The potential impact of smoking control policies on future global smoking trends

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ABSTRACT

Background The authors develop projections for global smoking prevalence for the years 2020 and 2030 with and without the implementation, starting in 2010, of the WHO's recommended multipronged approach to tobacco control known as the MPOWER policy package.

Methods Using data from the WHO's Global InfoBase Database and the WHO's Global Adult Tobacco Survey, the authors construct adult cigarette smoking prevalence time series for 60 countries that account for 90% of the world's smokers and 85% of the world's population. The authors then use a stock/flow model to project those countries' smoking prevalence for the years 2020 and 2030, with and without the implementation of MPOWER. The authors aggregate the results and report regional and global figures.

Results The authors estimate global adult cigarette smoking prevalence in 2010 to be 23.7%. If no additional policies are set in place and the initiation and cessation rates existing in 2010 persist, the authors estimate that global prevalence will be 22.7% by 2020 and 22.0% by 2030 (872 million smokers). If MPOWER had been implemented globally starting in 2010 with a 100% price increase for cigarettes, the authors estimate that global cigarette smoking prevalence would be 15.4% in 2020 and 13.2% in 2030 (523 million smokers).

Conclusions The estimates indicate the magnitude and trajectory of the global tobacco pandemic and of the impact the authors could expect if evidence-based tobacco control policies were applied immediately and universally throughout the world. As half of lifetime smokers die of tobacco-related diseases, if MPOWER were applied globally, within a few decades, many millions of premature tobacco-related deaths would be avoided.

Tobacco use, and in particular cigarette smoking, is the leading preventable cause of mortality around the world, responsible for a death toll in excess of 5 million people per year (more than HIV/AIDS, tuberculosis and malaria combined). The international community is increasingly aware of the impact of the tobacco epidemic on the health of the world population and is making serious efforts to control this global threat. In 2003, the World Health Assembly, the annual meeting of the member countries of the WHO, adopted the Framework Convention on Tobacco Control (FCTC), a treaty now ratified by 174 countries that have agreed to take steps to reduce both the supply of and demand for tobacco products. To help those countries fulfil their commitment to the FCTC, in 2008, the WHO disseminated recommendations for a multipronged approach to tobacco control consisting of six basic strategies: monitor tobacco use; protect people from tobacco smoke; offer help to quit tobacco use; warn about the dangers of tobacco; enforce bans on tobacco advertising, promotion and sponsorship; and raise taxes on tobacco. This comprehensive set of tobacco control policies is known as MPOWER.[1] The package is intended to assist in the country-level implementation of effective measures to reduce the demand for tobacco, contained in the WHO FCTC.

Several global surveys have been implemented to monitor the course and patterns of tobacco use throughout the world and a number of studies report estimates of tobacco smoking prevalence in specific countries and world regions.[1–6] While studies focus on country- and region-specific projections,[7–9] the literature is very scant when it comes to predicting future global trends.[10] This is especially true for projections incorporating the effects of implementing different tobacco control policies at the global level. In particular, while there is little disagreement that implementing the MPOWER policy package will reduce smoking rates worldwide, the magnitude of that potential reduction has not been previously estimated.

The aims of this study are to develop projections for global adult cigarette smoking prevalence for the years 2020 and 2030 with and without the implementation of the MPOWER package, based on available country-specific prevalence data and best estimates of the effectiveness of the tobacco control measures in the MPOWER policy set. To conduct our analysis, we focus on 60 countries comprising 85% of the world's population and 90% of global smoking prevalence. We first project what overall global prevalence in 2020 and 2030 would be if the trends observed in 2010 persist and no additional tobacco control policies are put in place. Then, we repeat the analysis assuming that, starting in 2010, all countries in the study apply the MPOWER policies, again developing global smoking projections for the years 2020 and 2030. We conduct extensive sensitivity analysis and compute most likely worst- and best-case scenarios for our smoking prevalence projections. We include an online appendix with detailed information on the data sources we use and the data cleaning process we apply to each country included in the study. We also discuss in the online appendix, the methods we used to estimate the combined effect of individual policies.

METHODS

The analysis was divided into two parts: a) modelling of baseline prevalence and b) development of prevalence estimates for 2020 and 2030 if MPOWER policies were implemented in 2010.

To develop the baseline prevalence estimates for 2020 and 2030, we first assembled prevalence time series for selected countries to compute the current trend of smoking rates. To construct the time series, we employed the tobacco use component of the WHO's Global InfoBase Database, a comprehensive compilation of historical tobacco use prevalence data in 191 countries. The countries are grouped into six main regions, corresponding to the official WHO regional divisions: AFRO (Africa), AMRO (the Americas), EMRO (the Eastern Mediterranean), EURO (Europe), SEARO (South-East Asia) and WPRO (the Western Pacific). The database includes prevalence rates obtained from published and non-published sources of governmental as well as non-governmental surveys. The database provides detailed information on each survey, including the definition of tobacco use (eg, current smokers vs. daily or ever-smokers), tobacco type, age groups, gender and geographical representation (national vs sub-national). In each region, we chose to focus on the 10 countries with the largest number of current cigarette smokers. This group of 60 target countries accounts for around 90% of the world's smokers and 85% of the world's population. Table 1 shows the selected countries and each country's share of the global smoking population.

Table 1 Countries with largest percentage of world smokers (by region)

	% Of global smokers
AFRO	
Nigeria	0.6
South Africa	0.6
Guinea	0.3
Algeria	0.3
Niger	0.2
Mozambique	0.2
Kenya	0.2
United Republic of Tanzania	0.2
Angola	0.2
Uganda	0.2
Subtotal	3.2
EMRO	
Pakistan	1.6
Egypt	1.3
Afghanistan	0.8
Iran (Islamic Republic of Iran)	0.6
Sudan	0.6
Iraq	0.3
Yemen	0.3
Syrian Arab Republic	0.3
Saudi Arabia	0.3
Morocco	0.3
Subtotal	6.4
SEARO	
India	11.0
Indonesia	4.8
Bangladesh	1.7
Myanmar	0.9
Thailand	0.9
Democratic People's Republic of Korea	0.4
Nepal	0.3
Sri Lanka	0.3
Timor-Leste	0.0
Bhutan	0.0
Subtotal	20.3

Table 1 Continued

	% Of global smokers
AMRO	
USA	4.7
Brazil	1.9
Mexico	1.2
Argentina	0.7
Peru	0.5
Colombia	0.5
Canada	0.4
Chile	0.4
Venezuela	0.3
Cuba	0.2
Subtotal	10.9
EURO	
Russian Federation	4.0
Germany	1.7
Turkey	1.5
Ukraine	1.4
France	1.3
UK	1.1
Spain	1.1
Italy	0.9
Poland	0.9
Romania	0.5
Subtotal	14.3
WPRO	
China	28.0
Japan	2.6
Philippines	1.6
Viet Nam	1.3
Republic of Korea	1.0
Malaysia	0.4
Australia	0.3
Cambodia	0.2
Lao People's Democratic Republic	0.1
Papua new guinea	0.1
Subtotal	35.7
Overall percentage prevalence	90.8

Using the raw (unadjusted) data from the InfoBase, we followed a multistage process to construct time trends for each of the target countries. First, we chose from among the surveys available in the InfoBase those that were conducted at the national level and reported overall prevalence rates for current cigarette smokers. Second, for those countries that had only a few surveys satisfying the criteria of the first stage, we looked for national surveys that provided prevalence rates for current smokers by gender and age categories. We then used the appropriate population estimates to derive a weighted average overall estimate for current smokers. Third, for countries where stages 1 and 2 result in insufficient data points to develop a trend, we made use of the available subnational data or data on daily smokers (daily smoker figures exclude people who are current smokers but do not smoke every day), making the necessary adjustments. This entailed the use of assumptions that varied by country and the available data. The data and process we used to construct the time series for each country are described in the online appendix.

Additionally, for selected countries, we supplemented the time trends with data from the WHO's Global Adult Tobacco Survey (GATS),[11] a nationally representative household survey, launched in 2007 in 16 low- and middle-income countries that account for more than half of the world's smokers. These data

are also shown in the online appendix. While in many countries, men and women exhibit dramatically different smoking patterns, due to the lack of sufficient data in several countries, we were not able to perform separate analyses for men and women.

To compute expected base case prevalence for the years 2020 and 2030, we adapted the method we have successfully used to model and forecast the natural trajectory of adult smoking prevalence in the USA to accommodate data from other countries. As in the US case, we modelled prevalence as a stock/flow process by keeping track of the accumulation over time of smokers who enter the system through smoking initiation and leave it due to smoking cessation or death. Our approach has been discussed extensively elsewhere.[12–15] The following expression describes the basic process:

$$dPrev(t)/dt = Init - Prev(t) \times (Cess + Mortality) \qquad (1)$$

with solution:

$$\begin{aligned}Prev(t) = {} & (Prev_0 - (Init/(Cess + Mortality))) \times exp(-(Cess \\ & + Mortality) \times t) + (Init/(Cess + Mortality))\end{aligned}$$
$$(2)$$

Prev(t) stands for adult smoking prevalence at time t for the country under study; Init is the country-specific smoking initiation rate; Cess is the country-specific smoking cessation rate; Mortality is the country-specific mortality rate and $Prev_0$ is the estimated prevalence at the time we chose to initialise the country-specific time series.

To calibrate the model, we first obtained estimates for the adult initiation rate by averaging historical smoking prevalence at young ages (17–24) for each country with available data, thus assuming that little initiation occurs after age 24. (We recognise that there is initiation after age 24 in some countries, which is a limitation of our study. In these countries, both prevalence and policy effects will be underestimated.) Then, for countries with a time series of two or more historical prevalence data points, we obtained estimates for the cessation rate and the initial prevalence ($Prev_0$), employing the model above and using non-linear least squares according to the following objective function:

$$\begin{aligned}Min_{Cess,Prev0} & \sum (Prev(Init, Cess, Prev_0, Mortality, t) \\ & - Observed\ Prevalence(t))^2.\end{aligned}$$
$$(3)$$

With the derived estimates, we used the model to project a smoking prevalence base case scenario for the years 2020 and 2030 for each country with available data, accounting for population growth. For countries with only one data point, we projected the same prevalence value to the years 2020 and 2030 as the base case but conducted a demanding sensitivity analysis around this assumption.

For each country in the study, we performed an extensive sensitivity analysis to develop worst- and best-case scenarios for the years 2020 and 2030. For countries with two or more observed prevalence data points, the sensitivity analysis consisted of conducting a Monte Carlo simulation to assess the variability of the 2020 and 2030 prevalence estimates according to the following procedure:

First, we fitted a triangular probability distribution to the data on initiation rates by selecting the minimum, maximum and mode statistics from the data as the distribution parameters. Then, we sampled from that distribution 10 000 times, each time obtaining a new estimate of the cessation rate according to expression (3) and a projected prevalence for the years 2020 and 2030. Finally, we collected the distribution of projected prevalence values for 2020 and 2030 and reported the 2.5 and 97.5 percentiles as the best- and worst-case scenarios for smoking prevalence.

For the sensitivity analysis for countries with only one data point we assumed, as the worst-case scenario, that their smoking rates would follow the same upward trajectory as the USA prior to the 1960s. As such, we used as worst-case values for 2020 and 2030, the prevalence attained by the USA in 10 and 20 years, respectively, following the time when the USA reached the target country's most current prevalence estimate. As the highest prevalence attained by the USA was <50% (in the late 1950s), we did not compute a worst-case scenario for countries that are currently at 50% or higher smoking prevalence.

To estimate global smoking prevalence for the years 2020 and 2030 along with best- and worst-case scenarios, we conducted a Monte Carlo simulation sampling from the individual country distributions for the 2020 and 2030 prevalence obtained in the previous stage of the analysis. Each country's sample was then weighted by the country's adult population projection for 2020 and 2030 to obtain regional and overall world prevalence.[16] The mean and the 2.5 and 97.5 percentiles were taken as the point estimate, best-case and worst-case estimate for the base case scenario of global prevalence in years 2020 and 2030.

To estimate the global impact of applying the smoking control policies described in the MPOWER package, we first obtained, from published sources, estimates of each policy's effectiveness on smoking initiation and cessation rates.[17–19] We derived the estimate for the effectiveness of cessation support by taking the average of the effectiveness of different types of cessation support interventions reported by Wilson and colleagues.[17] Assuming that just a fraction of current smokers will use cessation support, we then multiplied this average effectiveness by a cessation participation factor of 10%, consistent with current literature, to obtain the 1.061 estimate we used in our calculations. The effectiveness values we used in our analysis are summarised in table 2.

Except for the impact of taxes on smoking rates, values in table 2 show the improvement in initiation or cessation rates due to the application of individual MPOWER policies. For example, the table shows that a national mass media and package warning campaign would increase cessation rates by 23% and reduce initiation rates by 20%. For the impact of taxation on smoking rates, the table reports the price elasticity of initiation rates and the price elasticity of smoking prevalence. For example, a tax increase that resulted in a 100% cigarette price increase would decrease prevalence by 20% within 1 or 2 years and produce a 70% reduction in initiation rates, both of which will be maintained as long as the real price reduction is sustained. We do not estimate reductions in daily smoking by continuing smokers.

We performed the policy impact analysis assuming that no MPOWER policies had been applied prior to 2010 and that in 2010, all MPOWER policies were implemented globally and simultaneously, with tax increases that would produce a 100% price increase for cigarettes. We also assume that this will be a real price increase, sustained throughout the time span of our analysis (ie, we assume that taxes will be adjusted for inflation annually to maintain the same proportional level above the price). We chose the 100% level as a plausible if ambitious target,

Table 2 Effectiveness of MPOWER policies on initiation and cessation rates

Policy	Description	Effect on cessation (RR)	Effect on initiation (RR)
P (protect)	Clean air laws	1.11[18]	0.926[17]
O (offer help)	Cessation support	1.061[17]	NA
W (warn)	Mass media and package warnings	1.23[17]	0.8[17]
E (enforce)	Enforce ad bans	1.03[18]	0.94[18]
R (raise)	Raise taxes	Price elasticity of prevalence $=-0.20$[19]	Price elasticity $=-0.7$[18]

recognising that this would require an extremely large tax increase in nearly all countries.

We also considered different potential interactions among the individual policies that affect initiation and cessation rates when applied simultaneously. First, for a best-case scenario, we assumed that the policies acted independently on the population; that is, the fact that an individual is affected by one policy does not indicate that he/she is more or less likely to be affected by other policies. Discarding the possibility of negative correlation policy effects among individuals (ie, a person affected by one policy is less likely to be affected by other policies), the independence assumption provides the maximum combined effect of the policies on the 2020 and 2030 prevalence estimates, and thus, it constitutes our best-case scenario. We discuss this in greater detail in the online appendix.

For the worst-case scenario, we assumed maximum correlation among the effects of policies on individuals. This implies that the same subset of individuals is likely to be influenced by any policy. In this case, the maximum possible effectiveness from all policies combined is limited to that of the most effective policy.

Finally, for a more plausible intermediate case, we performed a Monte Carlo simulation sampling values for the combined policy effectiveness from a uniform distribution bounded by the best- and worst-case scenarios just described. On each iteration of the simulation, the sampled effectiveness modifies a pair of initiation and cessation rates resampled from the base case simulation run.

As in the base case scenario, the global prevalence for the years 2020 and 2030 is calculated by weighting the individual country estimates by their projected population size in 2020 and 2030, respectively.[16]

RESULTS

Table 3 shows our estimates of global and regional smoking prevalence for 2010, 2020 and 2030 under the base case setting (status quo). Table 4 shows the same information assuming that MPOWER policies are applied in 2010 and sustained thereafter. Each table present our estimates for best case, expected and worst case scenarios, as described in the Methods section.

We estimate global smoking prevalence in 2010 to be 23.7% (around 794 million smokers within the countries included in the study). If no additional policies are set in place and the initiation and cessation rates existing in 2010 persist, we estimate that global prevalence will be 22.7% by 2020 (838 million smokers, the larger number reflecting population growth) and 22.0% by 2030 (872 million smokers). Through our sensitivity analysis, we also estimate that global prevalence in 2030 could be as high as 22.7% or as low as 21.2%.

Regional estimates of prevalence in 2010 range from 15.8% in the AFRO region to 31.2% in the EURO region. Regional projections for 2020 and 2030 suggest that while the EURO, WPRO, AMRO and SEARO regions are trending down, smoking prevalence in the AFRO and EMRO regions will increase over the next 20 years under the status quo assumptions. The EURO region is still expected to have the highest smoking prevalence in 2030 (29.7%), but the AFRO region is the one with the largest expected increase (from 15.8% in 2010 to 21.9% in 2030).

Assuming that the MPOWER policies are applied and maintained globally starting in 2010 with a 100% price increase for cigarettes, we estimate that global smoking prevalence will be around 15.4% in 2020 (569 million smokers) and 13.2% in 2030 (523 million smokers), representing a 28% and 34% reduction in the number smokers from its 2010 value, respectively. The projected regional smoking prevalence for 2030 under the MPOWER policy package ranges from 8.9% (AMRO) to 17.0% (WPRO). The largest expected absolute decline corresponds to the EURO region (16.1 percentage points), while the AMRO region is expected to have the largest (57%) proportional reduction in prevalence. The largest expected prevalence reduction *attributable specifically to the MPOWER policies*, both absolute (14.6 percentage points) and proportional (49%), is projected to occur in the EURO region, moving from an expected prevalence in 2030 of 29.7% under the status quo to 15.1% with the application of MPOWER.

DISCUSSION

Our results suggest that even if no additional tobacco control efforts are put in place between now and 2030, the world's overall adult smoking prevalence will decline slightly within

Table 3 Estimated smoking prevalence in 2020 and 2030 under base case scenario

WHO region	Prevalence in 2010	Estimated prevalence in 2020 if no additional control policies are implemented after 2010			Estimated prevalence in 2030 if no additional control policies are implemented after 2010		
		Best case	Expected	Worst case	Best case	Expected	Worst case
AFRO	15.8	16.7	19.4	23.0	18.2	21.9	26.5
AMRO	20.5	17.0	18.0	18.9	15.6	16.7	17.8
EMRO	22.4	21.7	22.9	24.3	22.0	23.7	25.7
EURO	31.2	28.9	30.2	31.4	28.1	29.7	31.2
SEARO	20.1	18.3	18.7	19.2	17.0	17.6	18.4
WPRO	28.5	25.8	27.6	29.3	24.1	26.3	28.5
All regions	23.7	22.1	22.7	23.3	21.2	22.0	22.7

Table 4 Estimated prevalence in 2020 and 2030 under MPOWER policies with 100% price increase

WHO region	Prevalence in 2010	Estimated prevalence in 2020 with MPOWER package implemented in 2010 with 100% price increase			Estimated prevalence in 2030 with MPOWER package implemented in 2010 with 100% price increase		
		Best case	Expected	Worst case	Best case	Expected	Worst case
AFRO	15.8	11.6	12.1	12.4	10.6	11.3	11.9
AMRO	20.5	11.1	11.6	12.0	8.3	8.9	9.4
EMRO	22.4	13.9	15.1	16.3	11.3	13.0	14.6
EURO	31.2	17.1	18.2	19.2	13.7	15.1	16.4
SEARO	20.1	13.3	13.5	13.7	11.4	11.7	12.0
WPRO	28.5	19.2	19.4	19.6	16.7	17.0	17.4
All regions	23.7	15.0	15.4	15.8	12.5	13.2	13.7

that period (from 23.7% to 22.0%). This result is mixed news. On the one hand, it suggests that global smoking prevalence is not likely to rise over the next 20 years, but on the other hand, it also indicates that, due to expected population growth, the global number of smokers (at least those within the countries we studied, constituting approximately 90% of the world's smokers) will increase by 10%, to a staggering 872 million smokers in 2030, from 794 million in 2010. Moreover, the stability of global prevalence can be deceiving, as different regions of the world are likely to exhibit substantial movement in smoking prevalence, albeit in different directions. As shown in table 2, while the Americas (AMRO), Europe (EURO), the Western Pacific (WPRO) and South-East Asian (SEARO) regions are trending down, the African (AFRO) and Eastern Mediterranean (EMRO) regions are trending up.

The potential impact of the MPOWER package is better news. Our results show that the application of the MPOWER package could set smoking prevalence on a downward trend in every region of the world. For the year 2020, our results show that universal application of the comprehensive set of policies, implemented fully in 2010, could decrease the global number of smokers by 28% over a 10-year period. Over 20 years, the potential impact of MPOWER is much more dramatic, reducing the number of smokers by 271 million.

Our study is subject to several limitations. First, for several countries, we had very few historical prevalence data points with which to derive country-specific trends, as noted in the online appendix. Our estimates of future prevalence for these countries are subject to potentially large errors. Additionally, available surveys often employ very different methodologies and definitions of smoking even for the same country. It is important to promote a consistent and coherent data collection effort around the globe and particularly important in countries with rising smoking trends. Despite these data issues, as there is no obvious directional bias, and as we aggregated the country-specific results to perform regional analyses, we believe that our regional and global estimates of prevalence are reasonably robust. The results from our sensitivity analysis support this assertion. Second, our estimates of policy effectiveness are derived from studies in developed countries. The effect of the policies considered could differ in low- and middle-income countries. Third, we did not separate our analysis by gender. A substantial number of countries lacked the data to allow this distinction. In some countries, initiation patterns are very different for men and women; however, in most such countries, female smoking prevalence is very low, and thus, this modelling restriction does not significantly impact our results. Fourth, our model assumes that there is no initiation after age 24. We recognise that this assumption is violated in some countries. In such cases, both prevalence and policy effects will be underestimated. Fifth, our analysis focuses strictly on cigarette smoking, ignoring other tobacco products. In

countries such as India, other products represent a substantial amount of tobacco consumption. We chose to focus on the most important global tobacco-related source of disease—cigarette smoking—and the one that is by far the most common in the vast majority of countries. It is also the form of tobacco use for which prevalence data are most widely available and for which policy impacts are best understood.

It is important to emphasise that our assumption of doubling of price accounts for the majority of the impact of MPOWER policies (results not shown). This is particularly important to appreciate because in this study, we assume that the increase in real price will be maintained throughout the entire period of analysis, that is, prices would be adjusted annually to reflect inflation. To the extent that this did not occur, the effects of the one-time doubling of price would erode as inflation reduced the real value of the price. We also note that our sensitivity analysis focuses on the uncertainty stemming from the prevalence data. We did not perform sensitivity analysis around individual policy effectiveness, which we took as single estimates from the literature, reported in table 2.

In our analysis, we assume that the MPOWER policies are applied globally and simultaneously in 2010, without a subsequent reaction from the tobacco industry to try to counteract the effect of those policies (eg, the industry's encouraging cigarette smuggling from low- to high-price countries). As such, our results should not be taken as forecasts, which are based on what are believed to be realistic assumptions of what will occur in the future. Rather, our estimates indicate the magnitude and trajectory of the global smoking pandemic and of the impact we could expect if evidence-based tobacco control policies were applied immediately and universally throughout the world. A final caveat, however: our estimates may exaggerate the potential decrease in smoking attributable to complete adoption of MPOWER because many countries implemented components of the MPOWER policy package prior to 2010. However, two factors mitigate the bias in our assumption: first, the largest policy effects are due to price increases, and such effects can always be attained regardless of prior price levels and second, in many countries, we have used data prior to the implementation of such policies to compute smoking trend. Additionally, our projections do not consider the possibility of a synergistic effect among policies acting simultaneously, which may lead to an underestimation of the MPOWER effects.

In an article published recently in *The Lancet*,[20] the authors propose a target of <5% for global prevalence in 2040. Our analysis suggests that under what we consider the highly unrealistic assumption of complete and instant adoption of MPOWER, with a 100% increase in cigarette price, the best possible scenario for global prevalence in 2030 will be 12.5%. Reaching 5% in 2040 would be extremely difficult if we are constrained to our current policy arsenal. This is consistent with

What this paper adds

This paper describes the global trajectory of adult smoking prevalence over the next 20 years and estimates the impact of applying globally, WHO recommended tobacco control policies.

the premise set forth by Warner and Méndez,[21] who argue that without substantial innovation in tobacco control policy, further reductions in smoking in developed nations will come frustratingly slowly.

Nonetheless, the important message of our study is that the application of MPOWER globally would produce a substantial reduction in global cigarette smoking. If we assume that MPOWER strategies have similar effects on other tobacco product use, the reduction in global tobacco consumption could be much greater. As approximately half of lifetime smokers die of tobacco-related diseases, the implementation of MPOWER would prevent many millions of premature tobacco-related deaths. The Framework Convention on Tobacco Control can and should serve as the mechanism to move towards adoption of these policies. If implemented as required in the FCTC, the MPOWER strategies will contribute to significant declines in cigarette smoking over the next 20 years. However, the MPOWER strategies alone are not enough. We must fully implement all aspects of the FCTC and then continue to search for mechanisms to further drive down the use of tobacco.

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REFERENCES

1. **The World Health Organization.** *MPOWER: A Policy Package To Reverse The Tobacco Epidemic*. http://www.who.int/tobacco/mpower/mpower_english.pdf (accessed 5 Apr 2012).
2. **Warren C,** Lee J, Lea V, *et al*. Evolution of global tobacco surveillance system (GTSS) 1998-2008. *Glob Health Promot* 2009;**2**(Suppl):4—37.
3. **Warren C,** Jones N, Eriksen M, *et al*. Patterns of global tobacco use in young people and implications for future chronic disease burden in adults. *Lancet* 2006;**367**:749—53.
4. **Pample F.** Tobacco use in Sub-Saharan Africa: estimates from the demographic health surveys. *Soc Sci Med* 2008;**66**:1772—83.
5. **Hammond KS.** Global patterns of nicotine and tobacco consumption. In: Henningfield JE, London ED, Pogun S, eds. *Nicotine Psychopharmacol*. Berlin Heidelberg: Springer-Verlag, 2009:3—28.
6. **Mackay J,** Eriksen M, Shafey O. *The Tobacco Atlas*. 2nd edn. Geneva: World Health Organization, 2006.
7. **Levy DT,** Cho SI, Kim YM, *et al*. SimSmoke model evaluation of the effect of tobacco control policies in Korea: the unknown success story. *Am J Public Health* 2010;**100**:1267—73.
8. **Levy DT,** Ross H, Zaloshjna E. The Albania SimSmoke tobacco policy simulation model. *Cent Eur J Public Health* 2008;**16**:189—98.
9. **Levy DT,** Sarunya B, Ross H, *et al*. The role of tobacco control policies in reducing smoking and deaths in a middle income nation: results from the Thailand SimSmoke simulation model. *Tob Control* 2008;**17**:53—9.
10. **Mackay J.** The global tobacco epidemic: the next 25 years. *Public Health Rep* 1998;**113**:14—21.
11. **The World Health Organization.** *GATS (Global Adult Tobacco Survey)*. http://www.who.int/tobacco/surveillance/gats/en/index.html (accessed 5 Apr 2012).
12. **Mendez D,** Warner KE, Courant PN. Has smoking cessation ceased? Expected trends in the prevalence of smoking in the United States. *Am J Epidemiol* 1998;**148**:249—28.
13. **Mendez D,** Warner KE. Smoking prevalence in 2010: why the healthy people goal is unattainable. *Am J Public Health* 2000;**90**:401—3.
14. **Mendez D,** Warner KE. Adult cigarette smoking prevalence: declining as expected (not as desired). *AJPH* 2004;**94**:251—2.
15. **Mendez D,** Warner KE. Setting a challenging yet realistic smoking prevalence target for healthy people 2020: learning from the California experience. *AJPH* 2008;**98**:556—9.
16. **U.S. Census Bureau.** *International Database (IDB)*. http://www.census.gov/ipc/www/idb/informationGateway.php (accessed 16 Jan 2011).
17. **Wilson LM,** Tang EA, Chander G, *et al*. Impact of tobacco control interventions on smoking initiation, cessation and prevalence: a systematic review. *J Environ Public Health* [In press].
18. **Levy DT,** Gitchell JG, Chaloupka F. The effects of tobacco control policies on smoking rates: a tobacco control Scorecard. *J Public Health Manag Pract* 2004;**10**:338—51.
19. **IARC.** *IARC Handbooks of Cancer Prevention: Tobacco Control. Effectiveness of Price And Tax Policies For Control Of Tobacco*. Vol. 14. Lyon, France: International Agency for Research on Cancer. In press.
20. **Beaglehole R,** Bonita R, Horton R, *et al*. Priority actions for the non-communicable disease crisis. *Lancet* 2011;**377**:1438—47.
21. **Warner KE,** Mendez D. Tobacco control policy in developed countries: yesterday, today, and tomorrow. *Nicotine Tob Res* 2010;**9**:876—87.

Appendix to Accompany: An Evaluation of the Impact of Smoking Control Policies on Future Global Smoking Trends

I. This section of the Appendix describes the methods we used to estimate the combined effect of several tobacco control policies acting simultaneously.

Let $P_j(2010)$, C_j, I_j and M_j be the prevalence, cessation rate, initiation rate and mortality rate estimated for country j in 2010 prior to the application of MPOWER policies. Then, the prevalence trajectory of that country after 2010, without the implementation of MPOWER policies, can be estimated using the following expression, as described in the Methods section of the paper:

$$P_j(t) = \left(P_j(2010) - \left(\frac{I_j}{C_j + M_j} \right) \right) * \exp\left(-(C_j + M_j) * (t - 2010) \right)$$

$$+ \left(\frac{I_j}{C_j + M_j} \right)$$

We assume that, right after MPOWER is applied in 2010, prevalence drops responding to a tax increase, and initiation and cessation rates change in response to the combined effect of the tobacco control policies. Let $P'_j(2010)$, C'_j and I'_j be the price, cessation rate and initiation rate in country j, right after MPOWER is applied. Then, the revised prevalence trajectory, taking into account the effect of MPOWER polices, can be described as:

$$P'_j(t) = \left(P'_j(2010) - \left(\frac{I'_j}{C'_j + M_j} \right) \right) * \exp\left(-(C'_j + M_j) * (t - 2010) \right)$$

$$+ \left(\frac{I'_j}{C'_j + M_j} \right)$$

$P'_j(2010)$, C'_j, and I'_j are computed in the following way, considering a 100% price increase and the individual policy effectiveness shown on Table 2 in the paper:

As we take the price elasticity of prevalence to be -0.20, with a 100% price increase,

$$P'_j(2010) = (1 - 0.20 \times 100\%) \times P_j(2010) = 0.80 \times P_j(2010)$$

To compute the increase in cessation rates after the MPOWER policies are implemented, for a best case scenario we assume quitting because of individual policies represent independent events. As such, the probability of quitting when these independent events act together is:

$$C'_j = 1 - \sum_i (1 - C_j \times E_i)$$

Where E_i represents the effectiveness of policy i, shown in Table 2 in the paper. In our computations, we assume that increasing price has the effect of reducing prevalence to a maximum amount in one or two years, but it does not affect the background cessation rate that existed before the price increase. As such, price increases do not enter in the computation of C'_j.

For a worst-case scenario we compute C'_j considering just the policy with maximum impact on the cessation rate. This procedure, again, excludes price which has an immediate effect on prevalence.

$$C'_j(worst - case) = (C_j \times \max E_i)$$

Effects on initiation rates are computed in a similar way.

2

II.   This section of the Appendix describes the data and procedures used to construct the

historical prevalence time periods for each country.   We present the data and the data

sources and methods we used to construct the country-specific time series.

Afghanistan

Adult Prevalence:

- No nationally representative data on the prevalence of smoking in Afghanistan was available in the Infobase. As a result, a prevalence of 50 percent was used in all model calculations (source: Tobacco Atlas, 3rd edition).

  Initiation:

- 2004: The Afghanistan Global Youth Tobacco Survey (GYTS) Fact Sheet estimated the prevalence of current cigarette smoking (tt.003) among 13 to 15 year old men and women in Kabul to be 6.8 percent and in MaidanWardak, Logar, Parwan, and Nangarhar Provinces to be 13.4 percent (source: Infobase). The simple average (10.1 percent) was used as an estimate of current cigarette smoking among 14 year old men and women. For the calculation of the initiation rate, the proportion of 14 year old men and women was estimated at 2.58 percent using data for Tanzania, which was judged to be similar to pre-war Afghanistan with respect to per capita income and the prevalence of HIV/AIDS.

Summary Table:

Year	Prevalence
N/A	50.0

Algeria

Adult Prevalence:

- 2003: The total smoking prevalence for 15+ year olds was 13 percent (source: The World Bank, HNPStats, available at: http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=225).

- 2002: No nationally representative prevalence data was available, so a weighted average of user prevalence rates for 15-24 year old men and women from a subnational survey were used to estimate an overall rate of 23.15 (source: Infobase).

Summary Table:

Year	Prevalence

2003	13

Angola

We were not able to find any data on the prevalence of smoking in Angola. However, the WHO Infobase contained smoking prevalence estimates for several neighboring countries, including Cameron, Chad, and Congo. We decided to use the estimates from the 2003 World Health Survey in Chad, which is nationally representative survey with estimates of prevalence of adult current smoking. The survey in Chad is more recent than those for other countries, and has higher estimates of adult current smoking.

Summary Table:

Year	Prevalence
2003	9.9

Argentina

Adult Prevalence:

- 1982: We used overall (for both sexes) estimates of current smokers for ages 15-80 from a survey in Zarate city as reported in Infobase.

- 1988: We used overall estimates of current smokers for ages 18-100 from a survey in Buenos Aires city as reported in Infobase.

- 1991: We used estimates of current smokers for ages 18-80 from a survey in Buenos Aires city as reported in Infobase.

- 1994: We used overall estimates of daily smokers for ages 24-83 from a survey conducted in Buenos Aires and 9 other provinces, as reported in Infobase.

- 2004: We used overall estimates of current smokers, reported in Infobase, of current smokers from the survey "EncuestaNacional de Tabaco, 2004) for ages 18-64.

- 2005: We used overall estimates of current smokers for ages 18-100 from the survey "PrimeraEncuestaNacional de Factores de Riesgo" as reported in Infobase.

Initiation:

- 2005: we used estimates reported in Infobase of the prevalence of current smoking in age group 18-24 derived from the "PrimeraEncuestaNacional de Factores de Riesgo" survey. To convert this estimate to a percentage of the entire population, we used population estimates from the "CensoNacional de Pobaciun, Hogares y Viviendas" published by the InstitutoNacional de Estadistica y Censos".

To convert this initiation estimate to a percentage of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

Year	Prevalence
1982	34.8
1988	35
1991	34
1994	27.4
2004	28.5
2005	29.7

Australia

Adult Prevalence:

- 2005: Overall current smoker prevalence data was 23.3 percent for 18-100 year olds (source: Infobase).

- 2004: Overall daily smoker prevalence data for 14-100 year olds was 17.4 percent (source: Infobase). This was then adjusted upwards by 3 percent, the average difference between daily and current smokers (where available), to reflect current smoker prevalence rates.

- 1998: Overall current smoker prevalence of 26.7 data was estimated by first taking weighted averages of age-specific male and female prevalence rates (source: Infobase) to create male and female rates covering the 18-100 age group. Then a weighted average of these two rates was taken to calculate an overall 18-100 rate. Weights were calculated from 1998 population data (source: Human Mortality Database).

- 1995: Overall daily smoker prevalence data for the 16-100 age group was first estimated by using 1995 distribution of males and females in 16-100 age group (source: Human Mortality Database) to calculate weighted average of 16-100 population (source: Infobase). This was then adjusted upwards by 3 percent to reflect current smoker prevalence rates.

- 1993: Overall current smoker prevalence data of 28.4 percent for 20-100 year olds was estimated by using 1993 distribution of males and females in the 20-100 age group (source: Human Mortality Database) applied to male and female prevalence weights to calculate a weighted average (source: Infobase).

- Data from 1989 was not consistent with the historical prevalence trend and was therefore excluded from the model.

- Daily smoker prevalences were adjusted up 3% to compare line of best fit. Daily and current smoker prevalences were available for 2 years (2005 and 1998). The differences

between current and daily smokers for those years were 2 and 4.24581, respectively, with the average difference assumed at 3 percent.

Initiation:

- The 2007 crude death rate 0.66 percent (source: Australia Bureau of Statistics, available at: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Web+Pages/Population+Clock?opendocument?utm_id=LN).

- The 2005 initiation rate was estimated using 2006 population data (source: UNSD Demographic Statistics, available at: http://data.un.org/Search.aspx?q=australia+datamart%5bPOP%5d), specifically the percent of 18 year olds in the total population, which was then applied to the 2005 current smoker prevalence for 18-24 year olds (source: Infobase).

- Initiation rates were calculated for additional years using the same method but using different base initiation rates from Infobase data and population weights from the Australia Bureau of Statistics.

  o 1998 data was a 18-24 based initiation rate weighted by the proportion of 12-15 age group in the total population

  o 1996 data was a 12-15 based initiation rate with 12-15 age group as percent of total population weight applied

  o 1993 data was a 20-24 based initiation rate adjusted by the percent of 20 year olds in the total population

  o 1989 data was a 20-24 based initiation rate with using 20 yr old as percent of total population weight, assuming that population was equally distributed in 20-24 age segment

Summary Table:

Year	Prevalence
2005	23.3
2004	20.4
2001	25.4
1998	26.7
1995	28.1
1993	28.4

Bangladesh

Adult Prevalence:

- 2004: Overall current smoking prevalence for 15-100 year olds was 33 percent (source: Infobase).

- 2003: Overall current smoker data for ages 18-100 year olds was 31.9 percent (source: Infobase).

- A simple average was taken of these rates and assumed as the 2004 prevalence rate, which was the only data point entered into the model.

- 2009: Overall adult smoking prevalence was 23.0% (source: Global Adult Tobacco Survey (GATS). http://www.who.int/tobacco/surveillance/gats/en/index.html

Initiation:
- The 2009 estimated crude death rate was 0.923 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/bg.html).

- 2004 initiation rate for 15-19 year olds (source: Infobase) was weighted by the percent of 19 year olds in the total population in 1981 (source: UNSD Demographic Statistics, available at: http://data.un.org/Search.aspx?q=bangladesh+datamart%5bPOP%5d)

- 2003 initiation rate for 18-29 year olds (source: Infobase) was weighted by the percent of (estimated) 18 year olds in the total population, assuming a uniform distribution of people in the 15-24 age group (source: UNSD Demographic Statistics).

Summary Table:

Year	Prevalence
2004	32.4
2009	23.0

Bhutan

Infobase has no estimates for adult prevalence of current smoking in Buhtan. We used the estimates reported in the Tobacco Atlas- 3rd edition, 2009 for males and females. The overall estimate was derived by assuming that male to female ratio is 1.

Year	Prevalence
2009	8.5

Brazil

Adult Prevalence:
- 2003: The World Health Survey Brazil estimated the prevalence of current tobacco smoking (tt.002) among 18 to 100 year old men and women to be 21.8 percent (source: Infobase).

- 2006: VIGITEL Brasil — Vigilancia de Factores de Risco e ProtecaoparaDoencasCronicasporInqueritoTelefonico (Surveillance System of Risk Factors for Chronic Diseases by Telephone Interviews) — estimated the prevalence of current tobacco smoking among 18 to 100 year old men and women living in urban areas to be 16.2 percent (source: Infobase). Population data for 2000 from the UN Statistics Division was used to estimate the proportion of the adult population living in urban and rural areas (source: http://unstats.un.org/unsd/demographic/products/dyb/dyb2006.htm). Data from the World Health Survey Brazil on current smoking among 18 to 100 men and women for 2003 was used to determine the ratio of urban to rural smokers, which was then used to calculate a nationally representative estimate of the prevalence of current smoking among men and women (source: Infobase). The estimate obtained for 2006 was 17.9 percent.

- 2008: Adult smoking prevalence was 17.2 percent (source: GATS)

Initiation

- 2006: VIGITEL Brasil — Vigilancia de Factores de Risco e ProtecaoparaDoencasCronicasporInqueritoTelefonico (Surveillance System of Risk Factors for Chronic Diseases by Telephone Interviews) — estimated the prevalence of current tobacco smoking among 18 to 24 year old men and women to be 14.2 percent (source: Infobase). This prevalence rate was used as an estimate of current tobacco smoking among 15 to 19 year old men and women in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
2003	21.8
2006	17.9
2008	17.2

Cambodia

Adult Prevalence:

- 2000: The Cambodia Demographic and Health Survey 2000 estimated the prevalence of current cigarette smoking among women age 15 to 49 to be 10.5 percent (source: Infobase). Population data for 1998 from the UN Statistics Division was used to estimate the proportions of men and women among those age 15 to 49 (source: http://unstats.un.org/unsd/demographic/products/dyb/DYB2004/Table07.pdf). The ratio of male to female smoking for 2004 is used to calculate the overall prevalence of current tobaccos smoking for men and women aged 15 to 49 in 2000. The estimate obtained was 48.0 percent.

- 2004: A report on the analysis of smoking behavior survey in Cambodia 2004 by the National Institute of Statistics estimated the prevalence of current tobacco smoking (tt.002) among 18 to 100 year old men and women to be 26.3 percent (source: Infobase).

Initiation

- 2003: The Cambodia Global Youth Tobacco Survey (GYTS) estimated the prevalence of current cigarette smoking among 13 to 15 year old men and women to be 5.5 percent (source: Infobase). This prevalence rate was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
2000	48.0
2004	26.3

Canada

Adult Prevalence:

- 1985: we used estimates of prevalence of daily smoking for ages 25-64 from the Countrywide Integrated Noncommunicable Disease Intervention Programme, reported in Infobase. The estimates for males and females were averaged using population weights derived from the Human Mortality Database (online at :www.mortality.org). The overall daily smoking prevalence was then converted to current smoking prevalence by adding 5 percentage points (which is the average difference between current and daily prevalence in the other years for which data for both types of smoking are available).

- 1995: we used overall estimates of prevalence of current smoking for ages 12-100 from the National Population Survey, reported in Infobase.

- 1997: we used overall estimates of prevalence of current smoking for ages 12-100 from the National Population Survey, reported in Infobase.

- 1999-2004, 2006-2007: we used overall estimates of prevalence of current smoking for ages 15-100 from the Canadian Tobacco Use Monitoring Survey, reported in Infobase.

Initiation:

- 1994: we used estimates of prevalence of current smoking for ages 15-19 from the Youth Smoking Survey.

- 2000-2004, 2006: we used estimates of current smoking for ages 15-19 from the Canadian Tobacco Use Monitoring Survey, reported in Infobase.

To convert these initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

Year	Prevalence

1985	41.1
1995	28.3
1999	25.0
2000	24.0
2001	22.0
2002	21.0
2003	21.0
2004	20.0
2005	19.0
2006	18.0
2007	19.0

Chile

Adult Prevalence:

- 1994: weusedestimatesforcurrent smoking prevalencefromthe "Prevalencia de factores de riesgo de enfermedades cronicas. Estudio en poblacion general de la region metropolitana, 1986-1987" survey, reported in Infobase. Estimates for males and females were averaged using population weights derived from the Human Mortality Database.

- 1996: we used overall (for both sexes) estimates reported in the infobase of current smoking prevalence for ages 12-64 from the "Estudionacional de drogas en la población general de Chile, 1998" report.

- 1997: we used overall estimates reported in Infobase of current smoking prevalence for ages 12-64 from the "Estudionacional de drogas en la población general de Chile, 2002" report.

- 1998:we used overall estimates reported in Infobase of current smoking prevalence for ages 12-64 from the "Estudionacional de drogas en la población general de Chile, 2000" report.

- 2000: we used overall estimates reported in Infobase of current smoking prevalence for ages 15-100 from the "Encuesta de calidad de vida y salud Chile 2000" survey.

- 2004: we used overall estimates reported in the infobase of current smoking prevalence for ages 12-64 from the "Estudionacional de drogas en la población general de Chile, 2000" report.

- 2006: we used overall estimates reported in Infobase of current smoking prevalence for ages 15-100 from the "EncuestaNacional de Salud, Chile 2006" survey.

Initiation:

- 1996:we used overall (for both sexes) estimates reported in Infobase of current smoking prevalence for ages 19-25 from the "Estudionacional de drogas en la población general de Chile, 1998" report.

- 1998: we used overall estimates reported in Infobase of current smoking prevalence for ages 19-25 from the "Estudionacional de drogas en la población general de Chile, 2000" report.

- 2000: we used estimates reported in Infobase of current smoking prevalence for ages 15-19 from the "Encuesta de calidad de vida y salud Chile 2000" survey. Overall estimates were computed by taking the average of the reported estimates for males and females.

- 2006:we used overall estimates reported in Infobase of current smoking prevalence for ages 20-24 from the "EncuestaNacional de Salud, Chile 2006" survey.

To convert these initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

Year	Prevalence
1994	40.5
1996	40.4
1997	40.5
1998	40.0
2004	38.5
2006	37.4

China

Adult Prevalence:
- 1998: Overall current smoker prevalence for 15-100 year olds was 28.9 percent (source: Infobase).

- 1996: Overall current smoker prevalence for 15-100 year olds was 35.34 percent (source: Infobase).

- 1993: Overall current smoker prevalence for 15-100 year olds was 32 percent (source: Infobase).

- 1984: Overall current smoker prevalence for 15-100 year olds was 33.8 percent (source: Infobase).

- 2010: Overall adult smoking prevalence was 28.1 percent (source: GATS)

Initiation:
- Death rate of 0.69 percent was adapted from 2005 data from China Statistical Yearbook, available at: http://www.stats.gov.cn/tjsj/ndsj/2006/indexeh.htm and CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html

- 2002 initiation rate was based on 15-24 age group's prevalence (source: Infobase) weighted by the (estimated) percent of 18 year olds in the total population in 2000, assuming that 15-19 year olds were uniformly distributed (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?q=china+datamart%5bPOP%5d&d=POP&f=tableCode%3a 22%3bcountryCode%3a156)

- 1996 initiation rate was based on the 15-19 age group (source: Infobase) weighted by the (estimated) proportion of 18 year olds in the total 2000 population, assuming that population was evenly distributed within the 15-19 age group (source: UNSD Demographic Statistics)

- 1984 initiation rate was based on 15-19 age group prevalence (source: Infobase) weighted by the (estimated) percent of 18 year olds in the total population in 1982, assuming that the population is evenly distributed within 15-19 age group (source: UNSD Demographic Statistics).

Summary Table:

Year	Prevalence
1998	28.9
1996	35.3
1993	32.0
1984	33.8
2010	28.1

Colombia

Prevalence Data:

- No nationally representative data on the prevalence of smoking in Colombia was available in the Infobase. As a result, the regional average prevalence rate of smoking for 2003 of 30.3 percent was used as a best estimate for the prevalence of current smoking in 2009. The regional average is calculated as the simple average of the prevalence rates for the following countries: Argentina (28.5 percent), Bolivia (29.6 percent), Brazil (21.7 percent), Chile (40.0 percent), Ecuador (16.5 percent), Paraguay (27.3 percent), Peru (31.0 percent), Uruguay (33.3 percent), and Venezuela (31.0 percent).

Summary Table:

Year	Prevalence
2003	30.3

Cuba

Adult Prevalence:

- 2001: II Encuesta nacional y provincial de factores de riesgo (FR) y enfermedades no transmisibles (ENT). Cuba, 2000-03, estimated the prevalence of daily cigarette smoking (tt.003) among 15 to 100 year old men and women to be 31.6 percent. This estimate was used as a best estimate for the prevalence of current smoking in 2009 (source: Infobase).

Summary Table:

Year	Prevalence
2001	31.6

Egypt

Adult Prevalence:

- 2005: Smoking prevalence for 18+ year olds was 29.9 percent (source: Infobase).

- 2009: Adult smoking prevalence was 19.4 percent (source: GATS)

Summary Table:

Year	Prevalence
2005	29.9
2009	19.4

France

Adult Prevalence:

- 1982, 1987, 1992:we used estimates reported in Infobaseofdailysmoking prevalence for ages 15-100 (for 1982) and 18-100 (for 1987, 1992) from the "Tobacco consumption 1970-1994 in the member states of the European Union and in Norway". The estimates for males and females were averaged using population weights derived from the Human Mortality Database. The overall daily smoking prevalence was then converted to current smoking prevalence by adding 5 percentage points (which is the average difference between current and daily prevalence in the other years for which data for both types of smoking are available).

- 2005:we used overall (for both sexes) estimates reported in Infobaseofcurrentsmoking prevalence for ages 18-100 from "Baromètre santé 2005" survey. The estimates for males and females were averaged using population weights derived from the Human Mortality Database.

Initiation:

- 1982, 1987, 1992:we used overall (for both sexes) estimates reported in Infobaseofdailysmoking prevalence for ages 15-24 (for 1982) and 18-24 (for 1987, 1992) from the "Tobacco consumption 1970-1994 in the member states of the European Union

and in Norway". The estimates for males and females were averaged using population weights derived from the Human Mortality Database.

- 2005:we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 15-19 and 20-24 from "Baromètre santé 2005" survey. We computed an overall estimate for both sexes in age group 15-24 using population weights derived from the Human Mortality Database.

To convert these initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

Year	Prevalence
1982	34.8
1987	36.5
1992	34.1
2005	29.9

Germany

Adult Prevalence:
- 1986, 1989:we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 25-69 form the "National Trends in Risk Factors for Cardiovascular Disease in Germany" report. The estimates for males and females were averaged using population weights derived from the Human Mortality Database for the year 1991.

- 1990:we used overall (for both sexes) estimates reported in Infobaseofcurrentsmoking prevalence for ages 25-39 from the "2003 Epidemiological Survey of Substance Abuse among adults in Germany " report.

- 1991:we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 25-69 form the "National Trends in Risk Factors for Cardiovascular Disease in Germany" report. The estimates for males and females were averaged using population weights derived from the Human Mortality Database.

- 1995:we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 10-100 from the "1995 Microcensus Germany".

- 1997:we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 18-59 from the "Population Survey on the Consumption of Psychoactive Substances in the German Adult Population, 1997" survey.

- 1999::we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 18-59 from the "Verbreitung der Herz-Kreislauf-RisikofaktorenHypercholesterinämie, Übergewicht, Hypertonie und Rauchen in der Bevölkerung" survey.

- 2000:we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 18-59 from the "Population Survey on the Consumption of Psychoactive Substances in the German Adult Population,2000" survey.

- 2003:we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 18-100 from the "TelefonischerGesundheitssurvey des Robert-Koch-InstitutszuchronischenKrankheiten und ihrenBedingungen" survey.

- 2005::we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 15-100 from the "Leben in Deutschland - Haushalte, Familien und Gesundheit, Ergebnisse des Mikrozensus 2005" survey.

Initiation:

- 1990, 1995: we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 18-24 from the "2003 Epidemiological Survey of Substance Abuse among Adults in Germany" report.

- 1993,1997,2001,2004: we used estimates reported in Infobaseofcurrentsmoking prevalence for ages 18-25 from the "Youth Drug Use in Germany, 2004" report.

To convert these initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

Year	Prevalence
1986	34.1
1989	35.5
1990	45.5
1991	33.6
1995	24.4
1997	35.0
1999	32.5
2000	34.8
2003	32.5
2005	27.2

Guinea

Adult Prevalence:

- 1998: Enquêtesur le tabagisme en Guinée by Le Bureau de la Représentation de l'OMS en Guinée, Le Ministère de la Santé estimated the prevalence of current cigarette

smoking (tt.003) to be 54.9 percent for 20 to 29 year old men and women, 63.4 percent for 30 to 39 year old men and women, 73.3 percent for 40 to 49 year old men and women, and 30.3 percent for 50 to 72 year old men and women (source: Infobase). Population data for 1998 from the UN Statistics Division was used to calculate a nationally representative prevalence of current tobaccos smoking for all 20 to 72 year old men and women (source: http://unstats.un.org/unsd/demographic/products/dyb/dybsets/1998%20DYB.pdf). This calculation revealed a prevalence estimate of 55.0 percent.

Initiation:

- 1998: Enquêtesur le tabagisme en Guinée by Le Bureau de la Représentation de l'OMS en Guinée, Le Ministère de la Santé estimated the prevalence of current cigarette smoking (tt.003) to be 43.7 percent for 11 to 28 year old men and women. This prevalence rate was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population (source: Infobase).

Summary Table:

Year	Prevalence
1998	55.0

India

Adult Prevalence:

- 1999: The National Family Health Survey 1998-99 for India by the International Institute for Population Science estimated the prevalence of current tobacco smoking (tt.003) for 15 to 100 year old men and women to be 16.2 percent (source: Infobase).

- 2006: The National Family Health Survey 2005-06 for India by the International Institute for Population Science estimated the prevalence of current tobacco smoking (tt.003) among 15 to 49 year old men to be 32.7 percent and among 15 to 49 year women to be 1.4 percent (source: Infobase). Data from the UN Statistics Division was used to determine the ratio of men to women in the population aged 15 to 49 and to calculate the prevalence of current tobacco smoking for both sexes (source: http://unstats.un.org/unsd/demographic/products/dyb/dyb2006/Table07.pdf). The calculated prevalence rate for 15 to 49 year old men and women was 17.6 percent.

- Data from the World Health Survey for India for 2003 by the World Health Organization (estimate of current tobacco smoking of 20.8 percent for 18 to 100 year old men and women; source: Infobase) was omitted from the analysis since the estimate did not fit the trend we observe for India.

- 2010: Adult smoking prevalence was 14.0 percent (source: GATS)

Initiation:

- 2007: The India Global School-Based Student Health Survey (GSHS) for 2007 estimated the prevalence of current cigarette smoking (tt.003) to be 1.2 percent for 13 to 15 year old

men and women (source: Infobase). This prevalence rate was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
1999	16.2
2006	17.6
2010	14.0

Indonesia

Adult Prevalence:

- 2001: Overall current smoker prevalence for 15-100 year olds was 33.8 percent (source: Infobase)

- 1995: Overall current smoker prevalence for 15-100 year olds was estimated at 36.1 percent by adjusting the 1995 daily smoker prevalence by the difference between daily and current smoking prevalence in 2001 (source: Infobase).

Initiation:

- The 2009 estimated crude death rate was 0.625 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/id.html).

- 2001 initiation rate was based on 15-24 age group's prevalence (source: Infobase) weighted by the (estimated) percent of 18 year olds in the total population in 1985 (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?d=POP&f=tableCode%3a22%3bcountryCode%3a360&c=2,3,5,7,9,11,13,14,15&s=_countryEnglishNameOrderBy:asc,refYear:desc,areaCode:asc&v=1)

Summary Table:

Year	Prevalence
2001	33.8
1995	36.1

Iran

Adult Prevalence:

- 2005: Overall current smoker prevalence for 15-64 year olds was 14.2 percent (source: Infobase).

Initiation:

- The 2009 estimated crude death rate was 0.572 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/ir.html).

- 2005 initiation rate based on 15-64 age group's prevalence (source: Infobase) weighted by percent share of 18 year olds of total population in 1985 (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?d=POP&f=tableCode%3a22%3bcountryCode%3a364&c=2,3,5,7,9,11,13,14,15&s=_countryEnglishNameOrderBy:asc,refYear:desc,areaCode:asc&v=1)

Summary Table:

Year	Prevalence
2005	14.2

Iraq

Adult Prevalence:

- 2005: The Iraq - Kurdistan Region Global Youth Tobacco Survey estimated the prevalence of current cigarette smoking (tt.003) to be 15.3 percent for 13 to 15 year old men and women (source: Infobase). This prevalence rate was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.

- 2006: The National Survey for non-communicable diseases risk factors in Iraq 2006 by the Ministry of Health and the Ministry of Planning estimated the prevalence of current tobacco smoking (tt.002) among 25 to 65 year old men and women to be 21.9 percent (source: Infobase).

Summary Table:

Year	Prevalence
2006	21.9

Italy

Adult Prevalence:

- 1994: we used estimates reported in Infobase of current smoking prevalence for ages 15-100 from the "Tobacco consumption 1970-1994 in the member states of the European Union and in Norway and Iceland" report. The estimates for males and females were averaged using population weights derived from the Human Mortality Database.

- 2000-2002, 2005: we used estimates reported in Infobase of current smoking prevalence for ages 14-100 from the "Fumatori in Italia" report.

Initiation

- 1987: we used estimates reported in Infobase of current smoking prevalence for ages 20-24 from the "Mean levels and distributions of some cardiovascular risk factors in Italy in the 1970's and the 1980'" report. The estimates for males and females were averaged using population weights derived from the Human Mortality Database.

- 2003, 2005: we used estimates reported in Infobase of current smoking prevalence for ages 20-24 from the "Fumatori in Italia" report.

To convert these initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

Year	Prevalence
1994	25.2
2000	24.1
2001	23.7
2002	23.7
2005	22.0

Japan

Adult Prevalence:

- we used estimates of current smoking prevalence for ages 20 and above from the National Nutrition Survey for the specified years. The estimates were provided to us by the Johns Hopkins team. Overall estimates were computed from male and female estimates using population weights derived from data from the Human Mortality Database.

Initiation:

- we used estimates of current smoking prevalence for ages 20-29 from the National Nutrition Survey for the specified years. The estimates were provided to us by the Johns Hopkins team. Overall estimates were computed from male and female estimates using population weights derived from data from the Human Mortality Database.

To convert these initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

Year	Prevalence
1986	33.0
1987	32.0
1988	32.0
1989	32.0
1990	31.0

1991	29.0
1994	26.0
1995	31.0
1996	30.0
1997	31.0
1998	30.0
2005	25.0
2006	24.0

Kenya

Adult Prevalence:
- We took the average of estimates of current smoking prevalence for the years 2003 and 2004. The 2003 estimate is for ages 20-54 and the 2004 estimate is for ages 18-100 and comes from the World Health Survey. Both estimates were reported in Infobase.

Initiation:
- We used estimates of current smoking prevalence in 2004 for ages 18-29 from the World Health Survey. To convert these initiation estimates to percentages of the entire population, we used population estimates from the United Nations Data Common Database (online at data.un.org).

Summary Table:

Year	Prevalence
2003	15.5
2004	13.7

Laos

Adult Prevalence:
- Infobase has no estimates for adult prevalence of current smoking in Buhtan. We used the estimates reported in the Tobacco Atlas- 3rd edition, 2009 for males and females. The overall estimate was derived by assuming that male to female ratio is 1.

Summary Table:

Year	Prevalence
2009	40.2

Malaysia

Adult Prevalence:
- 1986, 1996: we used overall estimates reported in Infobase of current smoking prevalence for ages 15-100 from the 2nd Health and Morbidity Survey

- 2001: we used overall estimates reported in Tobacco Atlas-2nd edition, 2002.

- 2003: we used overall estimates reported in Infobase of current smoking prevalence for ages 18-100 from the World Health Survey.

- 2006: we used overall estimates reported in Infobase of current smoking prevalence for ages 25-64 from Malaysia NCD Surveillance 2006.

Initiation:
- 2003: we used overall estimates reported in Infobase of current smoking prevalence for ages 18-29 from the World Health Survey. To convert this estimate to a percentage of the entire population, we used population estimates from the United Nations Data Common Database (online at data.un.org).

Table Summary:

Year	Prevalence
1986	21.5
1996	24.8
2001	26.0
2003	28.0
2006	26.0

Mexico

Adult Prevalence:
- 1988, 1993: we used overall estimates reported in Infobase of current smoking prevalence for ages 18-100 from the "Encuestanacional de adicciones 2002: tabaco, alcohol y otrasdrogas" report.

- 2000: we used overall estimates reported in Infobase of current smoking prevalence for ages 18-100 from the "EncuestaNacional de Salud 2000" survey.

- 2003: we used overall estimates reported in Infobase of current smoking prevalence for ages 18-100 from the World Health Survey.

- 2009: Adult smoking prevalence was 15.9 percent (source: GATS).

Initiation:
- 1988, 1993, 1998: we used overall estimates reported in Infobase of current smoking prevalence for ages 20-24 from the "Encuesta nacional de adicciones 2002: tabaco, alcohol y otrasdrogas" report.

- 2000: we used overall estimates reported in Infobase of current smoking prevalence for ages 20-29 from the "EncuestaNacional de Salud 2000" survey.

- 2003: we used overall estimates reported in Infobase of current smoking prevalence for ages 18-29 from the World Health Survey.

- 2006: we used overall estimates reported in Infobase of current smoking prevalence for ages 20-29 from the "EncuestaNacional de Salud 2006" survey.

To convert this estimate to a percentage of the entire population, we used population estimates from the US Census Bureau, International Database.

Summary Table:

Year	Prevalence
1988	30.0
1993	28.0
2000	22.3
2003	25.2
2009	15.9

Morocco

Adult Prevalence Selection:

- 2003: Overall current smoker prevalence for 18-100 was 15.9 percent (source: Infobase).

- 2000: Overall current smoker prevalence for 20-100 was 13.5 percent (source: Infobase).

- A simple average of these numbers was taken and entered in the model for 2003 smoking prevalence.

Initiation:

- The 2009 estimated crude death rate was 0.545 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/mo.html).

- 2003 initiation rate was based on 18-29 group prevalence (source: Infobase) weighted by percent of 18-29 year olds in total population in 2004 (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?q=morocco+datamart%5bPOP%5d&d=POP&f=tableCode%3a22%3bcountryCode%3a504)

Summary Table:

Year	Prevalence
2003	14.7

Mozambique

Adult Prevalence:

- 2004: The STEPS survey Mozambique report estimated the prevalence of all tobacco use (tt.001) among 25 to 64 year old men and women to be 24.3 percent (source: Infobase).

- 2005: The Mozambique STEPS survey estimated the prevalence of tobacco smoking (tt.002) among 25 to 64 year old men and women to be 18.7 percent (source: Infobase).

Initiation:

2003: The Mozambique Global Youth Tobacco Survey estimated the prevalence of current cigarette smoking (tt.003) among 13 to 15 year old men and women to be 3.7 percent in Gaza Inhambe and 4.2 percent in Maputo City (source: Infobase). The simple average of these two prevalence rates of 3.95 percent was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
2004	24.3
2005	18.7

Myanmar

Adult Prevalence:

- 2001: The Myanmar sentinel tobacco use prevalence study estimated the prevalence of current tobacco smoking (tt.002) to be 31.1 percent for 15 to 100 year old men and women (source: Infobase).

- 2003: The World Health Survey estimated the prevalence of current tobacco smoking (tt.002) to among 18 to 100 year old men and women to be 30.9 percent (source: Infobase).

    Initiation:

- 2003: The World Health Survey estimated the prevalence of current tobacco smoking (tt.002) among 18 to 29 year old men and women to be 22.6 percent (source: Infobase). This was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
2001	31.1
2003	30.9

Nepal

Adult Prevalence:
- 2006: Overall current smoking prevalence of 24.0 percent ,for 15-49 age group, was estimated by first estimating male prevalence by taking 2001 ratio of male to female prevalence (assuming that ratio is constant from 2001 to 2006) and then taking weighted

average of male and female prevalence (source: Infobase) using 2001 population distribution of men and women (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?q=nepal+datamart%5bPOP%5d&d=POP&f=tableCode%3a22%3bcountryCode%3a524)

- 2003: Overall current smoking prevalence for 18-100 age group was 25.8 percent (source: Infobase).

- 2000: Overall current smoking prevalence for 18-100 age group was 31.6 percent (source: Infobase).

Initiation:
- The estimated 2009 crude death rate was 0.697 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/np.html).

- 2003 initiation rate based on 18-29 group prevalence (source: Infobase) using the share of 18 year olds in the total population in 2001 (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?q=nepal+datamart%5bPOP%5d&d=POP&f=tableCode%3a22%3bcountryCode%3a524)

Summary Table:

Year	Prevalence
2006	24.0
2003	25.8
2000	31.6

Niger

Adult Prevalence:
- 1991: Overall smoking prevalence for 15+ age group was 35 percent (source: World Bank, HNPStats, available at: http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=225).

Initiation:
- The 2009 estimated crude death rate was 1.48 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/ng.html).

- 2001 initiation rate based on 13-15 age group prevalence (source: Infobase) weighted by percent of 15 year olds in total population (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?d=POP&f=tableCode%3a22%3bcountryCode%3a562&c=2,3,5,7,9,11,13,14,15&s=_countryEnglishNameOrderBy:asc,refYear:desc,areaCode:asc&v=1)

Summary Table:

Year	Prevalence
1991	35.0

Nigeria

Adult Prevalence:

- 2001: Overall current smoker prevalence was 9 percent (source: World Bank, available at: http://www1.worldbank.org/tobacco/pdf/country%20briefs/AfricaRegion.doc)

Initiation:

- The estimated 2009 crude death rate was 1.66 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html).

- 1990 initiation rate based on 15-24 age group prevalence (source: Infobase) weighted by the percent of 18 year olds in the total population in 1985 (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?d=POP&f=tableCode%3a22%3bcountryCode%3a566&c=2,3,5,7,9,11,13,14,15&s=_countryEnglishNameOrderBy:asc,refYear:desc,areaCode:asc&v=1)

Summary Table:

Year	Prevalence
2001	9.0

North Korea

Adult Prevalence:

- 2000 overall smoking prevalence for 15+ year olds was 42 percent (source: World Bank, HNPStats, available at: http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=225)

Summary Table:

Year	Prevalence
2009	42.0

Pakistan

Adult Prevalence:

- 2003: Overall current smoker prevalence for 18-100 year olds was 19.1 percent (source: Infobase).

- 1994: Overall current smoker prevalence of 21.5 percent for 15-100 year olds was estimated by taking a weighted average of rural and urban smoker prevalence rates (source: Infobase), using rural and urban population distribution in 2001 (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?d=POP&f=tableCode%3a22%3bcountryCode%3a586&c=2,3,5,7,9,11,13,14,15&s=_countryEnglishNameOrderBy:asc,refYear:desc,areaCode:asc&v=1).

Initiation:

- The 2009 estimated crude death rate was 0.768 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/pk.html)

- 2003 initiation rate was estimated using 18-29 age group's smoking prevalence (source: Infobase) weighted by the (estimated) percent of 18 year olds in the total 2003 population, assuming that the population was evenly distributed within 15-19 age group (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?q=pakistan+datamart%5bPOP%5d&d=POP&f=tableCode%3a22%3bcountryCode%3a586)

Summary Table:

Year	Prevalence
2003	19.1
1994	21.5

Papua New Guinea

Adult Prevalence:

Infobase has no estimates for adult prevalence of current smoking in Buhtan. We used the estimates reported in the Tobacco Atlas- 3rd edition, 2009.

Summary Table:

Year	Prevalence
2009	37.0

Peru

Adult Prevalence:

1. Infobase has no adult prevalence estimates for current smoking in Peru. Alternatively, we used the average of two estimates reported in the Tobacco Atlas-2nd and 3rd Editions. The overall estimates were computed for male and female prevalence estimates assuming population male to female ratio of 1.

Source	Prevalence
Atlas 2nd-Edition, 2002	28.6
Atlas 3rd-Edition, 2009	32.55

Philippines

Adult Prevalence:

- 1998: The Food and nutrition research institute 5th National Nutrition Survey by the Food and Nutrition Research Institute estimated the prevalence of current tobacco smoking (tt.002) among 20 to 100 year old men and women to be 33.0 percent (source: Infobase).
- 2003: The World Health Survey estimated the prevalence of current tobacco smoking (tt.002) among 18 to 100 year old men and women to be 34.7 percent (source: Infobase).

- 2009: Adult smoking prevalence was 28.3 percent (source: GATS).

Initiation:

- 2003: The Philippines Global School-Based Student Health Survey estimated the prevalence of current cigarette smoking (tt.003) among 16 to 18 year old men and women to be 19.7 percent (source: Infobase). This was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.

- 2007: The Philippines Global School-Based Student Health Survey estimated the prevalence of current cigarette smoking (tt.003) among 16 to 18 year old men and women to be 23.7 percent (source: Infobase). This was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
1998	33.0
2003	34.7
2009	28.3

Poland

Adult Prevalence:

We used overall estimates of current smoking prevalence for the specified years reported in Infobase for ages 16-100 from the "Palenietytonio w Polsce: Postawy, Nastepstwazdrowotne I profilanktyka" report.

2010: Adult smoking prevalence was 30.3 percent (source: GATS).

Initiation:

- We used overall estimates of current smoking prevalence for the specified years reported in Infobase for ages 20-29 from the "Palenietytonio w Polsce: Postawy, Nastepstwazdrowotne I profilanktyka" report. Overall estimates were computed from male and female estimates using population weights derived from data from the Human Mortality Database.

To convert these initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

Year	Prevalence
1990	41.4
1991	43.0
1992	37.0
1993	39.0
1994	38.7
1995	36.0
1997	33.9
2002	34.1
2010	30.3

Romania

Adult Prevalence:

- 2007: Overall current smoking prevalence for 15-59 year olds was 30 percent (source: Infobase).

- 2005: Overall current smoking prevalence for 15-64 year olds was 36.5 percent (source: Infobase).

- A simple average of the two points was taken and was inputted into the model for year 2007.

Initiation:

- The 2009 estimated crude death rate was 1.18 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/ro.html).

- 2007 initiation rate based on 15-24 age group prevalence weighted by the percent of 15-24 year olds in the total 2008 population (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?q=romania+datamart%5bPOP%5d&d=POP&f=tableCode%3a22%3bcountryCode%3a642)

Summary Table:

Year	Prevalence
2007	33.3

Russia

Adult Prevalence:

- 1992: The Russia Longitudinal Monitoring Survey 1992 estimated the prevalence of current tobacco smoking among men age 18 and older to be 57.4 percent and among women age 18 and older to be 6.9 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 29.6 percent assuming that 45 percent of the population was male and 55 percent of the population was female using data for 1996 (source: http://www.mortality.org/hmd/RUS/STATS/Population).

- 1993: The Russia Longitudinal Monitoring Survey 1993 estimated the prevalence of current tobacco smoking among men age 18 and older to be 60.8 percent and among women age 18 and older to be 7.7 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 31.6 percent assuming that 45 percent of the population was male and 55 percent of the population was female using data for 1996 (source: http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 1994: The Russia Longitudinal Monitoring Survey 1994 estimated the prevalence of current tobacco smoking among men age 18 and older to be 59.0 percent and among women age 18 and older to be 9.0 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 31.5 percent assuming that 45 percent of the population was male and 55 percent of the population was female using data for 1996 (source: http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 1995: The Russia Longitudinal Monitoring Survey 1995 estimated the prevalence of current tobacco smoking among men age 18 and older to be 61.3 percent and among women age 18 and older to be 9.1 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 32.6 percent assuming that 45 percent of the population was male and 55 percent of the population was female using data for 1996 (source: http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 1996: The Russia Longitudinal Monitoring Survey 1996 estimated the prevalence of current tobacco smoking among men age 18 and older to be 61.9 percent and among women age 18 and older to be 9.8 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 33.2 percent assuming that 45 percent of the population was male and 55 percent of

the population was female using data for 1996 (source:
http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 1998: The Russia Longitudinal Monitoring Survey 1998 estimated the prevalence of current tobacco smoking among men age 18 and older to be 61.0 percent and among women age 18 and older to be 10.5 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 33.2 percent assuming that 45 percent of the population was male and 55 percent of the population was female using data for 1996 (source: http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 2000: The Russia Longitudinal Monitoring Survey 2000 estimated the prevalence of current tobacco smoking among men age 18 and older to be 61.3 percent and among women age 18 and older to be 11.5 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 34.9 percent assuming that 47 percent of the population was male and 53 percent of the population was female using data for 2001 (source: http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 2001: The Russia Longitudinal Monitoring Survey 2001 estimated the prevalence of current tobacco smoking among men age 18 and older to be 62.2 percent and among women age 18 and older to be 13.9 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 34.9 percent assuming that 47 percent of the population was male and 53 percent of the population was female using data for 2001 (source: http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 2002: The Russia Longitudinal Monitoring Survey 2002 estimated the prevalence of current tobacco smoking among men age 18 and older to be 63.0 percent and among women age 18 and older to be 13.8 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 36.9 percent assuming that 47 percent of the population was male and 53 percent of the population was female using data for 2001 (source: http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 2003: The Russia Longitudinal Monitoring Survey 2003 estimated the prevalence of current tobacco smoking among men age 18 and older to be 62.6 percent and among women age 18 and older to be 14.8 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 37.3 percent assuming that 47 percent of the population was male and 53 percent of the population was female using data for 2001 (source: http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 2004: The Russia Longitudinal Monitoring Survey 2004 estimated the prevalence of current tobacco smoking among men age 18 and older to be 61.3 percent and among women age 18 and older to be 15.0 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 and older was estimated to be 36.8 percent assuming that 47 percent of the population was male and 53 percent of

the population was female using data for 2001 (source:
http://www.mortality.org/hmd/RUS/STATS/Population.txt).

- 2009: Adult smoking prevalence was 39.1 percent (source: GATS).

Initiation:

- 1992: The Russia Longitudinal Monitoring Survey 1992 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 61.6 percent and among women age 18 to 24 to be 10.1 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 36.1 percent assuming that 50.5 percent of the 18-year olds was male and 49.5 percent was female (source: World Health Organization). This prevalence rate was used as an estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

- 1993: The Russia Longitudinal Monitoring Survey 1993 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 64.3 percent and among women age 18 to 24 to be 18.1 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 41.5 percent assuming that 50.7 percent of the 18-year olds was male and 49.3 percent was female (source: World Health Organization). This prevalence rate was used as an estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

- 1994: The Russia Longitudinal Monitoring Survey 1994 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 63.1 percent and among women age 18 to 24 to be 20.0 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 42.5 percent assuming that 50.7 percent of the 18-year olds was male and 49.3 percent was female (source: World Health Organization). This prevalence rate was used as an estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

- 1995: The Russia Longitudinal Monitoring Survey 1995 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 74.3 percent and among women age 18 to 24 to be 18.1 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 46.8 percent assuming that 50.8 percent of the 18-year olds was male and 49.2 percent was female (source: World Health Organization). This prevalence rate was used as an estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

- 1996: The Russia Longitudinal Monitoring Survey 1996 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 64.3 percent and among women age 18 to 24 to be 18.1 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 41.6 percent assuming that 50.7 percent of the 18-year olds was male and 49.3 percent was female (source: World Health Organization). This prevalence rate was used as an

estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

- 1998: The Russia Longitudinal Monitoring Survey 1998 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 61.0 percent and among women age 18 to 24 to be 18.9 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 40.2 percent assuming that 50.7 percent of the 18-year olds was male and 49.3 percent was female (source: World Health Organization). This prevalence rate was used as an estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

- 2000: The Russia Longitudinal Monitoring Survey 2000 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 62.6 percent and among women age 18 to 24 to be 18.1 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 40.6 percent assuming that 50.8 percent of the 18-year olds was male and 49.2 percent was female (source: World Health Organization). This prevalence rate was used as an estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

- 2001: The Russia Longitudinal Monitoring Survey 2001 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 62.1 percent and among women age 18 to 24 to be 22.3 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 42.4 percent assuming that 51.0 percent of the 18-year olds was male and 49.0 percent was female (source: World Health Organization). This prevalence rate was used as an estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

- 2002: The Russia Longitudinal Monitoring Survey 2002 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 63.8 percent and among women age 18 to 24 to be 21.4 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 42.8 percent assuming that 51.0 percent of the 18-year olds was male and 49.0 percent was female (source: World Health Organization). This prevalence rate was used as an estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

- 2003: The Russia Longitudinal Monitoring Survey 2003 estimated the prevalence of current tobacco smoking among men age 18 to 24 to be 63.8 percent and among women age 18 to 24 to be 23.1 percent (source: Hopkins database). The prevalence of current tobacco smoking among both men and women age 18 to 24 was estimated to be 43.7 percent assuming that 50.7 percent of the 18-year olds was male and 49.3 percent was female (source: World Health Organization). This prevalence rate was used as an estimate of current tobacco smoking among 18 year old men and women in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
1992	29.6
1993	31.6
1994	31.5
1995	32.6
1996	33.2
1998	33.2
2000	34.9
2001	36.6
2002	36.9
2003	37.3
2004	36.8
2009	39.1

Saudi Arabia

Adult Prevalence:

- 1993: In their article "Prevalence and determinants of smoking in three regions of Saudi Arabia", Jarallah and colleagues (1999) estimate the prevalence of daily smoking among 15 to 100 year old men and women to be 11.6 percent (source: Infobase).
- 1993: In their article "Prevalence and determinants of smoking in three regions of Saudi Arabia", Jarallah and colleagues (1999) estimate the prevalence of daily smoking among 15 to 20 year old men and women to be 15.0 percent (source: Infobase). This was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.
- 2000: The National cross-sectional study on coronary artery disease risk factors in Saudi Arabia (the CADIS study) by the Saudi Heart Association estimated the prevalence of current tobacco smoking (tt.002) among 30 to 100 year old men and women to be 12.8 percent (source: Infobase).

Summary Table:

Year	Prevalence
1993	11.6
2000	12.8

South Africa

Adult Prevalence:

- 1995: In their article "A comparison of the effects of South Africa's first tobacco control legislation on adult South Africans' smoking status, their knowledge of smoking-related diseases and perceptions regarding this legislation: February 1995- October 1996", Meyer-Weitz, Reddy, and Levine (1997) estimate the prevalence of daily tobacco smoking among 18 to 100 year old men and women to be 34.0 percent (source: Infobase).

This estimate was increased by 5 percentage points in order to obtain an estimate of the prevalence of current tobacco smoking.

- 1996: In their article "A comparison of the effects of South Africa's first tobacco control legislation on adult South Africans' smoking status, their knowledge of smoking-related diseases and perceptions regarding this legislation: February 1995- October 1996", Meyer-Weitz, Reddy, and Levine (1997) estimate the prevalence of daily tobacco smoking among 18 to 100 year old men and women to be 31.0 percent (source: Infobase). This estimate was increased by 5 percentage points in order to obtain an estimate of the prevalence of current tobacco smoking.

- 1998: The South Africa Demographic Health Survey 1998 by the Department of Health estimated the prevalence of daily tobacco smoking (tt.002) for 15 to 100 year old men to be 36.7 percent and for 15 to 100 year old women to be 9.4 percent (source: Infobase). Population data from the UN Statistics Division for 1996 was used to calculate an overall prevalence of daily tobacco smoking among men and women of 22.3 percent (source: http://unstats.un.org/unsd/demographic/products/dyb/dyb2005/Table07.pdf). This estimate was increased by 5 percentage points in order to obtain an estimate of the prevalence of current tobacco smoking.

- 2003: The World Health Survey estimated the prevalence of daily tobacco smoking among 18 to 100 year old men and women to be 17.1 percent (source: Infobase). This estimate was increased by 5 percentage points in order to obtain an estimate of the prevalence of current tobacco smoking. However,

- 2004: The South Africa Demographic Health Survey 2003 by the Department of Health estimated the prevalence of daily tobacco smoking (tt.002) among 15 to 100 year old men to be 31.2 percent and among 15 to 100 year old women to be 8.4 percent (source: Infobase). Population data from the UN Statistics Division for 2006 was used to calculate an overall prevalence of daily tobacco smoking among men and women of 19.5 percent (source: http://unstats.un.org/unsd/demographic/products/dyb/dyb2006/Table07.pdf). This estimate was increased by 5 percentage points in order to obtain an estimate of the prevalence of current tobacco smoking.

Initiation:

- 2003: The South Africa GYTS estimated the prevalence of current cigarette smoking among 13 to 15 year old men and women to be 23.0 percent (source: Infobase). This was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
1995	34.0
1996	31.0
1998	22.3

2003	17.1
2004	19.5

South Korea

Adult Prevalence:

- 2005: Overall current smoker prevalence for 20-100 year olds was 29.1 percent (source: Infobase)

- 2001: Overall current smoker prevalence for 20-100 year olds was 30.4 percent (source: Infobase).

- 1995: Overall current smoker prevalence for 15-69 year olds was 33.0 percent (source: Infobase).

- 1989: Overall current smoker prevalence for 15-100 year olds was estimated by taking several weighted averages. First, overall male and female prevalence (source: Infobase) was estimated by taking urban and rural rates for each gender and weighting them by the 1990 urban/rural distribution for each gender (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?d=POP&f=tableCode%3a22%3bcountryCode%3a410&c=2,3,5,7,9,11,13,14,15&s=_countryEnglishNameOrderBy:asc,refYear:desc,areaCode:asc&v=1) to create prevalence rates for males and females. These rates were then weighted by the 1990 distribution of men and women (source: UNSD Demographic Statistics) to create an overall prevalence rate.

Initiation:

- The estimated 2009 crude death rate was 0.594 percent (source: CIA, The World Factbook , available at: https://www.cia.gov/library/publications/the-world-factbook/geos/ks.html).

- 2001 initiation rate was based on 20-29 age group prevalence (source: Infobase) weighted by percent of 20 year olds in the total 2000 population (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?d=POP&f=tableCode%3a22%3bcountryCode%3a410&c=2,3,5,7,9,11,13,14,15&s=_countryEnglishNameOrderBy:asc,refYear:desc,areaCode:asc&v=1).

Summary Table:

Year	Prevalence
2005	29.1
2001	30.4
1995	33.0
1989	36.4

Spain

Adult Prevalence:

- 2003: The smoking prevalence was 33.2 percent (source: Infobase).

- 2001: The current smoking prevalence for 16-100 year olds was 36.1 percent, which was the 2001 daily smoking rate adjusted upwards by the difference between daily and current prevalence in 2003 (source: Infobase).

  - The 2001 daily smoker data was estimated by weighting the male and female prevalence rates (source: Infobase) by percent of men and women in the total 2001 population (source: Mortality Database, available at: http://www.mortality.org/hmd/ESP/STATS/Population.txt) .

- 1999: The smoking prevalence was 37.3 percent (source: Infobase).

- 1997: The smoking prevalence was 36.0 percent (source: National Health Study of Spain).

Initiation:

- The estimated 2009 crude death rate was 0.999 percent (source: CIA, The World Factbook, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/sp.html).

- 2003 initiation rate based on 18-29 current smoker prevalence weighted by the (estimated) percent of 18 year olds in the total population in 2007, assuming that the population was evenly distributed in the 15-19 age group (source: UNSD Demographic Statistics, available at: http://data.un.org/Data.aspx?q=spain+datamart%5bPOP%5d&d=POP&f=tableCode%3a22%3bcountryCode%3a724

Summary Table:

Year	Prevalence
2003	33.2
2001	36.1
1999	37.3
1997	36.0

Sri Lanka

Adult Prevalence Data:

- 2003: The World Health Survey estimated the prevalence of current tobacco smoking among 18 to 100 year old men and women to be 21.6 percent (source: Infobase).

Initiation:

- 1999: The Sri Lanka Global Youth Tobacco Survey estimated the prevalence of current cigarette smoking (tt.003) among 13 to 15 year men and women to be 4.5 percent (source: Infobase). This was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
2003	21.6

Timor

Adult Prevalence:

- No nationally representative for overall adult smoking) in the Infobase

- We used estimates from the Tobacco Atals- 2nd Edition, 2002.

Summary Table:

Year	Prevalence
2009	33.0

Turkey

Adult Prevalence:

- 1993: we used estimates reported in Infobase of current smoking prevalence in females for ages 15-49 from the Turkish Demographic and Health Survey 1993. To estimate prevalence in males of the same age, we used the male to female prevalence ratio derived from the 2003 World Health Survey. Overall estimates were computed from estimates for males and females using 1990 population data from the Turkish Statistical Institute (online at: www.turkstat.gov.tr).

- 2003: we used overall estimates reported in Infobase of current smoking prevalence for ages 18-100 from the World Health Survey.

- 2008: Adult smoking prevalence was 31.2 percent (source: GATS).

Initiation:

- 2003: we used overall estimates reported in Infobase of current smoking prevalence for ages 18-29 from the World Health Survey.

To convert this initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

year	prevalence
1993	33.6
2003	35.0
2008	31.2

Uganda

Adult Prevalence:

- No nationally representative for overall adult smoking) in the Infobase

- We used estimates from the Tobacco Atals- 2nd Edition, 2002.

Summary Table:

Year	Prevalence
2009	34.5

Ukraine

Adult Prevalence:

- Infobase has three surveys that report estimates of current smoking prevalence in adults. The estimates are for the years 2000, 2003, and 2005. However, the estimates were drastically different and are unlikely to represent actual trends over this short period of time. To minimize error, we chose to use a simple average of the three estimates to represent prevalence of current smoking in Ukraine.

- 2010: Adult smoking prevalence was 28.8 percent.

Initiation:

- Similarly, we used the average of the three reported estimates in Infobase for ages 18-29. To convert this initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

year	prevalence
2000	31.0

2003	30.0
2005	41.0
Average	33.9
2010	28.8

United Kingdom

Adult Prevalence:

- 1996: The Health Survey for England by the Department of Health estimated the prevalence of current cigarette smoking (tt.003) among 16 to 100 year old men to be 30.0 percent and among 16 to 100 year old women to be 27.0 percent (source: Infobase). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 28.4 percent assuming that 48 percent of the population was male and 52 percent of the population was female using data for 1996 (source: http://www.mortality.org).

- 1997: The Health Survey for England by the Department of Health estimated the prevalence of current cigarette smoking (tt.003) among 16 to 100 year old men to be 29.0 percent and among 16 to 100 year old women to be 27.0 percent (source: Infobase). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 28.0 percent assuming that 48 percent of the population was male and 52 percent of the population was female using data for 1997 (source: http://www.mortality.org).

- 1998: The Health Survey for England by the Department of Health estimated the prevalence of current cigarette smoking (tt.003) among 16 to 100 year old men to be 28.0 percent and among 16 to 100 year old women to be 27.0 percent (source: Infobase). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 27.5 percent assuming that 48 percent of the population was male and 52 percent of the population was female using data for 1998 (source: http://www.mortality.org).

- 1999: The Health Survey for England by the Department of Health estimated the prevalence of current cigarette smoking (tt.003) among 16 to 100 year old men to be 27.0 percent and among 16 to 100 year old women to be 26.0 percent (source: Infobase). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 26.5 percent assuming that 48.1 percent of the population was male and 51.9 percent of the population was female using data for 1999 (source: http://www.mortality.org).

- 2000: The Health Survey for England by the Department of Health estimated the prevalence of current cigarette smoking (tt.003) among 16 to 100 year old men to be 28.0 percent and among 16 to 100 year old women to be 25.0 percent (source: Infobase). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 26.4 percent assuming that 48.1 percent of the population was male

and 51.9 percent of the population was female using data for 2000 (source: http://www.mortality.org).

- 2001: The Health Survey for England by the Department of Health estimated the prevalence of current cigarette smoking (tt.003) among 16 to 100 year old men to be 26.0 percent and among 16 to 100 year old women to be 25.0 percent (source: Infobase). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 25.5 percent assuming that 48.2 percent of the population was male and 51.9 percent of the population was female using data for 2001 (source: http://www.mortality.org).

- 2002: The Health Survey for England by the Department of Health estimated the prevalence of current cigarette smoking (tt.003) among 16 to 100 year old men to be 27.0 percent and among 16 to 100 year old women to be 26.0 percent (source: Infobase). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 26.5 percent assuming that 48.3 percent of the population was male and 51.7 percent of the population was female using data for 2002 (source: http://www.mortality.org).

- 2004: The General Household Survey 2004 estimated the prevalence of current cigarette smoking among men aged 16 and older to be 26.0 percent and among women aged 16 and older to be 23.0 percent (source: Hopkins database). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 24.5 percent.

- 2005: The General Household Survey 2005 estimated the prevalence of current cigarette smoking among men aged 16 and older to be 25.0 percent and among women aged 16 and older to be 23.0 percent (source: Hopkins database). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 24.0 percent.

- 2006: The General Household Survey 2006 estimated the prevalence of current cigarette smoking among men aged 16 and older to be 23.0 percent and among women aged 16 and older to be 21.0 percent (source: Hopkins database). The prevalence of current cigarette smoking among both men and women age 16 and older was estimated to be 22.0 percent.

Initiation:
- 1974: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 40.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1978: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 34.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1982: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 30.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1984: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 31.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1986: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 30.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1988: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 28.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1990: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 30.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1992: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 27.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1994: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 27.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1996: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 29.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 1998: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 31.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 2000: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old

men and women to be 29.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 2001: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 28.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

- 2002: The General Household Survey-Great Britain by the United Kingdom Department of Health estimated the prevalence of daily cigarette smoking among 16 to 19 year old men and women to be 25.0 percent (source: Infobase). This prevalence rate was used as an estimate in the calculation of the initiation rate for the population.

Summary Table:

Year	Prevalence
1996	28.4
1997	28.0
1998	27.5
1999	26.5
2000	26.4
2001	25.5
2002	26.5
2004	24.5
2005	24.0
2006	22.0

United Republic of Tanzania

- Infobase has no estimates for Tanzania that are derived from nationally representative surveys. The database contains estimates from multiple subnational surveys conducted in the period from 1987 to 1993. We used an average of those estimates and assumed the prevalence remained the same until 2009.

year	prevalence
2009	11.1

USA

Adult Prevalence:

- We used overall estimates of current smoking prevalence for the specified years reported in Infobase for ages 18-100 from the National Health Interview Survey.

Initiation:

- We used overall estimates of current smoking prevalence for the specified years reported in Infobase for ages 18-24 from the National Health Interview Survey. To convert this initiation estimates to percentages of the entire population, we used population estimates from the Human Mortality Database.

Summary Table:

year	prevalence
1983	31.9
1985	24.1
1990	25.3
1991	23.1
1992	22.2
1993	22.6
1994	22.7
1995	24.6
1996	23.4
1997	24.7
1998	24.1
1999	23.3
2000	23.1
2001	22.7
2002	23.0
2003	21.6
2005	20.9

Venezuela

Prevalence Data Source:

- 1996: Overall current smoke prevalence for 15+ year olds was 31 percent (source: World Bank, HNPStats, available at: http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=225).

Summary Table:

Year	Prevalence
1996	31.0

Vietnam

Adult Prevalence:

- 1995: The publication "Vietnam: a tobacco epidemic in the making- a tobacco use prevalence survey and analysis of the economic barriers to tobacco control" by the National Center for Human and Social Sciences estimated the prevalence of current tobacco smoking among 18 to 100 year old men and women to be 37.6 percent (source: Infobase).

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- 2003: The World Health Survey estimated the prevalence of current tobacco smoking among 18 to 100 year old men and women to be 24.8 percent (source: Infobase).

Initiation:

- 2002: In their article "An assessment of tobacco use in Vietnam: result of the national health survey 2001-2002", Khoa, Kinh, Lam, Hai, Thu, and Khang (2002) estimated the prevalence of tobacco smoking among 15 to 24 year old men and women to be 31.6 and 0.6 percent, respectively (source: Infobase). Population data from the UN Statistics Division for 1999 was used to calculate an overall prevalence of 15.8 percent among men and women. This was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.
- 2003: The World Health Survey estimated the prevalence of current tobacco smoking among 18 to 29 year old men and women to be 19.6 percent (source: Infobase). This was used as an estimate of current tobacco smoking in the calculation of the initiation rate for the population.
- 2010: Adult smoking prevalence was 19.9 percent (source: GATS).

Summary Table:

Year	Prevalence
1995	37.6
2003	24.8
2010	19.9

Yemen

Adult Prevalence:

- Infobase has no adult prevalence estimates for current smoking in Peru. Alternatively, we used estimates reported in the Tobacco Atlas-3rd edition. Overall estimates were derived from estimates for males and females assuming a population male to female ratio of 1.

Summary Table:

year	prevalence
2009	53.0

TOBACCO CONTROL

Global smoking prevalence set to fall only marginally by 2030 without concerted action

But prevalence could be as low as 13% if WHO measures adopted

The global prevalence of cigarette smoking among adults is set to fall by just 1.7 percentage points by 2030 if governments do not do more to intervene, finds research published online in ***Tobacco Control.***

But if World Health Organization (WHO) measures are adopted, global prevalence would fall from just under 24% in 2010 to just over 13% by 2030, predict the researchers.

Smoking kills more than 5 million people every year around the globe, which is more than the death toll from HIV/AIDS, TB, and malaria combined.

In 2003, the World Health Assembly - the annual meeting of the member countries of the WHO - adopted a treaty to curb the supply and demand of tobacco products.

Five years later, the WHO developed a comprehensive package of six measures to help those countries make good on their promises, known as MPOWER.

These were: tobacco use monitoring; protection from second hand exposure to tobacco smoke; help to quit; warnings about the dangers of tobacco; enforcement of tobacco advertising/promotion and sponsorship bans; and tax hikes on tobacco products.

The researchers wanted to know what impact adoption of MPOWER would have on the global prevalence of smoking among adults over the next two decades, and conversely, what would happen if governments did nothing.

They used WHO data to estimate the global prevalence of smoking among adults based on the 60 countries that account for 90% of the world's smokers and 85% of the global population.

Countries which contribute the most to the global smoking tally include China (28%), India (11%), Indonesia (4.8%), USA (4.7%), and the Russian Federation (4%). Germany, Turkey, Brazil, Pakistan and Bangladesh all contribute 1.5-1.9%.

In total, the global smoking prevalence was estimated at just under 24% (around 794 million smokers) in 2010.

Their calculations showed that this would fall to just under 23% in 2020 and to 22% in 2030 without any further government action.

Countries in Europe would remain top of the league, with just under 30% of the world's smokers by 2030, while countries in the African region would show the fastest growth from just under 16% of the world's smokers in 2010 to just under 22% in 2030.

But if MPOWER measures were adopted everywhere, the global prevalence of smoking would fall to 15.4% in 2020 and to just over 13% by 2030.

And the largest fall in the proportion of the world's smokers would be in European countries, where this would almost halve to just over 15% by 2030, estimate the authors.

They caution that their figures should not be taken as forecasts, but as an indication of the scale of what could be achieved.

And they conclude: "If we assume that MPOWER strategies have similar effects on other tobacco product use, the reduction in global tobacco consumption could be much greater. As approximately half of lifetime smokers die of tobacco related diseases, implementation of MPOWER would prevent many millions of premature tobacco related deaths."