	0.037	0.030	0.044	45.744	45.650	45.837	45.780	45.692	45.870

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

3% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.099	0.085	0.113	58.284	58.156	58.413	58.383	58.264	58.502	0.073	0.061	0.086	58.284	58.156	58.413	58.357	58.238	58.478
QALE	0.071	0.061	0.082	45.744	45.650	45.837	45.815	45.729	45.902	0.053	0.044	0.063	45.744	45.650	45.837	45.797	45.710	45.885

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

3.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.122	0.106	0.140	58.284	58.156	58.413	58.407	58.290	58.524	0.096	0.081	0.111	58.284	58.156	58.413	58.380	58.262	58.499
QALE	0.088	0.076	0.101	45.744	45.650	45.837	45.832	45.747	45.918	0.069	0.059	0.081	45.744	45.650	45.837	45.813	45.727	45.900

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

4% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.146	0.126	0.166	58.284	58.156	58.413	58.430	58.314	58.546	0.118	0.101	0.136	58.284	58.156	58.413	58.402	58.286	58.520
QALE	0.105	0.091	0.119	45.744	45.650	45.837	45.848	45.764	45.933	0.085	0.073	0.098	45.744	45.650	45.837	45.829	45.744	45.915

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

4.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.168	0.146	0.191	58.284	58.156	58.413	58.452	58.338	58.567	0.140	0.120	0.160	58.284	58.156	58.413	58.424	58.309	58.54
QALE	0.121	0.105	0.137	45.744	45.650	45.837	45.865	45.781	45.948	0.101	0.087	0.116	45.744	45.650	45.837	45.845	45.761	45.929

Table D3.14, cont.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.191	0.166	0.216	58.284	58.156	58.413	58.475	58.362	58.588	0.161	0.139	0.184	58.284	58.156	58.413	58.445	58.331	58.560
QALE	0.137	0.119	0.155	45.744	45.650	45.837	45.881	45.798	45.963	0.116	0.100	0.133	45.744	45.650	45.837	45.860	45.777	45.943

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': 13-17 years; for 'switching' and 'diversion from quitting': 18-22 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.245	0.213	0.277	58.284	58.156	58.413	58.529	58.418	58.638	0.224	0.195	0.255	58.284	58.156	58.413	58.509	58.397	58.619
QALE	0.176	0.153	0.199	45.744	45.650	45.837	45.919	45.839	45.999	0.161	0.140	0.183	45.744	45.650	45.837	45.905	45.824	45.985

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': 18-22 years; for 'switching' and 'diversion from quitting': 18-22 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.249	0.218	0.281	58.284	58.156	58.413	58.533	58.422	58.642	0.229	0.200	0.259	58.284	58.156	58.413	58.513	58.401	58.623
QALE	0.179	0.156	0.202	45.744	45.650	45.837	45.922	45.842	46.002	0.165	0.144	0.186	45.744	45.650	45.837	45.908	45.827	45.989

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': 23-27 years; for 'switching' and 'diversion from quitting': 23-27 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.203	0.177	0.229	58.284	58.156	58.413	58.487	58.374	58.599	0.187	0.163	0.211	58.284	58.156	58.413	58.471	58.357	58.584
QALE	0.145	0.127	0.164	45.744	45.650	45.837	45.889	45.806	45.971	0.134	0.117	0.152	45.744	45.650	45.837	45.878	45.795	45.960

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 28-32 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.141	0.123	0.160	58.284	58.156	58.413	58.425	58.308	58.543	0.131	0.114	0.149	58.284	58.156	58.413	58.415	58.297	58.533
QALE	0.101	0.088	0.114	45.744	45.650	45.837	45.845	45.759	45.930	0.094	0.082	0.106	45.744	45.650	45.837	45.838	45.752	45.924

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 33-37 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.071	0.062	0.081	58.284	58.156	58.413	58.355	58.233	58.477	0.066	0.057	0.075	58.284	58.156	58.413	58.350	58.227	58.472
QALE	0.051	0.044	0.057	45.744	45.650	45.837	45.794	45.705	45.884	0.047	0.041	0.053	45.744	45.650	45.837	45.791	45.701	45.880

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 38-42 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.041	0.035	0.047	58.284	58.156	58.413	58.325	58.201	58.450	0.038	0.033	0.043	58.284	58.156	58.413	58.322	58.198	58.447
QALE	0.029	0.025	0.033	45.744	45.650	45.837	45.772	45.682	45.864	0.027	0.023	0.031	45.744	45.650	45.837	45.770	45.679	45.862

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 43-47 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.023	0.020	0.026	58.284	58.156	58.413	58.307	58.181	58.433	0.021	0.018	0.024	58.284	58.156	58.413	58.305	58.179	58.432
QALE	0.016	0.014	0.018	45.744	45.650	45.837	45.760	45.667	45.852	0.015	0.013	0.017	45.744	45.650	45.837	45.759	45.666	45.851

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 48-52 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.011	0.009	0.012	58.284	58.156	58.413	58.295	58.168	58.422	0.010	0.009	0.012	58.284	58.156	58.413	58.294	58.167	58.422
QALE	0.008	0.007	0.009	45.744	45.650	45.837	45.751	45.658	45.844	0.007	0.006	0.008	45.744	45.650	45.837	45.751	45.658	45.844

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 53-57 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.004	0.004	0.005	58.284	58.156	58.413	58.288	58.160	58.417	0.004	0.003	0.004	58.284	58.156	58.413	58.288	58.160	58.416
QALE	0.003	0.002	0.003	45.744	45.650	45.837	45.746	45.653	45.840	0.003	0.002	0.003	45.744	45.650	45.837	45.746	45.653	45.840

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 58-62 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.002	0.001	0.002	58.284	58.156	58.413	58.286	58.158	58.414	0.002	0.001	0.002	58.284	58.156	58.413	58.286	58.158	58.414
QALE	0.001	0.001	0.001	45.744	45.650	45.837	45.745	45.651	45.839	0.001	0.001	0.001	45.744	45.650	45.837	45.745	45.651	45.839

Table D3.15.: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 63-67 years

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.001	0.001	0.001	58.284	58.156	58.413	58.285	58.157	58.413	0.001	0.001	0.001	58.284	58.156	58.413	58.285	58.157	58.413
QALE	0.001	0.000	0.001	45.744	45.650	45.837	45.744	45.650	45.838	0.000	0.000	0.001	45.744	45.650	45.837	45.744	45.650	45.838

Table D_H1: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking' ('master model'); mortality rates for women

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.195	0.169	0.221	61.640	61.525	61.754	61.834	61.734	61.934	0.178	0.155	0.203	61.640	61.525	61.754	61.818	61.717	61.918
QALE	0.139	0.121	0.158	48.197	48.116	48.278	48.336	48.264	48.406	0.127	0.110	0.145	48.197	48.116	48.278	48.324	48.252	48.394

Table D_H5: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'additional initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking'; mortality rates for women

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.194	0.168	0.221	61.640	61.525	61.754	61.834	61.733	61.933	0.178	0.154	0.203	61.640	61.525	61.754	61.818	61.716	61.917
QALE	0.138	0.120	0.157	48.197	48.116	48.278	48.335	48.263	48.405	0.127	0.110	0.144	48.197	48.116	48.278	48.324	48.252	48.394

Table D_H8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

0% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	-0.022	-0.023	-0.020	61.640	61.525	61.754	61.618	61.504	61.732	-0.027	-0.029	-0.025	61.640	61.525	61.754	61.613	61.498	61.727
QALE	-0.015	-0.016	-0.015	48.197	48.116	48.278	48.182	48.100	48.263	-0.019	-0.020	-0.018	48.197	48.116	48.278	48.178	48.097	48.259

Table D_H8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

0.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.000	-0.002	0.002	61.640	61.525	61.754	61.640	61.527	61.752	-0.006	-0.008	-0.004	61.640	61.525	61.754	61.634	61.521	61.746
QALE	0.000	-0.002	0.002	48.197	48.116	48.278	48.197	48.116	48.277	-0.004	-0.006	-0.003	48.197	48.116	48.278	48.193	48.112	48.273

Table D_H8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

1% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.021	0.017	0.026	61.640	61.525	61.754	61.661	61.549	61.772	0.014	0.010	0.019	61.640	61.525	61.754	61.654	61.542	61.765
QALE	0.015	0.012	0.019	48.197	48.116	48.278	48.212	48.132	48.291	0.010	0.007	0.013	48.197	48.116	48.278	48.207	48.127	48.286

Table D_H8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

1.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.042	0.035	0.050	61.640	61.525	61.754	61.682	61.571	61.791	0.034	0.027	0.041	61.640	61.525	61.754	61.674	61.563	61.783
QALE	0.030	0.025	0.035	48.197	48.116	48.278	48.227	48.148	48.304	0.024	0.019	0.029	48.197	48.116	48.278	48.221	48.142	48.299

Table D_H8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

2% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.062	0.053	0.073	61.640	61.525	61.754	61.702	61.593	61.810	0.053	0.044	0.063	61.640	61.525	61.754	61.693	61.583	61.801
QALE	0.044	0.037	0.051	48.197	48.116	48.278	48.241	48.164	48.318	0.038	0.031	0.044	48.197	48.116	48.278	48.235	48.157	48.312

Table D_H8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

2.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.082	0.070	0.095	61.640	61.525	61.754	61.722	61.614	61.829	0.072	0.061	0.084	61.640	61.525	61.754	61.712	61.604	61.819
QALE	0.058	0.050	0.067	48.197	48.116	48.278	48.255	48.179	48.331	0.051	0.043	0.060	48.197	48.116	48.278	48.248	48.171	48.324

Table D_H8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

3% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.102	0.087	0.117	61.640	61.525	61.754	61.741	61.634	61.847	0.090	0.077	0.105	61.640	61.525	61.754	61.730	61.623	61.836
QALE	0.072	0.062	0.083	48.197	48.116	48.278	48.269	48.193	48.344	0.064	0.055	0.074	48.197	48.116	48.278	48.261	48.185	48.336

Table D_H8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

3.5% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.120	0.104	0.138	61.640	61.525	61.754	61.760	61.655	61.864	0.108	0.093	0.125	61.640	61.525	61.754	61.748	61.642	61.853
QALE	0.086	0.074	0.098	48.197	48.116	48.278	48.283	48.208	48.356	0.077	0.066	0.089	48.197	48.116	48.278	48.274	48.199	48.348

Table D_H8: Life expectancy (LE) at age 18 years and quality of life-adjusted life expectancy (QALE) at age 18 years in the base case and counterfactual scenario and differences, counterfactual scenario versus base case based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

4% 'switching'

	ERR=0.08									ERR=0.11								
	Difference, counterfactual vs. base case			Base case			Counterfactual			Difference, counterfactual vs. base case			Base case			Counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
LE	0.139	0.120	0.159	61.640	61.525	61.754	61.779	61.674	61.882	0.126	0.108	0.145	61.640	61.525	61.754	61.766	61.661	61.869
QALE	0.099	0.085	0.113	48.197	48.116	48.278	48.296	48.221	48.369	0.090	0.077	0.103	48.197	48.116	48.278	48.287	48.212	48.360

Appendix E: Results from Analyses of Numbers of Survivors for All Age Intervals

Table E3.1: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of ‘additional initiation’ with ‘delayed smoking’, ‘alternative initiation’ with ‘gateway effect’, ‘diversion from quitting’, and ‘switching’ with ‘resumed smoking’ (‘master model’)

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	1	1	1	993,650	993,281	994,009	993,651	993,282	994,010	1	1	1	993,650	993,281	994,009	993,651	993,282	994,010
23 - 27	18	15	21	988,756	988,189	989,305	988,774	988,207	989,324	17	14	20	988,756	988,189	989,305	988,773	988,206	989,323
28 - 32	88	76	101	982,030	981,252	982,794	982,118	981,346	982,877	84	72	96	982,030	981,252	982,794	982,114	981,341	982,873
33 - 37	270	234	307	972,766	971,766	973,763	973,036	972,055	974,015	256	221	292	972,766	971,766	973,763	973,022	972,041	974,002
38 - 42	618	537	700	959,978	958,732	961,234	960,596	959,394	961,800	587	509	666	959,978	958,732	961,234	960,564	959,363	961,772
43 - 47	1,188	1,034	1,343	942,285	940,758	943,830	943,474	942,037	944,916	1,127	978	1,276	942,285	940,758	943,830	943,412	941,969	944,857
48 - 52	2,031	1,768	2,294	917,749	915,866	919,636	919,780	918,100	921,490	1,921	1,668	2,175	917,749	915,866	919,636	919,670	917,983	921,383
53 - 57	3,168	2,756	3,580	883,638	881,326	885,956	886,806	884,816	888,828	2,986	2,593	3,381	883,638	881,326	885,956	886,624	884,625	888,657
58 - 62	4,555	3,966	5,147	836,133	833,339	838,900	840,688	838,399	843,020	4,274	3,711	4,841	836,133	833,339	838,900	840,407	838,099	842,753
63 - 67	6,051	5,265	6,840	769,998	766,689	773,230	776,049	773,410	778,644	5,643	4,894	6,397	769,998	766,689	773,230	775,641	772,973	778,264
68 - 72	7,374	6,416	8,346	678,494	674,893	682,007	685,868	683,064	688,615	6,819	5,919	7,743	678,494	674,893	682,007	685,313	682,464	688,107
73 - 77	8,078	7,033	9,147	554,326	550,744	557,788	562,404	559,662	565,122	7,386	6,410	8,399	554,326	550,744	557,788	561,713	558,927	564,459
78 - 82	7,609	6,620	8,633	393,784	390,324	397,173	401,393	398,316	404,458	6,855	5,945	7,802	393,784	390,324	397,173	400,639	397,550	403,693
83 - 87	5,545	4,778	6,343	208,183	203,696	212,699	213,728	209,165	218,346	4,903	4,213	5,628	208,183	203,696	212,699	213,086	208,535	217,684
88 - 92	2,199	1,698	2,739	44,385	39,290	49,590	46,584	41,220	52,052	1,907	1,481	2,361	44,385	39,290	49,590	46,292	40,970	51,718
93 - 97	-2	-9	4	5	-11	25	3	-7	16	-2	-9	4	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.1_2: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking'; probabilities for all primary beneficial and harmful transitions reduced by 75%, while probabilities for secondary harmful transitions retained at 100%

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,651	993,281	994,009	0	0	0	993,650	993,281	994,009	993,651	993,281	994,009
23 - 27	5	4	5	988,756	988,189	989,305	988,761	988,193	989,310	4	4	5	988,756	988,189	989,305	988,760	988,193	989,310
28 - 32	22	19	26	982,030	981,252	982,794	982,052	981,276	982,816	21	18	24	982,030	981,252	982,794	982,051	981,275	982,814
33 - 37	69	60	79	972,766	971,766	973,763	972,835	971,840	973,826	66	57	75	972,766	971,766	973,763	972,831	971,836	973,823
38 - 42	161	140	182	959,978	958,732	961,234	960,138	958,908	961,380	153	132	173	959,978	958,732	961,234	960,130	958,900	961,372
43 - 47	312	272	353	942,285	940,758	943,830	942,598	941,097	944,114	296	257	336	942,285	940,758	943,830	942,582	941,079	944,099
48 - 52	539	469	609	917,749	915,866	919,636	918,288	916,462	920,121	510	442	577	917,749	915,866	919,636	918,258	916,430	920,096
53 - 57	847	737	957	883,638	881,326	885,956	884,485	882,266	886,704	798	693	904	883,638	881,326	885,956	884,436	882,215	886,659
58 - 62	1,225	1,066	1,385	836,133	833,339	838,900	837,358	834,701	840,012	1,149	998	1,302	836,133	833,339	838,900	837,282	834,621	839,941
63 - 67	1,634	1,422	1,848	769,998	766,689	773,230	771,632	768,495	774,683	1,524	1,322	1,727	769,998	766,689	773,230	771,522	768,374	774,582
68 - 72	1,998	1,739	2,262	678,494	674,893	682,007	680,492	677,115	683,790	1,848	1,603	2,098	678,494	674,893	682,007	680,342	676,956	683,653
73 - 77	2,192	1,910	2,483	554,326	550,744	557,788	556,519	553,176	559,761	2,006	1,741	2,280	554,326	550,744	557,788	556,332	552,979	559,583
78 - 82	2,066	1,797	2,344	393,784	390,324	397,173	395,849	392,509	399,121	1,862	1,615	2,118	393,784	390,324	397,173	395,646	392,305	398,923
83 - 87	1,504	1,296	1,720	208,183	203,696	212,699	209,687	205,198	214,222	1,331	1,143	1,527	208,183	203,696	212,699	209,514	205,034	214,049
88 - 92	595	460	741	44,385	39,290	49,590	44,980	39,787	50,258	517	402	640	44,385	39,290	49,590	44,902	39,723	50,166
93 - 97	-1	-3	1	5	-11	25	4	-9	22	-1	-3	1	5	-11	25	4	-9	22
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.1_3: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of ‘additional initiation’ with ‘delayed smoking’, ‘alternative initiation’ with ‘gateway effect’, ‘diversion from quitting’, and ‘switching’ with ‘resumed smoking’, using different ERRs

Age interval	ERR=0.1									ERR=0.2								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	1	1	1	993,650	993,281	994,009	993,651	993,282	994,010	0	0	1	993,650	993,281	994,009	993,651	993,282	994,009
23 - 27	18	15	21	988,756	988,189	989,305	988,774	988,206	989,323	14	12	17	988,756	988,189	989,305	988,770	988,203	989,319
28 - 32	85	73	98	982,030	981,252	982,794	982,115	981,342	982,874	70	59	81	982,030	981,252	982,794	982,099	981,326	982,859
33 - 37	261	225	297	972,766	971,766	973,763	973,027	972,046	974,007	215	184	246	972,766	971,766	973,763	972,980	971,997	973,963
38 - 42	597	518	677	959,978	958,732	961,234	960,575	959,373	961,781	491	422	561	959,978	958,732	961,234	960,469	959,263	961,684
43 - 47	1,147	997	1,298	942,285	940,758	943,830	943,433	941,992	944,876	937	806	1,069	942,285	940,758	943,830	943,222	941,769	944,681
48 - 52	1,958	1,701	2,215	917,749	915,866	919,636	919,707	918,022	921,420	1,582	1,362	1,806	917,749	915,866	919,636	919,331	917,619	921,066
53 - 57	3,047	2,647	3,447	883,638	881,326	885,956	886,685	884,689	888,716	2,427	2,087	2,770	883,638	881,326	885,956	886,065	884,027	888,129
58 - 62	4,368	3,796	4,944	836,133	833,339	838,900	840,501	838,200	842,843	3,410	2,926	3,896	836,133	833,339	838,900	839,543	837,159	841,953
63 - 67	5,779	5,018	6,545	769,998	766,689	773,230	775,777	773,121	778,392	4,390	3,760	5,032	769,998	766,689	773,230	774,388	771,631	777,093
68 - 72	7,005	6,083	7,944	678,494	674,893	682,007	685,499	682,666	688,283	5,127	4,382	5,899	678,494	674,893	682,007	683,621	680,650	686,533
73 - 77	7,617	6,620	8,649	554,326	550,744	557,788	561,944	559,174	564,679	5,301	4,520	6,116	554,326	550,744	557,788	559,627	556,730	562,497
78 - 82	7,106	6,170	8,078	393,784	390,324	397,173	400,890	397,810	403,942	4,617	3,910	5,352	393,784	390,324	397,173	398,401	395,296	401,465
83 - 87	5,116	4,400	5,864	208,183	203,696	212,699	213,299	208,742	217,902	3,038	2,551	3,562	208,183	203,696	212,699	211,221	206,744	215,723
88 - 92	2,004	1,552	2,484	44,385	39,290	49,590	46,388	41,047	51,825	1,086	864	1,329	44,385	39,290	49,590	45,471	40,239	50,766
93 - 97	-2	-9	4	5	-11	25	3	-7	16	-2	-9	4	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.1_3, cont: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of ‘additional initiation’ with ‘delayed smoking’, ‘alternative initiation’ with ‘gateway effect’, ‘diversion from quitting’, and ‘switching’ with ‘resumed smoking’, using different ERRs

Age interval	ERR=0.3									ERR=0.4								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	10	8	13	988,756	988,189	989,305	988,766	988,199	989,316	7	5	9	988,756	988,189	989,305	988,763	988,195	989,312
28 - 32	54	44	63	982,030	981,252	982,794	982,083	981,309	982,844	37	30	45	982,030	981,252	982,794	982,067	981,292	982,829
33 - 37	167	141	195	972,766	971,766	973,763	972,933	971,947	973,918	119	97	142	972,766	971,766	973,763	972,884	971,897	973,871
38 - 42	381	322	442	959,978	958,732	961,234	960,359	959,148	961,581	268	219	319	959,978	958,732	961,234	960,245	959,029	961,476
43 - 47	718	607	832	942,285	940,758	943,830	943,004	941,540	944,476	492	400	586	942,285	940,758	943,830	942,777	941,306	944,263
48 - 52	1,191	1,005	1,380	917,749	915,866	919,636	918,939	917,196	920,701	783	634	939	917,749	915,866	919,636	918,532	916,760	920,317
53 - 57	1,779	1,499	2,067	883,638	881,326	885,956	885,417	883,332	887,518	1,105	882	1,342	883,638	881,326	885,956	884,743	882,607	886,904
58 - 62	2,411	2,022	2,815	836,133	833,339	838,900	838,544	836,084	841,021	1,375	1,069	1,702	836,133	833,339	838,900	837,508	834,979	840,056
63 - 67	2,951	2,451	3,471	769,998	766,689	773,230	772,949	770,086	775,762	1,469	1,085	1,877	769,998	766,689	773,230	771,467	768,485	774,400
68 - 72	3,206	2,627	3,813	678,494	674,893	682,007	681,700	678,596	684,758	1,251	813	1,716	678,494	674,893	682,007	679,745	676,514	682,933
73 - 77	2,974	2,386	3,600	554,326	550,744	557,788	557,300	554,230	560,292	652	206	1,132	554,326	550,744	557,788	554,978	551,750	558,128
78 - 82	2,183	1,680	2,726	393,784	390,324	397,173	395,967	392,810	399,060	-179	-592	250	393,784	390,324	397,173	393,605	390,395	396,785
83 - 87	1,080	746	1,440	208,183	203,696	212,699	209,263	204,832	213,710	-749	-1,094	-422	208,183	203,696	212,699	207,434	203,035	211,797
88 - 92	262	113	401	44,385	39,290	49,590	44,647	39,557	49,819	-470	-755	-218	44,385	39,290	49,590	43,915	38,911	48,988
93 - 97	-2	-9	4	5	-11	25	3	-7	16	-2	-9	4	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.1_3, cont: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking', using different ERRs

Age interval	ERR=0.5									ERR=0.6								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-1	-1	-1	993,650	993,281	994,009	993,650	993,280	994,008	-1	-1	-1	993,650	993,281	994,009	993,649	993,280	994,008
23 - 27	3	1	5	988,756	988,189	989,305	988,759	988,191	989,308	-1	-2	0	988,756	988,189	989,305	988,755	988,188	989,305
28 - 32	21	14	28	982,030	981,252	982,794	982,050	981,276	982,814	4	-1	9	982,030	981,252	982,794	982,034	981,259	982,798
33 - 37	69	51	88	972,766	971,766	973,763	972,834	971,846	973,824	18	3	33	972,766	971,766	973,763	972,783	971,791	973,776
38 - 42	151	112	192	959,978	958,732	961,234	960,129	958,904	961,363	30	-1	64	959,978	958,732	961,234	960,008	958,778	961,249
43 - 47	257	185	333	942,285	940,758	943,830	942,542	941,054	944,044	14	-43	75	942,285	940,758	943,830	942,299	940,799	943,821
48 - 52	360	243	486	917,749	915,866	919,636	918,109	916,304	919,925	-78	-173	22	917,749	915,866	919,636	917,671	915,844	919,528
53 - 57	406	233	593	883,638	881,326	885,956	884,044	881,864	886,244	-318	-465	-164	883,638	881,326	885,956	883,320	881,069	885,581
58 - 62	303	68	560	836,133	833,339	838,900	836,436	833,825	839,069	-802	-1,021	-580	836,133	833,339	838,900	835,331	832,630	838,052
63 - 67	-52	-359	272	769,998	766,689	773,230	769,946	766,837	773,002	-1,607	-1,919	-1,301	769,998	766,689	773,230	768,391	765,166	771,586
68 - 72	-728	-1,103	-344	678,494	674,893	682,007	677,766	674,351	681,121	-2,722	-3,146	-2,320	678,494	674,893	682,007	675,772	672,200	679,307
73 - 77	-1,651	-2,084	-1,224	554,326	550,744	557,788	552,675	549,311	555,983	-3,921	-4,459	-3,420	554,326	550,744	557,788	550,405	546,857	553,897
78 - 82	-2,454	-2,922	-2,010	393,784	390,324	397,173	391,330	388,017	394,601	-4,629	-5,250	-4,051	393,784	390,324	397,173	389,155	385,779	392,548
83 - 87	-2,441	-2,913	-2,008	208,183	203,696	212,699	205,742	201,393	210,071	-3,994	-4,623	-3,414	208,183	203,696	212,699	204,189	199,881	208,492
88 - 92	-1,113	-1,541	-725	44,385	39,290	49,590	43,272	38,368	48,269	-1,674	-2,223	-1,169	44,385	39,290	49,590	42,711	37,868	47,642
93 - 97	-2	-9	4	5	-11	25	3	-7	16	-2	-8	3	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.1_3, cont: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking', using different ERRs

Age interval	ERR=0.7									ERR=0.8								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-1	-2	-1	993,650	993,281	994,009	993,649	993,280	994,008	-2	-2	-2	993,650	993,281	994,009	993,649	993,279	994,007
23 - 27	-5	-6	-4	988,756	988,189	989,305	988,751	988,184	989,301	-9	-10	-8	988,756	988,189	989,305	988,747	988,180	989,297
28 - 32	-13	-18	-9	982,030	981,252	982,794	982,016	981,240	982,781	-31	-35	-27	982,030	981,252	982,794	981,999	981,221	982,764
33 - 37	-35	-47	-22	972,766	971,766	973,763	972,731	971,735	973,726	-88	-101	-76	972,766	971,766	973,763	972,677	971,679	973,674
38 - 42	-93	-121	-65	959,978	958,732	961,234	959,884	958,644	961,134	-221	-251	-192	959,978	958,732	961,234	959,757	958,509	961,015
43 - 47	-237	-290	-183	942,285	940,758	943,830	942,049	940,529	943,588	-495	-557	-436	942,285	940,758	943,830	941,790	940,256	943,352
48 - 52	-531	-626	-436	917,749	915,866	919,636	917,218	915,358	919,111	-999	-1,116	-887	917,749	915,866	919,636	916,750	914,851	918,668
53 - 57	-1,066	-1,228	-910	883,638	881,326	885,956	882,572	880,263	884,899	-1,836	-2,042	-1,642	883,638	881,326	885,956	881,802	879,440	884,192
58 - 62	-1,937	-2,196	-1,694	836,133	833,339	838,900	834,196	831,394	837,010	-3,100	-3,439	-2,782	836,133	833,339	838,900	833,032	830,131	835,937
63 - 67	-3,189	-3,583	-2,826	769,998	766,689	773,230	766,809	763,449	770,126	-4,794	-5,306	-4,309	769,998	766,689	773,230	765,204	761,699	768,657
68 - 72	-4,720	-5,272	-4,209	678,494	674,893	682,007	673,774	670,032	677,461	-6,715	-7,426	-6,040	678,494	674,893	682,007	671,780	667,849	675,623
73 - 77	-6,146	-6,852	-5,484	554,326	550,744	557,788	548,181	544,448	551,858	-8,312	-9,209	-7,463	554,326	550,744	557,788	546,014	542,096	549,881
78 - 82	-6,692	-7,500	-5,931	393,784	390,324	397,173	387,092	383,636	390,609	-8,633	-9,623	-7,693	393,784	390,324	397,173	385,150	381,549	388,743
83 - 87	-5,403	-6,187	-4,675	208,183	203,696	212,699	202,780	198,500	207,086	-6,671	-7,598	-5,813	208,183	203,696	212,699	201,512	197,230	205,807
88 - 92	-2,158	-2,799	-1,561	44,385	39,290	49,590	42,227	37,439	47,118	-2,571	-3,283	-1,903	44,385	39,290	49,590	41,814	37,070	46,666
93 - 97	-2	-8	3	5	-11	25	3	-7	17	-2	-7	3	5	-11	25	3	-8	18
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.1_3, cont: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking', using different ERRs

Age interval	ERR=0.9									ERR=1.0								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-2	993,650	993,281	994,009	993,648	993,279	994,007
23 - 27	-13	-14	-11	988,756	988,189	989,305	988,743	988,176	989,293	-16	-18	-15	988,756	988,189	989,305	988,740	988,172	989,290
28 - 32	-49	-54	-44	982,030	981,252	982,794	981,981	981,202	982,747	-67	-73	-61	982,030	981,252	982,794	981,963	981,184	982,730
33 - 37	-143	-158	-128	972,766	971,766	973,763	972,623	971,620	973,622	-199	-218	-180	972,766	971,766	973,763	972,567	971,561	973,570
38 - 42	-352	-389	-316	959,978	958,732	961,234	959,626	958,371	960,895	-486	-534	-440	959,978	958,732	961,234	959,492	958,229	960,766
43 - 47	-762	-841	-686	942,285	940,758	943,830	941,524	939,970	943,105	-1,036	-1,138	-937	942,285	940,758	943,830	941,250	939,672	942,852
48 - 52	-1,480	-1,632	-1,334	917,749	915,866	919,636	916,268	914,337	918,225	-1,976	-2,170	-1,787	917,749	915,866	919,636	915,773	913,801	917,757
53 - 57	-2,628	-2,896	-2,371	883,638	881,326	885,956	881,010	878,574	883,456	-3,440	-3,779	-3,109	883,638	881,326	885,956	880,198	877,697	882,714
58 - 62	-4,289	-4,722	-3,871	836,133	833,339	838,900	831,844	828,832	834,851	-5,500	-6,042	-4,967	836,133	833,339	838,900	830,633	827,520	833,746
63 - 67	-6,416	-7,066	-5,786	769,998	766,689	773,230	763,582	759,951	767,192	-8,049	-8,847	-7,262	769,998	766,689	773,230	761,949	758,169	765,708
68 - 72	-8,695	-9,581	-7,832	678,494	674,893	682,007	669,799	665,694	673,820	-10,654	-11,715	-9,598	678,494	674,893	682,007	667,840	663,556	672,040
73 - 77	-10,409	-11,502	-9,360	554,326	550,744	557,788	543,917	539,807	547,945	-12,427	-13,706	-11,173	554,326	550,744	557,788	541,899	537,609	546,100
78 - 82	-10,447	-11,611	-9,330	393,784	390,324	397,173	383,337	379,630	387,040	-12,127	-13,455	-10,841	393,784	390,324	397,173	381,657	377,827	385,468
83 - 87	-7,800	-8,841	-6,825	208,183	203,696	212,699	200,383	196,076	204,683	-8,795	-9,938	-7,708	208,183	203,696	212,699	199,388	195,074	203,688
88 - 92	-2,919	-3,683	-2,201	44,385	39,290	49,590	41,466	36,741	46,266	-3,209	-4,008	-2,454	44,385	39,290	49,590	41,176	36,475	45,954
93 - 97	-1	-2	1	5	-11	25	4	-13	26	12	-15	48	5	-11	25	17	-25	72
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.2: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'additional initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	15	12	17	988,756	988,189	989,305	988,771	988,204	989,320	14	11	16	988,756	988,189	989,305	988,770	988,203	989,319
28 - 32	81	69	93	982,030	981,252	982,794	982,110	981,338	982,869	76	65	88	982,030	981,252	982,794	982,106	981,333	982,865
33 - 37	257	222	292	972,766	971,766	973,763	973,023	972,041	974,003	244	210	278	972,766	971,766	973,763	973,009	972,027	973,991
38 - 42	598	519	678	959,978	958,732	961,234	960,576	959,374	961,783	568	492	644	959,978	958,732	961,234	960,546	959,343	961,755
43 - 47	1,161	1,010	1,313	942,285	940,758	943,830	943,447	942,006	944,890	1,101	955	1,247	942,285	940,758	943,830	943,386	941,941	944,834
48 - 52	1,997	1,738	2,255	917,749	915,866	919,636	919,745	918,063	921,458	1,889	1,640	2,138	917,749	915,866	919,636	919,638	917,945	921,351
53 - 57	3,128	2,723	3,534	883,638	881,326	885,956	886,766	884,774	888,791	2,949	2,561	3,339	883,638	881,326	885,956	886,588	884,587	888,626
58 - 62	4,514	3,932	5,101	836,133	833,339	838,900	840,646	838,351	842,986	4,237	3,680	4,797	836,133	833,339	838,900	840,370	838,054	842,722
63 - 67	6,015	5,235	6,796	769,998	766,689	773,230	776,013	773,366	778,617	5,611	4,872	6,358	769,998	766,689	773,230	775,609	772,938	778,240
68 - 72	7,353	6,401	8,318	678,494	674,893	682,007	685,847	683,039	688,597	6,804	5,905	7,720	678,494	674,893	682,007	685,298	682,447	688,098
73 - 77	8,084	7,041	9,147	554,326	550,744	557,788	562,410	559,658	565,131	7,398	6,426	8,402	554,326	550,744	557,788	561,724	558,931	564,476
78 - 82	7,651	6,662	8,674	393,784	390,324	397,173	401,434	398,352	404,509	6,901	5,986	7,850	393,784	390,324	397,173	400,684	397,595	403,744
83 - 87	5,613	4,840	6,420	208,183	203,696	212,699	213,796	209,244	218,420	4,973	4,274	5,703	208,183	203,696	212,699	213,156	208,605	217,753
88 - 92	2,257	1,739	2,810	44,385	39,290	49,590	46,641	41,278	52,115	1,964	1,525	2,431	44,385	39,290	49,590	46,349	41,022	51,780
93 - 97	-2	-9	4	5	-11	25	3	-7	16	-2	-9	4	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.3: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'additional initiation', 'diversion from quitting', and 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	33	28	39	988,756	988,189	989,305	988,789	988,222	989,339	32	27	37	988,756	988,189	989,305	988,788	988,220	989,337
28 - 32	175	151	198	982,030	981,252	982,794	982,204	981,437	982,959	167	145	190	982,030	981,252	982,794	982,197	981,429	982,952
33 - 37	539	471	606	972,766	971,766	973,763	973,304	972,332	974,272	517	452	582	972,766	971,766	973,763	973,283	972,310	974,251
38 - 42	1,228	1,078	1,377	959,978	958,732	961,234	961,205	960,033	962,372	1,177	1,033	1,321	959,978	958,732	961,234	961,155	959,982	962,324
43 - 47	2,344	2,062	2,625	942,285	940,758	943,830	944,629	943,263	946,021	2,245	1,973	2,517	942,285	940,758	943,830	944,530	943,160	945,929
48 - 52	3,974	3,496	4,451	917,749	915,866	919,636	921,723	920,162	923,314	3,798	3,336	4,259	917,749	915,866	919,636	921,547	919,977	923,146
53 - 57	6,155	5,410	6,899	883,638	881,326	885,956	889,794	888,049	891,575	5,866	5,148	6,581	883,638	881,326	885,956	889,504	887,740	891,307
58 - 62	8,804	7,744	9,871	836,133	833,339	838,900	844,936	842,977	846,928	8,356	7,336	9,381	836,133	833,339	838,900	844,489	842,497	846,505
63 - 67	11,650	10,229	13,069	769,998	766,689	773,230	781,648	779,469	783,817	11,000	9,645	12,355	769,998	766,689	773,230	780,998	778,771	783,199
68 - 72	14,162	12,434	15,904	678,494	674,893	682,007	692,656	690,418	694,899	13,277	11,637	14,939	678,494	674,893	682,007	691,772	689,493	694,059
73 - 77	15,490	13,591	17,417	554,326	550,744	557,788	569,817	567,518	572,121	14,386	12,589	16,204	554,326	550,744	557,788	568,712	566,394	571,059
78 - 82	14,567	12,756	16,430	393,784	390,324	397,173	408,350	405,351	411,348	13,359	11,671	15,109	393,784	390,324	397,173	407,143	404,157	410,125
83 - 87	10,563	9,139	12,046	208,183	203,696	212,699	218,746	213,919	223,601	9,530	8,236	10,881	208,183	203,696	212,699	217,713	212,955	222,495
88 - 92	4,100	3,151	5,119	44,385	39,290	49,590	48,485	42,869	54,270	3,628	2,810	4,508	44,385	39,290	49,590	48,013	42,462	53,716
93 - 97	-3	-15	6	5	-11	25	2	-4	10	-3	-15	6	5	-11	25	2	-4	10
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.4: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

0% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	-2	-3	-2	988,756	988,189	989,305	988,754	988,187	989,303	-3	-3	-3	988,756	988,189	989,305	988,753	988,186	989,302
28 - 32	-10	-11	-10	982,030	981,252	982,794	982,019	981,242	982,784	-12	-13	-11	982,030	981,252	982,794	982,018	981,240	982,782
33 - 37	-29	-31	-28	972,766	971,766	973,763	972,736	971,736	973,734	-34	-35	-32	972,766	971,766	973,763	972,732	971,731	973,730
38 - 42	-64	-66	-61	959,978	958,732	961,234	959,914	958,668	961,170	-73	-77	-70	959,978	958,732	961,234	959,904	958,657	961,160
43 - 47	-119	-124	-114	942,285	940,758	943,830	942,166	940,639	943,712	-139	-145	-132	942,285	940,758	943,830	942,147	940,619	943,693
48 - 52	-201	-209	-193	917,749	915,866	919,636	917,547	915,666	919,436	-236	-247	-225	917,749	915,866	919,636	917,513	915,630	919,405
53 - 57	-314	-327	-301	883,638	881,326	885,956	883,324	881,014	885,642	-371	-389	-354	883,638	881,326	885,956	883,267	880,955	885,588
58 - 62	-456	-476	-437	836,133	833,339	838,900	835,676	832,884	838,442	-544	-572	-518	836,133	833,339	838,900	835,588	832,792	838,360
63 - 67	-618	-647	-590	769,998	766,689	773,230	769,380	766,071	772,621	-746	-787	-706	769,998	766,689	773,230	769,252	765,941	772,497
68 - 72	-771	-812	-731	678,494	674,893	682,007	677,723	674,110	681,246	-943	-1,002	-888	678,494	674,893	682,007	677,551	673,925	681,077
73 - 77	-862	-918	-809	554,326	550,744	557,788	553,464	549,892	556,926	-1,074	-1,152	-1,000	554,326	550,744	557,788	553,252	549,684	556,720
78 - 82	-814	-884	-749	393,784	390,324	397,173	392,969	389,532	396,349	-1,041	-1,136	-952	393,784	390,324	397,173	392,743	389,303	396,122
83 - 87	-557	-630	-490	208,183	203,696	212,699	207,626	203,170	212,108	-744	-843	-653	208,183	203,696	212,699	207,439	202,985	211,913
88 - 92	-144	-203	-92	44,385	39,290	49,590	44,241	39,176	49,419	-224	-306	-150	44,385	39,290	49,590	44,161	39,102	49,330
93 - 97	0	0	0	5	-11	25	5	-11	25	0	0	0	5	-11	25	5	-11	25
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.4, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

0.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	-1	-1	-1	988,756	988,189	989,305	988,755	988,188	989,304	-2	-2	-1	988,756	988,189	989,305	988,754	988,187	989,304
28 - 32	-3	-4	-2	982,030	981,252	982,794	982,026	981,249	982,791	-5	-6	-4	982,030	981,252	982,794	982,024	981,247	982,789
33 - 37	-7	-10	-5	972,766	971,766	973,763	972,758	971,759	973,754	-13	-15	-10	972,766	971,766	973,763	972,753	971,754	973,749
38 - 42	-12	-18	-5	959,978	958,732	961,234	959,966	958,724	961,216	-23	-30	-17	959,978	958,732	961,234	959,954	958,712	961,205
43 - 47	-15	-28	-2	942,285	940,758	943,830	942,270	940,752	943,810	-38	-50	-25	942,285	940,758	943,830	942,248	940,729	943,788
48 - 52	-14	-36	9	917,749	915,866	919,636	917,735	915,864	919,607	-55	-75	-33	917,749	915,866	919,636	917,694	915,822	919,571
53 - 57	-7	-42	30	883,638	881,326	885,956	883,631	881,352	885,916	-75	-107	-40	883,638	881,326	885,956	883,564	881,283	885,854
58 - 62	6	-46	61	836,133	833,339	838,900	836,139	833,378	838,870	-99	-147	-48	836,133	833,339	838,900	836,034	833,274	838,770
63 - 67	24	-46	98	769,998	766,689	773,230	770,022	766,770	773,189	-130	-195	-61	769,998	766,689	773,230	769,868	766,605	773,046
68 - 72	39	-46	132	678,494	674,893	682,007	678,533	675,009	681,975	-169	-248	-84	678,494	674,893	682,007	678,325	674,789	681,772
73 - 77	49	-44	150	554,326	550,744	557,788	554,375	550,878	557,753	-209	-298	-114	554,326	550,744	557,788	554,117	550,611	557,499
78 - 82	56	-32	151	393,784	390,324	397,173	393,840	390,452	397,160	-221	-309	-130	393,784	390,324	397,173	393,562	390,170	396,887
83 - 87	76	7	147	208,183	203,696	212,699	208,259	203,794	212,765	-155	-229	-81	208,183	203,696	212,699	208,028	203,564	212,518
88 - 92	99	64	136	44,385	39,290	49,590	44,484	39,374	49,679	-1	-48	40	44,385	39,290	49,590	44,384	39,301	49,557
93 - 97	0	-2	1	5	-11	25	5	-10	23	0	-2	1	5	-11	25	5	-10	23
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.4, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

1% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	1	988,756	988,189	989,305	988,756	988,189	989,306	0	-1	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	4	2	5	982,030	981,252	982,794	982,033	981,256	982,797	1	0	3	982,030	981,252	982,794	982,031	981,254	982,795
33 - 37	14	9	20	972,766	971,766	973,763	972,780	971,783	973,773	8	3	14	972,766	971,766	973,763	972,774	971,777	973,768
38 - 42	39	27	52	959,978	958,732	961,234	960,017	958,780	961,262	26	14	38	959,978	958,732	961,234	960,004	958,767	961,250
43 - 47	88	64	113	942,285	940,758	943,830	942,374	940,860	943,904	62	39	85	942,285	940,758	943,830	942,347	940,833	943,879
48 - 52	171	128	215	917,749	915,866	919,636	917,920	916,070	919,773	124	84	166	917,749	915,866	919,636	917,873	916,021	919,727
53 - 57	296	226	366	883,638	881,326	885,956	883,934	881,689	886,187	217	152	285	883,638	881,326	885,956	883,856	881,604	886,115
58 - 62	461	357	568	836,133	833,339	838,900	836,594	833,887	839,288	339	242	440	836,133	833,339	838,900	836,471	833,758	839,169
63 - 67	652	509	800	769,998	766,689	773,230	770,650	767,455	773,756	473	341	611	769,998	766,689	773,230	770,471	767,267	773,589
68 - 72	832	655	1,016	678,494	674,893	682,007	679,326	675,894	682,691	587	425	759	678,494	674,893	682,007	679,082	675,630	682,463
73 - 77	939	743	1,143	554,326	550,744	557,788	555,265	551,852	558,564	635	460	825	554,326	550,744	557,788	554,962	551,539	558,270
78 - 82	906	723	1,100	393,784	390,324	397,173	394,690	391,335	397,980	578	417	755	393,784	390,324	397,173	394,362	391,010	397,645
83 - 87	693	558	839	208,183	203,696	212,699	208,876	204,423	213,394	419	300	547	208,183	203,696	212,699	208,602	204,143	213,095
88 - 92	336	261	418	44,385	39,290	49,590	44,721	39,585	49,938	216	162	275	44,385	39,290	49,590	44,601	39,475	49,805
93 - 97	-1	-3	1	5	-11	25	4	-9	22	-1	-3	1	5	-11	25	4	-9	22
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.4, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

1.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	1	1	2	988,756	988,189	989,305	988,757	988,190	989,307	1	0	1	988,756	988,189	989,305	988,757	988,190	989,306
28 - 32	10	8	13	982,030	981,252	982,794	982,040	981,263	982,804	8	6	11	982,030	981,252	982,794	982,038	981,261	982,802
33 - 37	36	28	43	972,766	971,766	973,763	972,801	971,805	973,793	29	22	37	972,766	971,766	973,763	972,795	971,798	973,787
38 - 42	90	72	108	959,978	958,732	961,234	960,068	958,833	961,310	75	58	93	959,978	958,732	961,234	960,053	958,818	961,296
43 - 47	190	154	227	942,285	940,758	943,830	942,476	940,970	943,997	161	126	196	942,285	940,758	943,830	942,446	940,940	943,970
48 - 52	354	289	419	917,749	915,866	919,636	918,103	916,273	919,941	301	240	363	917,749	915,866	919,636	918,050	916,217	919,890
53 - 57	593	488	699	883,638	881,326	885,956	884,232	882,010	886,451	504	406	604	883,638	881,326	885,956	884,143	881,918	886,368
58 - 62	907	750	1,066	836,133	833,339	838,900	837,040	834,383	839,691	768	622	918	836,133	833,339	838,900	836,901	834,237	839,560
63 - 67	1,268	1,053	1,490	769,998	766,689	773,230	771,266	768,143	774,311	1,064	864	1,272	769,998	766,689	773,230	771,062	767,919	774,124
68 - 72	1,607	1,337	1,884	678,494	674,893	682,007	680,101	676,736	683,389	1,328	1,078	1,586	678,494	674,893	682,007	679,822	676,443	683,123
73 - 77	1,808	1,511	2,116	554,326	550,744	557,788	556,135	552,816	559,356	1,461	1,188	1,747	554,326	550,744	557,788	555,787	552,446	559,024
78 - 82	1,736	1,455	2,029	393,784	390,324	397,173	395,519	392,200	398,761	1,359	1,106	1,627	393,784	390,324	397,173	395,142	391,820	398,393
83 - 87	1,296	1,083	1,523	208,183	203,696	212,699	209,479	205,004	214,002	980	795	1,180	208,183	203,696	212,699	209,163	204,704	213,683
88 - 92	568	441	706	44,385	39,290	49,590	44,953	39,775	50,203	429	335	531	44,385	39,290	49,590	44,814	39,657	50,034
93 - 97	-1	-5	2	5	-11	25	4	-9	20	-1	-5	2	5	-11	25	4	-9	20
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.4, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

2% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	3	2	3	988,756	988,189	989,305	988,759	988,192	989,308	2	1	3	988,756	988,189	989,305	988,758	988,191	989,308
28 - 32	17	14	21	982,030	981,252	982,794	982,047	981,271	982,811	15	12	18	982,030	981,252	982,794	982,045	981,268	982,809
33 - 37	57	46	67	972,766	971,766	973,763	972,822	971,828	973,813	50	40	60	972,766	971,766	973,763	972,815	971,821	973,807
38 - 42	140	116	165	959,978	958,732	961,234	960,118	958,889	961,356	124	101	148	959,978	958,732	961,234	960,102	958,872	961,341
43 - 47	291	243	340	942,285	940,758	943,830	942,577	941,079	944,088	259	213	305	942,285	940,758	943,830	942,544	941,045	944,058
48 - 52	534	448	621	917,749	915,866	919,636	918,283	916,467	920,107	475	394	558	917,749	915,866	919,636	918,224	916,402	920,051
53 - 57	886	747	1,027	883,638	881,326	885,956	884,525	882,328	886,729	787	655	921	883,638	881,326	885,956	884,426	882,223	886,638
58 - 62	1,346	1,136	1,557	836,133	833,339	838,900	837,479	834,867	840,092	1,190	993	1,389	836,133	833,339	838,900	837,323	834,701	839,946
63 - 67	1,872	1,584	2,166	769,998	766,689	773,230	771,870	768,814	774,860	1,643	1,373	1,919	769,998	766,689	773,230	771,641	768,561	774,650
68 - 72	2,365	2,006	2,733	678,494	674,893	682,007	680,859	677,567	684,071	2,051	1,717	2,397	678,494	674,893	682,007	680,546	677,224	683,783
73 - 77	2,658	2,260	3,070	554,326	550,744	557,788	556,984	553,750	560,133	2,267	1,900	2,648	554,326	550,744	557,788	556,593	553,338	559,762
78 - 82	2,545	2,166	2,941	393,784	390,324	397,173	396,329	393,060	399,536	2,121	1,777	2,484	393,784	390,324	397,173	395,904	392,623	399,123
83 - 87	1,885	1,595	2,193	208,183	203,696	212,699	210,068	205,582	214,597	1,528	1,272	1,800	208,183	203,696	212,699	209,711	205,242	214,228
88 - 92	795	616	986	44,385	39,290	49,590	45,180	39,974	50,471	636	498	787	44,385	39,290	49,590	45,021	39,837	50,274
93 - 97	-1	-6	2	5	-11	25	4	-8	19	-1	-6	2	5	-11	25	4	-8	19
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.4, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

2.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	4	3	5	988,756	988,189	989,305	988,760	988,193	989,309	3	2	4	988,756	988,189	989,305	988,759	988,192	989,309
28 - 32	24	20	29	982,030	981,252	982,794	982,054	981,278	982,818	22	17	26	982,030	981,252	982,794	982,051	981,275	982,815
33 - 37	78	65	91	972,766	971,766	973,763	972,844	971,851	973,834	70	58	83	972,766	971,766	973,763	972,836	971,844	973,827
38 - 42	190	160	221	959,978	958,732	961,234	960,168	958,943	961,402	173	144	202	959,978	958,732	961,234	960,150	958,924	961,385
43 - 47	391	331	451	942,285	940,758	943,830	942,676	941,186	944,178	355	298	413	942,285	940,758	943,830	942,641	941,148	944,145
48 - 52	712	605	819	917,749	915,866	919,636	918,461	916,660	920,271	647	545	750	917,749	915,866	919,636	918,396	916,591	920,209
53 - 57	1,175	1,000	1,350	883,638	881,326	885,956	884,813	882,643	886,998	1,066	901	1,232	883,638	881,326	885,956	884,704	882,527	886,899
58 - 62	1,776	1,516	2,039	836,133	833,339	838,900	837,909	835,340	840,476	1,605	1,358	1,853	836,133	833,339	838,900	837,737	835,158	840,315
63 - 67	2,464	2,105	2,827	769,998	766,689	773,230	772,462	769,477	775,391	2,210	1,872	2,555	769,998	766,689	773,230	772,208	769,199	775,156
68 - 72	3,107	2,659	3,566	678,494	674,893	682,007	681,601	678,394	684,749	2,760	2,341	3,191	678,494	674,893	682,007	681,254	678,021	684,423
73 - 77	3,488	2,991	4,001	554,326	550,744	557,788	557,814	554,666	560,903	3,054	2,594	3,531	554,326	550,744	557,788	557,380	554,198	560,479
78 - 82	3,336	2,864	3,831	393,784	390,324	397,173	397,120	393,898	400,292	2,864	2,429	3,319	393,784	390,324	397,173	396,648	393,423	399,822
83 - 87	2,460	2,096	2,846	208,183	203,696	212,699	210,643	206,147	215,182	2,062	1,737	2,409	208,183	203,696	212,699	210,245	205,756	214,763
88 - 92	1,016	787	1,261	44,385	39,290	49,590	45,401	40,172	50,713	839	655	1,037	44,385	39,290	49,590	45,224	40,014	50,509
93 - 97	-2	-7	3	5	-11	25	3	-8	18	-2	-7	3	5	-11	25	3	-8	18
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.4, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

3% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	5	4	6	988,756	988,189	989,305	988,761	988,194	989,311	5	3	6	988,756	988,189	989,305	988,761	988,193	989,310
28 - 32	31	26	37	982,030	981,252	982,794	982,061	981,285	982,825	28	23	34	982,030	981,252	982,794	982,058	981,282	982,822
33 - 37	99	84	115	972,766	971,766	973,763	972,865	971,873	973,854	91	76	106	972,766	971,766	973,763	972,856	971,865	973,846
38 - 42	240	204	276	959,978	958,732	961,234	960,218	958,995	961,451	221	186	256	959,978	958,732	961,234	960,198	958,975	961,432
43 - 47	490	418	562	942,285	940,758	943,830	942,775	941,289	944,269	451	382	520	942,285	940,758	943,830	942,736	941,249	944,233
48 - 52	887	759	1,015	917,749	915,866	919,636	918,636	916,846	920,432	817	695	939	917,749	915,866	919,636	918,565	916,771	920,364
53 - 57	1,459	1,250	1,668	883,638	881,326	885,956	885,097	882,951	887,255	1,339	1,142	1,538	883,638	881,326	885,956	884,978	882,825	887,142
58 - 62	2,199	1,888	2,512	836,133	833,339	838,900	838,332	835,805	840,856	2,012	1,716	2,309	836,133	833,339	838,900	838,144	835,608	840,680
63 - 67	3,043	2,615	3,476	769,998	766,689	773,230	773,041	770,111	775,917	2,766	2,362	3,179	769,998	766,689	773,230	772,764	769,814	775,662
68 - 72	3,832	3,297	4,380	678,494	674,893	682,007	682,326	679,185	685,419	3,452	2,951	3,967	678,494	674,893	682,007	681,946	678,791	685,058
73 - 77	4,298	3,702	4,915	554,326	550,744	557,788	558,625	555,556	561,648	3,823	3,271	4,395	554,326	550,744	557,788	558,149	555,053	561,192
78 - 82	4,108	3,540	4,701	393,784	390,324	397,173	397,892	394,692	401,034	3,590	3,067	4,138	393,784	390,324	397,173	397,374	394,180	400,524
83 - 87	3,021	2,584	3,488	208,183	203,696	212,699	211,204	206,714	215,763	2,583	2,193	3,001	208,183	203,696	212,699	210,766	206,279	215,301
88 - 92	1,232	954	1,532	44,385	39,290	49,590	45,617	40,363	50,962	1,037	808	1,282	44,385	39,290	49,590	45,422	40,193	50,735
93 - 97	-2	-8	3	5	-11	25	3	-7	16	-2	-8	3	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.4, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

3.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	7	5	8	988,756	988,189	989,305	988,763	988,195	989,312	6	5	7	988,756	988,189	989,305	988,762	988,194	989,311
28 - 32	38	32	44	982,030	981,252	982,794	982,068	981,292	982,831	35	29	41	982,030	981,252	982,794	982,065	981,289	982,828
33 - 37	120	102	139	972,766	971,766	973,763	972,886	971,895	973,874	111	94	129	972,766	971,766	973,763	972,877	971,886	973,865
38 - 42	289	247	331	959,978	958,732	961,234	960,267	959,048	961,497	268	228	309	959,978	958,732	961,234	960,246	959,026	961,478
43 - 47	588	504	672	942,285	940,758	943,830	942,873	941,394	944,358	546	466	626	942,285	940,758	943,830	942,831	941,351	944,318
48 - 52	1,060	912	1,209	917,749	915,866	919,636	918,809	917,034	920,594	984	842	1,126	917,749	915,866	919,636	918,733	916,955	920,518
53 - 57	1,738	1,496	1,981	883,638	881,326	885,956	885,376	883,259	887,511	1,609	1,380	1,840	883,638	881,326	885,956	885,247	883,119	887,390
58 - 62	2,614	2,254	2,978	836,133	833,339	838,900	838,747	836,264	841,237	2,411	2,068	2,756	836,133	833,339	838,900	838,544	836,045	841,045
63 - 67	3,611	3,115	4,113	769,998	766,689	773,230	773,609	770,729	776,421	3,311	2,841	3,788	769,998	766,689	773,230	773,309	770,408	776,146
68 - 72	4,542	3,921	5,176	678,494	674,893	682,007	683,036	679,963	686,051	4,130	3,546	4,726	678,494	674,893	682,007	682,624	679,532	685,678
73 - 77	5,091	4,398	5,806	554,326	550,744	557,788	559,417	556,426	562,375	4,574	3,932	5,239	554,326	550,744	557,788	558,900	555,880	561,889
78 - 82	4,862	4,201	5,550	393,784	390,324	397,173	398,645	395,467	401,760	4,299	3,692	4,933	393,784	390,324	397,173	398,083	394,907	401,203
83 - 87	3,569	3,058	4,112	208,183	203,696	212,699	211,752	207,267	216,335	3,093	2,635	3,580	208,183	203,696	212,699	211,276	206,794	215,821
88 - 92	1,444	1,116	1,795	44,385	39,290	49,590	45,829	40,550	51,198	1,230	957	1,522	44,385	39,290	49,590	45,615	40,365	50,948
93 - 97	-2	-9	4	5	-11	25	3	-7	15	-2	-9	4	5	-11	25	3	-7	15
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.4, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

4% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	8	6	9	988,756	988,189	989,305	988,764	988,196	989,313	7	6	9	988,756	988,189	989,305	988,763	988,196	989,312
28 - 32	45	38	52	982,030	981,252	982,794	982,075	981,300	982,837	42	35	49	982,030	981,252	982,794	982,071	981,296	982,834
33 - 37	141	120	162	972,766	971,766	973,763	972,907	971,918	973,893	132	112	152	972,766	971,766	973,763	972,897	971,908	973,884
38 - 42	338	290	386	959,978	958,732	961,234	960,316	959,100	961,542	316	270	362	959,978	958,732	961,234	960,293	959,076	961,522
43 - 47	685	590	780	942,285	940,758	943,830	942,970	941,500	944,447	639	549	731	942,285	940,758	943,830	942,925	941,451	944,405
48 - 52	1,231	1,063	1,400	917,749	915,866	919,636	918,980	917,219	920,748	1,149	988	1,311	917,749	915,866	919,636	918,898	917,131	920,672
53 - 57	2,013	1,739	2,289	883,638	881,326	885,956	885,651	883,563	887,761	1,875	1,613	2,137	883,638	881,326	885,956	885,513	883,414	887,631
58 - 62	3,022	2,613	3,435	836,133	833,339	838,900	839,155	836,712	841,612	2,803	2,414	3,195	836,133	833,339	838,900	838,936	836,473	841,408
63 - 67	4,168	3,605	4,737	769,998	766,689	773,230	774,166	771,348	776,927	3,845	3,313	4,385	769,998	766,689	773,230	773,843	771,001	776,628
68 - 72	5,236	4,533	5,956	678,494	674,893	682,007	683,730	680,726	686,686	4,792	4,133	5,470	678,494	674,893	682,007	683,287	680,253	686,271
73 - 77	5,864	5,080	6,676	554,326	550,744	557,788	560,191	557,272	563,082	5,308	4,578	6,064	554,326	550,744	557,788	559,634	556,692	562,554
78 - 82	5,598	4,847	6,379	393,784	390,324	397,173	399,381	396,247	402,496	4,991	4,300	5,713	393,784	390,324	397,173	398,774	395,625	401,878
83 - 87	4,104	3,521	4,722	208,183	203,696	212,699	212,287	207,771	216,880	3,590	3,067	4,146	208,183	203,696	212,699	211,773	207,291	216,344
88 - 92	1,650	1,275	2,054	44,385	39,290	49,590	46,035	40,747	51,442	1,419	1,104	1,757	44,385	39,290	49,590	45,804	40,529	51,154
93 - 97	-2	-11	4	5	-11	25	3	-6	14	-2	-11	4	5	-11	25	3	-6	14
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.5: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transition of 'alternative initiation'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	1	1	1	993,650	993,281	994,009	993,651	993,282	994,010	1	1	1	993,650	993,281	994,009	993,651	993,282	994,010
23 - 27	4	4	5	988,756	988,189	989,305	988,760	988,193	989,310	4	4	5	988,756	988,189	989,305	988,760	988,193	989,309
28 - 32	11	10	12	982,030	981,252	982,794	982,041	981,264	982,804	11	9	12	982,030	981,252	982,794	982,040	981,263	982,804
33 - 37	22	19	25	972,766	971,766	973,763	972,788	971,790	973,783	21	19	24	972,766	971,766	973,763	972,787	971,789	973,782
38 - 42	38	33	42	959,978	958,732	961,234	960,015	958,773	961,268	36	32	40	959,978	958,732	961,234	960,014	958,771	961,266
43 - 47	59	52	66	942,285	940,758	943,830	942,344	940,823	943,886	56	49	62	942,285	940,758	943,830	942,341	940,820	943,883
48 - 52	84	74	95	917,749	915,866	919,636	917,833	915,958	919,715	80	70	89	917,749	915,866	919,636	917,828	915,952	919,710
53 - 57	113	99	127	883,638	881,326	885,956	883,751	881,448	886,056	105	92	119	883,638	881,326	885,956	883,744	881,440	886,049
58 - 62	140	122	158	836,133	833,339	838,900	836,272	833,485	839,027	129	112	146	836,133	833,339	838,900	836,262	833,474	839,017
63 - 67	157	136	179	769,998	766,689	773,230	770,155	766,866	773,373	143	123	163	769,998	766,689	773,230	770,141	766,850	773,360
68 - 72	155	132	178	678,494	674,893	682,007	678,649	675,063	682,143	136	116	158	678,494	674,893	682,007	678,631	675,044	682,127
73 - 77	120	99	142	554,326	550,744	557,788	554,446	550,885	557,891	99	80	120	554,326	550,744	557,788	554,426	550,863	557,871
78 - 82	49	30	68	393,784	390,324	397,173	393,832	390,385	397,211	30	12	49	393,784	390,324	397,173	393,814	390,366	397,193
83 - 87	-37	-58	-16	208,183	203,696	212,699	208,146	203,662	212,661	-48	-70	-27	208,183	203,696	212,699	208,135	203,652	212,650
88 - 92	-73	-98	-49	44,385	39,290	49,590	44,312	39,222	49,515	-74	-99	-51	44,385	39,290	49,590	44,311	39,221	49,513
93 - 97	0	0	0	5	-11	25	5	-10	25	0	0	0	5	-11	25	5	-10	25
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.6: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transition of 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	35	29	40	988,756	988,189	989,305	988,791	988,223	989,340	33	28	39	988,756	988,189	989,305	988,789	988,222	989,339
28 - 32	179	155	203	982,030	981,252	982,794	982,208	981,441	982,963	173	151	196	982,030	981,252	982,794	982,203	981,435	982,958
33 - 37	550	483	618	972,766	971,766	973,763	973,316	972,344	974,283	533	468	599	972,766	971,766	973,763	973,299	972,326	974,268
38 - 42	1,254	1,103	1,404	959,978	958,732	961,234	961,232	960,061	962,399	1,215	1,068	1,360	959,978	958,732	961,234	961,192	960,020	962,360
43 - 47	2,396	2,111	2,678	942,285	940,758	943,830	944,681	943,315	946,073	2,317	2,042	2,591	942,285	940,758	943,830	944,603	943,234	945,999
48 - 52	4,067	3,587	4,547	917,749	915,866	919,636	921,816	920,257	923,402	3,927	3,462	4,391	917,749	915,866	919,636	921,676	920,108	923,271
53 - 57	6,310	5,559	7,057	883,638	881,326	885,956	889,948	888,205	891,728	6,079	5,354	6,800	883,638	881,326	885,956	889,717	887,958	891,515
58 - 62	9,044	7,975	10,116	836,133	833,339	838,900	845,176	843,220	847,164	8,686	7,657	9,722	836,133	833,339	838,900	844,818	842,841	846,829
63 - 67	12,000	10,568	13,432	769,998	766,689	773,230	781,998	779,827	784,164	11,478	10,103	12,851	769,998	766,689	773,230	781,476	779,255	783,676
68 - 72	14,639	12,892	16,396	678,494	674,893	682,007	693,133	690,893	695,378	13,925	12,261	15,611	678,494	674,893	682,007	692,420	690,140	694,707
73 - 77	16,082	14,144	18,033	554,326	550,744	557,788	570,408	568,097	572,716	15,186	13,358	17,036	554,326	550,744	557,788	569,512	567,192	571,853
78 - 82	15,204	13,367	17,099	393,784	390,324	397,173	408,987	405,962	412,014	14,214	12,489	16,001	393,784	390,324	397,173	407,997	404,977	411,012
83 - 87	11,091	9,615	12,616	208,183	203,696	212,699	219,274	214,432	224,181	10,231	8,875	11,641	208,183	203,696	212,699	218,414	213,603	223,247
88 - 92	4,320	3,317	5,401	44,385	39,290	49,590	48,705	43,066	54,545	3,916	3,026	4,873	44,385	39,290	49,590	48,301	42,718	54,071
93 - 97	-3	-15	6	5	-11	25	2	-4	10	-3	-15	6	5	-11	25	2	-4	10
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.7: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transition of 'additional initiation'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	-1	-1	-1	988,756	988,189	989,305	988,755	988,188	989,305	-1	-1	-1	988,756	988,189	989,305	988,755	988,188	989,304
28 - 32	-2	-2	-2	982,030	981,252	982,794	982,028	981,250	982,792	-3	-3	-3	982,030	981,252	982,794	982,027	981,249	982,791
33 - 37	-5	-5	-4	972,766	971,766	973,763	972,761	971,762	973,758	-7	-8	-6	972,766	971,766	973,763	972,759	971,759	973,756
38 - 42	-9	-10	-8	959,978	958,732	961,234	959,969	958,723	961,224	-14	-16	-13	959,978	958,732	961,234	959,964	958,718	961,219
43 - 47	-17	-19	-15	942,285	940,758	943,830	942,268	940,742	943,813	-26	-28	-23	942,285	940,758	943,830	942,260	940,733	943,804
48 - 52	-30	-33	-26	917,749	915,866	919,636	917,719	915,839	919,605	-44	-48	-40	917,749	915,866	919,636	917,704	915,824	919,590
53 - 57	-49	-54	-43	883,638	881,326	885,956	883,590	881,280	885,903	-72	-78	-66	883,638	881,326	885,956	883,567	881,258	885,879
58 - 62	-75	-82	-67	836,133	833,339	838,900	836,058	833,267	838,818	-109	-117	-101	836,133	833,339	838,900	836,024	833,233	838,783
63 - 67	-109	-118	-99	769,998	766,689	773,230	769,889	766,585	773,116	-156	-166	-145	769,998	766,689	773,230	769,842	766,539	773,067
68 - 72	-145	-155	-134	678,494	674,893	682,007	678,349	674,755	681,854	-205	-217	-193	678,494	674,893	682,007	678,289	674,696	681,792
73 - 77	-173	-183	-162	554,326	550,744	557,788	554,153	550,581	557,605	-241	-253	-228	554,326	550,744	557,788	554,086	550,515	557,536
78 - 82	-171	-181	-162	393,784	390,324	397,173	393,612	390,155	396,996	-234	-246	-222	393,784	390,324	397,173	393,550	390,092	396,931
83 - 87	-118	-126	-109	208,183	203,696	212,699	208,065	203,583	212,576	-157	-168	-146	208,183	203,696	212,699	208,026	203,546	212,536
88 - 92	-24	-32	-17	44,385	39,290	49,590	44,361	39,271	49,564	-29	-39	-20	44,385	39,290	49,590	44,356	39,267	49,559
93 - 97	0	0	0	5	-11	25	5	-11	25	0	0	0	5	-11	25	5	-11	25
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.8: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transition of 'diversion from quitting'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	-1	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	-2	-3	-2	982,030	981,252	982,794	982,028	981,250	982,792	-3	-4	-2	982,030	981,252	982,794	982,027	981,250	982,791
33 - 37	-7	-9	-6	972,766	971,766	973,763	972,758	971,758	973,756	-10	-12	-8	972,766	971,766	973,763	972,756	971,755	973,753
38 - 42	-18	-21	-15	959,978	958,732	961,234	959,960	958,713	961,216	-25	-28	-21	959,978	958,732	961,234	959,953	958,706	961,209
43 - 47	-38	-44	-33	942,285	940,758	943,830	942,247	940,719	943,794	-52	-59	-45	942,285	940,758	943,830	942,234	940,705	943,780
48 - 52	-70	-80	-61	917,749	915,866	919,636	917,678	915,794	919,571	-96	-109	-83	917,749	915,866	919,636	917,653	915,769	919,549
53 - 57	-120	-136	-104	883,638	881,326	885,956	883,519	881,201	885,842	-163	-184	-142	883,638	881,326	885,956	883,476	881,155	885,801
58 - 62	-190	-214	-166	836,133	833,339	838,900	835,943	833,144	838,718	-258	-292	-225	836,133	833,339	838,900	835,875	833,071	838,654
63 - 67	-281	-318	-246	769,998	766,689	773,230	769,717	766,398	772,968	-382	-432	-334	769,998	766,689	773,230	769,616	766,289	772,872
68 - 72	-390	-440	-341	678,494	674,893	682,007	678,104	674,471	681,639	-529	-597	-463	678,494	674,893	682,007	677,966	674,319	681,500
73 - 77	-496	-561	-434	554,326	550,744	557,788	553,831	550,250	557,307	-670	-758	-587	554,326	550,744	557,788	553,656	550,073	557,137
78 - 82	-554	-629	-483	393,784	390,324	397,173	393,230	389,775	396,624	-746	-848	-650	393,784	390,324	397,173	393,037	389,591	396,425
83 - 87	-487	-565	-415	208,183	203,696	212,699	207,696	203,235	212,178	-653	-757	-556	208,183	203,696	212,699	207,530	203,068	212,008
88 - 92	-233	-308	-164	44,385	39,290	49,590	44,152	39,086	49,312	-310	-409	-218	44,385	39,290	49,590	44,075	39,026	49,224
93 - 97	0	0	0	5	-11	25	5	-11	25	0	0	0	5	-11	25	5	-11	25
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.9: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'additional initiation' and 'gateway effect'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	-2	-2	-2	988,756	988,189	989,305	988,754	988,187	989,303	-2	-3	-2	988,756	988,189	989,305	988,754	988,187	989,303
28 - 32	-8	-9	-8	982,030	981,252	982,794	982,022	981,244	982,786	-9	-10	-9	982,030	981,252	982,794	982,021	981,243	982,785
33 - 37	-22	-23	-21	972,766	971,766	973,763	972,744	971,744	973,741	-24	-25	-22	972,766	971,766	973,763	972,742	971,742	973,739
38 - 42	-45	-48	-43	959,978	958,732	961,234	959,932	958,687	961,188	-49	-51	-46	959,978	958,732	961,234	959,929	958,684	961,184
43 - 47	-81	-85	-77	942,285	940,758	943,830	942,204	940,678	943,747	-87	-91	-83	942,285	940,758	943,830	942,198	940,673	943,741
48 - 52	-131	-137	-125	917,749	915,866	919,636	917,618	915,740	919,502	-140	-147	-134	917,749	915,866	919,636	917,609	915,731	919,493
53 - 57	-194	-204	-185	883,638	881,326	885,956	883,444	881,138	885,753	-208	-218	-199	883,638	881,326	885,956	883,430	881,125	885,739
58 - 62	-267	-280	-255	836,133	833,339	838,900	835,866	833,077	838,620	-287	-301	-274	836,133	833,339	838,900	835,846	833,057	838,600
63 - 67	-337	-353	-321	769,998	766,689	773,230	769,661	766,361	772,882	-364	-381	-347	769,998	766,689	773,230	769,634	766,335	772,854
68 - 72	-382	-400	-364	678,494	674,893	682,007	678,113	674,522	681,608	-415	-435	-397	678,494	674,893	682,007	678,079	674,489	681,573
73 - 77	-367	-386	-349	554,326	550,744	557,788	553,959	550,392	557,404	-405	-424	-386	554,326	550,744	557,788	553,922	550,355	557,367
78 - 82	-261	-280	-243	393,784	390,324	397,173	393,522	390,070	396,902	-296	-315	-276	393,784	390,324	397,173	393,488	390,037	396,867
83 - 87	-71	-97	-44	208,183	203,696	212,699	208,112	203,631	212,624	-92	-119	-65	208,183	203,696	212,699	208,091	203,611	212,603
88 - 92	89	56	122	44,385	39,290	49,590	44,474	39,353	49,676	86	53	119	44,385	39,290	49,590	44,471	39,351	49,672
93 - 97	0	0	0	5	-11	25	5	-11	25	0	0	0	5	-11	25	5	-11	25
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.10: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'alternative initiation' and 'delayed smoking'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	1	1	1	993,650	993,281	994,009	993,651	993,282	994,010	1	1	1	993,650	993,281	994,009	993,651	993,282	994,010
23 - 27	4	3	4	988,756	988,189	989,305	988,760	988,193	989,309	4	3	4	988,756	988,189	989,305	988,760	988,193	989,309
28 - 32	9	8	10	982,030	981,252	982,794	982,038	981,261	982,802	8	7	9	982,030	981,252	982,794	982,038	981,261	982,802
33 - 37	16	14	17	972,766	971,766	973,763	972,781	971,783	973,777	15	13	17	972,766	971,766	973,763	972,781	971,782	973,777
38 - 42	25	22	28	959,978	958,732	961,234	960,003	958,759	961,256	24	21	27	959,978	958,732	961,234	960,002	958,758	961,255
43 - 47	38	33	43	942,285	940,758	943,830	942,323	940,800	943,865	36	31	41	942,285	940,758	943,830	942,321	940,798	943,864
48 - 52	52	45	59	917,749	915,866	919,636	917,801	915,923	919,685	49	43	56	917,749	915,866	919,636	917,798	915,920	919,682
53 - 57	68	59	78	883,638	881,326	885,956	883,706	881,399	886,016	64	55	73	883,638	881,326	885,956	883,702	881,394	886,012
58 - 62	82	70	95	836,133	833,339	838,900	836,215	833,426	838,972	76	64	88	836,133	833,339	838,900	836,209	833,420	838,966
63 - 67	90	76	106	769,998	766,689	773,230	770,088	766,792	773,312	82	68	97	769,998	766,689	773,230	770,080	766,783	773,304
68 - 72	87	70	105	678,494	674,893	682,007	678,581	674,991	682,082	77	61	94	678,494	674,893	682,007	678,571	674,980	682,073
73 - 77	66	49	84	554,326	550,744	557,788	554,392	550,825	557,840	55	38	72	554,326	550,744	557,788	554,381	550,813	557,830
78 - 82	26	10	42	393,784	390,324	397,173	393,809	390,361	397,187	16	0	32	393,784	390,324	397,173	393,799	390,351	397,177
83 - 87	-21	-36	-6	208,183	203,696	212,699	208,162	203,677	212,679	-27	-42	-13	208,183	203,696	212,699	208,156	203,671	212,673
88 - 92	-39	-54	-26	44,385	39,290	49,590	44,345	39,253	49,549	-40	-55	-27	44,385	39,290	49,590	44,345	39,252	49,548
93 - 97	0	0	0	5	-11	25	5	-10	25	0	0	0	5	-11	25	5	-10	25
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.11: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' and 'resumed smoking'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	17	15	20	988,756	988,189	989,305	988,773	988,206	989,323	17	14	19	988,756	988,189	989,305	988,773	988,206	989,322
28 - 32	91	79	103	982,030	981,252	982,794	982,121	981,348	982,879	88	77	100	982,030	981,252	982,794	982,118	981,345	982,877
33 - 37	286	251	321	972,766	971,766	973,763	973,052	972,070	974,032	277	243	311	972,766	971,766	973,763	973,043	972,061	974,023
38 - 42	661	582	741	959,978	958,732	961,234	960,639	959,439	961,845	640	564	717	959,978	958,732	961,234	960,618	959,417	961,826
43 - 47	1,279	1,127	1,430	942,285	940,758	943,830	943,564	942,126	945,008	1,237	1,091	1,384	942,285	940,758	943,830	943,523	942,078	944,968
48 - 52	2,194	1,934	2,453	917,749	915,866	919,636	919,943	918,262	921,655	2,119	1,867	2,369	917,749	915,866	919,636	919,868	918,179	921,583
53 - 57	3,435	3,026	3,842	883,638	881,326	885,956	887,073	885,081	889,092	3,309	2,915	3,703	883,638	881,326	885,956	886,947	884,952	888,976
58 - 62	4,957	4,370	5,547	836,133	833,339	838,900	841,090	838,792	843,427	4,762	4,197	5,331	836,133	833,339	838,900	840,895	838,581	843,248
63 - 67	6,612	5,822	7,401	769,998	766,689	773,230	776,610	773,953	779,210	6,326	5,569	7,087	769,998	766,689	773,230	776,324	773,650	778,951
68 - 72	8,093	7,127	9,063	678,494	674,893	682,007	686,588	683,791	689,336	7,702	6,779	8,630	678,494	674,893	682,007	686,196	683,360	688,982
73 - 77	8,906	7,840	9,990	554,326	550,744	557,788	563,232	560,481	565,955	8,414	7,403	9,441	554,326	550,744	557,788	562,740	559,947	565,489
78 - 82	8,419	7,402	9,468	393,784	390,324	397,173	402,202	399,117	405,298	7,876	6,919	8,864	393,784	390,324	397,173	401,659	398,549	404,763
83 - 87	6,130	5,311	6,976	208,183	203,696	212,699	214,313	209,723	218,963	5,659	4,906	6,440	208,183	203,696	212,699	213,842	209,270	218,475
88 - 92	2,381	1,829	2,973	44,385	39,290	49,590	46,766	41,357	52,262	2,160	1,671	2,688	44,385	39,290	49,590	46,545	41,174	52,022
93 - 97	-2	-9	4	5	-11	25	3	-7	16	-2	-9	4	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

0% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-30	-33	-27	988,756	988,189	989,305	988,726	988,158	989,277	-45	-49	-41	988,756	988,189	989,305	988,711	988,142	989,262
28 - 32	-65	-76	-54	982,030	981,252	982,794	981,965	981,186	982,730	-106	-118	-94	982,030	981,252	982,794	981,924	981,145	982,689
33 - 37	-130	-156	-103	972,766	971,766	973,763	972,636	971,638	973,637	-216	-244	-188	972,766	971,766	973,763	972,549	971,549	973,552
38 - 42	-245	-296	-192	959,978	958,732	961,234	959,733	958,497	960,981	-408	-462	-354	959,978	958,732	961,234	959,569	958,335	960,820
43 - 47	-440	-527	-349	942,285	940,758	943,830	941,845	940,341	943,369	-724	-816	-629	942,285	940,758	943,830	941,561	940,058	943,082
48 - 52	-755	-891	-611	917,749	915,866	919,636	916,994	915,189	918,821	-1,217	-1,360	-1,067	917,749	915,866	919,636	916,532	914,731	918,354
53 - 57	-1,235	-1,432	-1,026	883,638	881,326	885,956	882,403	880,197	884,606	-1,944	-2,152	-1,727	883,638	881,326	885,956	881,694	879,499	883,888
58 - 62	-1,919	-2,182	-1,639	836,133	833,339	838,900	834,214	831,568	836,825	-2,947	-3,227	-2,654	836,133	833,339	838,900	833,186	830,564	835,781
63 - 67	-2,806	-3,131	-2,457	769,998	766,689	773,230	767,192	764,113	770,196	-4,206	-4,556	-3,841	769,998	766,689	773,230	765,792	762,745	768,780
68 - 72	-3,800	-4,162	-3,414	678,494	674,893	682,007	674,695	671,360	677,955	-5,557	-5,948	-5,150	678,494	674,893	682,007	672,937	669,634	676,166
73 - 77	-4,609	-4,957	-4,239	554,326	550,744	557,788	549,717	546,403	552,939	-6,572	-6,958	-6,166	554,326	550,744	557,788	547,755	544,463	550,935
78 - 82	-4,678	-4,962	-4,375	393,784	390,324	397,173	389,105	385,822	392,333	-6,481	-6,817	-6,131	393,784	390,324	397,173	387,303	384,055	390,490
83 - 87	-3,362	-3,614	-3,107	208,183	203,696	212,699	204,821	200,468	209,178	-4,475	-4,788	-4,159	208,183	203,696	212,699	203,708	199,401	208,012
88 - 92	-864	-1,131	-618	44,385	39,290	49,590	43,520	38,603	48,568	-1,003	-1,309	-710	44,385	39,290	49,590	43,382	38,494	48,379
93 - 97	0	0	0	5	-11	25	5	-11	25	0	0	0	5	-11	25	5	-11	25
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

0.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-29	-32	-25	988,756	988,189	989,305	988,727	988,159	989,278	-44	-48	-40	988,756	988,189	989,305	988,712	988,143	989,263
28 - 32	-58	-70	-47	982,030	981,252	982,794	981,972	981,194	982,736	-99	-111	-87	982,030	981,252	982,794	981,931	981,152	982,696
33 - 37	-109	-136	-81	972,766	971,766	973,763	972,657	971,659	973,655	-196	-225	-167	972,766	971,766	973,763	972,570	971,570	973,570
38 - 42	-195	-249	-140	959,978	958,732	961,234	959,783	958,551	961,027	-360	-416	-303	959,978	958,732	961,234	959,617	958,385	960,865
43 - 47	-340	-434	-243	942,285	940,758	943,830	941,945	940,449	943,459	-627	-725	-527	942,285	940,758	943,830	941,658	940,161	943,171
48 - 52	-576	-725	-421	917,749	915,866	919,636	917,173	915,379	918,987	-1,044	-1,199	-883	917,749	915,866	919,636	916,705	914,914	918,517
53 - 57	-943	-1,161	-714	883,638	881,326	885,956	882,696	880,519	884,876	-1,662	-1,892	-1,424	883,638	881,326	885,956	881,976	879,812	884,148
58 - 62	-1,479	-1,777	-1,165	836,133	833,339	838,900	834,654	832,058	837,222	-2,524	-2,839	-2,197	836,133	833,339	838,900	833,609	831,027	836,162
63 - 67	-2,198	-2,575	-1,798	769,998	766,689	773,230	767,800	764,776	770,747	-3,623	-4,023	-3,209	769,998	766,689	773,230	766,375	763,377	769,307
68 - 72	-3,033	-3,467	-2,579	678,494	674,893	682,007	675,461	672,204	678,650	-4,827	-5,290	-4,353	678,494	674,893	682,007	673,668	670,433	676,826
73 - 77	-3,749	-4,180	-3,297	554,326	550,744	557,788	550,577	547,332	553,731	-5,757	-6,219	-5,271	554,326	550,744	557,788	548,570	545,356	551,686
78 - 82	-3,858	-4,213	-3,485	393,784	390,324	397,173	389,926	386,701	393,110	-5,711	-6,111	-5,296	393,784	390,324	397,173	388,073	384,884	391,218
83 - 87	-2,767	-3,024	-2,505	208,183	203,696	212,699	205,416	201,058	209,778	-3,923	-4,241	-3,602	208,183	203,696	212,699	204,260	199,940	208,586
88 - 92	-636	-863	-428	44,385	39,290	49,590	43,749	38,791	48,818	-794	-1,067	-536	44,385	39,290	49,590	43,591	38,674	48,607
93 - 97	0	-2	1	5	-11	25	5	-10	23	0	-2	1	5	-11	25	5	-10	23
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

1% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-27	-31	-24	988,756	988,189	989,305	988,729	988,160	989,279	-43	-47	-39	988,756	988,189	989,305	988,713	988,144	989,264
28 - 32	-51	-63	-40	982,030	981,252	982,794	981,978	981,201	982,743	-92	-105	-80	982,030	981,252	982,794	981,937	981,159	982,703
33 - 37	-88	-116	-59	972,766	971,766	973,763	972,678	971,682	973,675	-176	-206	-146	972,766	971,766	973,763	972,590	971,591	973,588
38 - 42	-146	-203	-88	959,978	958,732	961,234	959,832	958,603	961,073	-312	-372	-252	959,978	958,732	961,234	959,665	958,436	960,908
43 - 47	-241	-342	-137	942,285	940,758	943,830	942,044	940,556	943,549	-532	-636	-424	942,285	940,758	943,830	941,754	940,264	943,260
48 - 52	-399	-563	-231	917,749	915,866	919,636	917,350	915,566	919,153	-873	-1,042	-698	917,749	915,866	919,636	916,876	915,098	918,673
53 - 57	-655	-897	-401	883,638	881,326	885,956	882,984	880,836	885,139	-1,384	-1,637	-1,124	883,638	881,326	885,956	882,254	880,116	884,398
58 - 62	-1,047	-1,381	-693	836,133	833,339	838,900	835,086	832,535	837,614	-2,109	-2,459	-1,745	836,133	833,339	838,900	834,024	831,487	836,539
63 - 67	-1,602	-2,032	-1,149	769,998	766,689	773,230	768,396	765,442	771,292	-3,052	-3,505	-2,583	769,998	766,689	773,230	766,945	764,004	769,823
68 - 72	-2,283	-2,788	-1,759	678,494	674,893	682,007	676,211	673,036	679,340	-4,112	-4,644	-3,563	678,494	674,893	682,007	674,382	671,231	677,475
73 - 77	-2,909	-3,426	-2,371	554,326	550,744	557,788	551,418	548,254	554,505	-4,961	-5,511	-4,395	554,326	550,744	557,788	549,366	546,232	552,422
78 - 82	-3,057	-3,493	-2,603	393,784	390,324	397,173	390,727	387,533	393,883	-4,959	-5,435	-4,476	393,784	390,324	397,173	388,825	385,670	391,941
83 - 87	-2,185	-2,476	-1,898	208,183	203,696	212,699	205,998	201,624	210,387	-3,384	-3,727	-3,039	208,183	203,696	212,699	204,799	200,475	209,155
88 - 92	-413	-608	-234	44,385	39,290	49,590	43,972	38,972	49,075	-591	-835	-358	44,385	39,290	49,590	43,794	38,832	48,839
93 - 97	-1	-3	1	5	-11	25	4	-9	22	-1	-3	1	5	-11	25	4	-9	22
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

1.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-26	-29	-23	988,756	988,189	989,305	988,730	988,162	989,280	-41	-45	-38	988,756	988,189	989,305	988,715	988,146	989,265
28 - 32	-45	-57	-33	982,030	981,252	982,794	981,985	981,209	982,749	-86	-99	-73	982,030	981,252	982,794	981,944	981,166	982,709
33 - 37	-67	-97	-37	972,766	971,766	973,763	972,699	971,704	973,695	-156	-187	-124	972,766	971,766	973,763	972,610	971,613	973,605
38 - 42	-97	-157	-35	959,978	958,732	961,234	959,881	958,654	961,119	-265	-328	-201	959,978	958,732	961,234	959,713	958,485	960,951
43 - 47	-143	-251	-32	942,285	940,758	943,830	942,142	940,664	943,642	-437	-550	-322	942,285	940,758	943,830	941,848	940,367	943,344
48 - 52	-225	-402	-42	917,749	915,866	919,636	917,524	915,755	919,312	-705	-888	-516	917,749	915,866	919,636	917,044	915,280	918,827
53 - 57	-371	-638	-92	883,638	881,326	885,956	883,267	881,150	885,400	-1,111	-1,388	-825	883,638	881,326	885,956	882,527	880,420	884,654
58 - 62	-623	-1,000	-229	836,133	833,339	838,900	835,510	833,004	838,000	-1,701	-2,093	-1,298	836,133	833,339	838,900	834,432	831,943	836,908
63 - 67	-1,018	-1,511	-505	769,998	766,689	773,230	768,980	766,094	771,825	-2,493	-3,003	-1,967	769,998	766,689	773,230	767,505	764,630	770,331
68 - 72	-1,550	-2,136	-944	678,494	674,893	682,007	676,944	673,842	680,000	-3,413	-4,024	-2,789	678,494	674,893	682,007	675,081	672,000	678,109
73 - 77	-2,088	-2,699	-1,454	554,326	550,744	557,788	552,239	549,165	555,259	-4,184	-4,822	-3,531	554,326	550,744	557,788	550,143	547,089	553,130
78 - 82	-2,275	-2,800	-1,734	393,784	390,324	397,173	391,508	388,341	394,621	-4,225	-4,777	-3,662	393,784	390,324	397,173	389,558	386,433	392,642
83 - 87	-1,618	-1,957	-1,285	208,183	203,696	212,699	206,565	202,182	210,972	-2,858	-3,239	-2,487	208,183	203,696	212,699	205,325	200,989	209,690
88 - 92	-195	-369	-33	44,385	39,290	49,590	44,190	39,158	49,334	-392	-617	-181	44,385	39,290	49,590	43,993	39,013	49,063
93 - 97	-1	-5	2	5	-11	25	4	-9	20	-1	-5	2	5	-11	25	4	-9	20
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

2% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-25	-28	-21	988,756	988,189	989,305	988,731	988,163	989,282	-40	-44	-36	988,756	988,189	989,305	988,716	988,147	989,267
28 - 32	-38	-50	-26	982,030	981,252	982,794	981,992	981,216	982,756	-79	-93	-66	982,030	981,252	982,794	981,951	981,174	982,715
33 - 37	-46	-78	-15	972,766	971,766	973,763	972,719	971,726	973,713	-135	-168	-103	972,766	971,766	973,763	972,630	971,635	973,623
38 - 42	-48	-113	18	959,978	958,732	961,234	959,930	958,708	961,164	-218	-285	-151	959,978	958,732	961,234	959,760	958,537	960,995
43 - 47	-46	-163	73	942,285	940,758	943,830	942,239	940,767	943,729	-343	-464	-221	942,285	940,758	943,830	941,942	940,469	943,431
48 - 52	-53	-246	146	917,749	915,866	919,636	917,696	915,942	919,467	-538	-737	-335	917,749	915,866	919,636	917,211	915,458	918,978
53 - 57	-92	-387	214	883,638	881,326	885,956	883,546	881,451	885,659	-842	-1,146	-531	883,638	881,326	885,956	882,796	880,711	884,901
58 - 62	-206	-624	230	836,133	833,339	838,900	835,927	833,466	838,381	-1,301	-1,733	-857	836,133	833,339	838,900	834,832	832,382	837,272
63 - 67	-445	-996	129	769,998	766,689	773,230	769,552	766,725	772,348	-1,945	-2,514	-1,359	769,998	766,689	773,230	768,053	765,237	770,829
68 - 72	-833	-1,500	-145	678,494	674,893	682,007	677,661	674,625	680,648	-2,730	-3,417	-2,026	678,494	674,893	682,007	675,764	672,741	678,724
73 - 77	-1,286	-1,991	-564	554,326	550,744	557,788	553,040	550,052	555,987	-3,424	-4,148	-2,682	554,326	550,744	557,788	550,902	547,924	553,815
78 - 82	-1,512	-2,124	-884	393,784	390,324	397,173	392,271	389,129	395,355	-3,510	-4,142	-2,869	393,784	390,324	397,173	390,274	387,162	393,316
83 - 87	-1,065	-1,460	-674	208,183	203,696	212,699	207,118	202,730	211,543	-2,345	-2,772	-1,929	208,183	203,696	212,699	205,838	201,509	210,206
88 - 92	18	-150	180	44,385	39,290	49,590	44,403	39,339	49,574	-198	-413	6	44,385	39,290	49,590	44,187	39,169	49,294
93 - 97	-1	-6	2	5	-11	25	4	-8	19	-1	-6	2	5	-11	25	4	-8	19
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

2.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-23	-27	-20	988,756	988,189	989,305	988,733	988,165	989,283	-39	-43	-35	988,756	988,189	989,305	988,717	988,148	989,268
28 - 32	-31	-44	-18	982,030	981,252	982,794	981,999	981,223	982,763	-73	-86	-59	982,030	981,252	982,794	981,957	981,180	982,721
33 - 37	-26	-59	7	972,766	971,766	973,763	972,740	971,748	973,730	-115	-150	-81	972,766	971,766	973,763	972,650	971,656	973,642
38 - 42	0	-69	69	959,978	958,732	961,234	959,978	958,759	961,208	-171	-242	-100	959,978	958,732	961,234	959,806	958,587	961,038
43 - 47	49	-77	177	942,285	940,758	943,830	942,335	940,869	943,819	-251	-380	-120	942,285	940,758	943,830	942,035	940,569	943,517
48 - 52	117	-93	333	917,749	915,866	919,636	917,866	916,124	919,623	-374	-590	-154	917,749	915,866	919,636	917,375	915,638	919,128
53 - 57	183	-141	518	883,638	881,326	885,956	883,821	881,752	885,911	-577	-907	-239	883,638	881,326	885,956	883,061	880,998	885,144
58 - 62	203	-259	683	836,133	833,339	838,900	836,335	833,912	838,756	-908	-1,380	-422	836,133	833,339	838,900	835,225	832,815	837,630
63 - 67	115	-499	751	769,998	766,689	773,230	770,113	767,350	772,848	-1,408	-2,037	-761	769,998	766,689	773,230	768,590	765,832	771,310
68 - 72	-132	-878	635	678,494	674,893	682,007	678,362	675,389	681,279	-2,061	-2,827	-1,281	678,494	674,893	682,007	676,433	673,471	679,329
73 - 77	-503	-1,297	311	554,326	550,744	557,788	553,823	550,896	556,691	-2,683	-3,493	-1,854	554,326	550,744	557,788	551,643	548,733	554,490
78 - 82	-768	-1,463	-51	393,784	390,324	397,173	393,016	389,910	396,072	-2,811	-3,527	-2,086	393,784	390,324	397,173	390,973	387,885	394,015
83 - 87	-524	-975	-68	208,183	203,696	212,699	207,659	203,276	212,099	-1,844	-2,322	-1,377	208,183	203,696	212,699	206,339	202,011	210,710
88 - 92	226	47	407	44,385	39,290	49,590	44,611	39,525	49,790	-8	-223	198	44,385	39,290	49,590	44,377	39,334	49,504
93 - 97	-2	-7	3	5	-11	25	3	-8	18	-2	-7	3	5	-11	25	3	-8	18
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

3% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-22	-26	-19	988,756	988,189	989,305	988,734	988,166	989,284	-38	-42	-34	988,756	988,189	989,305	988,718	988,150	989,269
28 - 32	-24	-38	-11	982,030	981,252	982,794	982,005	981,231	982,769	-66	-80	-52	982,030	981,252	982,794	981,964	981,187	982,727
33 - 37	-5	-40	30	972,766	971,766	973,763	972,761	971,769	973,750	-96	-132	-60	972,766	971,766	973,763	972,670	971,675	973,660
38 - 42	48	-25	121	959,978	958,732	961,234	960,026	958,809	961,252	-125	-200	-50	959,978	958,732	961,234	959,853	958,634	961,081
43 - 47	144	9	282	942,285	940,758	943,830	942,430	940,968	943,902	-159	-298	-19	942,285	940,758	943,830	942,127	940,666	943,603
48 - 52	285	58	517	917,749	915,866	919,636	918,034	916,304	919,777	-212	-445	24	917,749	915,866	919,636	917,537	915,809	919,276
53 - 57	453	100	815	883,638	881,326	885,956	884,092	882,048	886,156	-317	-675	50	883,638	881,326	885,956	883,322	881,280	885,381
58 - 62	604	97	1,128	836,133	833,339	838,900	836,737	834,354	839,124	-522	-1,035	4	836,133	833,339	838,900	835,611	833,237	837,988
63 - 67	664	-14	1,362	769,998	766,689	773,230	770,662	767,950	773,336	-883	-1,571	-175	769,998	766,689	773,230	769,115	766,410	771,777
68 - 72	554	-269	1,400	678,494	674,893	682,007	679,048	676,150	681,897	-1,408	-2,246	-548	678,494	674,893	682,007	677,086	674,205	679,921
73 - 77	262	-617	1,167	554,326	550,744	557,788	554,588	551,734	557,394	-1,959	-2,851	-1,048	554,326	550,744	557,788	552,367	549,526	555,162
78 - 82	-41	-820	757	393,784	390,324	397,173	393,743	390,667	396,771	-2,129	-2,923	-1,323	393,784	390,324	397,173	391,655	388,599	394,656
83 - 87	4	-505	521	208,183	203,696	212,699	208,187	203,800	212,635	-1,355	-1,887	-827	208,183	203,696	212,699	206,828	202,500	211,218
88 - 92	429	230	638	44,385	39,290	49,590	44,814	39,695	50,010	177	-45	396	44,385	39,290	49,590	44,562	39,495	49,722
93 - 97	-2	-8	3	5	-11	25	3	-7	16	-2	-8	3	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

3.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-21	-25	-17	988,756	988,189	989,305	988,735	988,167	989,286	-36	-41	-32	988,756	988,189	989,305	988,720	988,151	989,270
28 - 32	-18	-32	-4	982,030	981,252	982,794	982,012	981,238	982,775	-60	-74	-45	982,030	981,252	982,794	981,970	981,194	982,734
33 - 37	15	-21	52	972,766	971,766	973,763	972,781	971,790	973,768	-76	-114	-38	972,766	971,766	973,763	972,690	971,697	973,677
38 - 42	95	18	173	959,978	958,732	961,234	960,073	958,858	961,295	-79	-159	1	959,978	958,732	961,234	959,899	958,683	961,124
43 - 47	238	93	384	942,285	940,758	943,830	942,524	941,067	943,991	-68	-216	80	942,285	940,758	943,830	942,217	940,766	943,685
48 - 52	450	206	699	917,749	915,866	919,636	918,199	916,487	919,931	-52	-303	199	917,749	915,866	919,636	917,696	915,986	919,423
53 - 57	719	340	1,109	883,638	881,326	885,956	884,358	882,340	886,398	-60	-447	335	883,638	881,326	885,956	883,578	881,562	885,611
58 - 62	998	446	1,565	836,133	833,339	838,900	837,131	834,783	839,482	-143	-701	427	836,133	833,339	838,900	835,990	833,649	838,337
63 - 67	1,202	464	1,963	769,998	766,689	773,230	771,200	768,551	773,816	-367	-1,115	398	769,998	766,689	773,230	769,631	766,985	772,235
68 - 72	1,225	327	2,147	678,494	674,893	682,007	679,719	676,894	682,504	-769	-1,679	161	678,494	674,893	682,007	677,725	674,908	680,501
73 - 77	1,009	43	2,001	554,326	550,744	557,788	555,335	552,544	558,085	-1,252	-2,227	-256	554,326	550,744	557,788	553,074	550,289	555,810
78 - 82	669	-193	1,552	393,784	390,324	397,173	394,453	391,407	397,468	-1,464	-2,330	-577	393,784	390,324	397,173	392,320	389,292	395,312
83 - 87	519	-50	1,101	208,183	203,696	212,699	208,702	204,311	213,171	-878	-1,456	-298	208,183	203,696	212,699	207,305	202,965	211,723
88 - 92	628	401	873	44,385	39,290	49,590	45,013	39,861	50,229	358	120	597	44,385	39,290	49,590	44,743	39,647	49,908
93 - 97	-2	-9	4	5	-11	25	3	-7	15	-2	-9	4	5	-11	25	3	-7	15
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

4% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-20	-23	-16	988,756	988,189	989,305	988,736	988,168	989,287	-35	-39	-31	988,756	988,189	989,305	988,721	988,152	989,272
28 - 32	-11	-25	3	982,030	981,252	982,794	982,019	981,245	982,782	-53	-68	-38	982,030	981,252	982,794	981,977	981,201	982,740
33 - 37	36	-3	74	972,766	971,766	973,763	972,801	971,812	973,787	-56	-96	-17	972,766	971,766	973,763	972,709	971,718	973,695
38 - 42	142	60	225	959,978	958,732	961,234	960,120	958,908	961,340	-34	-118	51	959,978	958,732	961,234	959,944	958,731	961,167
43 - 47	331	176	487	942,285	940,758	943,830	942,616	941,169	944,080	22	-136	180	942,285	940,758	943,830	942,307	940,862	943,770
48 - 52	614	352	879	917,749	915,866	919,636	918,363	916,670	920,083	105	-162	374	917,749	915,866	919,636	917,854	916,163	919,567
53 - 57	981	573	1,400	883,638	881,326	885,956	884,620	882,627	886,644	192	-224	615	883,638	881,326	885,956	883,831	881,841	885,840
58 - 62	1,386	793	1,995	836,133	833,339	838,900	837,518	835,205	839,832	229	-372	839	836,133	833,339	838,900	836,362	834,054	838,678
63 - 67	1,730	934	2,549	769,998	766,689	773,230	771,728	769,118	774,288	138	-667	961	769,998	766,689	773,230	770,136	767,536	772,691
68 - 72	1,881	906	2,881	678,494	674,893	682,007	680,375	677,617	683,109	-144	-1,124	858	678,494	674,893	682,007	678,351	675,593	681,068
73 - 77	1,739	685	2,818	554,326	550,744	557,788	556,065	553,341	558,766	-561	-1,615	515	554,326	550,744	557,788	553,765	551,045	556,444
78 - 82	1,362	420	2,331	393,784	390,324	397,173	395,146	392,134	398,141	-814	-1,756	153	393,784	390,324	397,173	392,970	389,969	395,950
83 - 87	1,022	396	1,672	208,183	203,696	212,699	209,205	204,789	213,689	-412	-1,040	224	208,183	203,696	212,699	207,771	203,412	212,198
88 - 92	822	561	1,107	44,385	39,290	49,590	45,207	40,034	50,462	535	275	798	44,385	39,290	49,590	44,920	39,810	50,108
93 - 97	-2	-11	4	5	-11	25	3	-6	14	-2	-11	4	5	-11	25	3	-6	14
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

4.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-18	-22	-14	988,756	988,189	989,305	988,738	988,170	989,288	-34	-38	-30	988,756	988,189	989,305	988,722	988,153	989,273
28 - 32	-4	-19	11	982,030	981,252	982,794	982,026	981,252	982,788	-46	-62	-31	982,030	981,252	982,794	981,983	981,208	982,746
33 - 37	56	15	96	972,766	971,766	973,763	972,821	971,833	973,805	-37	-78	5	972,766	971,766	973,763	972,729	971,738	973,714
38 - 42	189	102	276	959,978	958,732	961,234	960,167	958,959	961,382	12	-77	100	959,978	958,732	961,234	959,989	958,780	961,209
43 - 47	423	259	588	942,285	940,758	943,830	942,708	941,268	944,166	110	-56	278	942,285	940,758	943,830	942,396	940,956	943,852
48 - 52	775	495	1,058	917,749	915,866	919,636	918,524	916,847	920,229	261	-23	547	917,749	915,866	919,636	918,010	916,333	919,712
53 - 57	1,239	800	1,685	883,638	881,326	885,956	884,877	882,906	886,876	441	-3	888	883,638	881,326	885,956	884,079	882,109	886,067
58 - 62	1,766	1,129	2,420	836,133	833,339	838,900	837,898	835,622	840,179	594	-48	1,246	836,133	833,339	838,900	836,727	834,452	839,007
63 - 67	2,246	1,392	3,124	769,998	766,689	773,230	772,244	769,677	774,750	632	-226	1,513	769,998	766,689	773,230	770,630	768,067	773,135
68 - 72	2,523	1,474	3,598	678,494	674,893	682,007	681,017	678,313	683,681	468	-581	1,543	678,494	674,893	682,007	678,962	676,266	681,621
73 - 77	2,452	1,315	3,618	554,326	550,744	557,788	556,779	554,122	559,421	113	-1,021	1,270	554,326	550,744	557,788	554,440	551,777	557,071
78 - 82	2,039	1,014	3,086	393,784	390,324	397,173	395,822	392,832	398,807	-180	-1,196	863	393,784	390,324	397,173	393,604	390,634	396,576
83 - 87	1,513	827	2,229	208,183	203,696	212,699	209,697	205,267	214,195	43	-634	738	208,183	203,696	212,699	208,226	203,864	212,668
88 - 92	1,011	717	1,334	44,385	39,290	49,590	45,396	40,200	50,677	707	425	1,001	44,385	39,290	49,590	45,092	39,966	50,297
93 - 97	-2	-11	5	5	-11	25	3	-6	13	-2	-11	5	5	-11	25	3	-6	13
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-10	-11	-9	993,650	993,281	994,009	993,640	993,271	994,000	-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27	-17	-21	-13	988,756	988,189	989,305	988,739	988,171	989,289	-33	-37	-28	988,756	988,189	989,305	988,723	988,155	989,274
28 - 32	3	-13	18	982,030	981,252	982,794	982,032	981,258	982,794	-40	-57	-24	982,030	981,252	982,794	981,990	981,214	982,752
33 - 37	76	33	118	972,766	971,766	973,763	972,842	971,855	973,824	-17	-61	26	972,766	971,766	973,763	972,748	971,760	973,732
38 - 42	235	143	328	959,978	958,732	961,234	960,213	959,010	961,424	56	-37	150	959,978	958,732	961,234	960,034	958,829	961,248
43 - 47	514	340	688	942,285	940,758	943,830	942,799	941,362	944,253	198	23	375	942,285	940,758	943,830	942,484	941,050	943,938
48 - 52	934	636	1,234	917,749	915,866	919,636	918,683	917,015	920,381	414	114	717	917,749	915,866	919,636	918,163	916,497	919,856
53 - 57	1,493	1,027	1,967	883,638	881,326	885,956	885,131	883,182	887,106	685	217	1,159	883,638	881,326	885,956	884,323	882,374	886,296
58 - 62	2,139	1,459	2,831	836,133	833,339	838,900	838,272	836,030	840,524	953	270	1,646	836,133	833,339	838,900	837,085	834,838	839,331
63 - 67	2,753	1,840	3,688	769,998	766,689	773,230	772,751	770,231	775,219	1,117	202	2,052	769,998	766,689	773,230	771,115	768,605	773,577
68 - 72	3,151	2,029	4,300	678,494	674,893	682,007	681,645	679,002	684,264	1,066	-52	2,213	678,494	674,893	682,007	679,560	676,914	682,170
73 - 77	3,149	1,930	4,399	554,326	550,744	557,788	557,475	554,866	560,061	772	-441	2,011	554,326	550,744	557,788	555,099	552,484	557,680
78 - 82	2,699	1,595	3,829	393,784	390,324	397,173	396,483	393,520	399,455	439	-651	1,557	393,784	390,324	397,173	394,223	391,271	397,182
83 - 87	1,993	1,248	2,771	208,183	203,696	212,699	210,176	205,752	214,679	487	-244	1,240	208,183	203,696	212,699	208,670	204,279	213,123
88 - 92	1,197	867	1,559	44,385	39,290	49,590	45,582	40,371	50,892	876	567	1,204	44,385	39,290	49,590	45,261	40,117	50,496
93 - 97	-3	-12	5	5	-11	25	2	-6	12	-3	-12	5	5	-11	25	2	-6	12
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.12, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'additional initiation'

5.5% 'switching'

Age interval	ERR=0.08						ERR=0.11								
	Difference in survivors		Number of survivors, base case		Number of survivors, counterfactual		Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI	Mean	95% PI	Mean	95% PI	Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	N/A						0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22							-14	-14	-13	993,650	993,281	994,009	993,637	993,267	993,996
23 - 27							-31	-36	-27	988,756	988,189	989,305	988,725	988,156	989,276
28 - 32							-33	-51	-17	982,030	981,252	982,794	981,996	981,221	982,758
33 - 37							2	-43	47	972,766	971,766	973,763	972,768	971,780	973,750
38 - 42							101	3	199	959,978	958,732	961,234	960,079	958,877	961,289
43 - 47							285	100	471	942,285	940,758	943,830	942,571	941,142	944,021
48 - 52							566	249	884	917,749	915,866	919,636	918,315	916,656	919,995
53 - 57							926	428	1,427	883,638	881,326	885,956	884,564	882,644	886,516
58 - 62							1,305	583	2,039	836,133	833,339	838,900	837,438	835,225	839,656
63 - 67							1,592	622	2,579	769,998	766,689	773,230	771,590	769,127	774,009
68 - 72							1,651	466	2,864	678,494	674,893	682,007	680,145	677,550	682,709
73 - 77							1,416	129	2,733	554,326	550,744	557,788	555,743	553,190	558,279
78 - 82							1,044	-117	2,233	393,784	390,324	397,173	394,828	391,908	397,754
83 - 87							920	137	1,730	208,183	203,696	212,699	209,103	204,706	213,581
88 - 92							1,041	704	1,401	44,385	39,290	49,590	45,426	40,258	50,690
93 - 97							-3	-13	5	5	-11	25	2	-5	11
98 - 102							0	0	0	0	0	0	0	0	0

Table E3.13: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

0% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-21	-22	-20	988,756	988,189	989,305	988,735	988,167	989,285	-24	-26	-23	988,756	988,189	989,305	988,732	988,163	989,282
28 - 32	-81	-86	-77	982,030	981,252	982,794	981,948	981,169	982,716	-90	-95	-85	982,030	981,252	982,794	981,940	981,161	982,707
33 - 37	-215	-227	-204	972,766	971,766	973,763	972,550	971,550	973,549	-233	-245	-221	972,766	971,766	973,763	972,532	971,531	973,532
38 - 42	-445	-468	-423	959,978	958,732	961,234	959,532	958,292	960,784	-479	-503	-455	959,978	958,732	961,234	959,499	958,258	960,751
43 - 47	-795	-835	-756	942,285	940,758	943,830	941,490	939,973	943,024	-852	-893	-811	942,285	940,758	943,830	941,434	939,917	942,966
48 - 52	-1,281	-1,344	-1,219	917,749	915,866	919,636	916,468	914,624	918,320	-1,371	-1,437	-1,307	917,749	915,866	919,636	916,377	914,535	918,229
53 - 57	-1,900	-1,991	-1,809	883,638	881,326	885,956	881,739	879,484	883,994	-2,036	-2,132	-1,942	883,638	881,326	885,956	881,602	879,351	883,858
58 - 62	-2,607	-2,733	-2,485	836,133	833,339	838,900	833,526	830,812	836,212	-2,803	-2,934	-2,675	836,133	833,339	838,900	833,330	830,620	836,011
63 - 67	-3,287	-3,446	-3,134	769,998	766,689	773,230	766,711	763,510	769,837	-3,551	-3,717	-3,390	769,998	766,689	773,230	766,447	763,257	769,568
68 - 72	-3,720	-3,901	-3,546	678,494	674,893	682,007	674,774	671,301	678,145	-4,049	-4,237	-3,866	678,494	674,893	682,007	674,446	670,982	677,806
73 - 77	-3,579	-3,761	-3,401	554,326	550,744	557,788	550,747	547,294	554,087	-3,944	-4,135	-3,758	554,326	550,744	557,788	550,382	546,935	553,711
78 - 82	-2,545	-2,730	-2,362	393,784	390,324	397,173	391,239	387,866	394,539	-2,880	-3,073	-2,691	393,784	390,324	397,173	390,904	387,535	394,195
83 - 87	-687	-943	-432	208,183	203,696	212,699	207,496	203,058	211,953	-896	-1,155	-636	208,183	203,696	212,699	207,287	202,854	211,739
88 - 92	865	549	1,190	44,385	39,290	49,590	45,250	40,142	50,447	837	517	1,163	44,385	39,290	49,590	45,222	40,119	50,412
93 - 97	0	0	0	5	-11	25	5	-11	25	0	0	0	5	-11	25	5	-11	25
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

0.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-20	-21	-19	988,756	988,189	989,305	988,736	988,168	989,286	-23	-25	-22	988,756	988,189	989,305	988,733	988,165	989,283
28 - 32	-74	-79	-70	982,030	981,252	982,794	981,955	981,177	982,722	-83	-89	-78	982,030	981,252	982,794	981,946	981,168	982,713
33 - 37	-194	-206	-181	972,766	971,766	973,763	972,572	971,571	973,569	-212	-226	-199	972,766	971,766	973,763	972,553	971,552	973,550
38 - 42	-394	-421	-368	959,978	958,732	961,234	959,583	958,345	960,831	-429	-457	-402	959,978	958,732	961,234	959,548	958,309	960,795
43 - 47	-692	-740	-644	942,285	940,758	943,830	941,593	940,085	943,117	-752	-801	-702	942,285	940,758	943,830	941,533	940,025	943,057
48 - 52	-1,096	-1,175	-1,016	917,749	915,866	919,636	916,653	914,824	918,492	-1,192	-1,274	-1,111	917,749	915,866	919,636	916,556	914,729	918,395
53 - 57	-1,596	-1,717	-1,475	883,638	881,326	885,956	882,042	879,822	884,269	-1,744	-1,868	-1,620	883,638	881,326	885,956	881,895	879,675	884,120
58 - 62	-2,150	-2,321	-1,980	836,133	833,339	838,900	833,983	831,315	836,620	-2,363	-2,539	-2,190	836,133	833,339	838,900	833,769	831,105	836,408
63 - 67	-2,654	-2,875	-2,434	769,998	766,689	773,230	767,344	764,222	770,402	-2,945	-3,170	-2,719	769,998	766,689	773,230	767,053	763,936	770,108
68 - 72	-2,922	-3,182	-2,662	678,494	674,893	682,007	675,572	672,186	678,886	-3,287	-3,552	-3,022	678,494	674,893	682,007	675,207	671,824	678,514
73 - 77	-2,682	-2,957	-2,408	554,326	550,744	557,788	551,644	548,285	554,901	-3,094	-3,374	-2,816	554,326	550,744	557,788	551,232	547,876	554,483
78 - 82	-1,688	-1,953	-1,426	393,784	390,324	397,173	392,095	388,769	395,359	-2,075	-2,343	-1,810	393,784	390,324	397,173	391,708	388,385	394,961
83 - 87	-65	-366	232	208,183	203,696	212,699	208,118	203,674	212,580	-319	-619	-21	208,183	203,696	212,699	207,864	203,436	212,318
88 - 92	1,103	753	1,464	44,385	39,290	49,590	45,488	40,359	50,723	1,055	705	1,413	44,385	39,290	49,590	45,440	40,320	50,665
93 - 97	0	-2	1	5	-11	25	5	-10	23	0	-2	1	5	-11	25	5	-10	23
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

1% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-19	-20	-17	988,756	988,189	989,305	988,737	988,169	989,287	-22	-23	-20	988,756	988,189	989,305	988,734	988,166	989,284
28 - 32	-68	-73	-62	982,030	981,252	982,794	981,962	981,184	982,728	-77	-82	-71	982,030	981,252	982,794	981,953	981,175	982,720
33 - 37	-172	-187	-158	972,766	971,766	973,763	972,593	971,595	973,589	-192	-207	-177	972,766	971,766	973,763	972,574	971,575	973,570
38 - 42	-344	-374	-312	959,978	958,732	961,234	959,634	958,398	960,878	-380	-412	-348	959,978	958,732	961,234	959,598	958,362	960,842
43 - 47	-590	-647	-532	942,285	940,758	943,830	941,695	940,196	943,208	-653	-712	-594	942,285	940,758	943,830	941,632	940,134	943,144
48 - 52	-913	-1,010	-815	917,749	915,866	919,636	916,836	915,022	918,660	-1,016	-1,114	-917	917,749	915,866	919,636	916,733	914,920	918,560
53 - 57	-1,297	-1,449	-1,146	883,638	881,326	885,956	882,341	880,149	884,542	-1,456	-1,609	-1,302	883,638	881,326	885,956	882,183	879,991	884,385
58 - 62	-1,701	-1,920	-1,481	836,133	833,339	838,900	834,431	831,815	837,029	-1,932	-2,153	-1,712	836,133	833,339	838,900	834,201	831,584	836,798
63 - 67	-2,034	-2,323	-1,742	769,998	766,689	773,230	767,964	764,918	770,956	-2,350	-2,641	-2,058	769,998	766,689	773,230	767,647	764,603	770,640
68 - 72	-2,141	-2,487	-1,790	678,494	674,893	682,007	676,353	673,053	679,585	-2,543	-2,890	-2,192	678,494	674,893	682,007	675,952	672,651	679,181
73 - 77	-1,805	-2,178	-1,428	554,326	550,744	557,788	552,521	549,257	555,707	-2,264	-2,634	-1,889	554,326	550,744	557,788	552,063	548,796	555,247
78 - 82	-852	-1,207	-499	393,784	390,324	397,173	392,932	389,638	396,147	-1,290	-1,644	-940	393,784	390,324	397,173	392,493	389,209	395,702
83 - 87	542	185	897	208,183	203,696	212,699	208,725	204,295	213,199	244	-107	594	208,183	203,696	212,699	208,427	204,005	212,892
88 - 92	1,336	945	1,743	44,385	39,290	49,590	45,721	40,572	50,999	1,267	885	1,663	44,385	39,290	49,590	45,652	40,513	50,914
93 - 97	-1	-3	1	5	-11	25	4	-9	22	-1	-3	1	5	-11	25	4	-9	22
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

1.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-17	-19	-16	988,756	988,189	989,305	988,739	988,170	989,289	-21	-22	-19	988,756	988,189	989,305	988,735	988,167	989,286
28 - 32	-61	-67	-55	982,030	981,252	982,794	981,969	981,191	982,735	-70	-76	-64	982,030	981,252	982,794	981,960	981,182	982,726
33 - 37	-151	-167	-135	972,766	971,766	973,763	972,615	971,619	973,610	-171	-188	-154	972,766	971,766	973,763	972,595	971,598	973,591
38 - 42	-293	-329	-257	959,978	958,732	961,234	959,684	958,452	960,924	-331	-368	-295	959,978	958,732	961,234	959,646	958,413	960,887
43 - 47	-489	-557	-421	942,285	940,758	943,830	941,797	940,306	943,303	-556	-624	-487	942,285	940,758	943,830	941,730	940,239	943,236
48 - 52	-732	-848	-615	917,749	915,866	919,636	917,017	915,217	918,828	-841	-957	-724	917,749	915,866	919,636	916,908	915,107	918,718
53 - 57	-1,003	-1,186	-818	883,638	881,326	885,956	882,635	880,470	884,822	-1,172	-1,355	-987	883,638	881,326	885,956	882,466	880,301	884,652
58 - 62	-1,261	-1,528	-989	836,133	833,339	838,900	834,872	832,304	837,425	-1,508	-1,775	-1,239	836,133	833,339	838,900	834,624	832,055	837,179
63 - 67	-1,427	-1,787	-1,065	769,998	766,689	773,230	768,571	765,588	771,503	-1,768	-2,125	-1,408	769,998	766,689	773,230	768,230	765,245	771,161
68 - 72	-1,377	-1,811	-939	678,494	674,893	682,007	677,117	673,890	680,283	-1,814	-2,246	-1,379	678,494	674,893	682,007	676,680	673,451	679,846
73 - 77	-949	-1,421	-470	554,326	550,744	557,788	553,377	550,180	556,494	-1,453	-1,919	-981	554,326	550,744	557,788	552,873	549,672	555,988
78 - 82	-36	-485	418	393,784	390,324	397,173	393,748	390,504	396,924	-525	-963	-81	393,784	390,324	397,173	393,259	390,007	396,435
83 - 87	1,134	713	1,556	208,183	203,696	212,699	209,317	204,870	213,804	794	384	1,202	208,183	203,696	212,699	208,977	204,541	213,453
88 - 92	1,564	1,127	2,016	44,385	39,290	49,590	45,949	40,767	51,248	1,475	1,057	1,911	44,385	39,290	49,590	45,860	40,697	51,140
93 - 97	-1	-5	2	5	-11	25	4	-9	20	-1	-5	2	5	-11	25	4	-9	20
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

2% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-16	-18	-14	988,756	988,189	989,305	988,740	988,172	989,290	-19	-21	-18	988,756	988,189	989,305	988,737	988,168	989,287
28 - 32	-54	-60	-47	982,030	981,252	982,794	981,976	981,199	982,742	-63	-70	-56	982,030	981,252	982,794	981,967	981,189	982,733
33 - 37	-130	-148	-111	972,766	971,766	973,763	972,636	971,639	973,631	-150	-169	-132	972,766	971,766	973,763	972,615	971,618	973,611
38 - 42	-243	-284	-202	959,978	958,732	961,234	959,734	958,505	960,972	-283	-324	-242	959,978	958,732	961,234	959,695	958,465	960,933
43 - 47	-389	-468	-311	942,285	940,758	943,830	941,896	940,412	943,395	-459	-538	-380	942,285	940,758	943,830	941,827	940,342	943,324
48 - 52	-554	-691	-417	917,749	915,866	919,636	917,195	915,409	918,992	-669	-806	-532	917,749	915,866	919,636	917,080	915,292	918,877
53 - 57	-714	-931	-497	883,638	881,326	885,956	882,925	880,783	885,088	-893	-1,110	-676	883,638	881,326	885,956	882,745	880,603	884,908
58 - 62	-828	-1,144	-510	836,133	833,339	838,900	835,305	832,779	837,823	-1,092	-1,407	-776	836,133	833,339	838,900	835,040	832,512	837,562
63 - 67	-831	-1,260	-401	769,998	766,689	773,230	769,167	766,243	772,039	-1,198	-1,622	-774	769,998	766,689	773,230	768,800	765,871	771,674
68 - 72	-630	-1,153	-102	678,494	674,893	682,007	677,865	674,713	680,962	-1,102	-1,617	-581	678,494	674,893	682,007	677,392	674,231	680,495
73 - 77	-113	-684	467	554,326	550,744	557,788	554,213	551,109	557,259	-661	-1,221	-93	554,326	550,744	557,788	553,665	550,554	556,721
78 - 82	761	221	1,313	393,784	390,324	397,173	394,544	391,321	397,694	223	-304	760	393,784	390,324	397,173	394,007	390,790	397,156
83 - 87	1,713	1,222	2,202	208,183	203,696	212,699	209,896	205,444	214,415	1,330	859	1,798	208,183	203,696	212,699	209,513	205,062	214,015
88 - 92	1,786	1,301	2,282	44,385	39,290	49,590	46,171	40,967	51,501	1,678	1,216	2,156	44,385	39,290	49,590	46,063	40,878	51,371
93 - 97	-1	-6	2	5	-11	25	4	-8	19	-1	-6	2	5	-11	25	4	-8	19
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

2.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-15	-16	-13	988,756	988,189	989,305	988,741	988,173	989,291	-18	-20	-16	988,756	988,189	989,305	988,738	988,169	989,288
28 - 32	-47	-54	-40	982,030	981,252	982,794	981,983	981,207	982,749	-56	-64	-49	982,030	981,252	982,794	981,973	981,197	982,740
33 - 37	-109	-129	-88	972,766	971,766	973,763	972,657	971,662	973,650	-130	-151	-109	972,766	971,766	973,763	972,636	971,640	973,629
38 - 42	-194	-240	-147	959,978	958,732	961,234	959,784	958,557	961,017	-235	-281	-189	959,978	958,732	961,234	959,743	958,515	960,977
43 - 47	-290	-380	-201	942,285	940,758	943,830	941,995	940,515	943,485	-363	-453	-274	942,285	940,758	943,830	941,922	940,441	943,413
48 - 52	-378	-535	-223	917,749	915,866	919,636	917,371	915,601	919,156	-499	-655	-344	917,749	915,866	919,636	917,250	915,478	919,036
53 - 57	-429	-678	-181	883,638	881,326	885,956	883,209	881,100	885,344	-619	-865	-373	883,638	881,326	885,956	883,020	880,906	885,156
58 - 62	-403	-768	-35	836,133	833,339	838,900	835,730	833,252	838,214	-684	-1,043	-320	836,133	833,339	838,900	835,449	832,967	837,936
63 - 67	-248	-739	251	769,998	766,689	773,230	769,750	766,877	772,560	-639	-1,125	-148	769,998	766,689	773,230	769,359	766,483	772,175
68 - 72	101	-513	719	678,494	674,893	682,007	678,595	675,519	681,620	-406	-1,005	199	678,494	674,893	682,007	678,088	674,998	681,123
73 - 77	704	35	1,380	554,326	550,744	557,788	555,030	552,012	558,007	112	-540	773	554,326	550,744	557,788	554,439	551,405	557,429
78 - 82	1,538	906	2,190	393,784	390,324	397,173	395,322	392,125	398,450	953	341	1,580	393,784	390,324	397,173	394,736	391,535	397,860
83 - 87	2,277	1,718	2,840	208,183	203,696	212,699	210,460	206,001	214,994	1,853	1,317	2,387	208,183	203,696	212,699	210,036	205,586	214,548
88 - 92	2,003	1,469	2,546	44,385	39,290	49,590	46,388	41,156	51,752	1,876	1,373	2,390	44,385	39,290	49,590	46,261	41,051	51,597
93 - 97	-2	-7	3	5	-11	25	3	-8	18	-2	-7	3	5	-11	25	3	-8	18
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

3% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-13	-15	-12	988,756	988,189	989,305	988,743	988,174	989,293	-17	-19	-15	988,756	988,189	989,305	988,739	988,171	989,289
28 - 32	-40	-48	-32	982,030	981,252	982,794	981,990	981,214	982,756	-50	-58	-42	982,030	981,252	982,794	981,980	981,204	982,746
33 - 37	-88	-111	-65	972,766	971,766	973,763	972,678	971,684	973,670	-110	-133	-86	972,766	971,766	973,763	972,656	971,662	973,648
38 - 42	-145	-197	-93	959,978	958,732	961,234	959,833	958,607	961,062	-187	-239	-136	959,978	958,732	961,234	959,790	958,563	961,020
43 - 47	-192	-293	-92	942,285	940,758	943,830	942,093	940,620	943,574	-269	-369	-169	942,285	940,758	943,830	942,017	940,543	943,498
48 - 52	-204	-381	-30	917,749	915,866	919,636	917,544	915,794	919,317	-332	-506	-159	917,749	915,866	919,636	917,417	915,664	919,190
53 - 57	-148	-429	130	883,638	881,326	885,956	883,490	881,410	885,608	-348	-625	-72	883,638	881,326	885,956	883,290	881,205	885,409
58 - 62	14	-397	430	836,133	833,339	838,900	836,147	833,717	838,596	-283	-689	127	836,133	833,339	838,900	835,850	833,410	838,303
63 - 67	324	-235	890	769,998	766,689	773,230	770,322	767,503	773,074	-92	-640	465	769,998	766,689	773,230	769,906	767,078	772,665
68 - 72	816	121	1,519	678,494	674,893	682,007	679,310	676,290	682,255	275	-406	962	678,494	674,893	682,007	678,770	675,741	681,733
73 - 77	1,502	733	2,276	554,326	550,744	557,788	555,828	552,875	558,743	868	124	1,619	554,326	550,744	557,788	555,194	552,230	558,120
78 - 82	2,297	1,574	3,040	393,784	390,324	397,173	396,081	392,941	399,191	1,665	967	2,381	393,784	390,324	397,173	395,448	392,297	398,556
83 - 87	2,829	2,202	3,467	208,183	203,696	212,699	211,012	206,520	215,555	2,364	1,766	2,968	208,183	203,696	212,699	210,547	206,077	215,070
88 - 92	2,216	1,639	2,803	44,385	39,290	49,590	46,600	41,341	51,988	2,069	1,524	2,623	44,385	39,290	49,590	46,454	41,225	51,815
93 - 97	-2	-8	3	5	-11	25	3	-7	16	-2	-8	3	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

3.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-12	-14	-10	988,756	988,189	989,305	988,744	988,176	989,294	-16	-18	-14	988,756	988,189	989,305	988,740	988,172	989,291
28 - 32	-33	-42	-24	982,030	981,252	982,794	981,997	981,221	982,762	-43	-52	-34	982,030	981,252	982,794	981,987	981,211	982,752
33 - 37	-67	-92	-41	972,766	971,766	973,763	972,699	971,706	973,690	-89	-115	-64	972,766	971,766	973,763	972,676	971,682	973,668
38 - 42	-96	-153	-39	959,978	958,732	961,234	959,882	958,660	961,107	-140	-197	-84	959,978	958,732	961,234	959,838	958,615	961,064
43 - 47	-95	-207	16	942,285	940,758	943,830	942,190	940,722	943,662	-175	-286	-65	942,285	940,758	943,830	942,111	940,641	943,585
48 - 52	-33	-229	162	917,749	915,866	919,636	917,716	915,982	919,472	-166	-360	25	917,749	915,866	919,636	917,583	915,846	919,343
53 - 57	128	-184	438	883,638	881,326	885,956	883,766	881,713	885,858	-82	-390	224	883,638	881,326	885,956	883,556	881,498	885,649
58 - 62	424	-36	886	836,133	833,339	838,900	836,557	834,162	838,972	111	-341	565	836,133	833,339	838,900	836,244	833,843	838,662
63 - 67	884	259	1,516	769,998	766,689	773,230	770,882	768,125	773,576	444	-167	1,064	769,998	766,689	773,230	770,442	767,674	773,148
68 - 72	1,515	732	2,300	678,494	674,893	682,007	680,009	677,076	682,902	942	181	1,708	678,494	674,893	682,007	679,436	676,484	682,339
73 - 77	2,282	1,419	3,151	554,326	550,744	557,788	556,608	553,723	559,449	1,606	771	2,446	554,326	550,744	557,788	555,932	553,030	558,789
78 - 82	3,038	2,228	3,871	393,784	390,324	397,173	396,822	393,695	399,926	2,360	1,579	3,160	393,784	390,324	397,173	396,143	393,022	399,243
83 - 87	3,367	2,671	4,077	208,183	203,696	212,699	211,550	207,059	216,100	2,863	2,201	3,533	208,183	203,696	212,699	211,046	206,571	215,587
88 - 92	2,423	1,802	3,055	44,385	39,290	49,590	46,808	41,524	52,229	2,258	1,674	2,852	44,385	39,290	49,590	46,643	41,388	52,030
93 - 97	-2	-9	4	5	-11	25	3	-7	15	-2	-9	4	5	-11	25	3	-7	15
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

4% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-11	-13	-9	988,756	988,189	989,305	988,745	988,177	989,295	-14	-17	-12	988,756	988,189	989,305	988,742	988,173	989,292
28 - 32	-26	-36	-17	982,030	981,252	982,794	982,003	981,228	982,768	-37	-46	-27	982,030	981,252	982,794	981,993	981,218	982,758
33 - 37	-46	-74	-18	972,766	971,766	973,763	972,720	971,728	973,709	-69	-97	-42	972,766	971,766	973,763	972,696	971,703	973,687
38 - 42	-47	-110	15	959,978	958,732	961,234	959,930	958,710	961,152	-93	-156	-31	959,978	958,732	961,234	959,884	958,663	961,107
43 - 47	1	-122	123	942,285	940,758	943,830	942,286	940,821	943,753	-82	-204	38	942,285	940,758	943,830	942,203	940,738	943,671
48 - 52	136	-80	350	917,749	915,866	919,636	917,885	916,161	919,626	-3	-216	208	917,749	915,866	919,636	917,746	916,019	919,490
53 - 57	400	54	743	883,638	881,326	885,956	884,038	882,003	886,100	180	-159	516	883,638	881,326	885,956	883,818	881,778	885,888
58 - 62	827	320	1,336	836,133	833,339	838,900	836,959	834,603	839,343	498	0	998	836,133	833,339	838,900	836,630	834,264	839,020
63 - 67	1,433	743	2,128	769,998	766,689	773,230	771,431	768,722	774,080	970	298	1,651	769,998	766,689	773,230	770,968	768,248	773,627
68 - 72	2,199	1,335	3,066	678,494	674,893	682,007	680,693	677,839	683,516	1,593	752	2,437	678,494	674,893	682,007	680,088	677,216	682,930
73 - 77	3,044	2,090	4,004	554,326	550,744	557,788	557,370	554,552	560,139	2,327	1,406	3,258	554,326	550,744	557,788	556,653	553,816	559,443
78 - 82	3,762	2,864	4,687	393,784	390,324	397,173	397,546	394,464	400,617	3,038	2,177	3,922	393,784	390,324	397,173	396,822	393,725	399,903
83 - 87	3,893	3,130	4,675	208,183	203,696	212,699	212,076	207,559	216,648	3,349	2,627	4,083	208,183	203,696	212,699	211,532	207,030	216,075
88 - 92	2,625	1,960	3,302	44,385	39,290	49,590	47,010	41,714	52,464	2,443	1,821	3,072	44,385	39,290	49,590	46,827	41,551	52,244
93 - 97	-2	-11	4	5	-11	25	3	-6	14	-2	-11	4	5	-11	25	3	-6	14
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

4.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-10	-12	-7	988,756	988,189	989,305	988,746	988,178	989,297	-13	-15	-11	988,756	988,189	989,305	988,743	988,175	989,293
28 - 32	-19	-30	-9	982,030	981,252	982,794	982,010	981,236	982,774	-30	-40	-20	982,030	981,252	982,794	982,000	981,225	982,764
33 - 37	-25	-56	5	972,766	971,766	973,763	972,740	971,750	973,729	-49	-79	-19	972,766	971,766	973,763	972,716	971,726	973,706
38 - 42	1	-68	68	959,978	958,732	961,234	959,978	958,762	961,197	-47	-115	20	959,978	958,732	961,234	959,931	958,713	961,151
43 - 47	95	-38	228	942,285	940,758	943,830	942,381	940,925	943,841	10	-122	141	942,285	940,758	943,830	942,295	940,837	943,757
48 - 52	303	67	536	917,749	915,866	919,636	918,052	916,342	919,783	158	-73	388	917,749	915,866	919,636	917,907	916,195	919,640
53 - 57	667	292	1,042	883,638	881,326	885,956	884,305	882,296	886,346	438	68	806	883,638	881,326	885,956	884,076	882,061	886,122
58 - 62	1,222	671	1,778	836,133	833,339	838,900	837,354	835,031	839,704	877	337	1,422	836,133	833,339	838,900	837,010	834,681	839,367
63 - 67	1,971	1,218	2,730	769,998	766,689	773,230	771,969	769,315	774,568	1,485	751	2,226	769,998	766,689	773,230	771,483	768,816	774,096
68 - 72	2,868	1,921	3,813	678,494	674,893	682,007	681,363	678,572	684,127	2,231	1,312	3,150	678,494	674,893	682,007	680,725	677,915	683,503
73 - 77	3,788	2,746	4,839	554,326	550,744	557,788	558,114	555,356	560,826	3,031	2,025	4,048	554,326	550,744	557,788	557,357	554,580	560,090
78 - 82	4,469	3,482	5,482	393,784	390,324	397,173	398,252	395,188	401,299	3,701	2,759	4,668	393,784	390,324	397,173	397,484	394,426	400,535
83 - 87	4,406	3,577	5,255	208,183	203,696	212,699	212,589	208,059	217,178	3,825	3,042	4,626	208,183	203,696	212,699	212,008	207,496	216,578
88 - 92	2,823	2,114	3,546	44,385	39,290	49,590	47,208	41,882	52,685	2,623	1,964	3,292	44,385	39,290	49,590	47,008	41,711	52,449
93 - 97	-2	-11	5	5	-11	25	3	-6	13	-2	-11	5	5	-11	25	3	-6	13
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.13, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus a scenario with elevated rates for 'additional initiation' and an extreme scenario for 'gateway effect'

5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	-2	-2	-2	993,650	993,281	994,009	993,648	993,279	994,007	-3	-3	-3	993,650	993,281	994,009	993,647	993,278	994,006
23 - 27	-8	-11	-6	988,756	988,189	989,305	988,748	988,179	989,298	-12	-14	-9	988,756	988,189	989,305	988,744	988,176	989,294
28 - 32	-13	-24	-1	982,030	981,252	982,794	982,017	981,243	982,780	-23	-35	-12	982,030	981,252	982,794	982,006	981,232	982,770
33 - 37	-5	-38	28	972,766	971,766	973,763	972,761	971,773	973,748	-29	-62	3	972,766	971,766	973,763	972,736	971,747	973,725
38 - 42	48	-26	121	959,978	958,732	961,234	960,026	958,811	961,243	-1	-74	72	959,978	958,732	961,234	959,977	958,760	961,194
43 - 47	189	44	333	942,285	940,758	943,830	942,475	941,027	943,930	100	-42	242	942,285	940,758	943,830	942,386	940,936	943,843
48 - 52	467	213	720	917,749	915,866	919,636	918,216	916,522	919,940	317	68	565	917,749	915,866	919,636	918,066	916,367	919,793
53 - 57	930	526	1,337	883,638	881,326	885,956	884,569	882,583	886,584	691	293	1,089	883,638	881,326	885,956	884,330	882,334	886,353
58 - 62	1,610	1,015	2,215	836,133	833,339	838,900	837,742	835,449	840,058	1,250	667	1,841	836,133	833,339	838,900	837,383	835,081	839,706
63 - 67	2,498	1,684	3,320	769,998	766,689	773,230	772,496	769,889	775,053	1,990	1,196	2,790	769,998	766,689	773,230	771,988	769,373	774,558
68 - 72	3,523	2,497	4,544	678,494	674,893	682,007	682,017	679,277	684,712	2,854	1,860	3,845	678,494	674,893	682,007	681,349	678,593	684,068
73 - 77	4,515	3,386	5,654	554,326	550,744	557,788	558,841	556,145	561,495	3,719	2,628	4,819	554,326	550,744	557,788	558,045	555,319	560,718
78 - 82	5,159	4,091	6,258	393,784	390,324	397,173	398,943	395,894	401,979	4,348	3,325	5,396	393,784	390,324	397,173	398,131	395,080	401,159
83 - 87	4,907	4,015	5,828	208,183	203,696	212,699	213,090	208,530	217,689	4,289	3,447	5,153	208,183	203,696	212,699	212,472	207,955	217,067
88 - 92	3,017	2,265	3,787	44,385	39,290	49,590	47,402	42,037	52,922	2,799	2,104	3,510	44,385	39,290	49,590	47,184	41,866	52,651
93 - 97	-3	-12	5	5	-11	25	2	-6	12	-3	-12	5	5	-11	25	2	-6	12
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

0% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	-1	-1	-1	988,756	988,189	989,305	988,755	988,188	989,304	-1	-2	-1	988,756	988,189	989,305	988,755	988,188	989,304
28 - 32	-6	-7	-5	982,030	981,252	982,794	982,024	981,247	982,789	-8	-10	-7	982,030	981,252	982,794	982,022	981,244	982,787
33 - 37	-21	-24	-18	972,766	971,766	973,763	972,745	971,744	973,742	-28	-33	-24	972,766	971,766	973,763	972,737	971,737	973,735
38 - 42	-55	-63	-47	959,978	958,732	961,234	959,923	958,673	961,181	-74	-85	-64	959,978	958,732	961,234	959,903	958,653	961,162
43 - 47	-120	-136	-104	942,285	940,758	943,830	942,165	940,633	943,718	-163	-185	-142	942,285	940,758	943,830	942,122	940,588	943,680
48 - 52	-234	-263	-204	917,749	915,866	919,636	917,515	915,622	919,417	-317	-358	-278	917,749	915,866	919,636	917,431	915,535	919,337
53 - 57	-415	-466	-364	883,638	881,326	885,956	883,224	880,878	885,571	-564	-634	-495	883,638	881,326	885,956	883,075	880,722	885,426
58 - 62	-682	-765	-600	836,133	833,339	838,900	835,451	832,623	838,269	-926	-1,039	-816	836,133	833,339	838,900	835,206	832,361	838,042
63 - 67	-1,043	-1,168	-920	769,998	766,689	773,230	768,955	765,568	772,267	-1,416	-1,585	-1,248	769,998	766,689	773,230	768,582	765,164	771,924
68 - 72	-1,477	-1,655	-1,303	678,494	674,893	682,007	677,017	673,300	680,643	-2,002	-2,244	-1,766	678,494	674,893	682,007	676,492	672,761	680,148
73 - 77	-1,902	-2,132	-1,676	554,326	550,744	557,788	552,425	548,770	555,991	-2,571	-2,883	-2,266	554,326	550,744	557,788	551,755	548,063	555,362
78 - 82	-2,128	-2,396	-1,870	393,784	390,324	397,173	391,655	388,176	395,078	-2,867	-3,228	-2,519	393,784	390,324	397,173	390,917	387,429	394,368
83 - 87	-1,856	-2,139	-1,593	208,183	203,696	212,699	206,327	201,925	210,747	-2,488	-2,867	-2,135	208,183	203,696	212,699	205,695	201,299	210,095
88 - 92	-873	-1,149	-620	44,385	39,290	49,590	43,512	38,546	48,594	-1,162	-1,527	-828	44,385	39,290	49,590	43,223	38,288	48,253
93 - 97	0	0	0	5	-11	25	5	-10	25	0	0	0	5	-11	25	5	-10	25
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

0.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	-1	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	1	0	2	982,030	981,252	982,794	982,031	981,254	982,795	-1	-3	0	982,030	981,252	982,794	982,028	981,252	982,793
33 - 37	1	-2	4	972,766	971,766	973,763	972,766	971,767	973,763	-7	-11	-3	972,766	971,766	973,763	972,758	971,759	973,754
38 - 42	-3	-9	3	959,978	958,732	961,234	959,975	958,730	961,229	-24	-33	-16	959,978	958,732	961,234	959,954	958,708	961,209
43 - 47	-15	-28	-3	942,285	940,758	943,830	942,270	940,746	943,814	-61	-79	-45	942,285	940,758	943,830	942,224	940,698	943,771
48 - 52	-45	-67	-23	917,749	915,866	919,636	917,704	915,826	919,591	-134	-166	-105	917,749	915,866	919,636	917,615	915,732	919,508
53 - 57	-104	-142	-68	883,638	881,326	885,956	883,534	881,224	885,852	-263	-317	-213	883,638	881,326	885,956	883,375	881,052	885,704
58 - 62	-213	-273	-157	836,133	833,339	838,900	835,920	833,138	838,692	-473	-559	-393	836,133	833,339	838,900	835,660	832,859	838,451
63 - 67	-392	-482	-308	769,998	766,689	773,230	769,606	766,301	772,856	-787	-918	-666	769,998	766,689	773,230	769,211	765,867	772,490
68 - 72	-652	-781	-534	678,494	674,893	682,007	677,842	674,215	681,383	-1,209	-1,397	-1,037	678,494	674,893	682,007	677,285	673,629	680,870
73 - 77	-971	-1,141	-815	554,326	550,744	557,788	553,356	549,788	556,834	-1,680	-1,929	-1,448	554,326	550,744	557,788	552,646	549,030	556,172
78 - 82	-1,236	-1,440	-1,049	393,784	390,324	397,173	392,548	389,116	395,918	-2,018	-2,315	-1,740	393,784	390,324	397,173	391,765	388,322	395,156
83 - 87	-1,205	-1,421	-1,005	208,183	203,696	212,699	206,978	202,557	211,414	-1,874	-2,190	-1,583	208,183	203,696	212,699	206,309	201,912	210,713
88 - 92	-622	-840	-422	44,385	39,290	49,590	43,763	38,764	48,868	-928	-1,241	-642	44,385	39,290	49,590	43,457	38,493	48,520
93 - 97	0	-2	1	5	-11	25	5	-10	23	0	-1	1	5	-11	25	5	-10	23
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

1% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	1	1	2	988,756	988,189	989,305	988,757	988,191	989,307	1	1	1	988,756	988,189	989,305	988,757	988,190	989,306
28 - 32	8	6	10	982,030	981,252	982,794	982,038	981,261	982,801	5	4	7	982,030	981,252	982,794	982,035	981,259	982,799
33 - 37	22	18	27	972,766	971,766	973,763	972,788	971,791	973,782	14	9	18	972,766	971,766	973,763	972,779	971,782	973,774
38 - 42	48	39	59	959,978	958,732	961,234	960,026	958,787	961,276	26	16	36	959,978	958,732	961,234	960,004	958,763	961,255
43 - 47	88	70	108	942,285	940,758	943,830	942,374	940,856	943,911	39	20	59	942,285	940,758	943,830	942,325	940,806	943,865
48 - 52	142	110	176	917,749	915,866	919,636	917,891	916,029	919,760	47	13	81	917,749	915,866	919,636	917,795	915,929	919,672
53 - 57	201	150	255	883,638	881,326	885,956	883,839	881,565	886,124	33	-22	88	883,638	881,326	885,956	883,671	881,379	885,977
58 - 62	247	172	326	836,133	833,339	838,900	836,380	833,646	839,110	-28	-111	56	836,133	833,339	838,900	836,105	833,343	838,854
63 - 67	247	143	355	769,998	766,689	773,230	770,245	766,996	773,425	-171	-292	-52	769,998	766,689	773,230	769,826	766,554	773,049
68 - 72	155	19	293	678,494	674,893	682,007	678,649	675,112	682,105	-433	-599	-272	678,494	674,893	682,007	678,061	674,475	681,557
73 - 77	-62	-223	100	554,326	550,744	557,788	554,265	550,789	557,642	-810	-1,025	-608	554,326	550,744	557,788	553,516	550,001	556,948
78 - 82	-364	-542	-192	393,784	390,324	397,173	393,419	390,043	396,749	-1,190	-1,443	-958	393,784	390,324	397,173	392,594	389,200	395,925
83 - 87	-569	-745	-408	208,183	203,696	212,699	207,614	203,165	212,053	-1,276	-1,542	-1,035	208,183	203,696	212,699	206,908	202,495	211,317
88 - 92	-376	-544	-227	44,385	39,290	49,590	44,009	38,975	49,149	-700	-964	-462	44,385	39,290	49,590	43,685	38,693	48,769
93 - 97	-1	-3	1	5	-11	25	4	-9	22	-1	-3	1	5	-11	25	4	-9	22
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

1.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	3	2	3	988,756	988,189	989,305	988,759	988,192	989,308	2	2	3	988,756	988,189	989,305	988,758	988,191	989,307
28 - 32	15	13	17	982,030	981,252	982,794	982,045	981,268	982,808	12	10	15	982,030	981,252	982,794	982,042	981,265	982,805
33 - 37	44	37	51	972,766	971,766	973,763	972,810	971,814	973,802	35	28	41	972,766	971,766	973,763	972,800	971,805	973,794
38 - 42	99	85	115	959,978	958,732	961,234	960,077	958,842	961,322	75	62	90	959,978	958,732	961,234	960,053	958,818	961,300
43 - 47	191	162	222	942,285	940,758	943,830	942,477	940,968	944,005	139	112	167	942,285	940,758	943,830	942,424	940,912	943,955
48 - 52	326	276	379	917,749	915,866	919,636	918,075	916,229	919,925	225	179	274	917,749	915,866	919,636	917,974	916,123	919,837
53 - 57	502	422	586	883,638	881,326	885,956	884,140	881,899	886,391	324	250	402	883,638	881,326	885,956	883,962	881,704	886,230
58 - 62	699	582	823	836,133	833,339	838,900	836,832	834,143	839,527	409	301	524	836,133	833,339	838,900	836,542	833,829	839,255
63 - 67	872	713	1,039	769,998	766,689	773,230	770,870	767,690	773,988	432	284	587	769,998	766,689	773,230	770,430	767,213	773,587
68 - 72	944	749	1,151	678,494	674,893	682,007	679,438	675,987	682,816	326	136	522	678,494	674,893	682,007	678,820	675,316	682,239
73 - 77	827	613	1,057	554,326	550,744	557,788	555,153	551,747	558,451	40	-183	265	554,326	550,744	557,788	554,367	550,916	557,712
78 - 82	486	277	704	393,784	390,324	397,173	394,270	390,934	397,547	-381	-624	-144	393,784	390,324	397,173	393,402	390,052	396,694
83 - 87	52	-117	218	208,183	203,696	212,699	208,235	203,775	212,685	-691	-925	-476	208,183	203,696	212,699	207,492	203,061	211,905
88 - 92	-136	-261	-30	44,385	39,290	49,590	44,249	39,187	49,408	-477	-698	-282	44,385	39,290	49,590	43,908	38,885	49,027
93 - 97	-1	-4	2	5	-11	25	4	-9	20	-1	-4	2	5	-11	25	4	-9	20
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

2% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	4	3	5	988,756	988,189	989,305	988,760	988,193	989,309	4	3	4	988,756	988,189	989,305	988,760	988,193	989,309
28 - 32	22	19	25	982,030	981,252	982,794	982,052	981,276	982,815	19	16	22	982,030	981,252	982,794	982,049	981,273	982,812
33 - 37	65	56	75	972,766	971,766	973,763	972,831	971,837	973,823	55	47	64	972,766	971,766	973,763	972,821	971,826	973,813
38 - 42	150	129	171	959,978	958,732	961,234	960,128	958,898	961,370	124	106	144	959,978	958,732	961,234	960,102	958,871	961,345
43 - 47	293	252	335	942,285	940,758	943,830	942,578	941,077	944,098	237	201	276	942,285	940,758	943,830	942,523	941,018	944,045
48 - 52	508	437	581	917,749	915,866	919,636	918,256	916,426	920,095	401	338	469	917,749	915,866	919,636	918,150	916,313	919,994
53 - 57	798	685	915	883,638	881,326	885,956	884,436	882,214	886,658	611	510	718	883,638	881,326	885,956	884,249	882,021	886,483
58 - 62	1,143	978	1,316	836,133	833,339	838,900	837,276	834,632	839,931	839	691	996	836,133	833,339	838,900	836,971	834,309	839,646
63 - 67	1,485	1,262	1,718	769,998	766,689	773,230	771,483	768,357	774,536	1,023	823	1,234	769,998	766,689	773,230	771,021	767,875	774,112
68 - 72	1,716	1,442	2,007	678,494	674,893	682,007	680,210	676,839	683,511	1,069	824	1,329	678,494	674,893	682,007	679,563	676,137	682,898
73 - 77	1,695	1,396	2,011	554,326	550,744	557,788	556,021	552,691	559,235	871	600	1,161	554,326	550,744	557,788	555,197	551,820	558,464
78 - 82	1,317	1,042	1,614	393,784	390,324	397,173	395,101	391,812	398,338	408	140	684	393,784	390,324	397,173	394,192	390,879	397,443
83 - 87	659	460	871	208,183	203,696	212,699	208,842	204,373	213,320	-120	-348	98	208,183	203,696	212,699	208,063	203,612	212,490
88 - 92	98	-1	188	44,385	39,290	49,590	44,483	39,396	49,661	-259	-440	-103	44,385	39,290	49,590	44,126	39,078	49,272
93 - 97	-1	-6	2	5	-11	25	4	-8	19	-1	-6	2	5	-11	25	4	-8	19
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

2.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	5	4	6	988,756	988,189	989,305	988,761	988,194	989,311	5	4	6	988,756	988,189	989,305	988,761	988,194	989,310
28 - 32	29	25	33	982,030	981,252	982,794	982,059	981,283	982,822	26	22	30	982,030	981,252	982,794	982,055	981,280	982,819
33 - 37	87	75	99	972,766	971,766	973,763	972,852	971,860	973,843	76	65	87	972,766	971,766	973,763	972,842	971,849	973,833
38 - 42	200	174	228	959,978	958,732	961,234	960,178	958,952	961,413	173	149	199	959,978	958,732	961,234	960,151	958,924	961,389
43 - 47	393	341	447	942,285	940,758	943,830	942,679	941,184	944,188	335	287	385	942,285	940,758	943,830	942,620	941,123	944,134
48 - 52	687	596	781	917,749	915,866	919,636	918,436	916,620	920,258	575	492	661	917,749	915,866	919,636	918,324	916,502	920,155
53 - 57	1,089	943	1,239	883,638	881,326	885,956	884,728	882,528	886,925	893	761	1,032	883,638	881,326	885,956	884,531	882,322	886,744
58 - 62	1,579	1,365	1,801	836,133	833,339	838,900	837,712	835,115	840,331	1,260	1,068	1,463	836,133	833,339	838,900	837,393	834,779	840,036
63 - 67	2,086	1,794	2,389	769,998	766,689	773,230	772,084	769,023	775,085	1,603	1,345	1,875	769,998	766,689	773,230	771,601	768,506	774,628
68 - 72	2,471	2,113	2,846	678,494	674,893	682,007	680,966	677,666	684,187	1,795	1,478	2,131	678,494	674,893	682,007	680,289	676,959	683,564
73 - 77	2,543	2,154	2,959	554,326	550,744	557,788	556,869	553,624	559,999	1,682	1,340	2,047	554,326	550,744	557,788	556,009	552,712	559,190
78 - 82	2,128	1,769	2,514	393,784	390,324	397,173	395,912	392,662	399,120	1,179	861	1,522	393,784	390,324	397,173	394,962	391,702	398,173
83 - 87	1,251	997	1,525	208,183	203,696	212,699	209,434	204,966	213,926	437	196	685	208,183	203,696	212,699	208,620	204,163	213,065
88 - 92	327	228	435	44,385	39,290	49,590	44,712	39,595	49,916	-47	-197	83	44,385	39,290	49,590	44,338	39,261	49,502
93 - 97	-2	-7	3	5	-11	25	3	-8	18	-1	-7	3	5	-11	25	4	-8	18
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

3% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	7	6	8	988,756	988,189	989,305	988,763	988,195	989,312	6	5	7	988,756	988,189	989,305	988,762	988,195	989,311
28 - 32	36	31	41	982,030	981,252	982,794	982,065	981,290	982,829	32	28	37	982,030	981,252	982,794	982,062	981,287	982,825
33 - 37	108	94	122	972,766	971,766	973,763	972,873	971,883	973,863	97	84	110	972,766	971,766	973,763	972,862	971,871	973,852
38 - 42	250	218	283	959,978	958,732	961,234	960,228	959,007	961,460	221	191	252	959,978	958,732	961,234	960,199	958,975	961,434
43 - 47	493	429	557	942,285	940,758	943,830	942,778	941,292	944,277	431	373	492	942,285	940,758	943,830	942,717	941,226	944,222
48 - 52	864	752	978	917,749	915,866	919,636	918,613	916,815	920,419	747	644	852	917,749	915,866	919,636	918,495	916,689	920,310
53 - 57	1,376	1,196	1,559	883,638	881,326	885,956	885,014	882,845	887,192	1,171	1,008	1,340	883,638	881,326	885,956	884,809	882,621	886,997
58 - 62	2,008	1,742	2,279	836,133	833,339	838,900	838,140	835,584	840,708	1,674	1,435	1,924	836,133	833,339	838,900	837,807	835,232	840,406
63 - 67	2,675	2,316	3,049	769,998	766,689	773,230	772,673	769,678	775,615	2,171	1,850	2,505	769,998	766,689	773,230	772,169	769,131	775,145
68 - 72	3,210	2,765	3,675	678,494	674,893	682,007	681,705	678,481	684,869	2,505	2,113	2,919	678,494	674,893	682,007	681,000	677,720	684,214
73 - 77	3,371	2,889	3,886	554,326	550,744	557,788	557,698	554,528	560,763	2,475	2,050	2,927	554,326	550,744	557,788	556,802	553,585	559,911
78 - 82	2,920	2,471	3,398	393,784	390,324	397,173	396,704	393,491	399,865	1,931	1,544	2,348	393,784	390,324	397,173	395,715	392,490	398,894
83 - 87	1,829	1,511	2,174	208,183	203,696	212,699	210,012	205,538	214,515	981	706	1,277	208,183	203,696	212,699	209,164	204,706	213,622
88 - 92	551	425	698	44,385	39,290	49,590	44,936	39,787	50,186	161	28	284	44,385	39,290	49,590	44,546	39,451	49,723
93 - 97	-2	-8	3	5	-11	25	3	-7	16	-2	-8	3	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

3.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	8	7	9	988,756	988,189	989,305	988,764	988,197	989,313	7	6	8	988,756	988,189	989,305	988,763	988,196	989,313
28 - 32	43	37	48	982,030	981,252	982,794	982,072	981,297	982,835	39	34	45	982,030	981,252	982,794	982,069	981,293	982,832
33 - 37	129	112	146	972,766	971,766	973,763	972,895	971,904	973,883	117	102	133	972,766	971,766	973,763	972,883	971,893	973,872
38 - 42	299	262	338	959,978	958,732	961,234	960,277	959,058	961,507	269	234	306	959,978	958,732	961,234	960,247	959,030	961,478
43 - 47	591	516	667	942,285	940,758	943,830	942,877	941,396	944,370	527	457	599	942,285	940,758	943,830	942,812	941,328	944,309
48 - 52	1,038	906	1,173	917,749	915,866	919,636	918,787	917,004	920,576	916	794	1,042	917,749	915,866	919,636	918,665	916,875	920,462
53 - 57	1,659	1,446	1,875	883,638	881,326	885,956	885,297	883,156	887,456	1,444	1,250	1,644	883,638	881,326	885,956	885,083	882,923	887,251
58 - 62	2,428	2,113	2,747	836,133	833,339	838,900	838,561	836,037	841,090	2,081	1,796	2,375	836,133	833,339	838,900	838,214	835,670	840,770
63 - 67	3,252	2,824	3,693	769,998	766,689	773,230	773,250	770,316	776,128	2,728	2,341	3,127	769,998	766,689	773,230	772,726	769,747	775,654
68 - 72	3,934	3,406	4,486	678,494	674,893	682,007	682,428	679,292	685,519	3,201	2,730	3,692	678,494	674,893	682,007	681,695	678,485	684,844
73 - 77	4,181	3,606	4,788	554,326	550,744	557,788	558,507	555,432	561,520	3,250	2,742	3,792	554,326	550,744	557,788	557,576	554,434	560,623
78 - 82	3,693	3,154	4,260	393,784	390,324	397,173	397,477	394,303	400,602	2,666	2,201	3,166	393,784	390,324	397,173	396,450	393,260	399,589
83 - 87	2,394	2,011	2,814	208,183	203,696	212,699	210,577	206,101	215,080	1,513	1,188	1,863	208,183	203,696	212,699	209,696	205,241	214,168
88 - 92	770	602	961	44,385	39,290	49,590	45,155	39,952	50,436	365	234	501	44,385	39,290	49,590	44,749	39,632	49,954
93 - 97	-2	-9	4	5	-11	25	3	-7	15	-2	-9	4	5	-11	25	3	-7	15
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

4% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	9	8	11	988,756	988,189	989,305	988,765	988,198	989,315	9	7	10	988,756	988,189	989,305	988,765	988,197	989,314
28 - 32	49	43	56	982,030	981,252	982,794	982,079	981,304	982,842	46	39	52	982,030	981,252	982,794	982,075	981,300	982,838
33 - 37	150	131	169	972,766	971,766	973,763	972,915	971,927	973,902	137	120	156	972,766	971,766	973,763	972,903	971,914	973,891
38 - 42	348	305	393	959,978	958,732	961,234	960,326	959,110	961,556	317	276	360	959,978	958,732	961,234	960,295	959,077	961,524
43 - 47	689	602	776	942,285	940,758	943,830	942,974	941,500	944,459	621	541	704	942,285	940,758	943,830	942,907	941,430	944,398
48 - 52	1,211	1,058	1,366	917,749	915,866	919,636	918,960	917,189	920,740	1,083	942	1,228	917,749	915,866	919,636	918,832	917,056	920,615
53 - 57	1,937	1,692	2,185	883,638	881,326	885,956	885,575	883,461	887,710	1,714	1,488	1,943	883,638	881,326	885,956	885,352	883,217	887,504
58 - 62	2,841	2,478	3,209	836,133	833,339	838,900	838,974	836,490	841,468	2,480	2,148	2,820	836,133	833,339	838,900	838,613	836,099	841,134
63 - 67	3,817	3,323	4,324	769,998	766,689	773,230	773,815	770,946	776,637	3,273	2,828	3,738	769,998	766,689	773,230	773,271	770,356	776,138
68 - 72	4,641	4,033	5,278	678,494	674,893	682,007	683,135	680,072	686,154	3,881	3,330	4,455	678,494	674,893	682,007	682,375	679,253	685,450
73 - 77	4,972	4,307	5,673	554,326	550,744	557,788	559,299	556,301	562,256	4,007	3,416	4,636	554,326	550,744	557,788	558,333	555,265	561,330
78 - 82	4,449	3,821	5,108	393,784	390,324	397,173	398,232	395,087	401,317	3,384	2,839	3,967	393,784	390,324	397,173	397,167	394,004	400,267
83 - 87	2,945	2,492	3,437	208,183	203,696	212,699	211,129	206,644	215,642	2,032	1,651	2,444	208,183	203,696	212,699	210,215	205,750	214,714
88 - 92	984	772	1,222	44,385	39,290	49,590	45,369	40,137	50,671	563	417	725	44,385	39,290	49,590	44,948	39,799	50,193
93 - 97	-2	-10	4	5	-11	25	3	-6	14	-2	-10	4	5	-11	25	3	-6	14
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

4.5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	11	9	12	988,756	988,189	989,305	988,767	988,199	989,316	10	8	11	988,756	988,189	989,305	988,766	988,198	989,315
28 - 32	56	49	64	982,030	981,252	982,794	982,086	981,311	982,848	52	45	60	982,030	981,252	982,794	982,082	981,307	982,844
33 - 37	171	149	193	972,766	971,766	973,763	972,936	971,949	973,922	158	137	179	972,766	971,766	973,763	972,923	971,935	973,909
38 - 42	397	348	448	959,978	958,732	961,234	960,375	959,161	961,601	364	318	412	959,978	958,732	961,234	960,342	959,126	961,570
43 - 47	785	687	884	942,285	940,758	943,830	943,070	941,603	944,548	715	623	808	942,285	940,758	943,830	943,000	941,531	944,483
48 - 52	1,381	1,208	1,556	917,749	915,866	919,636	919,130	917,376	920,894	1,248	1,087	1,412	917,749	915,866	919,636	918,997	917,235	920,769
53 - 57	2,210	1,934	2,491	883,638	881,326	885,956	885,849	883,760	887,956	1,979	1,722	2,241	883,638	881,326	885,956	885,617	883,508	887,743
58 - 62	3,247	2,834	3,661	836,133	833,339	838,900	839,379	836,932	841,843	2,873	2,495	3,258	836,133	833,339	838,900	839,005	836,536	841,494
63 - 67	4,371	3,811	4,944	769,998	766,689	773,230	774,369	771,555	777,135	3,808	3,298	4,339	769,998	766,689	773,230	773,806	770,953	776,622
68 - 72	5,333	4,641	6,053	678,494	674,893	682,007	683,827	680,822	686,795	4,546	3,920	5,201	678,494	674,893	682,007	683,040	679,990	686,056
73 - 77	5,746	4,991	6,537	554,326	550,744	557,788	560,072	557,153	562,967	4,747	4,070	5,466	554,326	550,744	557,788	559,073	556,081	562,011
78 - 82	5,187	4,472	5,937	393,784	390,324	397,173	398,970	395,860	402,042	4,085	3,462	4,749	393,784	390,324	397,173	397,868	394,741	400,944
83 - 87	3,484	2,959	4,050	208,183	203,696	212,699	211,668	207,175	216,195	2,538	2,102	3,013	208,183	203,696	212,699	210,722	206,264	215,222
88 - 92	1,193	936	1,479	44,385	39,290	49,590	45,578	40,334	50,895	757	586	955	44,385	39,290	49,590	45,142	39,953	50,411
93 - 97	-2	-11	5	5	-11	25	3	-6	13	-2	-11	5	5	-11	25	3	-6	13
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.14, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on the transitions of 'switching' versus an extreme scenario for 'diversion from quitting'

5% 'switching'

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	12	10	14	988,756	988,189	989,305	988,768	988,200	989,317	11	9	13	988,756	988,189	989,305	988,767	988,200	989,316
28 - 32	63	55	72	982,030	981,252	982,794	982,093	981,319	982,854	59	51	67	982,030	981,252	982,794	982,089	981,314	982,850
33 - 37	191	167	216	972,766	971,766	973,763	972,957	971,971	973,942	178	155	201	972,766	971,766	973,763	972,943	971,957	973,929
38 - 42	445	390	502	959,978	958,732	961,234	960,423	959,211	961,644	411	359	464	959,978	958,732	961,234	960,389	959,174	961,614
43 - 47	880	771	990	942,285	940,758	943,830	943,166	941,705	944,635	807	705	911	942,285	940,758	943,830	943,093	941,627	944,571
48 - 52	1,549	1,357	1,744	917,749	915,866	919,636	919,298	917,563	921,049	1,411	1,231	1,594	917,749	915,866	919,636	919,159	917,413	920,920
53 - 57	2,480	2,172	2,792	883,638	881,326	885,956	886,118	884,058	888,207	2,240	1,952	2,532	883,638	881,326	885,956	885,878	883,798	887,976
58 - 62	3,645	3,186	4,106	836,133	833,339	838,900	839,778	837,377	842,208	3,258	2,835	3,687	836,133	833,339	838,900	839,391	836,961	841,848
63 - 67	4,914	4,289	5,552	769,998	766,689	773,230	774,912	772,148	777,626	4,332	3,760	4,921	769,998	766,689	773,230	774,330	771,527	777,091
68 - 72	6,010	5,238	6,809	678,494	674,893	682,007	684,504	681,561	687,410	5,197	4,496	5,931	678,494	674,893	682,007	683,691	680,684	686,664
73 - 77	6,501	5,659	7,383	554,326	550,744	557,788	560,828	557,972	563,666	5,469	4,710	6,273	554,326	550,744	557,788	559,796	556,883	562,682
78 - 82	5,907	5,108	6,744	393,784	390,324	397,173	399,691	396,591	402,739	4,769	4,070	5,513	393,784	390,324	397,173	398,553	395,453	401,607
83 - 87	4,011	3,418	4,647	208,183	203,696	212,699	212,194	207,707	216,755	3,034	2,540	3,573	208,183	203,696	212,699	211,217	206,746	215,727
88 - 92	1,398	1,096	1,733	44,385	39,290	49,590	45,782	40,503	51,124	947	744	1,181	44,385	39,290	49,590	45,332	40,118	50,615
93 - 97	-3	-12	5	5	-11	25	2	-6	12	-3	-12	5	5	-11	25	2	-5	12
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': 13-17 years; for 'switching' and 'diversion from quitting': 18-22 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	1	1	1	993,650	993,281	994,009	993,651	993,282	994,010	1	1	1	993,650	993,281	994,009	993,651	993,282	994,010
23 - 27	18	15	21	988,756	988,189	989,305	988,774	988,207	989,324	17	14	20	988,756	988,189	989,305	988,773	988,206	989,323
28 - 32	88	76	101	982,030	981,252	982,794	982,118	981,346	982,877	84	72	96	982,030	981,252	982,794	982,114	981,341	982,873
33 - 37	270	234	307	972,766	971,766	973,763	973,036	972,055	974,015	256	221	292	972,766	971,766	973,763	973,022	972,041	974,002
38 - 42	618	537	700	959,978	958,732	961,234	960,596	959,394	961,800	587	509	666	959,978	958,732	961,234	960,564	959,363	961,772
43 - 47	1,188	1,034	1,343	942,285	940,758	943,830	943,474	942,037	944,916	1,127	978	1,276	942,285	940,758	943,830	943,412	941,969	944,857
48 - 52	2,031	1,768	2,294	917,749	915,866	919,636	919,780	918,100	921,490	1,921	1,668	2,175	917,749	915,866	919,636	919,670	917,983	921,383
53 - 57	3,168	2,756	3,580	883,638	881,326	885,956	886,806	884,816	888,828	2,986	2,593	3,381	883,638	881,326	885,956	886,624	884,625	888,657
58 - 62	4,555	3,966	5,147	836,133	833,339	838,900	840,688	838,399	843,020	4,274	3,711	4,841	836,133	833,339	838,900	840,407	838,099	842,753
63 - 67	6,051	5,265	6,840	769,998	766,689	773,230	776,049	773,410	778,644	5,643	4,894	6,397	769,998	766,689	773,230	775,641	772,973	778,264
68 - 72	7,374	6,416	8,346	678,494	674,893	682,007	685,868	683,064	688,615	6,819	5,919	7,743	678,494	674,893	682,007	685,313	682,464	688,107
73 - 77	8,078	7,033	9,147	554,326	550,744	557,788	562,404	559,662	565,122	7,386	6,410	8,399	554,326	550,744	557,788	561,713	558,927	564,459
78 - 82	7,609	6,620	8,633	393,784	390,324	397,173	401,393	398,316	404,458	6,855	5,945	7,802	393,784	390,324	397,173	400,639	397,550	403,693
83 - 87	5,545	4,778	6,343	208,183	203,696	212,699	213,728	209,165	218,346	4,903	4,213	5,628	208,183	203,696	212,699	213,086	208,535	217,684
88 - 92	2,199	1,698	2,739	44,385	39,290	49,590	46,584	41,220	52,052	1,907	1,481	2,361	44,385	39,290	49,590	46,292	40,970	51,718
93 - 97	-2	-9	4	5	-11	25	3	-7	16	-2	-9	4	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': 18-22 years; for 'switching' and 'diversion from quitting': 18-22 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	17	15	20	988,756	988,189	989,305	988,773	988,206	989,323	17	14	19	988,756	988,189	989,305	988,773	988,206	989,322
28 - 32	89	77	101	982,030	981,252	982,794	982,118	981,346	982,877	85	73	96	982,030	981,252	982,794	982,114	981,342	982,873
33 - 37	274	238	309	972,766	971,766	973,763	973,039	972,058	974,019	261	227	295	972,766	971,766	973,763	973,027	972,045	974,007
38 - 42	628	549	707	959,978	958,732	961,234	960,605	959,404	961,812	599	523	675	959,978	958,732	961,234	960,576	959,375	961,786
43 - 47	1,209	1,057	1,360	942,285	940,758	943,830	943,494	942,054	944,938	1,150	1,005	1,296	942,285	940,758	943,830	943,436	941,990	944,884
48 - 52	2,067	1,808	2,324	917,749	915,866	919,636	919,815	918,133	921,528	1,962	1,713	2,211	917,749	915,866	919,636	919,711	918,018	921,426
53 - 57	3,224	2,819	3,630	883,638	881,326	885,956	886,863	884,871	888,890	3,051	2,663	3,439	883,638	881,326	885,956	886,689	884,688	888,726
58 - 62	4,638	4,057	5,224	836,133	833,339	838,900	840,771	838,478	843,109	4,369	3,812	4,928	836,133	833,339	838,900	840,501	838,185	842,853
63 - 67	6,163	5,385	6,942	769,998	766,689	773,230	776,161	773,514	778,766	5,769	5,028	6,513	769,998	766,689	773,230	775,767	773,091	778,400
68 - 72	7,511	6,562	8,473	678,494	674,893	682,007	686,005	683,191	688,758	6,972	6,078	7,888	678,494	674,893	682,007	685,467	682,610	688,271
73 - 77	8,224	7,187	9,286	554,326	550,744	557,788	562,551	559,797	565,275	7,551	6,580	8,555	554,326	550,744	557,788	561,877	559,082	564,633
78 - 82	7,737	6,753	8,756	393,784	390,324	397,173	401,521	398,438	404,595	6,999	6,090	7,941	393,784	390,324	397,173	400,783	397,685	403,844
83 - 87	5,620	4,852	6,421	208,183	203,696	212,699	213,803	209,237	218,425	4,986	4,294	5,713	208,183	203,696	212,699	213,169	208,616	217,772
88 - 92	2,207	1,702	2,749	44,385	39,290	49,590	46,592	41,228	52,066	1,916	1,489	2,373	44,385	39,290	49,590	46,301	40,971	51,730
93 - 97	-2	-9	4	5	-11	25	3	-7	16	-2	-9	4	5	-11	25	3	-7	16
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': 23-27 years; for 'switching' and 'diversion from quitting': 23-27 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	33	29	37	982,030	981,252	982,794	982,063	981,288	982,827	32	28	36	982,030	981,252	982,794	982,062	981,286	982,825
33 - 37	157	138	176	972,766	971,766	973,763	972,923	971,934	973,911	150	132	168	972,766	971,766	973,763	972,916	971,927	973,905
38 - 42	423	371	474	959,978	958,732	961,234	960,401	959,185	961,626	404	354	453	959,978	958,732	961,234	960,381	959,164	961,608
43 - 47	885	776	992	942,285	940,758	943,830	943,170	941,702	944,645	843	739	947	942,285	940,758	943,830	943,128	941,657	944,603
48 - 52	1,591	1,394	1,786	917,749	915,866	919,636	919,339	917,601	921,099	1,512	1,323	1,700	917,749	915,866	919,636	919,260	917,513	921,024
53 - 57	2,566	2,247	2,883	883,638	881,326	885,956	886,204	884,152	888,288	2,430	2,127	2,734	883,638	881,326	885,956	886,069	884,003	888,162
58 - 62	3,773	3,301	4,244	836,133	833,339	838,900	839,906	837,509	842,321	3,559	3,109	4,010	836,133	833,339	838,900	839,691	837,277	842,125
63 - 67	5,085	4,447	5,727	769,998	766,689	773,230	775,083	772,326	777,792	4,769	4,167	5,381	769,998	766,689	773,230	774,766	771,987	777,505
68 - 72	6,248	5,466	7,048	678,494	674,893	682,007	684,743	681,805	687,632	5,813	5,075	6,568	678,494	674,893	682,007	684,307	681,332	687,234
73 - 77	6,861	5,997	7,745	554,326	550,744	557,788	561,187	558,321	564,023	6,315	5,506	7,144	554,326	550,744	557,788	560,641	557,737	563,518
78 - 82	6,434	5,611	7,291	393,784	390,324	397,173	400,218	397,094	403,311	5,835	5,073	6,628	393,784	390,324	397,173	399,619	396,484	402,717
83 - 87	4,625	3,993	5,302	208,183	203,696	212,699	212,808	208,243	217,422	4,113	3,541	4,727	208,183	203,696	212,699	212,296	207,773	216,876
88 - 92	1,779	1,377	2,216	44,385	39,290	49,590	46,163	40,852	51,588	1,544	1,201	1,915	44,385	39,290	49,590	45,929	40,630	51,319
93 - 97	-2	-8	3	5	-11	25	3	-7	17	-2	-8	3	5	-11	25	3	-7	17
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 28-32 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794
33 - 37	53	47	60	972,766	971,766	973,763	972,819	971,824	973,812	51	45	58	972,766	971,766	973,763	972,817	971,821	973,810
38 - 42	205	180	231	959,978	958,732	961,234	960,183	958,952	961,425	197	172	222	959,978	958,732	961,234	960,174	958,943	961,417
43 - 47	503	441	567	942,285	940,758	943,830	942,789	941,296	944,292	481	421	542	942,285	940,758	943,830	942,767	941,273	944,271
48 - 52	992	869	1,118	917,749	915,866	919,636	918,741	916,948	920,543	947	828	1,067	917,749	915,866	919,636	918,696	916,900	920,498
53 - 57	1,699	1,486	1,915	883,638	881,326	885,956	885,337	883,195	887,487	1,616	1,413	1,822	883,638	881,326	885,956	885,255	883,106	887,411
58 - 62	2,598	2,272	2,930	836,133	833,339	838,900	838,731	836,219	841,255	2,462	2,151	2,778	836,133	833,339	838,900	838,595	836,071	841,128
63 - 67	3,592	3,142	4,052	769,998	766,689	773,230	773,590	770,687	776,461	3,386	2,959	3,825	769,998	766,689	773,230	773,384	770,463	776,272
68 - 72	4,481	3,914	5,066	678,494	674,893	682,007	682,975	679,853	686,044	4,195	3,660	4,747	678,494	674,893	682,007	682,689	679,543	685,777
73 - 77	4,950	4,319	5,609	554,326	550,744	557,788	559,276	556,237	562,296	4,589	3,998	5,207	554,326	550,744	557,788	558,916	555,843	561,968
78 - 82	4,627	4,024	5,265	393,784	390,324	397,173	398,410	395,201	401,556	4,233	3,677	4,828	393,784	390,324	397,173	398,017	394,797	401,169
83 - 87	3,278	2,816	3,776	208,183	203,696	212,699	211,461	206,918	216,029	2,944	2,527	3,394	208,183	203,696	212,699	211,127	206,584	215,683
88 - 92	1,221	941	1,527	44,385	39,290	49,590	45,606	40,347	50,958	1,070	830	1,329	44,385	39,290	49,590	45,455	40,212	50,781
93 - 97	-1	-7	3	5	-11	25	4	-8	18	-1	-7	3	5	-11	25	4	-8	18
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 33-37 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794
33 - 37	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763
38 - 42	36	31	40	959,978	958,732	961,234	960,013	958,770	961,266	34	30	39	959,978	958,732	961,234	960,012	958,769	961,265
43 - 47	146	127	164	942,285	940,758	943,830	942,431	940,916	943,967	139	121	157	942,285	940,758	943,830	942,424	940,908	943,961
48 - 52	369	323	417	917,749	915,866	919,636	918,118	916,270	919,971	352	307	397	917,749	915,866	919,636	918,100	916,251	919,955
53 - 57	735	641	830	883,638	881,326	885,956	884,373	882,140	886,604	698	609	789	883,638	881,326	885,956	884,337	882,098	886,570
58 - 62	1,235	1,077	1,396	836,133	833,339	838,900	837,368	834,703	840,019	1,169	1,019	1,322	836,133	833,339	838,900	837,302	834,629	839,959
63 - 67	1,812	1,581	2,048	769,998	766,689	773,230	771,810	768,710	774,850	1,708	1,489	1,932	769,998	766,689	773,230	771,705	768,594	774,755
68 - 72	2,345	2,046	2,655	678,494	674,893	682,007	680,839	677,491	684,107	2,196	1,913	2,490	678,494	674,893	682,007	680,690	677,320	683,970
73 - 77	2,641	2,301	3,000	554,326	550,744	557,788	556,967	553,667	560,171	2,451	2,133	2,786	554,326	550,744	557,788	556,777	553,459	559,991
78 - 82	2,477	2,150	2,830	393,784	390,324	397,173	396,261	392,950	399,504	2,271	1,967	2,598	393,784	390,324	397,173	396,054	392,731	399,308
83 - 87	1,736	1,486	2,004	208,183	203,696	212,699	209,919	205,399	214,466	1,564	1,338	1,808	208,183	203,696	212,699	209,747	205,236	214,288
88 - 92	633	490	789	44,385	39,290	49,590	45,018	39,814	50,306	557	434	691	44,385	39,290	49,590	44,942	39,741	50,212
93 - 97	-1	-5	2	5	-11	25	4	-8	20	-1	-5	2	5	-11	25	4	-8	20
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 38-42 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794
33 - 37	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763
38 - 42	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234
43 - 47	34	30	38	942,285	940,758	943,830	942,319	940,796	943,862	32	28	37	942,285	940,758	943,830	942,318	940,794	943,860
48 - 52	138	121	156	917,749	915,866	919,636	917,887	916,016	919,764	132	115	149	917,749	915,866	919,636	917,881	916,009	919,758
53 - 57	343	299	388	883,638	881,326	885,956	883,982	881,709	886,258	326	284	370	883,638	881,326	885,956	883,965	881,691	886,243
58 - 62	650	566	735	836,133	833,339	838,900	836,783	834,052	839,492	616	537	698	836,133	833,339	838,900	836,749	834,016	839,461
63 - 67	1,024	893	1,160	769,998	766,689	773,230	771,022	767,816	774,145	967	843	1,096	769,998	766,689	773,230	770,965	767,756	774,094
68 - 72	1,385	1,208	1,571	678,494	674,893	682,007	679,879	676,434	683,242	1,301	1,134	1,478	678,494	674,893	682,007	679,796	676,336	683,168
73 - 77	1,600	1,390	1,821	554,326	550,744	557,788	555,926	552,513	559,233	1,492	1,295	1,700	554,326	550,744	557,788	555,818	552,398	559,135
78 - 82	1,518	1,314	1,736	393,784	390,324	397,173	395,301	391,929	398,597	1,400	1,210	1,603	393,784	390,324	397,173	395,183	391,806	398,486
83 - 87	1,062	906	1,230	208,183	203,696	212,699	209,245	204,744	213,785	965	822	1,118	208,183	203,696	212,699	209,148	204,644	213,690
88 - 92	383	297	478	44,385	39,290	49,590	44,768	39,600	50,013	341	266	423	44,385	39,290	49,590	44,726	39,564	49,965
93 - 97	-1	-4	2	5	-11	25	4	-9	21	-1	-4	2	5	-11	25	4	-9	21
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 43-47 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794
33 - 37	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763
38 - 42	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234
43 - 47	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830
48 - 52	35	30	39	917,749	915,866	919,636	917,783	915,905	919,669	33	29	38	917,749	915,866	919,636	917,782	915,903	919,667
53 - 57	135	118	153	883,638	881,326	885,956	883,773	881,474	886,073	129	112	146	883,638	881,326	885,956	883,767	881,468	886,068
58 - 62	309	270	350	836,133	833,339	838,900	836,442	833,668	839,178	295	257	334	836,133	833,339	838,900	836,428	833,652	839,166
63 - 67	540	471	613	769,998	766,689	773,230	770,538	767,282	773,704	514	447	583	769,998	766,689	773,230	770,512	767,254	773,679
68 - 72	779	678	885	678,494	674,893	682,007	679,273	675,756	682,708	737	641	838	678,494	674,893	682,007	679,232	675,709	682,672
73 - 77	936	813	1,067	554,326	550,744	557,788	555,262	551,778	558,628	880	763	1,004	554,326	550,744	557,788	555,206	551,714	558,576
78 - 82	906	783	1,039	393,784	390,324	397,173	394,690	391,284	398,018	845	729	969	393,784	390,324	397,173	394,628	391,221	397,957
83 - 87	639	544	742	208,183	203,696	212,699	208,822	204,329	213,360	588	501	683	208,183	203,696	212,699	208,771	204,278	213,305
88 - 92	230	178	287	44,385	39,290	49,590	44,615	39,481	49,841	208	162	259	44,385	39,290	49,590	44,593	39,464	49,819
93 - 97	-1	-3	1	5	-11	25	4	-9	21	-1	-3	1	5	-11	25	4	-9	21
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 48-52 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794
33 - 37	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763
38 - 42	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234
43 - 47	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830
48 - 52	0	0	0	917,749	915,866	919,636	917,749	915,866	919,636	0	0	0	917,749	915,866	919,636	917,749	915,866	919,636
53 - 57	32	28	36	883,638	881,326	885,956	883,670	881,359	885,985	31	27	35	883,638	881,326	885,956	883,669	881,357	885,984
58 - 62	110	96	125	836,133	833,339	838,900	836,243	833,455	838,999	105	91	119	836,133	833,339	838,900	836,237	833,450	838,994
63 - 67	231	201	263	769,998	766,689	773,230	770,229	766,944	773,434	219	191	250	769,998	766,689	773,230	770,217	766,931	773,424
68 - 72	370	322	422	678,494	674,893	682,007	678,865	675,301	682,340	350	304	399	678,494	674,893	682,007	678,844	675,278	682,321
73 - 77	474	410	541	554,326	550,744	557,788	554,800	551,268	558,213	445	385	509	554,326	550,744	557,788	554,772	551,237	558,186
78 - 82	475	410	547	393,784	390,324	397,173	394,259	390,825	397,615	443	381	510	393,784	390,324	397,173	394,227	390,789	397,586
83 - 87	340	288	396	208,183	203,696	212,699	208,523	204,024	213,054	313	266	365	208,183	203,696	212,699	208,497	203,999	213,023
88 - 92	122	94	153	44,385	39,290	49,590	44,507	39,393	49,732	111	86	138	44,385	39,290	49,590	44,496	39,382	49,723
93 - 97	-1	-3	1	5	-11	25	4	-10	22	-1	-3	1	5	-11	25	4	-10	22
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 53-57 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794
33 - 37	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763
38 - 42	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234
43 - 47	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830
48 - 52	0	0	0	917,749	915,866	919,636	917,749	915,866	919,636	0	0	0	917,749	915,866	919,636	917,749	915,866	919,636
53 - 57	0	0	0	883,638	881,326	885,956	883,638	881,326	885,956	0	0	0	883,638	881,326	885,956	883,638	881,326	885,956
58 - 62	19	16	21	836,133	833,339	838,900	836,151	833,358	838,915	18	15	20	836,133	833,339	838,900	836,150	833,357	838,915
63 - 67	63	55	72	769,998	766,689	773,230	770,061	766,759	773,290	60	52	69	769,998	766,689	773,230	770,058	766,756	773,286
68 - 72	130	112	148	678,494	674,893	682,007	678,624	675,034	682,124	123	106	140	678,494	674,893	682,007	678,617	675,026	682,118
73 - 77	190	164	218	554,326	550,744	557,788	554,516	550,954	557,958	179	154	205	554,326	550,744	557,788	554,505	550,943	557,948
78 - 82	206	177	238	393,784	390,324	397,173	393,990	390,541	397,366	193	166	223	393,784	390,324	397,173	393,977	390,528	397,354
83 - 87	154	130	180	208,183	203,696	212,699	208,337	203,847	212,864	143	120	167	208,183	203,696	212,699	208,326	203,837	212,852
88 - 92	56	43	70	44,385	39,290	49,590	44,441	39,336	49,657	51	40	64	44,385	39,290	49,590	44,436	39,333	49,651
93 - 97	0	-2	1	5	-11	25	5	-10	23	0	-2	1	5	-11	25	5	-10	23
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 58-62 years

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794
33 - 37	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763
38 - 42	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234
43 - 47	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830
48 - 52	0	0	0	917,749	915,866	919,636	917,749	915,866	919,636	0	0	0	917,749	915,866	919,636	917,749	915,866	919,636
53 - 57	0	0	0	883,638	881,326	885,956	883,638	881,326	885,956	0	0	0	883,638	881,326	885,956	883,638	881,326	885,956
58 - 62	0	0	0	836,133	833,339	838,900	836,133	833,339	838,900	0	0	0	836,133	833,339	838,900	836,133	833,339	838,900
63 - 67	13	12	15	769,998	766,689	773,230	770,011	766,704	773,242	13	11	15	769,998	766,689	773,230	770,011	766,703	773,241
68 - 72	45	39	52	678,494	674,893	682,007	678,540	674,942	682,048	43	37	50	678,494	674,893	682,007	678,538	674,939	682,046
73 - 77	82	71	94	554,326	550,744	557,788	554,409	550,834	557,862	78	67	90	554,326	550,744	557,788	554,405	550,830	557,858
78 - 82	100	86	116	393,784	390,324	397,173	393,884	390,422	397,267	95	81	110	393,784	390,324	397,173	393,879	390,417	397,263
83 - 87	80	67	93	208,183	203,696	212,699	208,263	203,778	212,785	75	63	88	208,183	203,696	212,699	208,258	203,774	212,780
88 - 92	30	23	38	44,385	39,290	49,590	44,415	39,316	49,626	28	21	35	44,385	39,290	49,590	44,413	39,314	49,624
93 - 97	0	-2	1	5	-11	25	5	-10	23	0	-2	1	5	-11	25	5	-10	23
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E3.15, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on purchase probability projections for the 'Master model': Increasing age category at MRTP availability

First Age Category of Camel SNUS availability

For 'Alternative initiation' and 'additional initiation': N/A; for 'switching' and 'diversion from quitting': 63-67

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428	0	0	0	997,252	997,070	997,428	997,252	997,070	997,428
18 - 22	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009	0	0	0	993,650	993,281	994,009	993,650	993,281	994,009
23 - 27	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305	0	0	0	988,756	988,189	989,305	988,756	988,189	989,305
28 - 32	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794	0	0	0	982,030	981,252	982,794	982,030	981,252	982,794
33 - 37	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763	0	0	0	972,766	971,766	973,763	972,766	971,766	973,763
38 - 42	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234	0	0	0	959,978	958,732	961,234	959,978	958,732	961,234
43 - 47	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830	0	0	0	942,285	940,758	943,830	942,285	940,758	943,830
48 - 52	0	0	0	917,749	915,866	919,636	917,749	915,866	919,636	0	0	0	917,749	915,866	919,636	917,749	915,866	919,636
53 - 57	0	0	0	883,638	881,326	885,956	883,638	881,326	885,956	0	0	0	883,638	881,326	885,956	883,638	881,326	885,956
58 - 62	0	0	0	836,133	833,339	838,900	836,133	833,339	838,900	0	0	0	836,133	833,339	838,900	836,133	833,339	838,900
63 - 67	0	0	0	769,998	766,689	773,230	769,998	766,689	773,230	0	0	0	769,998	766,689	773,230	769,998	766,689	773,230
68 - 72	12	10	14	678,494	674,893	682,007	678,506	674,906	682,017	12	10	13	678,494	674,893	682,007	678,506	674,905	682,017
73 - 77	33	28	38	554,326	550,744	557,788	554,359	550,780	557,816	31	27	36	554,326	550,744	557,788	554,358	550,778	557,815
78 - 82	47	41	55	393,784	390,324	397,173	393,831	390,370	397,218	45	39	53	393,784	390,324	397,173	393,829	390,368	397,216
83 - 87	41	35	49	208,183	203,696	212,699	208,224	203,740	212,744	39	33	46	208,183	203,696	212,699	208,222	203,737	212,741
88 - 92	16	12	21	44,385	39,290	49,590	44,401	39,304	49,610	15	11	19	44,385	39,290	49,590	44,400	39,303	49,609
93 - 97	0	-1	0	5	-11	25	5	-10	24	0	-1	0	5	-11	25	5	-10	24
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_C3: Mean numbers of survivors in the 'master model' (no 'relapse'), the counterfactual scenario with 50% 'relapse' in the 'master model', and the difference between them, for all age categories

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	997,252	997,252	0	997,252	997,252
18 - 22	0	993,651	993,651	0	993,651	993,651
23 - 27	1	988,773	988,774	2	988,771	988,773
28 - 32	12	982,106	982,118	12	982,102	982,114
33 - 37	39	972,997	973,036	37	972,985	973,022
38 - 42	92	960,504	960,596	88	960,476	960,564
43 - 47	182	943,292	943,474	176	943,236	943,412
48 - 52	318	919,462	919,780	307	919,363	919,670
53 - 57	501	886,305	886,806	483	886,141	886,624
58 - 62	729	839,959	840,688	701	839,706	840,407
63 - 67	977	775,072	776,049	937	774,704	775,641
68 - 72	1,199	684,669	685,868	1,144	684,169	685,313
73 - 77	1,321	561,083	562,404	1,253	560,460	561,713
78 - 82	1,250	400,143	401,393	1,174	399,465	400,639
83 - 87	910	212,818	213,728	844	212,242	213,086
88 - 92	353	46,231	46,584	322	45,970	46,292
93 - 97	0	3	3	0	3	3
98 - 102	0	0	0	0	0	0

Table E_C4: Mean numbers of survivors in the 'master model' without 'alternative initiation' (no 'relapse'), the counterfactual scenario with 50% 'relapse' in the 'master model' without 'alternative initiation', and the difference between them, for all age categories

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' without 'alternative initiation' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model' without 'alternative initiation'	Difference in survivors	Number of survivors, Counterfactual, 'master model' without 'alternative initiation' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model' without 'alternative initiation'
13 - 17	0	997,252	997,252	0	997,252	997,252
18 - 22	0	993,650	993,650	0	993,650	993,650
23 - 27	2	988,769	988,771	2	988,768	988,770
28 - 32	12	982,098	982,110	12	982,094	982,106
33 - 37	40	972,983	973,023	37	972,972	973,009
38 - 42	93	960,483	960,576	90	960,456	960,546
43 - 47	184	943,263	943,447	178	943,208	943,386
48 - 52	319	919,426	919,745	310	919,328	919,638
53 - 57	505	886,261	886,766	488	886,100	886,588
58 - 62	734	839,912	840,646	708	839,662	840,370
63 - 67	986	775,027	776,013	944	774,665	775,609
68 - 72	1,209	684,638	685,847	1,154	684,144	685,298
73 - 77	1,333	561,077	562,410	1,263	560,461	561,724
78 - 82	1,261	400,173	401,434	1,183	399,501	400,684
83 - 87	917	212,879	213,796	851	212,305	213,156
88 - 92	356	46,285	46,641	325	46,024	46,349
93 - 97	0	3	3	0	3	3
98 - 102	0	0	0	0	0	0

Table E_C5: Mean numbers of survivors in the counterfactual scenario with 'diversion from quitting' (no 'relapse'), the counterfactual scenario with 50% 'relapse' in addition to 'diversion from quitting', and the difference between them, for all age categories

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'diversion from quitting' with 50% 'relapse'	Number of survivors, Counterfactual, 'diversion from quitting'	Difference in survivors	Number of survivors, Counterfactual, 'diversion from quitting' with 50% 'relapse'	Number of survivors, Counterfactual, 'diversion from quitting'
13 - 17	0	997,252	997,252	0	997,252	997,252
18 - 22	0	993,650	993,650	0	993,650	993,650
23 - 27	2	988,754	988,756	2	988,754	988,756
28 - 32	13	982,015	982,028	12	982,015	982,027
33 - 37	42	972,716	972,758	41	972,715	972,756
38 - 42	104	959,856	959,960	100	959,853	959,953
43 - 47	210	942,037	942,247	204	942,030	942,234
48 - 52	375	917,303	917,678	363	917,290	917,653
53 - 57	606	882,913	883,519	585	882,891	883,476
58 - 62	895	835,048	835,943	861	835,014	835,875
63 - 67	1,215	768,502	769,717	1,165	768,451	769,616
68 - 72	1,502	676,602	678,104	1,435	676,531	677,966
73 - 77	1,663	552,168	553,831	1,577	552,079	553,656
78 - 82	1,573	391,657	393,230	1,478	391,559	393,037
83 - 87	1,141	206,555	207,696	1,059	206,471	207,530
88 - 92	440	43,712	44,152	402	43,673	44,075
93 - 97	0	5	5	0	5	5
98 - 102	0	0	0	0	0	0

Table E_C6: Mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' (no 'relapse'), mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' with 50% 'relapse', and the difference between them, for all age categories

0% 'switching'

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	997,252	997,252	0	997,252	997,252
18 - 22	0	993,650	993,650	0	993,650	993,650
23 - 27	2	988,752	988,754	2	988,751	988,753
28 - 32	12	982,007	982,019	12	982,006	982,018
33 - 37	42	972,694	972,736	41	972,691	972,732
38 - 42	103	959,811	959,914	100	959,804	959,904
43 - 47	210	941,956	942,166	204	941,943	942,147
48 - 52	375	917,172	917,547	363	917,150	917,513
53 - 57	605	882,719	883,324	583	882,684	883,267
58 - 62	894	834,782	835,676	860	834,728	835,588
63 - 67	1,213	768,167	769,380	1,163	768,089	769,252
68 - 72	1,500	676,223	677,723	1,433	676,118	677,551
73 - 77	1,661	551,803	553,464	1,575	551,677	553,252
78 - 82	1,571	391,398	392,969	1,477	391,266	392,743
83 - 87	1,140	206,486	207,626	1,058	206,381	207,439
88 - 92	440	43,801	44,241	401	43,760	44,161
93 - 97	0	5	5	0	5	5
98 - 102	0	0	0	0	0	0

Table E_C6, cont.: Mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' (no 'relapse'), mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' with 50% 'relapse', and the difference between them, for all age categories

0.5% 'switching'

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	997,252	997,252	0	997,252	997,252
18 - 22	0	993,650	993,650	0	993,650	993,650
23 - 27	2	988,753	988,755	2	988,752	988,754
28 - 32	12	982,014	982,026	12	982,012	982,024
33 - 37	42	972,716	972,758	40	972,713	972,753
38 - 42	102	959,864	959,966	98	959,856	959,954
43 - 47	207	942,063	942,270	201	942,047	942,248
48 - 52	369	917,366	917,735	356	917,338	917,694
53 - 57	592	883,039	883,631	572	882,992	883,564
58 - 62	874	835,265	836,139	841	835,193	836,034
63 - 67	1,184	768,838	770,022	1,135	768,733	769,868
68 - 72	1,462	677,071	678,533	1,396	676,929	678,325
73 - 77	1,616	552,759	554,375	1,532	552,585	554,117
78 - 82	1,529	392,311	393,840	1,436	392,126	393,562
83 - 87	1,109	207,150	208,259	1,030	206,998	208,028
88 - 92	428	44,056	44,484	391	43,993	44,384
93 - 97	0	5	5	0	5	5
98 - 102	0	0	0	0	0	0

Table E_C6, cont.: Mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' (no 'relapse'), mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' with 50% 'relapse', and the difference between them, for all age categories

1% 'switching'

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	997,252	997,252	0	997,252	997,252
18 - 22	0	993,650	993,650	0	993,650	993,650
23 - 27	2	988,754	988,756	2	988,754	988,756
28 - 32	12	982,021	982,033	12	982,019	982,031
33 - 37	42	972,738	972,780	40	972,734	972,774
38 - 42	101	959,916	960,017	98	959,906	960,004
43 - 47	205	942,169	942,374	197	942,150	942,347
48 - 52	362	917,558	917,920	350	917,523	917,873
53 - 57	581	883,353	883,934	561	883,295	883,856
58 - 62	854	835,740	836,594	822	835,649	836,471
63 - 67	1,155	769,495	770,650	1,108	769,363	770,471
68 - 72	1,425	677,901	679,326	1,360	677,722	679,082
73 - 77	1,573	553,692	555,265	1,492	553,470	554,962
78 - 82	1,487	393,203	394,690	1,397	392,965	394,362
83 - 87	1,079	207,797	208,876	1,001	207,601	208,602
88 - 92	416	44,305	44,721	380	44,221	44,601
93 - 97	-1	5	4	-1	5	4
98 - 102	0	0	0	0	0	0

Table E_C6, cont.: Mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' (no 'relapse'), mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' with 50% 'relapse', and the difference between them, for all age categories

1.5% 'switching'

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	997,252	997,252	0	997,252	997,252
18 - 22	0	993,650	993,650	0	993,650	993,650
23 - 27	2	988,755	988,757	2	988,755	988,757
28 - 32	12	982,028	982,040	12	982,026	982,038
33 - 37	41	972,760	972,801	40	972,755	972,795
38 - 42	100	959,968	960,068	96	959,957	960,053
43 - 47	201	942,275	942,476	194	942,252	942,446
48 - 52	356	917,747	918,103	344	917,706	918,050
53 - 57	569	883,663	884,232	549	883,594	884,143
58 - 62	835	836,205	837,040	804	836,097	836,901
63 - 67	1,127	770,139	771,266	1,081	769,981	771,062
68 - 72	1,388	678,713	680,101	1,325	678,497	679,822
73 - 77	1,531	554,604	556,135	1,452	554,335	555,787
78 - 82	1,446	394,073	395,519	1,358	393,784	395,142
83 - 87	1,050	208,429	209,479	974	208,189	209,163
88 - 92	406	44,547	44,953	371	44,443	44,814
93 - 97	0	4	4	0	4	4
98 - 102	0	0	0	0	0	0

Table E_H1: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking' ('master model'); mortality rates for women

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	1	996,656	996,422	996,877	996,656	996,423	996,877	0	0	0	996,656	996,422	996,877	996,656	996,423	996,877
23 - 27	10	9	12	994,175	993,819	994,511	994,185	993,830	994,520	10	8	11	994,175	993,819	994,511	994,184	993,829	994,520
28 - 32	49	42	56	990,793	990,308	991,256	990,842	990,360	991,301	46	39	53	990,793	990,308	991,256	990,839	990,357	991,298
33 - 37	149	129	170	986,111	985,492	986,712	986,260	985,650	986,851	142	122	162	986,111	985,492	986,712	986,252	985,642	986,843
38 - 42	347	301	394	979,521	978,754	980,281	979,868	979,123	980,603	330	285	375	979,521	978,754	980,281	979,851	979,105	980,587
43 - 47	686	596	778	970,094	969,141	971,029	970,780	969,884	971,666	651	564	739	970,094	969,141	971,029	970,745	969,848	971,632
48 - 52	1,220	1,062	1,381	956,369	955,198	957,540	957,590	956,519	958,652	1,156	1,003	1,310	956,369	955,198	957,540	957,525	956,449	958,592
53 - 57	2,008	1,748	2,273	936,029	934,569	937,506	938,038	936,764	939,320	1,896	1,646	2,151	936,029	934,569	937,506	937,925	936,643	939,212
58 - 62	3,091	2,689	3,501	905,333	903,479	907,243	908,425	906,897	909,990	2,906	2,522	3,297	905,333	903,479	907,243	908,239	906,698	909,818
63 - 67	4,460	3,880	5,052	858,218	855,797	860,609	862,678	860,781	864,595	4,168	3,614	4,730	858,218	855,797	860,609	862,386	860,470	864,329
68 - 72	5,977	5,201	6,768	784,991	782,039	787,940	790,968	788,695	793,253	5,542	4,808	6,292	784,991	782,039	787,940	790,532	788,230	792,852
73 - 77	7,242	6,302	8,222	671,075	667,696	674,396	678,317	675,723	680,832	6,640	5,753	7,565	671,075	667,696	674,396	677,715	675,080	680,275
78 - 82	7,423	6,441	8,461	498,612	495,053	502,115	506,035	503,059	508,969	6,699	5,789	7,670	498,612	495,053	502,115	505,311	502,311	508,277
83 - 87	5,340	4,501	6,228	261,599	256,994	266,145	266,939	262,228	271,635	4,708	3,952	5,515	261,599	256,994	266,145	266,307	261,622	270,974
88 - 92	852	214	1,498	20,927	15,029	26,772	21,780	15,428	28,005	717	182	1,261	20,927	15,029	26,772	21,644	15,365	27,815
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H5: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'additional initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking'; mortality rates for women

	ERR=0.08									ERR=0.11								
Age interval	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	8	7	10	994,175	993,819	994,511	994,183	993,828	994,519	8	6	9	994,175	993,819	994,511	994,182	993,827	994,518
28 - 32	44	38	51	990,793	990,308	991,256	990,837	990,356	991,296	42	36	49	990,793	990,308	991,256	990,835	990,353	991,294
33 - 37	142	122	162	986,111	985,492	986,712	986,253	985,642	986,843	135	116	154	986,111	985,492	986,712	986,245	985,635	986,837
38 - 42	336	291	382	979,521	978,754	980,281	979,857	979,111	980,594	319	276	363	979,521	978,754	980,281	979,841	979,093	980,578
43 - 47	670	583	760	970,094	969,141	971,029	970,764	969,868	971,651	636	551	723	970,094	969,141	971,029	970,730	969,832	971,618
48 - 52	1,200	1,044	1,358	956,369	955,198	957,540	957,569	956,496	958,634	1,136	986	1,288	956,369	955,198	957,540	957,505	956,428	958,575
53 - 57	1,983	1,725	2,243	936,029	934,569	937,506	938,012	936,735	939,297	1,872	1,626	2,123	936,029	934,569	937,506	937,901	936,617	939,192
58 - 62	3,062	2,663	3,465	905,333	903,479	907,243	908,395	906,863	909,964	2,879	2,499	3,265	905,333	903,479	907,243	908,212	906,668	909,794
63 - 67	4,429	3,854	5,015	858,218	855,797	860,609	862,647	860,747	864,570	4,141	3,593	4,699	858,218	855,797	860,609	862,359	860,436	864,306
68 - 72	5,951	5,181	6,736	784,991	782,039	787,940	790,941	788,662	793,233	5,520	4,792	6,265	784,991	782,039	787,940	790,510	788,203	792,835
73 - 77	7,229	6,291	8,202	671,075	667,696	674,396	678,304	675,703	680,829	6,632	5,751	7,553	671,075	667,696	674,396	677,707	675,064	680,272
78 - 82	7,433	6,447	8,468	498,612	495,053	502,115	506,045	503,062	508,984	6,714	5,804	7,679	498,612	495,053	502,115	505,326	502,320	508,297
83 - 87	5,370	4,521	6,267	261,599	256,994	266,145	266,969	262,245	271,672	4,741	3,974	5,556	261,599	256,994	266,145	266,340	261,645	271,025
88 - 92	868	211	1,538	20,927	15,029	26,772	21,796	15,442	28,029	733	177	1,298	20,927	15,029	26,772	21,660	15,361	27,837
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H8: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

0% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	-1	-1	-1	994,175	993,819	994,511	994,173	993,818	994,510	-2	-2	-1	994,175	993,819	994,511	994,173	993,817	994,510
28 - 32	-6	-6	-5	990,793	990,308	991,256	990,787	990,302	991,250	-7	-7	-6	990,793	990,308	991,256	990,787	990,301	991,249
33 - 37	-16	-17	-15	986,111	985,492	986,712	986,095	985,476	986,696	-18	-19	-17	986,111	985,492	986,712	986,092	985,474	986,694
38 - 42	-35	-37	-33	979,521	978,754	980,281	979,486	978,718	980,246	-41	-43	-39	979,521	978,754	980,281	979,481	978,712	980,241
43 - 47	-68	-71	-65	970,094	969,141	971,029	970,026	969,073	970,962	-79	-83	-75	970,094	969,141	971,029	970,015	969,062	970,952
48 - 52	-119	-124	-114	956,369	955,198	957,540	956,250	955,079	957,422	-140	-146	-133	956,369	955,198	957,540	956,230	955,057	957,402
53 - 57	-197	-205	-189	936,029	934,569	937,506	935,833	934,370	937,308	-232	-243	-221	936,029	934,569	937,506	935,797	934,335	937,275
58 - 62	-308	-321	-295	905,333	903,479	907,243	905,026	903,168	906,938	-366	-385	-349	905,333	903,479	907,243	904,967	903,105	906,880
63 - 67	-456	-477	-437	858,218	855,797	860,609	857,762	855,337	860,156	-548	-578	-521	858,218	855,797	860,609	857,670	855,240	860,067
68 - 72	-636	-668	-607	784,991	782,039	787,940	784,354	781,401	787,308	-773	-818	-731	784,991	782,039	787,940	784,217	781,249	787,174
73 - 77	-813	-858	-769	671,075	667,696	674,396	670,262	666,868	673,589	-1,000	-1,065	-939	671,075	667,696	674,396	670,075	666,677	673,407
78 - 82	-889	-950	-832	498,612	495,053	502,115	497,723	494,169	501,229	-1,111	-1,197	-1,031	498,612	495,053	502,115	497,500	493,953	501,014
83 - 87	-688	-754	-627	261,599	256,994	266,145	260,912	256,311	265,447	-878	-971	-794	261,599	256,994	266,145	260,722	256,126	265,246
88 - 92	-105	-161	-55	20,927	15,029	26,772	20,822	14,966	26,638	-144	-228	-68	20,927	15,029	26,772	20,784	14,948	26,581
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H8, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

0.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	-1	-1	0	994,175	993,819	994,511	994,174	993,818	994,511	-1	-1	-1	994,175	993,819	994,511	994,174	993,818	994,510
28 - 32	-2	-2	-1	990,793	990,308	991,256	990,791	990,307	991,254	-3	-3	-2	990,793	990,308	991,256	990,790	990,305	991,253
33 - 37	-4	-5	-2	986,111	985,492	986,712	986,107	985,488	986,707	-7	-8	-5	986,111	985,492	986,712	986,104	985,485	986,704
38 - 42	-6	-10	-2	979,521	978,754	980,281	979,515	978,751	980,273	-13	-16	-9	979,521	978,754	980,281	979,509	978,743	980,267
43 - 47	-8	-15	0	970,094	969,141	971,029	970,086	969,138	971,019	-20	-27	-13	970,094	969,141	971,029	970,073	969,124	971,006
48 - 52	-6	-20	8	956,369	955,198	957,540	956,363	955,200	957,527	-30	-43	-17	956,369	955,198	957,540	956,339	955,175	957,504
53 - 57	-1	-23	23	936,029	934,569	937,506	936,029	934,584	937,485	-43	-64	-21	936,029	934,569	937,506	935,986	934,541	937,444
58 - 62	10	-26	48	905,333	903,479	907,243	905,343	903,520	907,223	-60	-93	-25	905,333	903,479	907,243	905,273	903,446	907,156
63 - 67	24	-29	81	858,218	855,797	860,609	858,242	855,873	860,593	-87	-136	-35	858,218	855,797	860,609	858,131	855,756	860,489
68 - 72	34	-38	113	784,991	782,039	787,940	785,025	782,147	787,904	-132	-199	-59	784,991	782,039	787,940	784,859	781,973	787,753
73 - 77	27	-61	124	671,075	667,696	674,396	671,102	667,797	674,348	-201	-284	-111	671,075	667,696	674,396	670,874	667,564	674,127
78 - 82	-8	-100	93	498,612	495,053	502,115	498,604	495,120	502,046	-280	-370	-184	498,612	495,053	502,115	498,332	494,857	501,790
83 - 87	-49	-126	33	261,599	256,994	266,145	261,550	256,951	266,094	-282	-358	-205	261,599	256,994	266,145	261,317	256,729	265,857
88 - 92	-6	-43	33	20,927	15,029	26,772	20,921	15,004	26,768	-54	-90	-22	20,927	15,029	26,772	20,873	14,980	26,707
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H8, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

1% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	0	0	0	994,175	993,819	994,511	994,175	993,819	994,511	0	0	0	994,175	993,819	994,511	994,175	993,819	994,511
28 - 32	2	1	3	990,793	990,308	991,256	990,795	990,311	991,258	1	0	2	990,793	990,308	991,256	990,794	990,309	991,257
33 - 37	8	5	11	986,111	985,492	986,712	986,119	985,500	986,718	5	2	8	986,111	985,492	986,712	986,115	985,497	986,715
38 - 42	23	16	30	979,521	978,754	980,281	979,544	978,780	980,300	15	9	22	979,521	978,754	980,281	979,537	978,772	980,293
43 - 47	52	38	67	970,094	969,141	971,029	970,146	969,201	971,075	37	24	51	970,094	969,141	971,029	970,131	969,184	971,061
48 - 52	105	79	132	956,369	955,198	957,540	956,475	955,320	957,627	77	53	103	956,369	955,198	957,540	956,447	955,291	957,600
53 - 57	192	147	238	936,029	934,569	937,506	936,221	934,793	937,662	143	101	187	936,029	934,569	937,506	936,173	934,741	937,616
58 - 62	321	249	396	905,333	903,479	907,243	905,654	903,864	907,500	240	172	310	905,333	903,479	907,243	905,573	903,777	907,423
63 - 67	493	386	606	858,218	855,797	860,609	858,712	856,392	861,024	364	265	470	858,218	855,797	860,609	858,582	856,256	860,899
68 - 72	689	542	846	784,991	782,039	787,940	785,680	782,870	788,486	495	360	640	784,991	782,039	787,940	785,485	782,660	788,302
73 - 77	847	664	1,043	671,075	667,696	674,396	671,922	668,715	675,092	578	411	757	671,075	667,696	674,396	671,653	668,435	674,846
78 - 82	850	659	1,057	498,612	495,053	502,115	499,462	496,045	502,834	530	357	717	498,612	495,053	502,115	499,141	495,715	502,522
83 - 87	574	416	742	261,599	256,994	266,145	262,173	257,571	266,710	298	164	443	261,599	256,994	266,145	261,897	257,313	266,439
88 - 92	90	-9	191	20,927	15,029	26,772	21,018	15,036	26,907	34	-28	99	20,927	15,029	26,772	20,961	15,017	26,823
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H8, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

1.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	1	0	1	994,175	993,819	994,511	994,175	993,820	994,512	0	0	1	994,175	993,819	994,511	994,175	993,819	994,512
28 - 32	6	4	7	990,793	990,308	991,256	990,799	990,314	991,261	5	3	6	990,793	990,308	991,256	990,798	990,313	991,260
33 - 37	20	15	24	986,111	985,492	986,712	986,130	985,513	986,730	16	12	21	986,111	985,492	986,712	986,127	985,509	986,726
38 - 42	51	41	62	979,521	978,754	980,281	979,572	978,810	980,326	43	33	53	979,521	978,754	980,281	979,564	978,801	980,319
43 - 47	111	90	132	970,094	969,141	971,029	970,205	969,267	971,129	94	74	115	970,094	969,141	971,029	970,188	969,250	971,113
48 - 52	215	176	255	956,369	955,198	957,540	956,585	955,439	957,725	184	147	222	956,369	955,198	957,540	956,553	955,407	957,696
53 - 57	382	314	451	936,029	934,569	937,506	936,411	934,997	937,834	326	263	392	936,029	934,569	937,506	936,356	934,938	937,783
58 - 62	627	518	738	905,333	903,479	907,243	905,960	904,206	907,776	534	432	639	905,333	903,479	907,243	905,867	904,107	907,689
63 - 67	953	792	1,122	858,218	855,797	860,609	859,171	856,904	861,442	806	655	965	858,218	855,797	860,609	859,024	856,749	861,301
68 - 72	1,329	1,106	1,564	784,991	782,039	787,940	786,320	783,572	789,058	1,107	900	1,328	784,991	782,039	787,940	786,097	783,333	788,854
73 - 77	1,646	1,369	1,941	671,075	667,696	674,396	672,721	669,606	675,808	1,338	1,082	1,612	671,075	667,696	674,396	672,413	669,279	675,522
78 - 82	1,687	1,395	2,002	498,612	495,053	502,115	500,299	496,949	503,609	1,319	1,053	1,606	498,612	495,053	502,115	499,930	496,566	503,258
83 - 87	1,180	935	1,441	261,599	256,994	266,145	262,780	258,179	267,328	863	653	1,088	261,599	256,994	266,145	262,462	257,866	266,990
88 - 92	185	19	351	20,927	15,029	26,772	21,112	15,072	27,042	119	0	240	20,927	15,029	26,772	21,046	15,045	26,948
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H8, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

2% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	2	1	2	994,175	993,819	994,511	994,176	993,821	994,512	1	1	2	994,175	993,819	994,511	994,176	993,820	994,512
28 - 32	10	8	12	990,793	990,308	991,256	990,803	990,318	991,265	8	6	10	990,793	990,308	991,256	990,801	990,317	991,264
33 - 37	32	26	38	986,111	985,492	986,712	986,142	985,525	986,740	28	22	33	986,111	985,492	986,712	986,138	985,521	986,737
38 - 42	79	65	93	979,521	978,754	980,281	979,601	978,840	980,353	70	57	84	979,521	978,754	980,281	979,592	978,831	980,344
43 - 47	169	141	198	970,094	969,141	971,029	970,263	969,329	971,184	151	124	178	970,094	969,141	971,029	970,244	969,310	971,166
48 - 52	324	271	377	956,369	955,198	957,540	956,693	955,557	957,824	289	239	340	956,369	955,198	957,540	956,658	955,521	957,791
53 - 57	568	479	660	936,029	934,569	937,506	936,598	935,195	938,008	507	422	594	936,029	934,569	937,506	936,536	935,130	937,950
58 - 62	926	783	1,074	905,333	903,479	907,243	906,260	904,540	908,042	823	687	963	905,333	903,479	907,243	906,156	904,433	907,947
63 - 67	1,404	1,188	1,625	858,218	855,797	860,609	859,622	857,397	861,846	1,238	1,037	1,450	858,218	855,797	860,609	859,456	857,224	861,692
68 - 72	1,954	1,655	2,266	784,991	782,039	787,940	786,945	784,262	789,619	1,705	1,427	1,999	784,991	782,039	787,940	786,695	783,998	789,381
73 - 77	2,426	2,056	2,818	671,075	667,696	674,396	673,501	670,460	676,507	2,080	1,738	2,445	671,075	667,696	674,396	673,155	670,087	676,183
78 - 82	2,502	2,110	2,921	498,612	495,053	502,115	501,114	497,834	504,357	2,087	1,730	2,474	498,612	495,053	502,115	500,699	497,407	503,963
83 - 87	1,772	1,440	2,125	261,599	256,994	266,145	263,371	258,746	267,936	1,413	1,124	1,724	261,599	256,994	266,145	263,012	258,421	267,562
88 - 92	277	46	510	20,927	15,029	26,772	21,204	15,130	27,177	202	26	380	20,927	15,029	26,772	21,129	15,085	27,066
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H8, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

2.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	2	2	3	994,175	993,819	994,511	994,177	993,821	994,513	2	1	2	994,175	993,819	994,511	994,177	993,821	994,513
28 - 32	13	11	16	990,793	990,308	991,256	990,807	990,322	991,268	12	10	14	990,793	990,308	991,256	990,805	990,321	991,267
33 - 37	43	36	51	986,111	985,492	986,712	986,154	985,538	986,752	39	32	46	986,111	985,492	986,712	986,150	985,533	986,747
38 - 42	107	90	125	979,521	978,754	980,281	979,629	978,870	980,380	98	81	114	979,521	978,754	980,281	979,619	978,860	980,370
43 - 47	227	192	263	970,094	969,141	971,029	970,321	969,393	971,239	207	173	241	970,094	969,141	971,029	970,300	969,371	971,219
48 - 52	431	366	497	956,369	955,198	957,540	956,800	955,669	957,923	392	330	456	956,369	955,198	957,540	956,762	955,630	957,889
53 - 57	752	640	865	936,029	934,569	937,506	936,781	935,399	938,173	684	578	792	936,029	934,569	937,506	936,713	935,327	938,110
58 - 62	1,221	1,042	1,404	905,333	903,479	907,243	906,554	904,864	908,310	1,106	937	1,281	905,333	903,479	907,243	906,440	904,742	908,200
63 - 67	1,845	1,576	2,119	858,218	855,797	860,609	860,063	857,890	862,240	1,662	1,409	1,923	858,218	855,797	860,609	859,880	857,692	862,074
68 - 72	2,565	2,192	2,951	784,991	782,039	787,940	787,556	784,945	790,180	2,289	1,941	2,653	784,991	782,039	787,940	787,280	784,651	789,912
73 - 77	3,186	2,725	3,674	671,075	667,696	674,396	674,261	671,296	677,180	2,803	2,374	3,258	671,075	667,696	674,396	673,878	670,889	676,831
78 - 82	3,297	2,807	3,816	498,612	495,053	502,115	501,909	498,686	505,089	2,836	2,386	3,319	498,612	495,053	502,115	501,448	498,219	504,654
83 - 87	2,348	1,932	2,790	261,599	256,994	266,145	263,947	259,313	268,542	1,950	1,583	2,342	261,599	256,994	266,145	263,549	258,934	268,117
88 - 92	367	73	666	20,927	15,029	26,772	21,294	15,176	27,302	284	50	520	20,927	15,029	26,772	21,211	15,131	27,186
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H8, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

3% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	3	2	4	994,175	993,819	994,511	994,178	993,822	994,514	3	2	3	994,175	993,819	994,511	994,177	993,822	994,513
28 - 32	17	14	20	990,793	990,308	991,256	990,810	990,326	991,272	16	13	19	990,793	990,308	991,256	990,809	990,325	991,270
33 - 37	55	46	64	986,111	985,492	986,712	986,166	985,551	986,762	50	42	59	986,111	985,492	986,712	986,161	985,546	986,758
38 - 42	135	115	156	979,521	978,754	980,281	979,657	978,899	980,406	124	105	144	979,521	978,754	980,281	979,646	978,888	980,396
43 - 47	284	242	327	970,094	969,141	971,029	970,378	969,454	971,291	262	222	303	970,094	969,141	971,029	970,356	969,431	971,271
48 - 52	536	459	615	956,369	955,198	957,540	956,906	955,782	958,020	495	420	570	956,369	955,198	957,540	956,864	955,737	957,981
53 - 57	933	799	1,068	936,029	934,569	937,506	936,962	935,592	938,335	858	732	987	936,029	934,569	937,506	936,888	935,513	938,266
58 - 62	1,509	1,296	1,727	905,333	903,479	907,243	906,843	905,178	908,566	1,385	1,183	1,593	905,333	903,479	907,243	906,718	905,050	908,451
63 - 67	2,276	1,956	2,604	858,218	855,797	860,609	860,494	858,371	862,628	2,076	1,774	2,387	858,218	855,797	860,609	860,294	858,150	862,445
68 - 72	3,162	2,716	3,620	784,991	782,039	787,940	788,152	785,609	790,704	2,860	2,443	3,296	784,991	782,039	787,940	787,851	785,285	790,426
73 - 77	3,928	3,377	4,509	671,075	667,696	674,396	675,003	672,108	677,848	3,508	2,993	4,052	671,075	667,696	674,396	674,583	671,664	677,453
78 - 82	4,071	3,485	4,693	498,612	495,053	502,115	502,683	499,520	505,810	3,567	3,026	4,143	498,612	495,053	502,115	502,178	498,995	505,322
83 - 87	2,910	2,409	3,440	261,599	256,994	266,145	264,509	259,856	269,118	2,472	2,029	2,946	261,599	256,994	266,145	264,072	259,449	268,665
88 - 92	455	97	817	20,927	15,029	26,772	21,382	15,209	27,425	363	74	657	20,927	15,029	26,772	21,290	15,177	27,293
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H8, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

3.5% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	4	3	4	994,175	993,819	994,511	994,178	993,823	994,514	3	3	4	994,175	993,819	994,511	994,178	993,823	994,514
28 - 32	21	18	25	990,793	990,308	991,256	990,814	990,330	991,276	19	16	23	990,793	990,308	991,256	990,812	990,329	991,274
33 - 37	67	56	77	986,111	985,492	986,712	986,177	985,563	986,772	62	52	72	986,111	985,492	986,712	986,172	985,558	986,768
38 - 42	163	139	187	979,521	978,754	980,281	979,684	978,928	980,432	151	128	175	979,521	978,754	980,281	979,673	978,917	980,421
43 - 47	340	292	390	970,094	969,141	971,029	970,434	969,515	971,344	317	270	364	970,094	969,141	971,029	970,410	969,489	971,321
48 - 52	641	551	732	956,369	955,198	957,540	957,010	955,893	958,116	595	509	683	956,369	955,198	957,540	956,965	955,846	958,070
53 - 57	1,110	956	1,267	936,029	934,569	937,506	937,140	935,787	938,496	1,030	882	1,180	936,029	934,569	937,506	937,059	935,702	938,422
58 - 62	1,793	1,546	2,045	905,333	903,479	907,243	907,126	905,485	908,823	1,658	1,423	1,899	905,333	903,479	907,243	906,991	905,341	908,697
63 - 67	2,699	2,328	3,077	858,218	855,797	860,609	860,917	858,841	863,005	2,482	2,131	2,843	858,218	855,797	860,609	860,700	858,604	862,809
68 - 72	3,745	3,232	4,276	784,991	782,039	787,940	788,736	786,257	791,237	3,418	2,933	3,921	784,991	782,039	787,940	788,408	785,910	790,929
73 - 77	4,652	4,014	5,322	671,075	667,696	674,396	675,727	672,893	678,489	4,196	3,601	4,826	671,075	667,696	674,396	675,271	672,412	678,072
78 - 82	4,826	4,147	5,546	498,612	495,053	502,115	503,438	500,318	506,512	4,278	3,651	4,948	498,612	495,053	502,115	502,890	499,745	505,992
83 - 87	3,457	2,876	4,074	261,599	256,994	266,145	265,057	260,396	269,692	2,982	2,463	3,536	261,599	256,994	266,145	264,581	259,945	269,194
88 - 92	540	121	965	20,927	15,029	26,772	21,468	15,259	27,557	441	95	790	20,927	15,029	26,772	21,368	15,210	27,404
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H8, cont.: Numbers of survivors in the base case and counterfactual scenario and difference in survivors, counterfactual versus base case, for all age categories based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

4% 'switching'

Age interval	ERR=0.08									ERR=0.11								
	Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual			Difference in survivors			Number of survivors, base case			Number of survivors, counterfactual		
	Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI		Mean	95% PI	
13 - 17	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631	0	0	0	998,522	998,406	998,631	998,522	998,406	998,631
18 - 22	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877	0	0	0	996,656	996,422	996,877	996,655	996,422	996,877
23 - 27	4	3	5	994,175	993,819	994,511	994,179	993,824	994,515	4	3	5	994,175	993,819	994,511	994,179	993,823	994,515
28 - 32	25	21	29	990,793	990,308	991,256	990,818	990,335	991,279	23	19	27	990,793	990,308	991,256	990,816	990,333	991,277
33 - 37	78	67	90	986,111	985,492	986,712	986,189	985,576	986,783	73	62	84	986,111	985,492	986,712	986,183	985,570	986,778
38 - 42	190	163	218	979,521	978,754	980,281	979,711	978,958	980,457	178	152	204	979,521	978,754	980,281	979,699	978,945	980,446
43 - 47	396	341	453	970,094	969,141	971,029	970,490	969,574	971,396	371	318	425	970,094	969,141	971,029	970,464	969,548	971,372
48 - 52	743	641	847	956,369	955,198	957,540	957,113	956,002	958,214	695	597	795	956,369	955,198	957,540	957,064	955,951	958,167
53 - 57	1,285	1,110	1,463	936,029	934,569	937,506	937,315	935,975	938,656	1,199	1,031	1,369	936,029	934,569	937,506	937,228	935,885	938,575
58 - 62	2,071	1,790	2,356	905,333	903,479	907,243	907,404	905,791	909,076	1,926	1,659	2,199	905,333	903,479	907,243	907,259	905,636	908,942
63 - 67	3,112	2,693	3,542	858,218	855,797	860,609	861,331	859,302	863,374	2,880	2,481	3,289	858,218	855,797	860,609	861,098	859,050	863,163
68 - 72	4,315	3,734	4,915	784,991	782,039	787,940	789,305	786,883	791,750	3,963	3,410	4,533	784,991	782,039	787,940	788,953	786,509	791,421
73 - 77	5,358	4,634	6,114	671,075	667,696	674,396	676,433	673,662	679,116	4,867	4,191	5,583	671,075	667,696	674,396	675,942	673,145	678,670
78 - 82	5,562	4,792	6,377	498,612	495,053	502,115	504,174	501,093	507,205	4,972	4,259	5,730	498,612	495,053	502,115	503,583	500,489	506,635
83 - 87	3,991	3,331	4,693	261,599	256,994	266,145	265,591	260,907	270,254	3,479	2,887	4,110	261,599	256,994	266,145	265,078	260,422	269,698
88 - 92	624	146	1,111	20,927	15,029	26,772	21,552	15,309	27,682	517	117	921	20,927	15,029	26,772	21,444	15,244	27,514
93 - 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E_H3: Mean numbers of survivors in the 'master model' (no 'relapse'), the counterfactual scenario with 50% 'relapse' in the 'master model', and the difference between them, for all age categories; mortality rates for women

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	998,522	998,522	0	998,522	998,522
18 - 22	0	996,656	996,656	0	996,656	996,656
23 - 27	1	994,184	994,185	1	994,183	994,184
28 - 32	7	990,835	990,842	6	990,833	990,839
33 - 37	22	986,238	986,260	20	986,232	986,252
38 - 42	51	979,817	979,868	50	979,801	979,851
43 - 47	106	970,674	970,780	102	970,643	970,745
48 - 52	191	957,399	957,590	184	957,341	957,525
53 - 57	318	937,720	938,038	307	937,618	937,925
58 - 62	495	907,930	908,425	476	907,763	908,239
63 - 67	721	861,957	862,678	693	861,693	862,386
68 - 72	975	789,993	790,968	932	789,600	790,532
73 - 77	1,191	677,126	678,317	1,131	676,584	677,715
78 - 82	1,232	504,803	506,035	1,160	504,151	505,311
83 - 87	896	266,043	266,939	831	265,476	266,307
88 - 92	144	21,636	21,780	129	21,515	21,644
93 - 97	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0

Table E_H6: Mean numbers of survivors in the 'master model' without 'alternative initiation' (no 'relapse'), the counterfactual scenario with 50% 'relapse' in the 'master model' without 'alternative initiation', and the difference between them, for all age categories; mortality rates for women

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' without 'alternative initiation' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model' without 'alternative initiation'	Difference in survivors	Number of survivors, Counterfactual, 'master model' without 'alternative initiation' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model' without 'alternative initiation'
13 - 17	0	998,522	998,522	0	998,522	998,522
18 - 22	0	996,655	996,655	0	996,655	996,655
23 - 27	1	994,182	994,183	1	994,181	994,182
28 - 32	6	990,831	990,837	6	990,829	990,835
33 - 37	22	986,231	986,253	20	986,225	986,245
38 - 42	52	979,805	979,857	51	979,790	979,841
43 - 47	106	970,658	970,764	103	970,627	970,730
48 - 52	192	957,377	957,569	185	957,320	957,505
53 - 57	321	937,691	938,012	309	937,592	937,901
58 - 62	499	907,896	908,395	481	907,731	908,212
63 - 67	728	861,919	862,647	699	861,660	862,359
68 - 72	983	789,958	790,941	939	789,571	790,510
73 - 77	1,201	677,103	678,304	1,140	676,567	677,707
78 - 82	1,243	504,802	506,045	1,169	504,157	505,326
83 - 87	903	266,066	266,969	838	265,502	266,340
88 - 92	145	21,651	21,796	130	21,530	21,660
93 - 97	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0

Table E_H10: Mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' (no 'relapse'), mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' with 50% 'relapse', and the difference between them, for all age categories; mortality rates for women

0% 'switching'

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	998,522	998,522	0	998,522	998,522
18 - 22	0	996,655	996,655	0	996,655	996,655
23 - 27	1	994,172	994,173	1	994,172	994,173
28 - 32	6	990,781	990,787	7	990,780	990,787
33 - 37	24	986,071	986,095	22	986,070	986,092
38 - 42	58	979,428	979,486	56	979,425	979,481
43 - 47	122	969,904	970,026	118	969,897	970,015
48 - 52	226	956,024	956,250	219	956,011	956,230
53 - 57	386	935,447	935,833	372	935,425	935,797
58 - 62	611	904,415	905,026	588	904,379	904,967
63 - 67	902	856,860	857,762	866	856,804	857,670
68 - 72	1,229	783,125	784,354	1,176	783,041	784,217
73 - 77	1,510	668,752	670,262	1,436	668,639	670,075
78 - 82	1,564	496,159	497,723	1,473	496,027	497,500
83 - 87	1,132	259,780	260,912	1,052	259,670	260,722
88 - 92	178	20,644	20,822	161	20,623	20,784
93 - 97	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0

Table E_H10, cont.: Mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' (no 'relapse'), mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' with 50% 'relapse', and the difference between them, for all age categories; mortality rates for women

0.5% 'switching'

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	998,522	998,522	0	998,522	998,522
18 - 22	0	996,655	996,655	0	996,655	996,655
23 - 27	1	994,173	994,174	1	994,173	994,174
28 - 32	7	990,784	990,791	6	990,784	990,790
33 - 37	23	986,084	986,107	22	986,082	986,104
38 - 42	57	979,458	979,515	56	979,453	979,509
43 - 47	120	969,966	970,086	116	969,957	970,073
48 - 52	222	956,141	956,363	215	956,124	956,339
53 - 57	378	935,651	936,029	364	935,622	935,986
58 - 62	596	904,747	905,343	575	904,698	905,273
63 - 67	879	857,363	858,242	844	857,287	858,131
68 - 72	1,197	783,828	785,025	1,145	783,714	784,859
73 - 77	1,467	669,635	671,102	1,395	669,479	670,874
78 - 82	1,519	497,085	498,604	1,431	496,901	498,332
83 - 87	1,099	260,451	261,550	1,022	260,295	261,317
88 - 92	173	20,748	20,921	156	20,717	20,873
93 - 97	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0

Table E_H10, cont.: Mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' (no 'relapse'), mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' with 50% 'relapse', and the difference between them, for all age categories; mortality rates for women

1% 'switching'

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	998,522	998,522	0	998,522	998,522
18 - 22	0	996,655	996,655	0	996,655	996,655
23 - 27	1	994,174	994,175	2	994,173	994,175
28 - 32	7	990,788	990,795	7	990,787	990,794
33 - 37	23	986,096	986,119	22	986,093	986,115
38 - 42	57	979,487	979,544	55	979,482	979,537
43 - 47	118	970,028	970,146	114	970,017	970,131
48 - 52	218	956,257	956,475	211	956,236	956,447
53 - 57	369	935,852	936,221	357	935,816	936,173
58 - 62	582	905,072	905,654	561	905,012	905,573
63 - 67	857	857,855	858,712	823	857,759	858,582
68 - 72	1,165	784,515	785,680	1,113	784,372	785,485
73 - 77	1,427	670,495	671,922	1,355	670,298	671,653
78 - 82	1,475	497,987	499,462	1,389	497,752	499,141
83 - 87	1,068	261,105	262,173	993	260,904	261,897
88 - 92	169	20,849	21,018	153	20,808	20,961
93 - 97	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0

Table E_H10, cont.: Mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' (no 'relapse'), mean numbers of survivors in tipping point analyses for the 'master model' without 'alternative initiation' with 50% 'relapse', and the difference between them, for all age categories; mortality rates for women

1.5% 'switching'

	ERR=0.08			ERR=0.11		
Age interval	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'	Difference in survivors	Number of survivors, Counterfactual, 'master model' with 50% 'relapse'	Number of survivors, Counterfactual, 'master model'
13 - 17	0	998,522	998,522	0	998,522	998,522
18 - 22	0	996,655	996,655	0	996,655	996,655
23 - 27	1	994,174	994,175	1	994,174	994,175
28 - 32	7	990,792	990,799	7	990,791	990,798
33 - 37	22	986,108	986,130	22	986,105	986,127
38 - 42	55	979,517	979,572	54	979,510	979,564
43 - 47	117	970,088	970,205	113	970,075	970,188
48 - 52	214	956,371	956,585	207	956,346	956,553
53 - 57	362	936,049	936,411	350	936,006	936,356
58 - 62	569	905,391	905,960	548	905,319	905,867
63 - 67	835	858,336	859,171	802	858,222	859,024
68 - 72	1,134	785,186	786,320	1,083	785,014	786,097
73 - 77	1,387	671,334	672,721	1,317	671,096	672,413
78 - 82	1,433	498,866	500,299	1,349	498,581	499,930
83 - 87	1,038	261,742	262,780	964	261,498	262,462
88 - 92	164	20,948	21,112	148	20,898	21,046
93 - 97	0	0	0	0	0	0
98 - 102	0	0	0	0	0	0

Appendix F: Explanation of Tipping Point Extrapolations

Tipping points were extrapolated from the results tables as shown in the following example. Note that *Table F1* is identical to *Table 3.4*, the results table from the tipping point analysis for the 'master model' without 'alternative initiation' for an ERR of 0.08.

Table F1: Results Table 3.4, Difference in survivors, counterfactual versus base case, for age category 68-72 years based on purchase probability projections for 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'

ERR	Additional Initiation ^a (%)	Gateway Effect ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Mean	95% PI	
0.08	0.3	50	2.2-15.4	0.0	-771	-812	-731
				0.5	39	-46	132
				1.0	832	655	1,016
				1.5	1,607	1,337	1,884
				2.0	2,365	2,006	2,733
				2.5	3,107	2,659	3,566
				3.0	3,832	3,297	4,380
				3.5	4,542	3,921	5,176
				4.0	5,236	4,533	5,956
				4.5	5,915	5,131	6,718
				5.0	6,580	5,716	7,462

^a Probability applied to age intervals 13-17, 18-22 and 23-27 years

^b Probability applied to age intervals 18-22, 23-27 and 28-32 years

^c Refer to *Table 2.3* for age interval-specific probabilities

^d Probability applied to age intervals 18+ years

Let α and β be the nearest negative and nearest positive results straddling 0.

In *Table 3.4* above,

$\alpha = -771$ and $\beta = 39$

95% $\alpha = -46$ and 95% $\beta = 655$

95% $\alpha = -731$ and 95% $\beta = 132$

Further, let p be the probability of 'switching' corresponding to α or β . In *Table 3.4* above, for the mean and the upper 95% PI, $p = 0$ and $p = 0.5$. For the lower 95% PI, $p = 0.5$ and $p = 1.0$.

Assuming linearity of the mean and the boundaries of the 95% PI between any two modeled probabilities of 'switching',

$$\frac{0 - \text{ERR}}{\text{ERR}} = \frac{\text{ERR} - \text{ERR}}{\text{ERR} - \text{ERR}}$$

where ERR is the tipping point.

Therefore,

$$= (\text{ERR} - \text{ERR}) \frac{0 - \text{ERR}}{\text{ERR} - \text{ERR}} + \text{ERR}$$

The extrapolated tipping points are shown in *Table F2*. For the tipping point analysis in Results *Table 3.4* (ERR=0.08), if, starting at age 18, 0.42% of base case continuing smokers switch to MRTP use in the counterfactual scenario in each age category, then the survival deficit is no longer statistically significant. If, starting at age 18, 0.48% of base case continuing smokers switch to MRTP use in the counterfactual scenario in each age category, then the difference in survivors between the counterfactual scenario and the base case is 0. If, starting at age 18, 0.53% of base case continuing smokers switch to MRTP use in the counterfactual scenario in each age category, then there is a statistically significant survival benefit. Similarly, for an ERR of 0.11, if, starting at age 18, 0.55% of base case continuing smokers switch to MRTP use in the counterfactual scenario in each age category, then the survival deficit is no longer statistically significant. If, starting at age 18, 0.61% of base case continuing smokers switch to MRTP use in the counterfactual scenario in each age category, then the difference in survivors between the counterfactual scenario and the base case is 0. If, starting at age 18, 0.68% of base case continuing smokers switch to MRTP use in the counterfactual scenario in each age category, then there is a statistically significant survival benefit. The results for the other tipping point analyses are interpreted similarly.

Table F2: Extrapolated tipping points

Results table number	ERR	Tipping point (%)		
		Upper 95% PI	Mean	Lower 95% PI
3.4	0.08	0.42	0.48	0.53
	0.11	0.55	0.61	0.68
3.12	0.08	2.09	2.60	3.23
	0.11	3.39	4.12	5.05
3.13	0.08	2.06	2.43	2.90
	0.11	2.37	2.80	3.35
3.14	0.08	0.82	0.90	0.99
	0.11	1.17	1.29	1.41

Table F3 shows the extrapolated tipping points for the mean difference in survivors for the ‘master model’ without ‘alternative initiation’ after incorporating a 50% return to smoking among base case smoking quitters who switched to MRTP use in the counterfactual scenario (‘diverted quitters’). For an ERR of 0.08, if, starting at age 18, 1.37% of base case continuing smokers switch to MRTP use in the counterfactual scenario in each age category, then the difference in survivors between the counterfactual scenario and the base case is 0. The tipping point for the corresponding analysis without relapse to smoking was 0.48%

(refer to results for Results [Table 3.4](#) in [Table F2](#)). For an ERR of 0.11, if, starting at age 18, 1.50% of base case continuing smokers switch to MRTP use in the counterfactual scenario in each age category, then the difference in survivors between the counterfactual scenario and the base case is 0. The tipping point for the corresponding analysis without relapse to smoking was 0.61% ([Table F2](#)).

Table F3: Extrapolated tipping points for the mean difference in survivors, master model without alternative initiation after incorporating a 50% return to smoking among ‘diverted quitters’^a

ERR	Tipping point (%) for the mean difference in survivors
0.08	1.37
0.11	1.50

^a Tipping points were calculated based on the results in [Table C6](#) in [Appendix C](#)

Appendix G: Assessing the Cumulative Effects of Exposure Transitions of 'Switching', 'Diversion from Quitting' and 'Additional Initiation'

When interpreting results produced by the DPM(+1), it is important to recognize that transition probabilities are applied to a birth cohort and accumulate over time. To illustrate this for the exposure transitions of 'switching', 'diversion from quitting' and 'additional initiation', we present results for differences between different counterfactual scenarios and the base case at the end of age category 68-72 years.¹

Switching to Camel SNUS use among base case continuing smokers ('switching')

If $p\%$ of continuing smokers switch to Camel SNUS use in each age category starting at age 18 years, then $p\%$ of continuing smokers switch in age category 18-22 year, another $p\%$ of (surviving) continuing smokers switch in age category 23-27 years, etc. Therefore, the pool of continuing smokers is not only depleted by smoking cessation and mortality but also by 'switching'.

The numbers of continuing smokers, former smokers and Camel SNUS users at the end of age category 68-72 are shown in [Table G1](#) for counterfactual scenarios that incorporate 'switching' and corresponding counterfactual scenarios assuming no 'switching' for an ERR of 0.08. Also shown are differences in continuing smokers and former smokers between corresponding counterfactual scenarios.

In all counterfactual scenarios exploring net population effects, the number of continuing smokers at the end of age category 68-72 years was just under 23,000 when 'switching' was suspended. In contrast, for the master model, the master model without alternative initiation, and the model combining 'switching' and 'resumed smoking', about 15,500 continuing smokers remained at the end of age category 68-72 years, a decrease of 32%. When all transition probabilities were reduced by 75% in the master model, just under 21,000 continuing smokers remained at the end of age category 68-72 years, a decrease of 9%. For the model combining all primary transitions with the exception of 'alternative initiation' and for the model containing only 'switching', only about 10,400 continuing smokers remained at the end of age category 68-72 years, a decrease of 55% (without 'resumed smoking', more 'switching' occurred in these scenarios).

The tipping point analysis for the master model without 'alternative initiation' suggested that the survival deficit resulting from the combination of harmful transitions was offset when about 0.48% of continuing smokers switched to Camel SNUS use in each age category after age 18 years. At this level of 'switching', just under 22,000 continuing smokers remained at the end of age category 68-72 years, a decrease of about 5% compared to the corresponding model without 'switching'. 'Switching' at levels identified in the two tipping point analyses involving extreme 'additional initiation', resulted in a reduction in the number of continuing smokers at the end of age category 68-72 years of more than 20%. When extreme transition probabilities were assumed for 'diversion from quitting', the tipping point for 'switching' was 0.9% resulting in a reduction in the number of continuing smokers at the end of age category 68-72 years of about 9%.

For all counterfactual scenarios, the percent reduction in former smokers as a result of 'switching' was about half or less than half the corresponding percent reduction in continuing smokers.

Results were generally similar when the ERR was set to 0.11 ([Table G2](#)).

Switching to Camel SNUS use among base case smoking quitters ('diversion from quitting')

The numbers of continuing smokers, former smokers and Camel SNUS users at the end of age category 68-72 are shown in [Table G3](#) for counterfactual scenarios that incorporate 'diversion from quitting' and corresponding counterfactual scenarios assuming no 'diversion from quitting' for an ERR of 0.08. Also

¹ Results for LE and QALE, the total numbers of survivors in the counterfactual scenarios and the base case, and the differences between them are available upon request.

shown are differences in continuing smokers and former smokers between corresponding counterfactual scenarios.

For the master model and the master model without alternative initiation, about 95,000 former smokers remained at the end of age category 68-72 years when 'diversion from quitting' was suspended compared to just over 85,000 former smokers when 'diversion from quitting' was modeled with transition probabilities from the 'likelihoods of use' study, a decrease of 12%. When all transition probabilities were reduced by 75% in the master model, about 111,000 former smokers remained at the end of age category 68-72 years, the decrease in former smokers was less than 3%. For the model combining all primary transitions with the exception of 'alternative initiation' and for the model containing only 'diversion from quitting', the number of former smokers at the end of age category 68-72 years decreased by about 12% compared to the corresponding counterfactual scenarios where 'diversion from quitting was suspended.

The number of current smokers was unaffected by 'diversion from quitting'. Results were very similar when the ERR was set to 0.11 ([Table G4](#)).

Initiating Camel SNUS use among base case never tobacco users ('additional initiation')

In the analysis based on Camel SNUS initiation rates that were identical to smoking initiation rates, under the assumption of no 'switching', the number of current and former tobacco users at the end of age category 68-72 years was more than 80% higher than in the base case, i.e., the number of current and former tobacco users was nearly doubled (see [Table G5](#) for an ERR of 0.08 and [Table G6](#) for an ERR of 0.11).

In the analysis based on 3% of base case never tobacco smokers instead initiating Camel SNUS use in the first three age categories and half of all Camel SNUS initiators switching to smoking, under the assumption of no 'switching', the number of current and former tobacco users at the end of age category 68-72 years was more than 30% higher than in the base case (see [Table G5](#) for an ERR of 0.08 and [Table G6](#) for an ERR of 0.11).

Table G1: Numbers of continuing smokers, former smokers and Camel SNUS users at the end of age category 68-72 for counterfactual scenarios that incorporate 'switching' and corresponding counterfactual scenarios assuming no 'switching'; and differences in continuing smokers and former smokers between corresponding counterfactual scenarios; ERR=0.08

			Original counterfactual scenario			Corresponding counterfactual scenario without 'switching'			Original counterfactual scenario vs. corresponding counterfactual scenario without 'switching'			
Input Table	Result Table		Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers	%	Former smokers	%
									Decrease		Decrease	
2.5	3.1	Master model	15,393	85,277	45,303	22,610	102,694	12,613	7,218	31.9	17,417	17.0
2.5b	3.1_2	Master model, 25% of transition probabilities	20,734	108,258	12,424	22,782	113,279	3,179	2,048	9.0	5,021	4.4
2.6	3.2	Master model without 'alternative initiation'	15,525	86,008	45,691	22,804	103,574	12,721	7,280	31.9	17,566	17.0
2.7	3.3	Primary transitions without 'alternative initiation'	10,387	71,752	71,657	22,804	103,574	12,721	12,417	54.5	31,822	30.7
2.8	3.4	Master model without 'alternative initiation', 0.48% 'switching'	21,683	101,876	16,320	22,804	103,574	12,721	1,122	4.9	1,699	1.6
2.10	3.6	'Switching'	10,405	82,117	61,799	22,840	116,843	0	12,435	54.4	34,726	29.7
2.15	3.11	'Switching' and 'resumed smoking'	15,550	97,713	34,513	22,840	116,843	0	7,290	31.9	19,130	16.4
2.16	3.12	'Extreme additional initiation', 2.6% 'switching'	16,127	100,912	17,910	21,281	109,861	0	5,154	24.2	8,949	8.1
2.17	3.13	'Extreme additional initiation' and 'gateway effect', 2.43% 'switching'	17,372	106,494	17,610	22,486	115,270	0	5,114	22.7	8,776	7.6
2.18	3.14	0.9% 'switching' vs. 'extreme diversion from quitting'	20,775	56,720	62,182	22,840	58,421	56,944	2,065	9.0	1,701	2.9

Table G2: Numbers of continuing smokers, former smokers and Camel SNUS users at the end of age category 68-72 for counterfactual scenarios that incorporate 'switching' and corresponding counterfactual scenarios assuming no 'switching'; and differences in continuing smokers and former smokers between corresponding counterfactual scenarios; ERR=0.11

			Original counterfactual scenario			Corresponding counterfactual scenario without 'switching'			Original counterfactual scenario vs. corresponding counterfactual scenario without 'switching'			
Input Table	Result Table		Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers		Former smokers	
									Decrease	%	Decrease	%
2.5	3.1	Master model	15,393	85,277	44,791	22,610	102,694	12,476	7,218	31.9	17,417	17.0
2.5b	3.1_2	Master model, 25% of transition probabilities	20,734	108,258	12,285	22,782	113,279	3,145	2,048	9.0	5,021	4.4
2.6	3.2	Master model without 'alternative initiation'	15,525	86,008	45,175	22,804	103,574	12,583	7,280	31.9	17,566	17.0
2.7	3.3	Primary transitions without 'alternative initiation'	10,387	71,752	70,832	22,804	103,574	12,583	12,417	54.5	31,822	30.7
2.8	3.4	Master model without 'alternative initiation', 0.61% 'switching'	21,387	101,422	17,093	22,804	103,574	12,583	1,417	6.2	2,152	2.1
2.10	3.6	'Switching'	10,405	82,117	61,086	22,840	116,843	0	12,435	54.4	34,726	29.7
2.15	3.11	'Switching' and 'resumed smoking'	15,550	97,713	34,122	22,840	116,843	0	7,290	31.9	19,130	16.4
2.16	3.12	'Extreme additional initiation', 4.12% 'switching'	13,667	96,135	26,901	21,281	109,861	0	7,614	35.8	13,726	12.5
2.17	3.13	'Extreme additional initiation' and 'gateway effect', 2.8% 'switching'	16,694	105,239	19,877	22,486	115,270	0	5,792	25.8	10,031	8.7
2.18	3.14	1.29% 'switching' vs. 'extreme diversion from quitting'	19,934	56,004	63,754	22,840	58,421	56,419	2,906	12.7	2,417	4.1

Table G3: Numbers of continuing smokers, former smokers and Camel SNUS users at the end of age category 68-72 for counterfactual scenarios that incorporate 'diversion from quitting' and corresponding counterfactual scenarios assuming no 'diversion from quitting'; and differences in continuing smokers and former smokers between corresponding counterfactual scenarios; ERR=0.08

			Original counterfactual scenario			Corresponding counterfactual scenario without 'diversion from quitting'			Original counterfactual scenario vs. corresponding counterfactual scenario without 'diversion from quitting'			
Input Table	Result Table		Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers		Former smokers	
									Decrease	%	Decrease	%
2.5	3.1	Master model	15,393	85,277	45,303	15,393	96,748	34,178	0	0	11,471	11.9
2.5b	3.1_2	Master model, 25% of transition probabilities	20,734	108,258	12,424	20,734	111,433	9,343	0	0	3,175	2.8
2.6	3.2	Master model without 'alternative initiation'	15,525	86,008	45,691	15,525	97,578	34,471	0	0	11,569	11.9
2.7	3.3	Primary transitions without 'alternative initiation'	10,387	71,752	71,657	10,387	82,001	61,723	0	0	10,249	12.5
2.12	3.8	'Diversion from quitting'	22,840	103,716	12,737	22,840	116,843	0	0	0	13,127	11.2

Table G4: Numbers of continuing smokers, former smokers and Camel SNUS users at the end of age category 68-72 for counterfactual scenarios that incorporate 'diversion from quitting' and corresponding counterfactual scenarios assuming no 'diversion from quitting'; and differences in continuing smokers and former smokers between corresponding counterfactual scenarios; ERR=0.11

			Original counterfactual scenario			Corresponding counterfactual scenario without 'diversion from quitting'			Original counterfactual scenario vs. corresponding counterfactual scenario without 'diversion from quitting'			
Input Table	Result Table		Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers		Former smokers	
									Decrease	%	Decrease	%
2.5	3.1	Master model	15,393	85,277	44,791	15,393	96,748	33,791	0	0	11,471	11.9
2.5b	3.1_2	Master model, 25% of transition probabilities	20,734	108,258	12,285	20,734	111,433	9,239	0	0	3,175	2.8
2.6	3.2	Master model without 'alternative initiation'	15,525	86,008	45,175	15,525	97,578	34,080	0	0	11,569	11.9
2.7	3.3	Primary transitions without 'alternative initiation'	10,387	71,752	70,832	10,387	82,001	61,011	0	0	10,249	12.5
2.12	3.8	'Diversion from quitting'	22,840	103,716	12,599	22,840	116,843	0	0	0	13,127	11.2

Table G5: Numbers of continuing smokers, former smokers and Camel SNUS users at the end of age category 68-72 for counterfactual scenarios that incorporate extreme 'additional initiation' and the base case; and differences in continuing smokers and former smokers between the counterfactual scenarios and the base case; ERR=0.08

			Original counterfactual scenario			Base case			Original counterfactual scenario vs. base case	
Input Table	Result Table		Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers	Former smokers	Camel SNUS users	All current and former tobacco users	
									Decrease	%
2.16	3.12	'Extreme additional initiation', no 'switching'	21,281	109,861	129,483	22,819	116,875	0	120,930	87
2.17	3.13	'Extreme additional initiation' and 'gateway effect', no 'switching'	27,030	132,201	23,784	22,819	116,875	0	43,321	31

Table G6: Numbers of continuing smokers, former smokers and Camel SNUS users at the end of age category 68-72 for counterfactual scenarios that incorporate extreme 'additional initiation' and the base case; and differences in continuing smokers and former smokers between the counterfactual scenarios and the base case; ERR=0.11

			Original counterfactual scenario			Base case			Original counterfactual scenario vs. base case	
Input Table	Result Table		Continuing smokers	Former smokers	Camel SNUS users	Continuing smokers	Former smokers	Camel SNUS users	All current and former tobacco users	
									Decrease	%
2.16	3.12	'Extreme additional initiation', no 'switching'	21,281	109,861	127,725	22,819	116,875	0	119,173	85
2.17	3.13	'Extreme additional initiation' and 'gateway effect', no 'switching'	27,019	132,177	23,490	22,819	116,875	0	42,992	31

Appendix H: Tipping Point Analysis for Women

‘Net’ population health effect of all primary beneficial and harmful transitions, and secondary harmful transitions of ‘gateway effect’/‘delayed smoking’ and ‘resumed smoking’, combined; secondary harmful transition ‘relapse’ addressed in sensitivity analyses, as is effect of different ERRs [refer to [Table 2.5](#)]; based on mortality rates for women

These analyses evaluated, among women, the ‘net’ population health effect of all primary beneficial transitions (‘alternative initiation’ and ‘switching’), all primary harmful transitions (‘additional initiation’ and ‘diversion from quitting’) and the secondary harmful transitions of ‘gateway effect’, ‘delayed smoking’ and ‘resumed smoking’ –referred to as the ‘master model’. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on primary beneficial and harmful transitions were based on projected purchase probabilities, as provided by the second execution of RAIS’s ‘likelihood of use’ study. Specifically, the probability that base case cigarette initiators would instead initiate tobacco use with Camel SNUS (‘alternative initiation’) was projected to be 0.85% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. ‘Switching’ to the use of Camel SNUS instead of continuing to use cigarettes among base case current smokers was projected to range from 2.0% to 16.0%, depending on age category (refer to [Table 2.3](#)). The probability that base case never tobacco users would initiate use of Camel SNUS instead of remaining never users (‘additional initiation’) was projected to be 0.3% (refer to [Table 2.2](#)); similar to ‘alternative initiation’, this transition occurs in the first three age categories. Finally, the probability that base case current smokers would switch to using Camel SNUS instead of quitting tobacco use (‘diversion from quitting’) was projected to range from 1.8%-22.1%, depending on the age category (refer to [Table 2.3](#)).

In the absence of empirical data on secondary harmful transitions from RAIS’s ‘likelihood of use’ studies, the effect of these unintended changes in tobacco exposure patterns were evaluated using hypothetical and, in many instances, extreme scenarios. Specifically, both ‘gateway effect’ (the probability that some portion of ‘additional initiation’ Camel SNUS users would transition to cigarette use) and ‘delayed smoking’ (the probability that some portion of ‘alternative initiation’ Camel SNUS users would transition to cigarette use) were evaluated using scenarios whereby 50% of all Camel SNUS initiators transition to cigarette smoking in the age category following initiation (ages 18-22, 23-27 and 28-32 years). In addition, the secondary harmful transition of ‘resumed smoking’ was evaluated using a scenario whereby 50% of those smokers who switched to using Camel SNUS instead of continuing to smoke subsequently resumed cigarette use. Under the assumption that ‘resumed smoking’ would likely occur in the same 5-year age category as ‘switching’, this transition was modeled by reducing the transition probabilities for ‘switching’ from smoking to Camel SNUS use by 50%. Finally, sensitivity analyses conducted within the context of the ‘master model’ evaluated the ‘net’ population health effect of an extreme scenario for ‘relapse’, whereby 50% of base case current smokers who would have quit tobacco use but instead switched to Camel SNUS use (‘diversion from quitting’) subsequently relapsed to smoking.

For ERRs of 0.08 and 0.11, the ‘net’ population health effect of all primary beneficial and harmful transitions and the secondary harmful transitions of ‘gateway effect’/‘delayed smoking’ and ‘resumed smoking’ (‘master model’) was a survival benefit in the counterfactual scenario of almost 6,000 and 5,500 additional survivors, respectively (refer to [Table H1](#)). Sensitivity analyses for the ‘master model’ that additionally included the secondary harmful transition of ‘relapse’ (refer to transition probabilities in [Table H2](#)) provided

a smaller survival benefit of approximately 5,000 and 4,600 additional survivors for ERRs of 0.08 and 0.11, respectively (refer to [Table H3](#)).¹

Net results based on mortality rates for women differed from those for men due to different mortality risks for men and women in the Kaiser-Permanente cohort; the 'net' population effect was about 19% lower for women than for men (refer to [Table H4](#)).

Table H1: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'additional initiation' with 'delayed smoking', 'alternative initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking' ('master model'); mortality rates for women

ERR	Additional Initiation ^a (%)	Alternative Initiation ^a (%)	Gateway effect/ Delayed Smoking ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Mean	95% PI	
0.08	0.3	0.85	50	1.8-22.1	1.0-8.0	5,977	5,201	6,768
0.11	0.3	0.85	50	1.8-22.1	1.0-8.0	5,542	4,808	6,292

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years.

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking'); refer to [Table 2.3](#) for age interval-specific probabilities.

¹ To be directly comparable to results for men, modeling results for the current analyses are presented as the difference in the number of survivors for the counterfactual scenario compared to the based case at the end of age interval 68-72 years. The total numbers of survivors in the counterfactual scenario and the base case, and the differences between them are shown for all age categories in [Tables E_H1](#) and [E_H3](#) in [Appendix E](#); these results suggest that the greatest differences between the counterfactual scenario and base case are observed about 5 to 10 years later in women than in men. Results for life expectancy (LE) and quality of life-adjusted life expectancy (QALE) are presented in [Tables D_H1](#) and [D_H3](#) in [Appendix D](#).

Table H2: Transition probabilities for continued smoking, 'switching' and 'diversion from quitting' used in the 'master model' (with or without 'alternative initiation') and corresponding adjusted transition probabilities under the assumption of 50% 'relapse'²

Age	Original transition probabilities			Adjusted transition probabilities ^a		
	(continued smoking)	('switching')	('diversion from quitting')	$\hat{\pi}$ (continued smoking)	$\hat{\pi}$ ('switching')	$\hat{\pi}$ ('diversion from quitting')
13-17	-	-	-	-	-	-
18-22	0.91	0.067	0.154	0.917	0.0665	0.083
23-27	0.905	0.065	0.221	0.915	0.0643	0.124
28-32	0.86	0.080	0.136	0.870	0.0791	0.073
33-37	0.86	0.045	0.113	0.868	0.0446	0.060
38-42	0.86	0.037	0.113	0.868	0.0367	0.060
43-47	0.86	0.033	0.054	0.864	0.0329	0.028
48-52	0.86	0.029	0.071	0.865	0.0288	0.037
53-57	0.86	0.017	0.056	0.864	0.0169	0.029
58-62	0.86	0.013	0.026	0.862	0.0130	0.013
63-67	0.86	0.014	0.018	0.861	0.0140	0.009
68-72	0.86	0.010	0.022	0.862	0.0100	0.011
73+	0.86	0.010	0.022	0.862	0.0100	0.011

^a Using the formulas for $\hat{\pi}$ (continued smoking), $\hat{\pi}$ ('switching') and $\hat{\pi}$ ('diversion from quitting') shown in [Appendix C](#)

² 'Relapse' occurs in the same age category as 'diversion from quitting'

Table H3: Difference in survivors, tipping point analysis for 'master model' without 'alternative initiation' (no 'relapse') versus tipping point analysis for 'master model' without 'alternative initiation' with 50% 'relapse'; based on mortality rates for women

ERR	Mean number of survivors, counterfactual		Mean difference in survivors, two counterfactuals	Mean difference in survivors, Counterfactual ^a – base case ^b	Mean difference in survivors ^c , Counterfactual ^d – base case ^e
	No 'relapse'	50% 'relapse'			
0.08	790,968	789,993	975	5,977	5,002
0.11	790,532	789,600	932	5,542	4,610

^a Counterfactual scenario with no 'relapse'

^b Base case with no 'relapse'

^c Identical to the difference between 'Mean difference in survivors, counterfactual¹ – base case²' and 'Mean difference in survivors, two counterfactuals'

^d Counterfactual scenario with 50% 'relapse'

^e Base case with no 'relapse'; base case with 50% 'relapse' must be ignored.

Table H4: Comparison of difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for men versus mortality rates for women

ERR	Additional Initiation ^a (%)	Alternative Initiation ^a (%)	Gateway effect/ Delayed Smoking ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Difference in survivors		Difference, men vs. women (%)
						Men	Women	
No 'relapse'								
0.08	0.3	0.85	50	1.8-22.1	1.0-8.0	7,374	5,977	19
0.11	0.3	0.85	50	1.8-22.1	1.0-8.0	6,819	5,542	19
50% 'relapse'								
0.08	0.3	0.85	50	1.8-22.1	1.0-8.0	6,175	5,002	19
0.11	0.3	0.85	50	1.8-22.1	1.0-8.0	5,675	4,610	19

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years.

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking'); refer to [Table 2.3](#) for age interval-specific probabilities.

‘Net’ population health effect of primary beneficial transition ‘switching’, all primary harmful transitions, and secondary harmful transitions of ‘gateway effect’/‘delayed smoking’ and ‘resumed smoking’, combined; secondary harmful transition ‘relapse’ addressed in sensitivity analyses [refer to [Table 2.6](#)]; based on mortality rates for women

To assess, among women, the ‘net’ population health effect of omitting the primary beneficial transition of ‘alternative initiation’ from the ‘master model’, these analyses evaluated the primary beneficial transition of ‘switching’, all primary harmful transitions (‘additional initiation’ and ‘diversion from quitting’), and the secondary harmful transitions of ‘gateway effect’, ‘delayed smoking’ and ‘resumed smoking’. Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on primary beneficial and harmful transitions were based on projected purchase probabilities, as provided by the second execution of RAIS’s ‘likelihood of use’ study. Specifically, ‘switching’ to Camel SNUS use instead of continuing to use cigarettes among base case smokers was projected to range from 2.0% to 16.0%, depending on age category (refer to [Table 2.3](#)). The probability that base case never tobacco users would initiate Camel SNUS use instead of remaining never users (‘additional initiation’) was projected to be 0.3% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. Finally, the probability that base case current smokers would switch to using Camel SNUS instead of quitting tobacco use (‘diversion from quitting’) was projected to range from 1.8%-22.1%, depending on the age category (refer to [Table 2.3](#)).

In the absence of empirical data on secondary harmful transitions from RAIS’s ‘likelihood of use’ studies, the effect of these unintended changes in tobacco exposure patterns were evaluated using hypothetical scenarios, which were extreme in many instances. Specifically, ‘gateway effect’ was evaluated using an extreme scenario whereby 50% of Camel SNUS initiators (‘additional initiation’) transitioned to cigarette smoking in the age category following initiation (ages 18-22, 23-27 and 28-32 years). In addition, the secondary harmful transition of ‘resumed smoking’ was evaluated using a scenario whereby 50% of those smokers who switched to using Camel SNUS instead of continuing to use cigarettes subsequently resumed smoking. Under the assumption that ‘resumed smoking’ would likely occur in the same 5-year age category as ‘switching’, this transition was modeled by reducing the transition probabilities for ‘switching’ from smoking to Camel SNUS by 50%. Finally, sensitivity analyses evaluated the effect of an extreme scenario for ‘relapse’, whereby 50% of base case current smokers who would have quit tobacco use but instead switched to using Camel SNUS (‘diversion from quitting’) subsequently relapsed to smoking.

Omitting ‘alternative initiation’ as a possible beneficial exposure transition had a nominal effect on the ‘net’ population health benefit, as projected by the ‘master model’. For ERRs of 0.08 and 0.11, the survival benefit in the counterfactual scenario was estimated to be about 6,000 and 5,500 additional survivors, respectively (refer to [Table H5](#)). Sensitivity analyses that additionally included the secondary harmful transition, ‘relapse’ (refer to transition probabilities in [Table H2](#)), indicated that the survival benefit was decreased to an estimated 5,000 and 4,600 additional survivors for ERRs of 0.08 and 0.11, respectively (refer to [Table H6](#)).³

³ Modeling results for the current analyses are presented as the difference in the number of survivors for the counterfactual scenario compared to the based case at the end of age interval 68-72 years; the total numbers of survivors in the counterfactual scenario and the base case, and the differences between them are shown for all age categories in [Tables E_H5](#) and [E_H6](#) in [Appendix E](#). Results for LE and QALE are presented in [Tables D_H5](#) and [D_H6](#) in [Appendix D](#).

Net results based on mortality rates for women differed from those for men due to different mortality risks for men and women in the Kaiser-Permanente cohort; the 'net' population effect was about 19% lower for women than for men (refer to [Table H7](#)).

Table H5: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'additional initiation' with 'gateway effect', 'diversion from quitting', and 'switching' with 'resumed smoking'; mortality rates for women

ERR	Additional Initiation ^a (%)	Gateway Effect ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Mean	95% PI	
0.08	0.3	50	1.8-22.1	1.0-8.0	5,951	5,181	6,736
0.11	0.3	50	1.8-22.1	1.0-8.0	5,520	4,792	6,265

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years.

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking'); refer to [Table 2.3](#) for age interval-specific probabilities.

Table H6: Difference in survivors, tipping point analysis for 'master model' without 'alternative initiation' (no 'relapse') versus tipping point analysis for 'master model' without 'alternative initiation' with 50% 'relapse'; based on mortality rates for women

ERR	Mean number of survivors, counterfactual		Mean difference in survivors, two counterfactuals	Mean difference in survivors, Counterfactual ^a – base case ^b	Mean difference in survivors ^c , Counterfactual ^d – base case ^e
	No 'relapse'	50% 'relapse'			
0.08	790,941	789,958	983	5,951	4,968
0.11	790,510	789,571	939	5,520	4,580

^a Counterfactual scenario with no 'relapse'

^b Base case with no 'relapse'

^c Identical to the difference between 'Mean difference in survivors, counterfactual¹ – base case²' and 'Mean difference in survivors, two counterfactuals'

^d Counterfactual scenario with 50% 'relapse'

^e Base case with no 'relapse'; base case with 50% 'relapse' must be ignored.

Table H7: Comparison of difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for men versus mortality rates for women

ERR	Additional Initiation ^a (%)	Gateway effect/ Delayed Smoking ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Difference in survivors		
					Men	Women	Difference, men vs. women (%)
No 'relapse'							
0.08	0.3	50	1.8-22.1	1.0-8.0	7,353	5,951	19
0.11	0.3	50	1.8-22.1	1.0-8.0	6,804	5,520	19
50% 'relapse'							
0.08	0.3	50	1.8-22.1	1.0-8.0	6,144	4,968	19
0.11	0.3	50	1.8-22.1	1.0-8.0	5,650	4,580	19

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years.

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probabilities from 'likelihood of use' study reduced by 50% to model 50% return from Camel SNUS use to smoking ('resumed smoking'); refer to [Table 2.3](#) for age interval-specific probabilities.

'Tipping point' related to the primary beneficial transition, 'switching', versus all primary harmful transitions and secondary harmful transition 'gateway effect' [refer to [Table 2.8](#)]; based on mortality rates for women

Beneficial and harmful transitions were evaluated for women within the context of 'tipping point' analyses, used to estimate the magnitude of a beneficial change in tobacco exposure required to offset the population health effects of one or more harmful exposure changes. The analyses described here estimated tipping points between the primary beneficial transition of 'switching' and a combination of primary and secondary harmful transitions ('additional initiation' with 'gateway effect', and 'diversion from quitting').

Based on U.S. rates (refer to [Table 2.4](#)), cigarette smoking initiation among never tobacco users occurs in the first three age categories (ages 13-17, 18-22 and 23-27 years), while smoking cessation can occur throughout life, at any age after smoking initiation has taken place. For these analyses, no smoking cessation was allowed in the first age category (ages 13-17 years), and Camel SNUS cessation was suspended for all ages (the probability of Camel SNUS cessation was set to 0, as worst-case scenario).

Empirical data on primary beneficial and harmful transitions were based on projected purchase probabilities, as provided by the second execution of RAIS's 'likelihood of use' study. Specifically, the probability that base case never tobacco users would initiate Camel SNUS use instead of remaining never users ('additional initiation') was projected to be 0.3% (refer to [Table 2.2](#)); this transition occurs in the first three age categories. In the absence of empirical data on secondary harmful transitions, 'gateway effect' was evaluated using an extreme scenario, whereby 50% of Camel SNUS initiators transition to cigarette smoking in the next age category (in age categories 18-22, 23-27 and 28-32 years). Finally, the probability

that base case smokers would switch to using Camel SNUS instead of quitting tobacco use ('diversion from quitting') was projected to range from 1.8%-22.1%, depending on the age category (refer to [Table 2.3](#)).

The beneficial exposure pattern, 'switching' from cigarettes to Camel SNUS among base case current smokers who would have continued to smoke, was increased incrementally, starting in the second age category (ages 18-22 years) and continuing until the end of follow-up. For ERRs of 0.08 and 0.11, absent the beneficial primary transition of 'switching', the survival deficit in the counterfactual scenario (0.3% 'additional initiation' with 50% 'gateway effect'; and, 1.8%-22.1% 'diversion from quitting', depending on age category) was estimated to be about 640 and 770 fewer survivors, respectively (refer to [Table H8](#)). 'Tipping point' analyses indicated that for a concurrent increase in 'switching' of 0.42% and 0.54% (in each age category, ages 18+ years) for ERRs of 0.08 and 0.11, respectively, a decrease in survivors was still observed between the counterfactual scenario and base case but that the decrease was no longer statistically significant. A concurrent increase in 'switching' of 0.47% and 0.61% ERRs of 0.08 and 0.11, respectively, provided a point estimate for the difference in the number of survivors that was 'near zero'; and, a concurrent increase in 'switching' of 0.53% and 0.68% ERRs of 0.08 and 0.11, respectively, provided a population health benefit – as reflected by a statistically significant increase in the number of survivors in the counterfactual scenario (refer to [Figure H1](#) and [Table H9](#)). Introducing the extreme scenario of a 50% 'relapse' to smoking among base case smoking quitters who instead switched to using Camel SNUS (refer to transition probabilities in [Table H2](#)) provided a point estimate that was 'near zero' when there was a concurrent 1.35% and 1.48% increase in 'switching' for ERRs of 0.08 and 0.11, respectively (refer to [Tables H10 and H11](#)). Under the assumption of 50% 'resumed smoking', all tipping points for 'switching' must necessarily be doubled. This is because a 50% resumption of smoking among base case continuing smokers who switched to Camel SNUS ('resumed smoking') was modeled by reducing transition probabilities for 'switching' by 50%.⁴

Net results based on mortality rates for women differed from those for men due to different mortality risks for men and women in the Kaiser-Permanente cohort; the 'net' population effect was about 18% lower for women than for men (refer to [Tables H12 and H13](#)). However, 'tipping point' estimates were almost identical for both genders (refer to [Table H14](#)).

⁴ Modeling results for the current analyses are presented as the difference in the number of survivors for the counterfactual scenario compared to the based case at the end of age interval 68-72 years; the total numbers of survivors in the counterfactual scenario and the base case, and the differences between them are shown for all age categories in [Tables E_H8 and E_H10](#) in [Appendix E](#). Results for LE and QALE are presented in [Tables D_H8 and D_H10](#) in [Appendix D](#).

Table H8: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

ERR	Additional Initiation ^a (%)	Gateway Effect ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Mean	95% PI	
0.08	0.3	50	1.8-22.1	0.0	-636	-668	-607
				0.5	34	-38	113
				1.0	689	542	846
				1.5	1,329	1,106	1,564
				2.0	1,954	1,655	2,266
				2.5	2,565	2,192	2,951
				3.0	3,162	2,716	3,620
				3.5	3,745	3,232	4,276
				4.0	4,315	3,734	4,915
0.11	0.3	50	1.8-22.1	0.0	-773	-818	-731
				0.5	-132	-199	-59
				1.0	495	360	640
				1.5	1,107	900	1,328
				2.0	1,705	1,427	1,999
				2.5	2,289	1,941	2,653
				3.0	2,860	2,443	3,296
				3.5	3,418	2,933	3,921
				4.0	3,963	3,410	4,533

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years.

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probability applied to age intervals 18+ years

Table H9: Extrapolated tipping points for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for women

ERR	Tipping point (%)		
	Upper 95% PI	Mean	Lower 95% PI
0.08	0.42	0.47	0.53
0.11	0.54	0.61	0.68

Table H10: Difference in survivors, tipping point analysis for 'master model' without 'alternative initiation' (no 'relapse') versus tipping point analysis for 'master model' without 'alternative initiation' with 50% 'relapse'; based on mortality rates for women

ERR	Switching (%) ^a	Mean number of survivors, counterfactual		Mean difference in survivors, two counterfactuals	Mean difference in survivors, Counterfactual ^b – base case ^c	Mean difference in survivors ^d , Counterfactual ^e – base case ^f
		No 'relapse'	50% 'relapse'			
0.08	0.0	784,354	783,125	1,229	-636	-1,866
	0.5	785,025	783,828	1,197	34	-1,163
	1.0	785,680	784,515	1,165	689	-476
	1.5	786,320	785,186	1,134	1,329	196
0.11	0.0	784,217	783,041	1,176	-773	-1,949
	0.5	784,859	783,714	1,145	-132	-1,276
	1.0	785,485	784,372	1,113	495	-619
	1.5	786,097	785,014	1,083	1,107	23

^a Replaces (' h ') \approx ^(' h ') in [Table C2](#)

^b Counterfactual scenario with no 'relapse'

^c Base case with no 'relapse'

^d Identical to the difference between 'Mean difference in survivors, counterfactual¹ – base case²' and 'Mean difference in survivors, two counterfactuals'

^e Counterfactual scenario with 50% 'relapse'

^f Base case with no 'relapse'; base case with 50% 'relapse' must be ignored.

Table H11: Extrapolated tipping points for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting' with 50% 'relapse'; mortality rates for women

ERR	Tipping point (%)
0.08	1.35
0.11	1.48

Table H12: Comparison of difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for men versus mortality rates for women

ERR	Additional Initiation ^a (%)	Gateway Effect ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Difference in survivors		Difference, men vs. women (%)
					Men	Women	
0.08	0.3	50	1.8-22.1	0.0	-771	-636	17
				0.5	39	34	13
				1.0	832	689	17
				1.5	1,607	1,329	17
				2.0	2,365	1,954	17
				2.5	3,107	2,565	17
				3.0	3,832	3,162	17
				3.5	4,542	3,745	18
				4.0	5,236	4,315	18
0.11	0.3	50	1.8-22.1	0.0	-943	-773	18
				0.5	-169	-132	22
				1.0	587	495	16
				1.5	1,328	1,107	17
				2.0	2,051	1,705	17
				2.5	2,760	2,289	17
				3.0	3,452	2,860	17
				3.5	4,130	3,418	17
				4.0	4,792	3,963	17

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years.

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probability applied to age intervals 18+ years

Table H13: Comparison of difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting' with 50% 'relapse'; mortality rates for men versus mortality rates for women

ERR	Additional Initiation ^a (%)	Gateway Effect ^b (%)	Diversion from Quitting ^c (%)	Switching ^d (%)	Difference in survivors ^e		Difference, men vs. women (%)
					Men	Women	
0.08	0.3	50	1.8-22.1	0.0	-2,271	-1,866	18
				0.5	-1,423	-1,163	18
				1.0	-593	-476	20
				1.5	219	196	11
0.11	0.3	50	1.8-22.1	0.0	-2,376	-1,949	18
				0.5	-1,565	-1,276	18
				1.0	-772	-619	20
				1.5	3	23	-667 ^f

^a Refer to [Table 2.2](#); probability applied to age intervals 13-17, 18-22 and 23-27 years.

^b Extreme transition probability, in absence of empirical data (applied to age intervals 18-22, 23-27 and 28-32 years)

^c Refer to [Table 2.3](#) for age interval-specific probabilities

^d Probability applied to age intervals 18+ years

^e Counterfactual scenario with 50% 'relapse'; base case with no 'relapse'; base case with 50% 'relapse' must be ignored

^f Small absolute difference; large relative difference due to small values.

Table H14: Comparison of tipping points for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting'; mortality rates for men versus mortality rates for women

	ERR	Tipping point (%)		
		Men	Women	Difference, men vs. women (%)
No 'relapse'	0.08	0.48	0.47	0
	0.11	0.61	0.61	0
50% 'relapse'	0.08	1.37	1.35	0
	0.11	1.50	1.48	0

Figure H1: Difference in survivors, counterfactual versus base case, for age category 68-72 years based on transitions of 'switching' versus 'additional initiation' with 'gateway effect' and 'diversion from quitting' (top: ERR=0.08; bottom: ERR=0.11)

