# A cross-country comparison of secondhand smoke exposure among adults: findings from the Global Adult Tobacco Survey (GATS) 

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#### Abstract

Objective-Exposure to secondhand smoke (SHS) from burning tobacco products causes disease and premature death among non-smoking adults and children. The objective of this study was to determine the nature, extent and demographic correlates of SHS exposure among adults in lowand middle-income countries with a high burden of tobacco use.

Methods-Data were obtained from the Global Adult Tobacco Survey (GATS), a nationally representative household survey of individuals 15 years of age or older. Interviews were conducted during 2008-2010 in Bangladesh, Brazil, China, Egypt, India, Mexico, the Philippines, Poland, Russia, Thailand, Turkey, Ukraine, Uruguay and Vietnam. Descriptive statistics were used to determine the prevalence and correlates of SHS exposure in homes, workplaces, government buildings, restaurants, public transportation and healthcare facilities.

Results—Exposure to SHS in the home ranged from 17.3\% (Mexico) to $73.1 \%$ (Vietnam). Among those who work in an indoor area outside the home, SHS exposure in the workplace ranged from $16.5 \%$ (Uruguay) to $63.3 \%$ (China). Exposure to SHS ranged from $6.9 \%$ (Uruguay) to $72.7 \%$ (Egypt) in government buildings, $4.4 \%$ (Uruguay) to $88.5 \%$ (China) in restaurants, $5.4 \%$


[^0](Uruguay) to $79.6 \%$ (Egypt) on public transportation, and 3.8\% (Uruguay) to 49.2\% (Egypt) in healthcare facilities.

Conclusions-A large proportion of adults living in low-and middle-income countries are exposed to SHS in their homes, workplaces, and other public places. Countries can enact and enforce legislation requiring $100 \%$ smoke-free public places and workplaces, and can also conduct educational initiatives to reduce SHS exposure in homes.

## Introduction

Secondhand smoke (SHS) is the combination of smoke emitted from the burning end of a cigarette or other smoked tobacco products and the smoke exhaled from the lungs of smokers. ${ }^{12}$ SHS is involuntarily inhaled by non-smokers, can linger in the air for hours after smoked tobacco products have been extinguished, and contains at least 250 chemicals which are known to be toxic to humans. ${ }^{3}$ The International Agency for Research on Cancer, the WHO and the US Surgeon General have all concluded that exposure to SHS causes disease and premature death among non-smokers. ${ }^{24}$

Article 8 of the WHO Framework Convention on Tobacco Control (FCTC) calls on ratifying nations to adopt measures that provide universal protection from SHS. ${ }^{5}$ As a result, governments worldwide are increasingly implementing smoke-free laws that prohibit smoking in all indoor public places and workplaces, including restaurants and bars. ${ }^{5}$ In 2004, an estimated $40 \%$ of children, $33 \%$ of non-smoking men, and $35 \%$ of non-smoking women worldwide were exposed to SHS. ${ }^{6}$ This exposure is estimated to have caused a total of 602300 deaths and 10.9 million lost disability-adjusted life years (DALYs). ${ }^{6}$

Few studies have examined cross-country variations in population-level SHS exposure. ${ }^{7-10}$ Data from the 1999-2005 Global Youth Tobacco Survey, which was comprised of students aged 13 years to 15 years old from 132 different countries, found that nearly $56 \%$ of respondents were exposed to SHS in any public place, with prevalence ranging from $46.3 \%$ in the African and eastern Mediterranean regions to $84.8 \%$ in the European region. ${ }^{7}$ Similar variation was observed with regard to SHS exposure in the home, with prevalence ranging from $30.4 \%$ in the African region to $78.0 \%$ in the European region. Data from the 20052009 Global Health Professions Student Survey also show cross-country variations in SHS exposure in both public places and the home among medical, dental and nursing students from nearly 50 countries. ${ }^{8-10}$ However, the extent of SHS exposure among the general population of adults, particularly in low- and middle-income countries, is less certain.

For the first time, the Global Adult Tobacco Survey (GATS) provides nationally representative and comparable estimates of SHS exposure among adults in low- and middleincome countries. A better understanding of the nature and extent of SHS exposure can help inform the development and/or refinement of national smoke-free policies. The present study utilises GATS data to assess the self-reported prevalence of SHS exposure in homes, workplaces, government buildings, restaurants, public transportation and healthcare facilities among nationally representative samples of adults from Bangladesh, Brazil, China, Egypt, India, Mexico, Poland, the Philippines, Russia, Thailand, Turkey, Ukraine, Uruguay and Vietnam.

## Methods

## GATS

GATS is a nationally representative household survey designed to monitor key tobacco control indicators. ${ }^{11}$ During 2008-2010, GATS was conducted in each of the following 14 countries: Bangladesh (2009; sample size ( $n$ )=9629), Brazil (2008; n=39 425), China (2010; n=13 354), Egypt (2009; n=20 924), India (2009-2010; n=69 296), Mexico (2009; n=13 617), the Philippines (2009; n=9701), Poland (2009-2010; n=7840), Russia (2009; n=11 406), Thailand (2009; n=20 566), Turkey (2008; n=9030), Ukraine (2010; n=8158), Uruguay (2009; n=5581), and Vietnam (2010; n=9925).

The target population of GATS includes all non-institutionalised men and women 15 years of age or older who consider the country to be their primary place of residence. In each country, a multistage cluster sample design was employed, with households selected proportional to population size. At each address in the sample, field interviewers administered the household questionnaire using an electronic data collection device to determine household eligibility and to identify a list of all household members. Once the roster of eligible household members was identified, one person was randomly selected to complete the individual questionnaire, which asks questions about background characteristics, tobacco smoking, smokeless tobacco use, cessation, SHS exposure, tobacco purchase patterns and price, exposure to pro- and antitobacco media, and knowledge, attitudes and perceptions about tobacco. Interviews were conducted privately. In countries where culturally appropriate (ie, Bangladesh, Egypt, and India), same-sex interviews were conducted. Overall response rates for GATS ranged from $65.1 \%$ in Poland to $97.7 \%$ in Russia. ${ }^{12}$

## Measures

SHS exposure in the home-Exposure to SHS in the home was assessed among all respondents within each country using the question, 'How often does anyone smoke inside your home? Would you say daily, weekly, monthly, less than monthly, or never?' Respondents who indicated 'daily', 'weekly', or 'monthly' were classified as exposed to SHS in the home.

SHS exposure in the workplace-Exposure to SHS in the workplace was assessed among respondents within each country who reported working outside the home, either indoors or both indoors and outdoors, using the question, 'During the past 30 days, did anyone smoke in indoor areas where you work?' Respondents who indicated 'yes' were classified as exposed to SHS in the workplace.

SHS exposure in other public places-GATS questionnaire contains separate questions on SHS exposure in four public places: government buildings, healthcare facilities, public transportation and restaurants. Respondents were first asked whether they had visited each location in the past 30 days. Among those who indicated 'yes', exposure to SHS was assessed using the following questions, 'Did anyone smoke inside of any (government buildings or government offices/healthcare facilities/public transportation/
restaurants) that you (visited/used) during the past 30 days?' Respondents who indicated 'yes' were classified as exposed to SHS in each public place. In China, exposure in healthcare facilities was assessed separately for three different facility types, including 'private or village clinic', 'township or community health services centre', and 'any other healthcare facility'. Respondents who indicated 'yes' to any one of these three questions were classified as exposed to SHS in a healthcare facility.

Respondent characteristics-Smoking status was determined using the question, 'Do you currently smoke tobacco on a daily basis, less than daily, or not at all?' Respondents who indicated 'not at all' were classified as non-smokers, while those who indicated 'daily' or 'less than daily' were classified as smokers. Sociodemographic characteristics assessed within each country included sex (male or female) and age (15-24, 25-64 and $\Varangle 65$ years).

## Data analysis

All estimates and 95\% CIs were calculated on weighted data using SPSS V.18, which estimated variances while accounting for the clustered sample design. For each country, prevalence of SHS exposure was calculated overall and among non-smokers by age and sex when sample size permitted. Differences in response estimates were considered statistically significant if $95 \%$ CIs did not overlap. Estimates were not presented when the sample size for any subpopulation was less than 25 cases.

## Results

## SHS exposure in the home

Among all respondents, exposure to SHS in the home was $54.9 \%$ in Bangladesh, $27.9 \%$ in Brazil, $67.3 \%$ in China, $62.5 \%$ in Egypt, $40.0 \%$ in India, $17.3 \%$ in Mexico, $54.4 \%$ in the Philippines, $44.2 \%$ in Poland, $34.7 \%$ in Russia, $33.2 \%$ in Thailand, $56.3 \%$ in Turkey, $23.5 \%$ in Ukraine, $34.0 \%$ in Uruguay, and $73.1 \%$ in Vietnam (data not shown). By sex, home SHS exposure ranged between $17.2 \%$ (Mexico) and $77.2 \%$ (Vietnam) among males, and between $17.4 \%$ (Mexico) and $69.2 \%$ (Vietnam) among females. In six out of the 14 countries, SHS exposure in the home was significantly greater among males than females (Bangladesh, Brazil, Philippines, Thailand, Uruguay and Vietnam). Exposure generally decreased with increasing age, with both males and females $\Varangle 65$ years of age showing the lowest prevalence (table 1).

Among non-smokers, SHS exposure in the home was $48.4 \%$ in Bangladesh, 20.0\% in Brazil, $58.3 \%$ in China, $57.4 \%$ in Egypt, $34.7 \%$ in India, $14.1 \%$ in Mexico, $44.8 \%$ in the Philippines, $28.0 \%$ in Poland, $21.5 \%$ in Russia, $25.3 \%$ in Thailand, $47.5 \%$ in Turkey, $14.6 \%$ in Ukraine, $23.9 \%$ in Uruguay and $67.6 \%$ in Vietnam (figure 1). By sex, non-smokers' exposure to SHS in the home ranged between $8.8 \%$ (Ukraine) and $65.2 \%$ (Vietnam) among males, and between $14.8 \%$ (Mexico) and $68.8 \%$ (Vietnam) among females. With the exception of Brazil, Mexico, Uruguay and Vietnam, non-smokers' exposure to SHS in the home was significantly greater among females than males. Among both males and females, home SHS exposure generally decreased with increasing age (table 1 ).

## SHS exposure in the workplace

Among all respondents who work in an indoor area outside the home, exposure to SHS in the workplace was $62.2 \%$ in Bangladesh, $23.3 \%$ in Brazil, $63.3 \%$ in China, $59.9 \%$ in Egypt, $29.9 \%$ in India, $18.6 \%$ in Mexico, $32.6 \%$ in the Philippines, $33.6 \%$ in Poland, $34.9 \%$ in Russia, $27.2 \%$ in Thailand, $37.3 \%$ in Turkey, $33.1 \%$ in Ukraine, $16.5 \%$ in Uruguay and $55.9 \%$ in Vietnam (data not shown). By sex, workplace SHS exposure ranged between $21.4 \%$ (Uruguay) and $71.1 \%$ (China) among males, and between $11.8 \%$ (Uruguay) and $53.6 \%$ (Egypt) among females. In every country, workplace SHS exposure was greater among males than females. The only statistically significant differences by age were among men in China and Russia, where workers aged 25-64 years had higher levels of exposure than other age groups (table 2).

Among non-smokers, SHS exposure in the workplace was $54.6 \%$ in Bangladesh, 21.7\% in Brazil, $54.9 \%$ in China, $57.3 \%$ in Egypt, $26.1 \%$ in India, $16.4 \%$ in Mexico, $28.0 \%$ in the Philippines, $26.8 \%$ in Poland, $26.9 \%$ in Russia, $23.6 \%$ in Thailand, $31.1 \%$ in Turkey, $26.0 \%$ in Ukraine, $15.6 \%$ in Uruguay and $49.0 \%$ in Vietnam (figure 1). By sex, non-smokers' exposure to SHS in the workplace ranged between 19.3\% (Mexico) and 62.8\% (Vietnam) among males, and between $11.9 \%$ (Uruguay) and $53.4 \%$ (Egypt) among females. In every country, except for China, Egypt, the Philippines and Urguay, workplace SHS exposure among non-smokers was greater among males than females. The only statistically significant differences by age were among men in Brazil and China. In Brazil, men aged $¥ 65$ years had higher levels of exposure than those aged 25-64 years. In China, men aged 25-64 years had higher levels of exposure than those aged 15-24 years and $\Varangle 65$ years (table 2).

## SHS exposure in other public places

Overall SHS exposure in government buildings was $43.3 \%$ in Bangladesh, $18.0 \%$ in Brazil, $58.4 \%$ in China, $72.7 \%$ in Egypt, $26.2 \%$ in India, $17.0 \%$ in Mexico, $25.5 \%$ in the Philippines, $10.0 \%$ in Poland, $17.0 \%$ in Russia, $13.0 \%$ in Thailand, $11.3 \%$ in Turkey, $10.1 \%$ in Ukraine, $6.9 \%$ in Uruguay and $38.7 \%$ in Vietnam (data not shown). By sex, SHS exposure in government buildings ranged between $8.0 \%$ (Uruguay) and $75.8 \%$ (Egypt) among males, and between $5.8 \%$ (Uruguay) and $66.6 \%$ (Egypt) among females (table 3). In seven of the 14 countries, exposure to SHS in government buildings was significantly higher among males than females (Bangladesh, Egypt, India, Russia, Turkey, Ukraine, and Vietnam). Among non-smokers, SHS exposure in government buildings ranged from $7.7 \%$ (Uruguay) to $71.3 \%$ (Egypt) (figure 1).

Overall SHS exposure in healthcare facilities was $23.8 \%$ in Bangladesh, $10.1 \%$ in Brazil, $37.9 \%$ in China, $49.2 \%$ in Egypt, $16.8 \%$ in India, $4.3 \%$ in Mexico, $7.6 \%$ in the Philippines, 4.6\% in Poland, $10.2 \%$ in Russia, $4.8 \%$ in Thailand, $6.0 \%$ in Turkey, $6.6 \%$ in Ukraine, 3.8\% in Uruguay and $23.6 \%$ in Vietnam (data not shown). By sex, SHS exposure in healthcare facilities ranged between $4.2 \%$ (Uruguay) and $53.8 \%$ (Egypt) among males, and between $3.5 \%$ (Uruguay) and $46.4 \%$ (Egypt) among females (table 3). Exposure to SHS in healthcare facilities was higher among males than females in Bangladesh, Egypt, India and Vietnam. Among non-smokers, SHS exposure in healthcare facilities ranged from 3.7\% (Uruguay) to $47.9 \%$ (Egypt) (figure 1).

Overall SHS exposure on public transportation was $53.6 \%$ in Bangladesh, $9.5 \%$ in Brazil, $34.1 \%$ in China, $79.6 \%$ in Egypt, $33.9 \%$ in India, $24.2 \%$ in Mexico, $55.3 \%$ in the Philippines, $8.4 \%$ in Poland, $24.9 \%$ in Russia, $21.6 \%$ in Thailand, $16.5 \%$ in Turkey, $17.5 \%$ in Ukraine, $5.4 \%$ in Uruguay and $34.4 \%$ in Vietnam (data not shown). By sex, SHS exposure in public transportation ranged between $5.7 \%$ (Uruguay) and $80.3 \%$ (Egypt) among males, and between $5.2 \%$ (Uruguay) and $78.7 \%$ (Egypt) among females (table 3). Exposure to SHS on public transportation was higher among males than females in six of the 14 countries (Bangladesh, India, Philippines, Poland, Turkey and Vietnam). Among nonsmokers, SHS exposure on public transportation ranged from 5.6\% (Uruguay) to 80.0\% (Egypt) (figure 1).

Overall SHS exposure in restaurants was $79.7 \%$ in Bangladesh, $31.7 \%$ in Brazil, $88.5 \%$ in China, $72.7 \%$ in Egypt, $47.8 \%$ in India, $29.6 \%$ in Mexico, $33.6 \%$ in the Philippines, $52.0 \%$ in Poland, $78.6 \%$ in Russia, $34.4 \%$ in Thailand, $55.9 \%$ in Turkey, $64.1 \%$ in Ukraine, $4.4 \%$ in Uruguay and $84.9 \%$ in Vietnam (data not shown). By sex, SHS exposure in restaurants ranged between $4.7 \%$ (Uruguay) and $91.8 \%$ (China) among males, and between $4.2 \%$ (Uruguay) and $83.3 \%$ (China) among females (table 3). Exposure to SHS in restaurants was higher among males than females in seven of the 14 countries (Bangladesh, China, Egypt, India, Philippines, Thailand and Vietnam). Among non-smokers, SHS exposure in restaurants ranged from $4.5 \%$ (Uruguay) to $84.6 \%$ (China) (figure 1).

## Discussion

This study used data from GATS to assess self-reported exposure to SHS in homes, workplaces, government buildings, restaurants, public transportation and healthcare facilities among a nationally representative sample of adults in 14 low- and middle-income countries. The findings indicate that for the majority of the countries assessed, a large proportion of adults are exposed to SHS in their homes, workplaces and other public places. Variations in the prevalence of SHS exposure were also observed across age and sex in most countries. Since there is no risk-free level of SHS, implementing and enforcing comprehensive smokefree policies in all workplaces and public places, including bars and restaurants, represents the only effective way to fully protect the population from the harmful effects of SHS exposure. ${ }^{24}$ With adequate planning and education, such policies are relatively easy to implement, and achieve high levels of compliance at minimal expense. ${ }^{4513}$ Accompanying strategies can also be implemented to encourage the voluntary adoption of smoke-free home rules.

Studies suggest that comprehensive smoke-free laws reduce self-reported and objectively measured SHS exposure in the general population of non-smokers. ${ }^{1415}$ Comprehensive smoke-free policies have been shown to substantially reduce SHS exposure among nonsmoking bar and restaurant workers, as measured by air quality monitoring, self-report, and biomarkers, such as cotinine, a metabolite of nicotine that can be measured in blood, urine or saliva. ${ }^{131617}$ However, data from Scotland indicate that decreases in SHS exposure among non-smoking adults and youth may be more pronounced in households without smokers, with non-smokers living with smokers experiencing non-significant decreases in exposure. ${ }^{1415}$ Accordingly, voluntary smoke-free home rules can further reduce SHS in the
general population and help to fully protect all non-smokers from the adverse health effects of SHS exposure. Smoke-free home rules have also been shown to help current smokers quit. ${ }^{41321}$

The benefits of smoke-free policies have been well documented globally. Data from a growing number of countries and sub-national areas show that the implementation of smoke-free policies improves public health. ${ }^{1318}$ More specifically, comprehensive smokefree policies are associated with reductions in self-reported respiratory symptoms and improved lung function among non-smoking hospitality workers, ${ }^{1318}$ as well as reductions in hospitalisations for heart attacks in the general population. ${ }^{19}$ Additionally, several studies suggest that the implementation of smoke-free policies helps facilitate smoking cessation and the adoption of voluntary smoke-free home rules. ${ }^{41320}$ Moreover, studies in multiple countries indicate that smoke-free environments are popular among the general public and do not have an adverse economic impact on restaurants and bars. ${ }^{451322}$

Notable progress has recently occurred in enacting smoke-free policies. In 2000, no country had a comprehensive smoke-free law in place that completely eliminated smoking in indoor workplaces and public places. ${ }^{513}$ However, in March 2004, Ireland became the first country to implement a law of this kind. ${ }^{513}$ In the intervening years, many other countries have adopted comprehensive smoke-free laws, driven by the growing evidence on the health risks posed by SHS, the successful experiences of other jurisdictions in implementing smoke-free laws, and the requirements of WHO Framework Convention on Tobacco Control. ${ }^{513}$ Between 2008 and 2010, 16 countries implemented nationwide comprehensive smoke-free legislation, bringing the total number of countries with such laws to 31 and increasing the number of individuals protected by such laws to 739 million, or $11 \%$ of the world's population. ${ }^{23}$ An additional 210 million people, or $3 \%$ of the world's population, were protected by comprehensive smoke-free legislation at the subnational level in 2010. ${ }^{23}$

The prevalence of SHS exposure in workplaces and public places in the present study was lowest in Uruguay, which was the only country with a national comprehensive smoke-free law prohibiting smoking in all workplaces and public places with no exemptions at the time of GATS assessment. This finding aligns with studies showing that comprehensive smokefree policies lead to marked reductions in population SHS exposure. ${ }^{1415}$ Between the time that GATS was conducted and January 2011, both Thailand (2010) and Turkey (2009) subsequently enacted national comprehensive smoke-free laws, while the remaining 11 countries had either no or partial smoke-free laws in place. ${ }^{23}$

Enhanced efforts by the global tobacco control community have the potential to reduce SHS exposure, particularly among subpopulations where the burden of SHS exposure is greatest. ${ }^{5}$ In the present study, non-smokers' exposure to SHS in the home was generally higher among females than males, while exposure in the workplace and other public places was higher among males. Moreover, exposure to SHS in the home generally decreased with increasing age among both sexes. These findings may be reflective of variations in the social acceptability of tobacco use across genders and/or the demographic structure of the workforce in each country. ${ }^{24}$

Based on evidence of the cost-effectiveness, feasibility and popularity of smoke-free laws, the WHO recommends several key measures for protecting workers and the public from SHS exposure. These measures include implementing $100 \%$ smoke-free environments with no exemptions, enacting legislation requiring all workplaces and public places to be $100 \%$ smoke-free, adequately enforcing smoke-free legislation, and implementing accompanying strategies to reduce SHS exposure in the home. ${ }^{5}$ In addition, efforts should be made to evaluate and monitor the effects of the aforementioned measures in order to maintain public support, establish best practices and identify factors that may undermine existing smoke-free policies. ${ }^{5}$

The findings in this report are subject to at least four limitations. First, estimates of SHS exposure were self-reported and not validated by biochemical tests. Research suggest that self-reported surveys of SHS exposure in the home and workplace yield lower estimates of exposure than measurements of serum cotinine, an objective biomarker of nicotine intake. ${ }^{25}$ Second, in some regions, social norms (eg, unacceptability of women smoking) might result in under-reporting of current smoking behaviours. Misclassification of current smoking status could introduce bias into estimates of SHS exposure calculated among non-smokers. However, the use of same-sex interviewers and private interview settings may have reduced the extent of such under-reporting in the present study. Third, because the employed population tends to be predominantly less than age 65 years, sample size was limited for persons aged 65 years and older for this measure; therefore, analysing or interpreting data on workplace SHS exposure among this subpopulation was not possible in some countries. Finally, slight variations in the number and type of questions used to determine SHS exposure in healthcare facilities in China might limit comparability with findings from the other 13 countries. However, aside from this difference, questions were comparable across the 14 countries included in the analysis.

## Conclusion

Findings from GATS suggest that a large proportion of adults who live in the low- and middle-income countries that were analysed in this report are exposed to SHS in their homes, workplaces and other public places. While progress has been made in implementing smoke-free policies, many individuals remain exposed to SHS in these environments. Accordingly, all countries can enact and enforce legislation requiring $100 \%$ smoke-free public places and workplaces, and also conduct educational initiatives to reduce SHS exposure in homes. Creating smoke-free environments and educating the public about the dangers of SHS could ultimately have complementary effects on tobacco control efforts by reducing the social acceptability of tobacco use around non-smokers. In addition, ongoing surveillance among both non-smokers and the general population is necessary to evaluate progress toward eliminating SHS exposure, to track the implementation and enforcement of legislation to reduce SHS exposure, and to gauge public support for smoke-free environments.

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## What this study adds

- Limited data are available on the extent of secondhand smoke (SHS) exposure in indoor environments in low- and middle-income countries with a high burden of tobacco use.
- This study used nationally representative data from the Global Adult Tobacco Survey to assess the nature, extent and demographic correlates of SHS exposure among adults in 14 low- and middle-income countries.
- The data suggest that a large proportion of adults in these countries are exposed to SHS in their homes, workplaces and other public places.
- These findings can help inform the promotion, development and sustainability of smoke-free policies in these countries.


Figure 1.
Box and whisker plots of the percentage of non-smokers exposed to secondhand smoke in 14 countries, $\dagger$ by location of exposure-Global Adult Tobacco Survey. $\dagger$ : Bangladesh, Brazil, China, Egypt, India, Mexico, Philippines, Poland, Russia, Thailand, Turkey, Ukraine, Uruguay, Vietnam. Note: Lower, middle, and upper ends of boxes represent $25 \%, 50 \%$ and $75 \%$ percentiles, respectively. Whiskers represent minimum and maximum country for each location.

* Among respondents who reported working in an indoor area outside the home.
${ }^{\dagger}$ Sample size less than 25 . and among non-smokers, by sex-Global Adult Tobacco Use Survey (GATS)

| Year | GATS <br> Country | \% (95\% CI) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Government buildings |  | Health care facilities |  | Public transportation |  | Restaurants |  |
|  |  | Males | Females | Males | Females | Males | Females | Males | Females |
| All respondents |  |  |  |  |  |  |  |  |  |
| Bangladesh | 2009 | $\begin{array}{r} 49.2(44.8 \text { to } \\ 53.7) \end{array}$ | 25.2 (18.8 to 33.0) | $\begin{array}{r} 31.7\binom{26.5 \text { to }}{37.5)} \end{array}$ | 17.0 (14.2 to 20.3) | $\begin{array}{r} 56.9(53.9 \text { to } \\ 59.7) \end{array}$ | 47.8 (43.8 to 51.8) | 84.6 (82.4 to 86.7) | $\begin{array}{r} 32.8(25.8 \text { to } \\ 40.6) \end{array}$ |
| Brazil | 2008 | $\begin{array}{r} 18.4(16.9 \text { to } \\ 19.9) \end{array}$ | 17.7 (16.3 to 19.2) | 9.6 (8.7 to 10.6) | 10.4 (9.7 to 11.1) | 9.8 (9.0 to 10.7) | 9.2 (8.5 to 10.0) | 32.1 (30.6 to 33.6) | $\begin{array}{r} 31.3 \text { (29.8 to } \\ 32.8) \end{array}$ |
| China | 2010 | $\begin{array}{r} 62.6(55.0 \text { to } \\ 69.5) \end{array}$ | 50.7 (40.6 to 60.8) | $\begin{array}{r} 41.2(34.7 \text { to } \\ 48.1)^{*} \end{array}$ | $\begin{array}{r} 35.2(31.0 \text { to } \\ 39.6)^{*} \end{array}$ | $\begin{array}{r} 36.4 \text { (30.1 to } \\ 43.1) \end{array}$ | 31.5 (26.3 to 37.2) | 91.8 (89.7 to 93.5) | $\begin{array}{r} 83.3 \text { (80.1 to } \\ 86.2) \end{array}$ |
| Egypt | 2009 | $\begin{array}{r} 75.8 \text { (73.5 to } \\ 77.9) \end{array}$ | 66.6 (63.8 to 69.4) | $\begin{array}{r} 53.8(50.9 \text { to } \\ 56.7) \end{array}$ | 46.4 (44.3 to 48.6) | $\begin{array}{r} 80.3(78.7 \text { to } \\ 81.9) \end{array}$ | 78.7 (77.1 to 80.2) | 75.6 (73.2 to 77.8) | $\begin{array}{r} 62.1 \text { (57.4 to } \\ 66.7) \end{array}$ |
| India | 2009/10 | $\begin{array}{r} 29.4\binom{27.7 \text { to }}{31.1)} \end{array}$ | 18.0 (16.1 to 20.0) | $\begin{array}{r} 18.9(17.3 \text { to } \\ 20.5) \end{array}$ | 14.6 (13.3 to 16.1) | $\begin{array}{r} 36.4(34.6 \text { to } \\ 38.3) \end{array}$ | 30.0 (28.1 to 31.9) | 51.1 (49.0 to 53.1) | $\begin{array}{r} 32.7 \text { (29.3 to } \\ 36.2) \end{array}$ |
| Mexico | 2009 | $\begin{array}{r} 17.7(14.8 \text { to } \\ 21.1) \end{array}$ | 16.0 (12.6 to 20.2) | 5.2 (3.8 to 7.0) | 3.7 (2.8 to 4.9) | $\begin{array}{r} 25.4(23.0 \text { to } \\ 27.9) \end{array}$ | 23.2 (20.2 to 26.4) | 30.9 (27.4 to 34.7) | $\begin{array}{r} 28.1 \text { (25.0 to } \\ 31.4) \end{array}$ |
| Philippines | 2009 | $\begin{array}{r} 27.9(25.3 \text { to } \\ 30.7) \end{array}$ | 23.1 (20.6 to 25.9) | 8.0 (6.4 to 10.0) | 7.3 (6.0 to 8.9) | $\begin{array}{r} 61.1(58.6 \text { to } \\ 63.5) \end{array}$ | 49.7 (47.3 to 52.1) | 38.4 (35.3-41.5) |  |
| Poland | 2009/10 | 10.7 (9.1 to 12.7) | 9.3 (7.6 to 11.5) | 4.3 (3.3 to 5.7) | 4.8 (3.7 to 6.2) | 10.7 (9.0 to 12.7) | 6.6 (5.3 to 8.2) | 52.5 (48.4 to 56.5) | $\begin{array}{r} 51.5(47.1 \text { to } \\ 55.9) \end{array}$ |
| Russia | 2009 | $\begin{array}{r} 21.2(18.9 \text { to } \\ 23.8) \end{array}$ | 13.8 (12.0 to 15.8) | $\begin{array}{r} 12.1(9.8 \text { to } \\ 14.8) \end{array}$ | 9.1 (7.4 to 11.2) | $\begin{array}{r} 24.5(21.9 \text { to } \\ 27.2) \end{array}$ | 25.1 (22.5 to 28.0) | 78.3 (74.0 to 82.1) | $\begin{array}{r} 78.8(74.0 \text { to } \\ 82.9) \end{array}$ |
| Thailand | 2009 | $\begin{array}{r} 14.4(12.4 \text { to } \\ 16.7) \end{array}$ | 11.4 (9.3 to 13.9) | 5.8 (4.6 to 7.2) | 4.2 (3.5 to 5.0) | $\begin{array}{r} 22.2\left(\begin{array}{r} 19.5 \text { to } \\ 25.0) \end{array}\right. \end{array}$ | 21.3 (18.7 to 24.1) | 38.7 (35.8 to 41.6) | $\begin{array}{r} 29.6(26.9 \text { to } \\ 32.5) \end{array}$ |
| Turkey | 2008 | $\begin{array}{r} 13.0(11.2 \text { to } \\ 15.1) \end{array}$ | 7.8 (5.6 to 10.7) | 6.6 (5.3 to 8.2) | 5.5 (4.5 to 6.7) | $\begin{array}{r} 18.7 \text { (16.5 to } \\ 21.1) \end{array}$ | 14.1 (12.3 to 16.0) | 57.7 (54.8 to 60.5) | $\begin{array}{r} 52.3(48.1 \text { to } \\ 56.5) \end{array}$ |
| Ukraine | 2010 | $\begin{array}{r} 12.9(10.9 \text { to } \\ 15.3) \end{array}$ | 8.1 (6.5 to 10.1) | 9.2 (7.0 to 12.2) | 5.3 (4.0 to 7.0) | $\begin{array}{r} 17.9 \text { (15.8 to } \\ 20.2) \end{array}$ | 17.2 (15.3 to 19.3) | 65.7 (61.9 to 69.2) | $\begin{array}{r} 62.3(57.2 \text { to } \\ 67.1) \end{array}$ |
| Uruguay | 2009 | 8.0 (6.3 to 10.0) | 5.8 (4.2 to 8.0) | 4.2 (2.6 to 6.7) | 3.5 (2.6 to 4.8) | 5.7 (4.4 to 7.4) | 5.2 (4.0 to 6.8) | 4.7 (2.9 to 7.3) | 4.2 (2.6 to 6.7) |
| Vietnam | 2010 | $\begin{array}{r} 45.4(42.0 \text { to } \\ 48.8) \end{array}$ | 28.4 (25.0 to 32.1) | $\begin{array}{r} 29.9 \text { (26.1 to } \\ 34.0) \end{array}$ | 19.6 (17.1 to 22.4) | $\begin{aligned} & 38.8(34.4 \text { to } \\ &43.4) \end{aligned}$ | 29.6 (26.1 to 33.4) | 90.9 (89.0 to 92.4) | $\begin{array}{r} 75.2(72.0 \text { to } \\ 78.2) \end{array}$ |
| Non-smokers |  |  |  |  |  |  |  |  |  |


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