

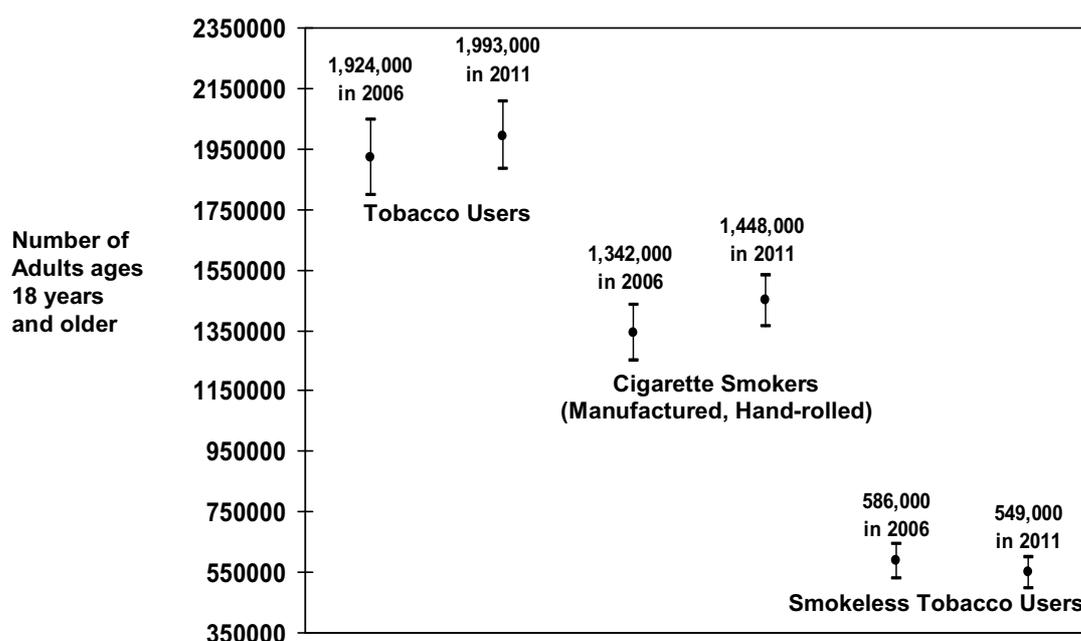
2011 National Adult Tobacco Survey of Cambodia (NATSC, 2011)



NATSC 2011 Highlights

The burden of tobacco use is growing...

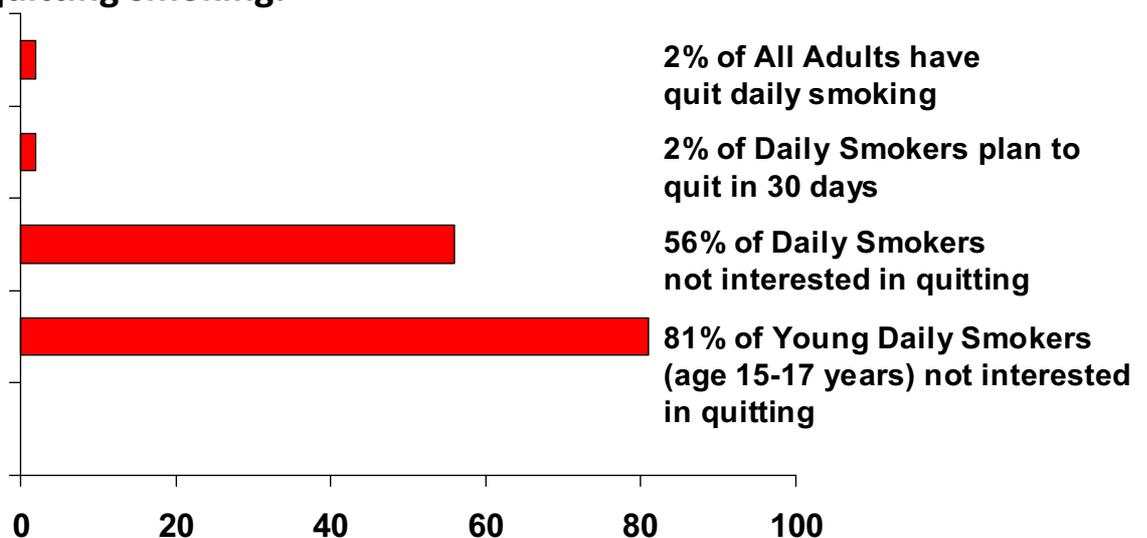
- There are currently 1,336,000 male smokers ages 15 and older in Cambodia (39.1 % of all males).
- Although the prevalence of cigarette smoking in adult males ages 18 and older decreased from 48% in 2006 to 42.5% in 2011, the number of adult tobacco users in the Kingdom of Cambodia has not decreased.



- NATSC 2011 data indicate that the number of tobacco users remains about 2 million, the number of cigarette smokers remains about 1.4 million, and the number of smokeless tobacco users (in the form of a betel quid) still exceeds half a million.

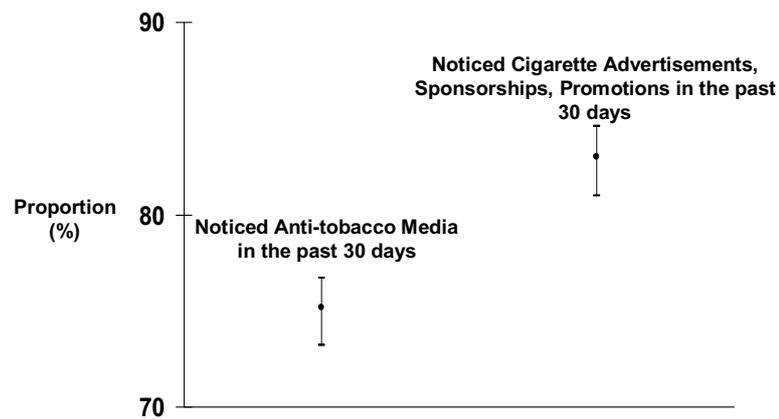
Public awareness of harm from tobacco use is not enough to convince smokers to quit.

- **Greater than 90% of all Cambodians believe that smoking is harmful to your health, that the smoke from someone else’s cigarette is harmful to the health of others, that smoking during pregnancy harms the fetus, that smoking causes lung cancer, and that smoking causes heart disease. Also, 38% of Cambodian smokers have been advised to quit by a health care professional.**
- **Despite existing medical, public health, and media efforts in education and dissemination on the harms of tobacco, NATSC 2011 finds that the majority of smokers are not interested in quitting smoking:**



Cigarette advertisements, promotions, and sponsorships continue to encourage smoking and recruit new smokers.

- **NATSC 2011 findings indicate that significantly more adults noticed cigarette marketing (83%) in the past 30 days than noticed anti-tobacco media messages (75%).**



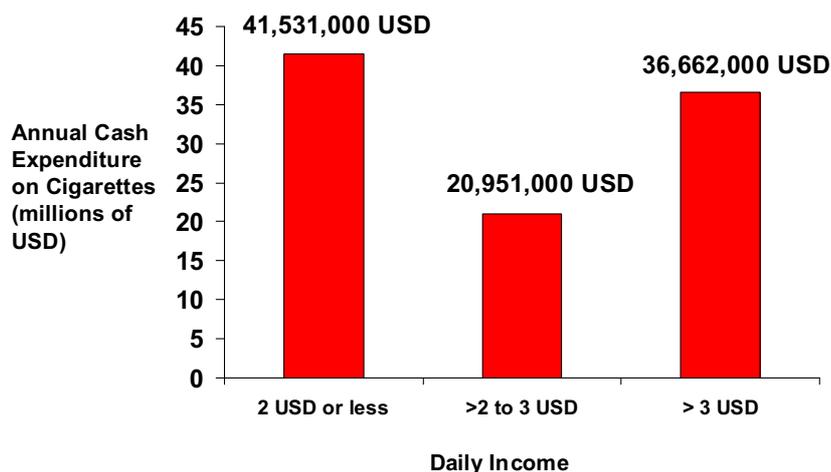
- **NATSC 2011 findings indicate that enforcement of the recently passed sub-decree on measures for the banning of tobacco product advertising can reverse the alarming trend in Cambodian media where promotion of tobacco exceeds public education about tobacco harm.**



Photo, courtesy of Ministry of Health

Cigarettes are affordable even to the poor.

- **Adults earning 2 USD or less per day (representing 69% of the nation) spend more as a group on cigarettes than those earning greater than 2 USD per day.**



- **NATSC 2011 findings indicate that a single pack of manufactured cigarettes was bought by the average smoker for 0.20 USD.**
- **NATSC 2011 findings indicate that the five most popular brands (ARA, Cambo, Luxury, Romdoh, Lapin) are all inexpensive and purchased at about the same frequency by low and high income smokers.**
- **NATSC 2011 findings indicate that 1 out of 5 of the youngest adult smokers (ages 15 to 19) started their daily habit before the age of 15 years – a trend indicating that the youth can afford to start a daily habit before the age of 15 years.**
- **In summary, NATSC 2011 findings indicate that manufactured cigarettes are priced to make them affordable to the poorest and youngest Cambodians.**

Raising tobacco taxes and prices is a publicly supported method to decrease cigarette consumption, especially among the poor and the youth.

- **Since regional and international data indicate that low income earners and young persons do quit when the prices of cigarettes increase, NATSC 2011 examined taxation and found that:**
 - **81% and 82% of all adults believe that cigarette taxes and prices, respectively, should be increased in order to discourage consumption by the poor and the youth.**
 - **95% of cigarette packs examined by NATSC 2011 interviewers while interviewing current smokers displayed a domestic tax stamp.**

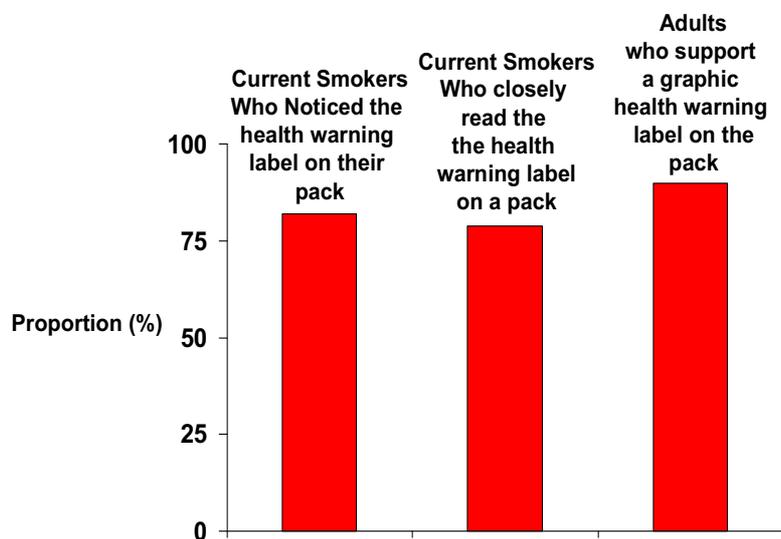
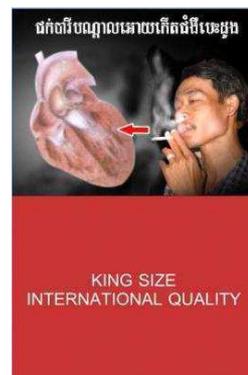
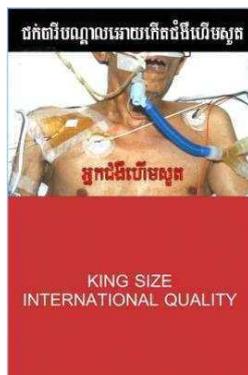
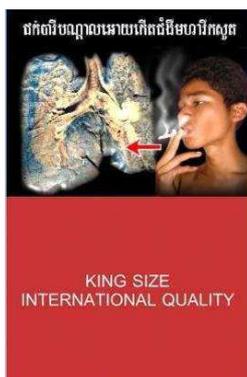


- **NATSC 2011 indicates that increasing taxation of cigarettes is a publicly supported measure and the resulting increase in price can:**
 - **Effectively encourage the poorest Cambodians to quit.**
 - **Stop the youngest Cambodians from starting an addictive and harmful habit that is hard to break.**

On health warning labels on cigarettes...

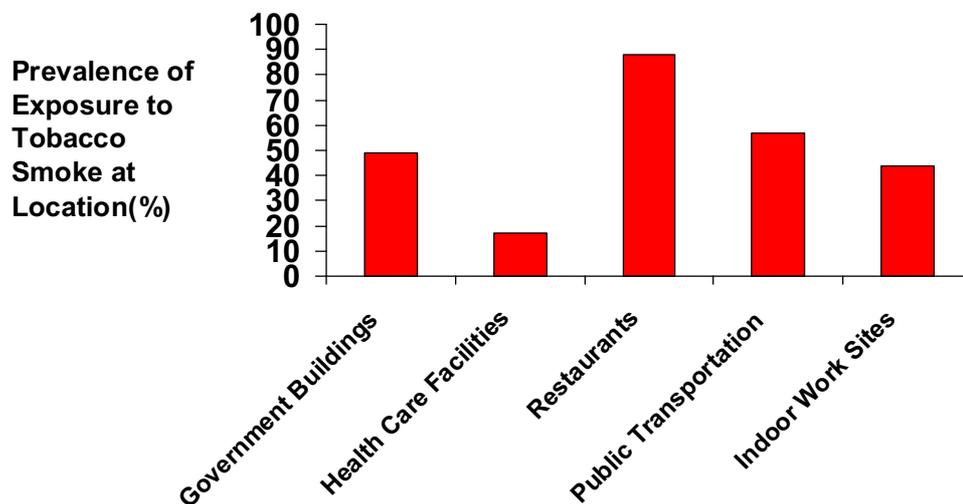


- **NATSC 2011 findings indicate that the written health warning labels, newly required by government sub-decree, are being noticed by both smokers and non-smokers, and 90% of adults support further legislation to add graphic warning labels to the pack.**



Smoke-free areas need to be expanded to protect the public from the harm of second-hand smoke exposure.

- **NATSC 2011 findings indicate that the circulars of the government ministries that make parts of government buildings and health care facilities smoke-free, are reducing tobacco smoke exposure at some of these locations. The findings identify restaurants, public transport, and indoor work sites as areas where public exposure to tobacco smoke is still very high.**



Contents

Highlights.....	i
Acknowledgments.....	xiv
Executive Summary.....	xv
1. Introduction.....	1
1.1 Burden of Tobacco in Cambodia.....	2
1.2 Current Tobacco Control Policies in Cambodia.....	10
1.3 Survey Objectives.....	14
2. Methodology.....	15
2.1 Study population.....	15
2.2 Sampling.....	15
2.3 Questionnaire.....	18
2.4 Data Collection.....	21
2.5 Statistical Analysis.....	23
3. Sample and Population Characteristics.....	24
4. Tobacco Use.....	29
5. Cessation.....	51
6. Secondhand Smoke.....	56
7. Economics.....	61
8. Media.....	67
9. Knowledge, Attitudes and Perceptions.....	74
References.....	77
Appendix A: Questionnaire.....	79
Appendix B: Sample Design.....	101
Appendix C: Estimates of Sampling Errors.....	120
Appendix D: Technical and Survey Staff.....	126
Appendix E: Glossary of Terms.....	129
Appendix F: National Ethics Committee for Health Research approval.....	134

Tables and Figures

1. Introduction

Figure 1.1. Number of adults (with 95% confidence intervals) using all forms of tobacco, cigarettes, and smokeless tobacco is estimated in 2006 and 2011 from national survey data (Tobacco Control Leadership Training Survey 2006; NATSC Cambodia, 2011).

Figure 1.2. Nationwide prevalence of tobacco use among adults (ages 18 and older) sampled from urban and rural regions of all provinces of Cambodia.

Table 1.1. Current Status of FCTC Implementation in Cambodia – NATSC Cambodia, 2011.

2. Methodology

Table 2.1. Distribution of households across 437 Primary Sampling Units in the Census-based Sampling Frame for the survey of 15,615 adults (ages 15 and older) – NATSC Cambodia, 2011.

Table 2.2. Forms 1 and 2 of the Survey – NATSC Cambodia, 2011.

3. Sample and Population Characteristics

Table 3.1. Number of persons interviewed and response rates by residence and region (unweighted) – NATSC Cambodia, 2011.

Table 3.2. Distribution of adults ≥ 15 years old by selected demographic characteristics – NATSC Cambodia, 2011.

4. Tobacco Use

Figure 4.1 National prevalence of tobacco smoking and smokeless tobacco use among 15,615 adults (ages 15 and older) – NATSC Cambodia 2011.

Figure 4.2. Age-specific prevalence of current use of all tobacco among males – NATSC Cambodia, 2011.

Figure 4.3. Age-specific prevalence of current use of all tobacco among females – NATSC Cambodia, 2011.

Table 4.1. Percentage of adults ≥ 15 years old, by smoking status and gender – NATSC Cambodia, 2011.

Table 4.2. Number of adults ≥ 15 years old, by smoking status and gender – NATSC Cambodia, 2011.

Figure 4.4. Age-specific prevalence of current use of smoked tobacco among males - NATSC Cambodia, 2011.

Figure 4.5. Age-specific prevalence of current use of smoked tobacco among females - NATSC Cambodia, 2011.

Table 4.3. Percentage of adults ≥ 15 years old who are current smokers of various smoked tobacco products, by gender and selected demographic characteristics – NATSC Cambodia, 2011.

Table 4.4. Number of adults ≥ 15 years old who are current smokers of various smoked tobacco products, by gender and selected demographic characteristics – NATSC Cambodia, 2011.

Table 4.5. Percentage of adults ≥ 15 years old who are daily, occasional, or non-smokers, by gender and selected demographic characteristics – NATSC Cambodia, 2011.

Table 4.6. Percentage of cigarettes smoked per day among daily cigarette smokers ≥ 15 years old, by gender and selected demographic characteristics– NATSC Cambodia, 2011.

Figure 4.6. Age-specific prevalence of current use of smokeless tobacco among females - NATSC Cambodia, 2011.

Table 4.7. Percentage of adults ≥ 15 years old by smokeless tobacco (i.e. tobacco chewing in the form of a betel quid) and gender – NATSC Cambodia, 2011.

Table 4.8. Number of adults ≥ 15 years old by smokeless tobacco (i.e. tobacco chewing in the form of a betel quid) and gender – NATSC Cambodia, 2011.

Table 4.9. Percentage and number of adults > 15 years old who are current users of smokeless tobacco products, by gender and selected demographic statistics – NATSC Cambodia, 2011.

Table 4.10. Percentage of adults ≥ 15 years old who are daily, occasional, or non - users of smokeless tobacco (i.e. in the form of a betel quid), by gender and selected demographic characteristics – NATSC Cambodia, 2011.

Table 4.11: Percentage of age at smoking initiation among ever daily smokers 20 - 34 years old, by selected demographic characteristics– NATSC Cambodia, 2011.

Table 4.12. Percentage of age at initiation of smokeless tobacco use (i.e. tobacco chewing in the form of a betel quid) among ever users, by selected demographic characteristics– NATSC Cambodia, 2011.

Table 4.13. Percentage of all adults and ever daily smokers ≥ 15 years old who are former daily smokers, by selected demographic characteristics– NATSC Cambodia, 2011.

Table 4.14. Percentage of time since quitting among former daily smokers ≥ 15 years old, by selected demographic characteristics– NATSC Cambodia, 2011.

Table 4.15. Percentage of time to first tobacco use upon waking among daily smokers and/or smokeless tobacco users ≥ 15 years old, by selected demographic characteristics– NATSC Cambodia, 2011.

Table 4.16. Percentage of adults who are current tobacco users and the percentage of tobacco use patterns among current tobacco users ≥ 15 years old by selected demographic characteristics– NATSC Cambodia, 2011.

5. Cessation

Table 5.1. Percentage of smokers ≥ 15 years old who made a quit attempt and received health care provider assistance in the past 12 months, by selected demographic characteristics – NATSC Cambodia, 2011.

Table 5.2. Percentage of smokers ≥ 15 years old who made a quit attempt in past 12 months and used various cessation methods for their last quit attempt, by selected demographic characteristics – NATSC Cambodia, 2011.

Table 5.3. Percentage of smokeless tobacco users ≥ 15 years old who made a quit attempt and received health care provider assistance in the past 12 months, by selected demographic characteristics – NATSC Cambodia, 2011.

Table 5.4. Percentage of smokeless tobacco users ≥ 15 years old who made a quit attempt in past 12 months and used various cessation methods for their last quit attempt, by selected demographic characteristics – NATSC Cambodia, 2011.

Table 5.5. Percentage of current smokers ≥ 15 years old by interest in quitting smoking and selected demographic characteristics – NATSC Cambodia, 2011.

Table 5.6. Percentage of current smokeless tobacco users ≥ 15 years old by interest in quitting smoking and selected demographic characteristics – NATSC Cambodia, 2011.

6. Secondhand Smoke

Figure 6.1. Household behaviors relating to smoking inside the home reported by adults (ages 15 and older) – NATSC Cambodia, 2011.

Figure 6.2. Urbanization effect in Phnom Penh shown by proportion of urban clusters in TCLT 2006 and NATSC 2011 – NATSC Cambodia, 2011.

Figure 6.3. Exposure to tobacco smoke at locations frequented by adults respondents during the past 30 days – NATSC Cambodia, 2011.

Table 6.1. Percentage and number of adults ≥ 15 years old who work indoors and are exposed to tobacco smoke at work, by smoking status and selected demographic characteristics – NATSC Cambodia, 2011.

Table 6.2. Percentage of adults ≥ 15 years old who were exposed to tobacco smoke in public places in the past 30 days, by smoking status and selected demographic characteristics – NATSC Cambodia, 2011.

7. Economics

Figure 7.1. Annual current expenditure on cigarettes by current adult smokers (daily, less than daily) – NATSC Cambodia 2011.

Figure 7.2. Annual current expenditure on cigarettes by current adult smokers (daily, less than daily) given by income – NATSC Cambodia 2011.

Table 7.1. Number of manufactured cigarettes obtained at the last purchase of manufactured cigarettes by current smokers – NATSC Cambodia 2011.

Table 7.2. Number of hand-rolled cigarettes obtained at the last purchase of hand-rolled cigarettes by current smokers – NATSC Cambodia 2011.

Table 7.3. Average cigarette expenditure per month among manufactured cigarette smokers ≥ 15 years old, by selected demographic characteristics – NATSC Cambodia, 2011. .

Table 7.4. Percentage of current manufactured cigarette smokers ≥ 15 years old, by last brand purchased and selected demographic characteristics – NATSC Cambodia, 2011.

Table 7.5. Percentage of the source of last purchase of cigarettes among manufactured cigarette smokers ≥ 15 years old, by selected demographic characteristics – NATSC Cambodia, 2011.

Table 7.6. Presence of tax stamps and labeling on the last pack of cigarettes smoked by daily and less than daily smokers - NATSC Cambodia, 2011.

8. Media

Figure 8.1. Findings on reading and support for health warning labels on manufactured packs – NATSC Cambodia, 2011.

Figure 8.2. Written and graphic health warning labels proposed for cigarette packs in Cambodia (written labels are enforced by sub-decree) – NATSC Cambodia, 2011.

Table 8.1. Percentage of adults ≥ 15 years old who noticed anti-cigarette smoking information during the last 30 days in various places, by smoking status, and selected demographic characteristics – NATSC Cambodia, 2011.

Table 8.2. Percentage of current smokers ≥ 15 years old who noticed health warnings on cigarette packages and considered quitting because of the warning label on cigarette packages during the last 30 days, by selected demographic characteristics – NATSC Cambodia, 2011.

Table 8.3. Percentage of adults ≥ 15 years old who noticed cigarette marketing during the last 30 days in various places, by selected demographic characteristics – NATSC Cambodia, 2011.

Table 8.4. Percentage of current smokers ≥ 15 years old who noticed cigarette marketing during the last 30 days in various places, by selected demographic characteristics – NATSC Cambodia, 2011.

Table 8.5. Percentage of non-smokers ≥ 15 years old who noticed cigarette marketing during the last 30 days in various places, by selected demographic characteristics – NATSC Cambodia, 2011.

9. Knowledge, Attitudes and Perceptions

Table 9.1. Percentage of adults ≥ 15 years old who believe that smoking causes any illness, heart attack, or lung cancer, by smoking status and selected demographic characteristics – NATSC Cambodia, 2011.

Table 9.2. Percentage of adults ≥ 15 years old who believe that breathing other people's smoke causes serious illness in non-smokers, by smoking status and selected demographic characteristics – NATSC Cambodia, 2011.

Acknowledgments

It is with great pleasure that we present this report containing the results of the 2011 National Adult Tobacco Survey of the Royal Government of Cambodia. This is the third national tobacco survey in Cambodia conducted by the National Institute of Statistics (NIS). In consideration of the sampling techniques and the sample size (n=15,615 participants ages 15 years and older), this survey report is considered a nationally representative survey of tobacco use in the general population of the Kingdom of Cambodia.

This survey was not only designed to obtain the prevalence of tobacco consumption among Cambodians, but also to gather more detailed information on issues related to secondhand smoke, knowledge attitudes and perceptions, media, economics, cessation and other health behaviors.

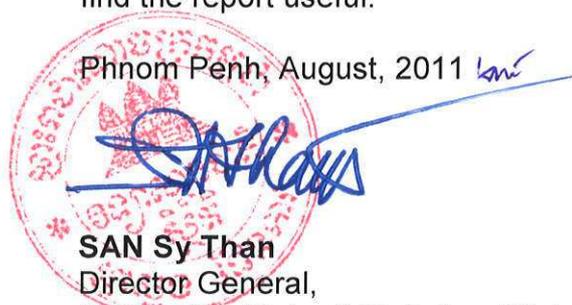
This report illustrates that tobacco is not just a simple health issue, but rather involves economics, business, trade, etc, and needs a multidisciplinary approach with effective measures to reduce the widespread prevalence in order to protect the health and the future of Cambodians.

This National Adult Tobacco Survey also promotes capacity building within the Kingdom of Cambodia for future tobacco research and long-term tobacco control strategies. On behalf of the National Institute of Statistics, Ministry of Planning, we wish to pay gratitude to the World Health Organization in Cambodia, Loma Linda University (School of Public Health), United States National Institute of Health (Fogarty International Center), Cambodia Movement for Health (CMH) and the Southeast Asia Tobacco Control Alliance (SEATCA).

Much appreciation should be recognized to the staff of the NIS in making the survey a success. We would like to express thanks to the national and international staff of the project, especially Mr. They Kheam, Dr. Daravuth Yel, Dr. Pramil Singh, Dr. Mom Kong, and Ms. Bungon Ritthiphakdee.

I am sure that our government, economic planners, policy makers and researchers will find the report useful.

Phnom Penh, August, 2011 *San*



SAN Sy Than
Director General,
National Institute of Statistics, Ministry of Planning
Phnom Penh, Cambodia

Executive Summary

The *National Adult Tobacco Survey of Cambodia 2011* (NATSC 2011) is the largest national survey (n=15,615) of adult tobacco use (ages 15 years and older) ever conducted in Cambodia and was completed in January 2011 by the National Institute of Statistics (Ministry of Planning, Cambodia) with support and technical assistance given by the WHO Cambodia, Fogarty International Center (National Institute of Health) funded investigators from Loma Linda University (USA), and the Southeast Asia Tobacco Control Alliance. The survey was designed to be comparable to a similar effort in 2005-2006¹ but also included a comprehensive set of items on tobacco use, cessation, second hand smoke, economics, media, and “knowledge, attitudes, and perceptions” from the Global Adult Tobacco Survey (GATS).

Key findings of this survey and a set of recommendations based on the findings are given here.

No change in the number of Adult Tobacco Users in Cambodia

NATSC 2011 data confirms that the total number of current tobacco users in Cambodia has remained about 2 million (1.92 million during 2005-2006¹; 1.99 million in 2010-2011). These tobacco use trends among adults ages 15 years and older are primarily due to the continued use of cigarettes by 1.4 million males and the continued use of smokeless tobacco by more than half a million women. Overall, the higher rate of cigarette smoking in males (39.1% males) and smokeless tobacco habit in females (12.7%) is comparable to trends in tobacco use for males and females found throughout the Western Pacific Region.

During the past decade, surveys in Indonesia, Malaysia, Philippines, Thailand and Vietnam indicate that cigarette smoking is common among men (39% to 75%) but not women (3% to 18%)². During 2009-2010, the Global Adult Tobacco Survey (GATS) findings from Thailand³, Vietnam⁴, and the Philippines⁵ all indicate a 40% or greater prevalence of cigarette smoking in males. Among females, GATS Thailand³ and GATS Philippines⁵ data indicate that the prevalence of smokeless tobacco use (primarily as a betel quid) was 6% and 1%, respectively.

Thus, in 2011, Cambodia appears to continue to follow cultural norms prevalent in the region where 1) cigarette smoking is primarily a male habit and stigmatized in women, particularly young women¹⁻², and 2) smokeless tobacco in the form of a betel quid is culturally acceptable among women and typically becomes habitual during middle age and older age⁶.

NATSC 2011 confirms the previous reports that cigarette smoking is primarily a habit among males that is initiated at a median age of 20 years old¹. Between adolescence and middle age the findings indicate that there is a 20-fold increase (2% at ages 15-17 years; 45% at ages 25-44 years) in the prevalence of cigarette smoking among males. Each birth cohort of 15-17 year old males who follow this steep gradient of smoking initiation adds to the 1,477,000 adults who are current smokers as of January 2011 (1,278,000 of these smokers are males who are daily smokers).

What characterizes these men who smoke cigarettes?

They tend to be rural men who smoke 20 cigarettes per day (usually by the daily purchase of a pack of manufactured cigarettes), have less than a primary school education (49%), and most earn 2 USD per day or less (75%).

NATSC 2011 findings also confirm previous reports from Cambodia indicating that smokeless tobacco use is primarily a habit of females that is initiated later in life at a median age of 33 years old¹. Most of the smokeless tobacco use is in the form of a betel quid that includes the betel nut (*Areca catechu*), betel leaf, and slaked lime (a calcium hydroxide paste). The betel quid habit in Cambodia is part of cultural, familial, and traditional medicine practices^{1,7}. Findings from qualitative research studies⁸ and the 2005-2006 national survey data¹ indicate that rural Cambodian women tend to start and continue to use smokeless tobacco in the form of a betel quid (i) as an addictive stimulant⁷, (ii) as part of a female rite of passage into adulthood and reproductive age⁸, (iii) as a remedy to relieve pregnancy-related symptoms such as morning sickness⁹, and (iv) as part of traditional medicine remedies for indigestion, antiseptic needs, deworming, headaches, arthritis, joint pain, and tooth pain¹⁰.

Despite the beginnings of urbanization in some regions and trends in rural areas towards using health centers rather than traditional medicine, the NATSC 2011 data show no real decrease in the count of more than half a million women (586,000 in 2006; 549,000 in 2011) using smokeless tobacco in Cambodia. Also noteworthy from NATSC 2011, is that about 80% of women using smokeless tobacco initiated their habit between ages 20 and 50 years – primarily during their reproductive years. Taken together with previous reports of Cambodian women using betel quid during pregnancy for relief of morning sickness^{1,11}, the data highlights another potent harm of this behavior – the adverse effect of maternal smokeless tobacco use on infant outcomes¹²⁻¹⁴. Emerging data from Asia and South Asia has long linked maternal betel quid use to

higher rates of infant mortality¹⁵.

Knowledge of the Harms of Tobacco Use is Common among Cambodians

When considering the relatively unchanged size of the population of tobacco users, it is important to note that the trend of tobacco use remains, despite the fact that most Cambodians are very aware of the harms of tobacco use. NATSC 2011 findings from all adults found that more than 90% of Cambodians believe that smoking is harmful to your health, that the smoke from someone else's cigarette or pipe is harmful to the health of others, that smoking during pregnancy harms the fetus, that smoking causes lung cancer, and that smoking causes heart disease. Most interesting is that the common knowledge of these harms was found in males and females, from adolescents (ages 15 to 17 years) to the very old (65 years or older), among urban and rural dwellers, and at all levels of education. Also noteworthy is that 75% of the public had seen an anti-tobacco message on harm and 40% of smokers had been directly advised by a health care professional to quit.

Findings on the public's common knowledge of tobacco's harmful effects need to be considered in the context of the unchanged number of tobacco users and low rate of cessation in Cambodia. Taken together, the data leads to the unavoidable conclusion that the public's knowledge of the harms of tobacco is not, on its own, leading to progress in cessation or prevention of tobacco use.

Low rate of Tobacco Cessation among Cambodians

Tobacco cessation is not a common occurrence in Cambodia. NATSC 2011 findings estimate that in a population of 7.5 million adults with 2 million current users of tobacco, there are only 189,000 adults who were able to quit daily use of cigarettes and

only 9,000 adults who were able to quit daily use of smokeless tobacco. The quit rate (former daily users among the ever daily users) is 11.5% for smoking and could not even be computed for smokeless tobacco due to the small number of survey respondents (< 25) who were former daily smokeless tobacco users. The fact that the quit rate for smoking is about 3 times higher in adults greater than 65 years compared to middle-aged adults ages 25-44 (22.7% versus 7.6%) raises the possibility that the reason for cessation was due to the onset of illness rather than the more successful public health paradigm of quitting at a young age to prevent illness.

When moving the focus to adults who attempted to quit, NATSC 2011 findings indicate that about 8.0% of male smokers, 6.9% of female smokers, and 3.2% of female smokeless tobacco users had made an attempt to quit in the past 12 months. Quit attempts also seemed to be higher among the older adults – an effect that again raises the possibility of quitting due to symptoms of clinical or sub-clinical disease.

Among the 1,477,000 current smokers in Cambodia, about 2% had a plan to quit cigarette smoking during the next 30 days, 42% considered quitting in the future, and 56% had no interest in quitting.

What needs immediate public health and policy driven action is that the youngest current smokers, ages 15-17 years and 18-24 years, were the least likely to have a plan to quit, 81% and 68%, respectively. We note that it is among 15-24 year old young men that the rate of smoking initiation multiplies during the following decade of their life to the point that half of all Cambodian males over the age of 35 years are smokers.

Low cost of the Manufactured Cigarettes makes them available for daily use by the Poorest and Youngest Cambodian Adults

Manufactured cigarettes in Cambodia are priced to be affordable to all Cambodians. NATSC 2011 findings estimate that **the average price of one pack of manufactured cigarettes that was last purchased by 857,000 current smokers (out of 1,477,000) was 791 Riels or about 0.20 USD.**

At the low price of 0.20 USD per pack, daily smoking of manufactured cigarettes is possible for the poorest Cambodians. NATSC 2011 findings indicate that:

- Of the 99,144,000 USD in annual cash expenditure on manufactured cigarettes, 41,531,000 USD is being spent by adults earning 2 USD per day or less – a group representing 69% of the nation.
- Even among adults earning less than 1 USD per day, the annual cash expenditure on manufactured cigarettes is 26,837,000 USD.
- Smokers earning 2 USD per day or less spend about 6 USD per month on tobacco – a finding identifying that many poor adults are spending 10% or more of their income on tobacco.
- For each of the top five brands of manufactured cigarettes (ARA, Cambo, Luxury, Romdoh, Lapin), there is no difference in the prevalence of use by income – a trend indicating that each brand is as accessible to an adult earning < 1 USD per day as it is to an adult earning > 3 USD per day.

The low price of manufactured brands (0.20 USD) allows direct competition with the hand-rolled cigarettes that are purchased for about 0.07 USD in bags, bundles, or single sticks by the poorest Cambodians. The low price of manufactured brands has also

created an effect where virtually all manufactured cigarettes are purchased as a pack. NATSC 2011 data indicates that for every 21 cigarettes last purchased by smokers, 18 are in a pack, 2 are as single cigarettes, and 1 is in a carton.

The NATSC 2011 findings indicating high tobacco expenditures by smokers earning 2 USD per day or less continue to raise an issue that has been reported by health officials and researchers in Cambodia for over a decade – the direct contribution of tobacco consumption to the poverty of the nation.

A 1999 analysis indicated that smokers in Cambodia spend 6,248 billion Riels or 69.44 million USD annually and that this expenditure is equivalent to the price of 274,304 tons of high quality rice, 1,388,382 bicycles or 27,778 large wooden houses in the provinces¹⁶. In qualitative data summarized in a 2007 SEATCA report¹⁷, Cambodian women married to smokers expressed concern about the money their husbands spent on smoking: “The sum that my husband spends on cigarettes each week could buy 7 - 8 kg of rice.”¹⁸

At the low price of 0.20 USD per pack, daily smoking of manufactured cigarettes also appears to be an attractive option for the young adult males and may be a factor in the rapid initiation and increase in smoking during ages 15 to 35 years. **An alarming finding from NATSC 2011 indicated that 1 out of 5 of the youngest adult smokers (ages 15 to 19) started their daily habit before the age of 15 years. The price issue again arises since the data indicates that youngest adult smokers (age 15-19 years) were able to afford to start a daily habit before the age of 15 years.**

A taxation increase and price increase to put this harmful product beyond the daily reach of the young is warranted.

**Can further taxation to increase the price of manufactured cigarettes
produce a *real* decrease in the number of smokers in Cambodia?**

Cambodia has one of the lowest rates of taxation (20% tax on the retail price of domestic manufactured cigarettes; 25% tax on the retail price of imported manufactured cigarettes) among the nations in the region that have ratified FCTC. The lower tax rate is directly reflected in the low price of manufactured cigarette packs. For comparison, we note that the NATSC 2011 has used GATS methodology to estimate that the average price of a pack is 0.20 USD in a nation where the quit ratio (former daily smokers to ever daily smokers) is 11.5%. In contrast, 2009-2010 GATS data from Thailand and Vietnam indicate that the average price of a pack is higher than Cambodia (1.45 USD in Thailand, 0.26 USD in Vietnam) and quit ratios are twice as high (29% in Thailand, 24% in Vietnam). A detailed consideration of these comparisons is needed.

Overall, decades of data from Southeast Asia point to the efficacy of an increase in the price of cigarettes to decrease cigarette consumption or smoking initiation. In the Vietnam Living Standards Surveys (1992–1993, 1997–1998)¹⁹, a 10% increase in cigarette price was linked to a reduction in smoking initiation of 11.8%. Analysis of Thailand’s socioeconomic survey data for 2000²⁰, estimated that a 10% increase in cigarette prices would result in a 3.9% decline in overall cigarette consumption. One of the strongest estimates of the efficacy of pricing in the region comes from household surveys from Myanmar conducted in 2000²¹ and indicates that a 10% increase in cigarette prices would lead to a 12.8% decline in smoking prevalence.

Noteworthy for Cambodia is that in an analysis of regional evidence on price increases, Ross and Chaloupka²² have noted that it is the young and often low income

persons who tend to be most responsive to increases in cigarette prices. In Cambodia, NATSC 2011 findings indicate that it is the rapid initiation of smoking among young adult men earning less than 2 USD per day that primarily maintains the epidemic of cigarette smoking at more than 1.4 million adults. Thus, a price increase via taxation would specifically target a potentially responsive and high prevalence group of smokers in Cambodia.

The findings from NATSC 2011 that support a price increase via taxation include:

- 95% of manufactured cigarette packs of current smokers that were examined by the interviewers displayed a domestic tax stamp.
- 81% of all adults believe that the cigarette tax should be increased.
- 82% of all adults believe that the price of cigarettes should be raised.

Exposure to Secondhand Smoke in Highly Frequented Locations

Comprehensive analyses of the clinical, biological, and public health data have concluded, “there is no risk free level of exposure to secondhand smoke²³⁻²⁴.” The associations between chronic exposure to secondhand smoke and lung cancer²⁵ and heart disease²⁶ have long been shown, and are also compounded by the adverse effect of secondhand smoke on the respiratory health of children²⁷. Despite recent efforts in Cambodia that designates certain smoke-free areas of government buildings, hospitals, and schools, NATSC 2011 findings identify that it is the indoor locations, where Cambodians spend their occupational, familial, and/or leisure time hours, that have the highest rates of exposure.

In 2011, about half of Cambodian homes allow smoking in the home (48.3%), allow smoking in every room of the home (52.9%), and allow smoking inside the home

to occur on a daily basis (53.9%). Among the public locations, restaurants have the highest rate of exposure (90% of rural restaurants; 84% of urban restaurants). Lastly, in the emerging industrial “indoor work locations,” about 44% of adults are exposed to secondhand smoke. Although indoor work locations are not common in Cambodia (currently < 200,000 exposed to smoke), a policy regulating them *before* they increase in number can prevent present and future generations of Cambodians from ever having been exposed to secondhand smoke at work.

Overall, policies for highly trafficked indoor public areas (restaurants, bars, cafes, nightclubs) and indoor work sites represent a needed area of focus for tobacco control in Cambodia. Addressing widespread exposure in the home needs a focus by health education programs, although models for intervention pose a considerable challenge.

Public exposure to Cigarette Marketing exceeds Public exposure to Anti Tobacco Messages

In 2011, Cambodia passed a sub-decree that explicitly bans the advertising of tobacco products in the form of picture, text, sound, radio, television, magazine, CD, VCD, DVD, and telecommunication. This measure was very timely and necessary when considering NATSC 2011 findings indicating that although 75% of all adults have seen anti-tobacco messages in the media (i.e. print, television, radio, and billboard) during the past 30 days, 83% of adults had seen cigarette company advertisements, sponsorship, and promotions during the same period of time. The most common media for exposure to both anti-tobacco messages and cigarette marketing was television and radio. The ban on cigarette marketing in these media can definitely turn the tide of the

tobacco-related media messages that is currently slanted in favor of marketing tobacco products.

Recommendations

Based on the key findings of NATSC 2011, the following recommendations have been developed:

- **An increase in the current price of a pack of manufactured cigarettes (about 0.20 USD or 791 Riels) needs to be accomplished by increasing the rate of taxation on this product. Since FCTC compliance with tax stamps on manufactured cigarettes has been achieved for 95% of the packs, taxation can be an effective method of increasing the low price of manufactured cigarettes that target the poorest and youngest Cambodian adults.**
- **An enforcement of the recently passed sub-decree that bans tobacco product advertising is needed to decrease public exposure to tobacco product marketing from current levels that exceed public exposure to anti-tobacco messages.**
- **Since written health warnings currently on packs of manufactured cigarettes are well enforced and closely read by smokers and non-smokers, the efforts to add graphic health warnings can only add to current efficacy. As of 2011, the proposed (in the legislation) graphic warnings on the pack are supported by 90% of adults. This addition of graphic health warnings to the pack is needed.**
- **A focus on secondhand smoke exposure in restaurants and other highly trafficked public locations is needed, since up to 90% of rural adults are exposed to the harm of tobacco at these locations.**
- **A focus is needed on the epidemic of smoked tobacco use that emerges as young males grow older. Young, rural males, earning less than 2 USD per day are the group that, from ages 15 to 45 years, experience a 20-fold**

increase in the prevalence of smoking tobacco. These males are the primary contributor to the count of 1.47 million current smokers in the Kingdom of Cambodia in 2011. Making cigarettes an economic burden (by increasing the price) and a social burden (i.e. cannot smoke at their favorite restaurants, bars, and clubs) to these males during their adolescence and young adulthood represents a strong preventive step in slowing the steep increase in their demand for cigarettes as they age. Price increases must keep pace with increases in their earning capacity.

- A focus is needed on the smokeless tobacco use (in the form of a betel quid) that is initiated by women during their reproductive years and can cause great harm to their health and the health of their newborns and infants.

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1. Introduction

Tobacco use is a major preventable cause of premature death and disease, presently causing over 5 million deaths each year and is expected to cause over 8 million deaths yearly by 2030. Unless current trends are changed, the vast majority of these deaths are projected to occur in the developing world. An efficient and systematic surveillance mechanism to monitor the epidemic is one of the essential components of a comprehensive tobacco control program.

The World Health Organization (WHO) – Tobacco Free Initiative (TFI) aims to reduce the global burden of disease and death caused by tobacco, thereby protecting present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke. This is accomplished through providing global policy leadership - promoting the WHO Framework Convention on Tobacco Control (FCTC) and the MPOWER* package²⁸ of tobacco policies as a key entry points. The FCTC encourages countries to adhere to its principles, and the TFI program supports countries in their efforts to implement tobacco control measures through MPOWER.

In August 2006, the WHO and the United States Centers for Disease Control and Prevention (CDC) convened an expert consultation to discuss adult tobacco surveillance and made recommendations for the development of a standard survey protocol. The expert consultation also recognized the challenges of limited funding and

* The MPOWER package is a series of six proven policies aimed at reversing the global tobacco epidemic and include: **M**onitor tobacco use and prevention policies; **P**rotect people from tobacco smoke; **O**ffer help to quit tobacco use; **W**arn about the dangers of tobacco; **E**nforce bans on tobacco advertising, promotion, and sponsorship; and **R**aise taxes on tobacco.

methodological complexities when conducting systematic adult tobacco surveys and identified a lack of comparability in ongoing national surveys.

The Bloomberg Initiative to Reduce Tobacco Use offers resources to fill the data gap for measuring adult tobacco use globally and to optimize the reach and results of the ongoing Global Tobacco Surveillance System (GTSS), which originally was comprised of three school-based surveys for youth and selected adult populations: the Global Youth Tobacco Survey (GYTS), the Global School Personnel Survey (GSPS), and the Global Health Professions Students Survey (GHPSS).

The Global Adult Tobacco Survey (GATS) is a household survey that was launched in February 2007 as a new component of the ongoing GTSS. The GATS will enable countries to collect data on key tobacco control measures in the adult population. Results from the GATS will assist countries in the formulation, tracking and implementation of effective tobacco control interventions, and countries will be able to compare results of their survey with results from other countries implementing GATS.

1.1 Burden of Tobacco Use in Cambodia

Prevalence and trends in Tobacco Smoking and Smokeless Tobacco Use in Cambodia during 1999-2011

Prior to 2005, national estimates of adult use of tobacco were computed during the 1999, 2003, 2009 Socioeconomic Surveys (men and women)²⁹, and the 2000 and 2005 Demographic and Health Surveys (women only)³⁰. These reports confirmed the trend seen in other parts of Southeast Asia that cigarette smoking was highly prevalent

among men (>50%), but not women (3%). Until 2005, accurate prevalence data on all forms of tobacco use was not available in a complete nationwide sample.

During 2005-2006, a large nationwide survey of adult (18 years and older) tobacco use (n=13,988) was completed through a collaborative effort of the Fogarty-NIH sponsored Tobacco Control Leadership Training Program (TCLT) and the National Institute of Statistics (Ministry of Planning, Phnom Penh, Cambodia)^{1, 31}. In preparation for this national prevalence survey, validity and reliability studies were conducted on survey items and pictograms of cigarettes (commercial, hand rolled), chewing tobacco, and tobacco pipes. The validation was done by sampling 201 adults from a rural province, then administering the TCLT survey and collecting saliva samples for cotinine testing using the NicAlert (Nymox Corporation) test³¹. For the reliability study¹, subjects from 10 provinces who had completed the national prevalence survey were re-interviewed two to three weeks later using the identical survey and a different interviewer. Relative to salivary cotinine levels, we found excellent validity for the items and pictograms of current tobacco use (sensitivity 86% [95% confidence interval (CI) = 78.9%, 93.1%], specificity 94% [95% CI = 87.6%, 98.4%], positive predictive value 93% [95% CI = 89.7% ,98.7%]). Reliability analysis showed excellent re-test results for current smoking (kappa=0.93), a commercial cigarette pictogram of 37 brands (kappa=1), hand-rolled cigarettes (kappa=0.80), chewing tobacco pictogram (kappa=0.86), and a current pipe use pictogram (kappa=1).

The 2005-2006 TCLT survey was noteworthy due to 1) providing accurate estimates of all forms of tobacco use (cigarettes, smokeless tobacco in the form of a betel quid, and tobacco pipes) and 2) providing nationwide baseline data starting on the

year of FCTC ratification. The exact wording of the items on current use of cigarettes, smokeless tobacco, and pipes on the 2005-2006 TCLT was reproduced on the NATSC 2011 survey instrument (while also including the GATS format on tobacco use). Because the 2005-2006 TCLT survey and the NATSC 2011 Cambodia followed a similar sampling methodology (census-derived division of the nation into 17 sampling domains as a frame) to obtain nationally representative estimates of adults, we can use these data sets to study trends in tobacco use since the ratification of FCTC.

In figure 1.1, we present the total number of tobacco users (manufactured and hand-rolled cigarettes, smokeless tobacco, tobacco pipe), total number of cigarette smokers, and total number of smokeless tobacco users among adults (ages 18 and older) estimated in 2006 during the TCLT survey and estimated in 2011 during the NATSC Cambodia survey. These data indicate that there does not appear to be any decline in the overall number of tobacco users between 2006 and 2011 ($n = 1,924,000$; 95% CI [1,799,00 to 2,049,000] in 2006; $n = 1,993,000$; 95% CI [1,882,000 to 2,105,000] in 2011) in the Kingdom of Cambodia.

Figure 1.1. Number of adults (with 95% confidence intervals) using all forms of tobacco, cigarettes, and smokeless tobacco is estimated in 2006 and 2011 from national survey data (Tobacco Control Leadership Training Survey 2006; NATSC Cambodia, 2011).

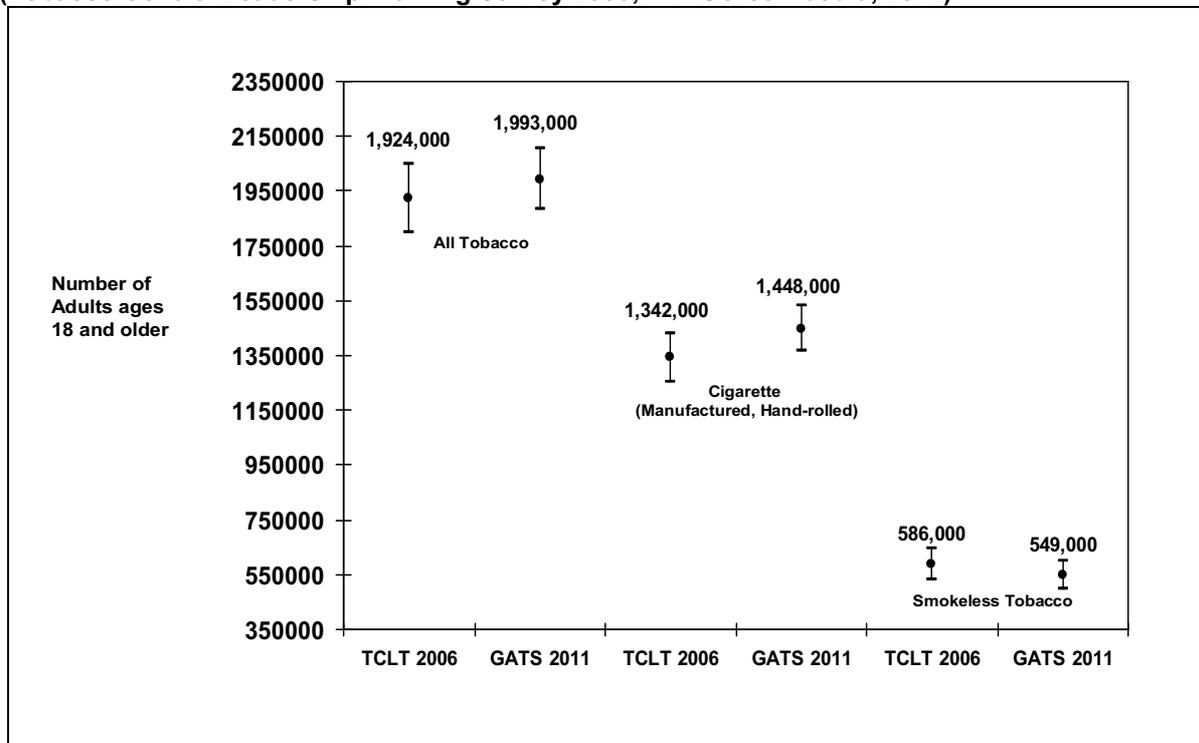
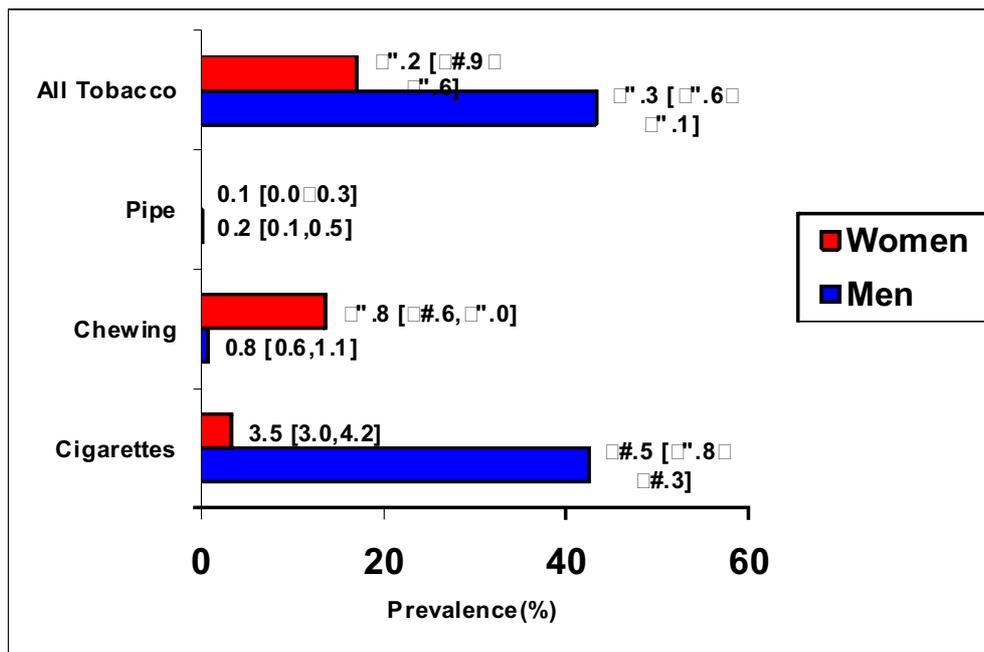


Figure 1.1 also indicates that the number of cigarette smokers remains about constant and exceeds 1.3 million ($n = 1,342,000$; 95% CI [1,251,000 to 1,432,000] in 2006; $n = 1,448,000$ 95% CI [1,366,000 to 1,531,000 in 2011]) and, as previously reported, consists primarily of men smoking manufactured cigarettes. Similarly, the number of smokeless tobacco users remains over half a million in Cambodia, and continues in 2011 to consist primarily of over half a million women who chew tobacco as part of a betel quid with slaked lime, betel leaf, and the areca nut ($n = 586,000$; 95% CI [529,000 to 644,000] in 2006; $n = 549,000$ 95% CI [497,000 to 601,000 in 2011]). Also noteworthy is that the count of “all tobacco” users in Cambodia also includes about 10,000 tobacco pipe users who are primarily from the ethnic and religious minorities

living in provinces (Mondol Kiri, Rotanak Kiri, Stuong Reng) near the Laos-Cambodian border. These minorities are indigenous, mountain dwelling persons of the region who are ethnically linked to tribes that live in communities as large as 90,000 in Laos, Vietnam, and Thailand.

Among adults 18 years and older, the prevalence of tobacco use from GATS 2011 data is given in Figure 1.2 for the purpose of comparison to TCLT 2006 survey data. Relative to 2006, the NATSC 2011 indicates 1) a modest decrease in the prevalence of current smoking among men (48.0% in 2005-2006 to 42.5% in 2011), and 2) a modest decrease in the prevalence of chewing tobacco among women (17.0% in 2005-2006 to 13.8% in 2011). We note that such apparent decreases also reflect marked increases in overall population size and life expectancy. As shown in Figure 1.1 the absolute number of tobacco users in 2011 remains virtually identical, if not slightly higher, than 2005.

Figure 1.2. Nationwide prevalence of tobacco use among adults (ages 18 and older) sampled from urban and rural regions of all provinces of Cambodia.



Economic Impact of Tobacco Use in Cambodia

Both globally and in Asia, tobacco use appears to be concentrated in the low income groups and the habit itself contributes to negative economic consequences beyond increased rates of death and disability. Findings from a study in Bangladesh have been used to estimate that “if the money spent on tobacco were directed towards food, about 10.5 million people in Bangladesh would have an adequate diet instead of being malnourished”³².

In Cambodia, Ross has reported that the very poor spend a 2-3 times greater fraction of their income on tobacco relative to the rich³³. In urban areas, a poor Cambodian might spend in excess of 7% of their income on tobacco, as opposed to 2% or less spent by the affluent. A secondary analysis of the 1999 Socioeconomic Survey of Cambodia indicated that the annual cash expenditure of Cambodian smokers on cigarettes was about 69.44 million USD¹⁶. This annual expenditure on cigarettes is enough to buy 274,304 tons of quality rice, 1,388,382 bicycles, or construct 27,778 wooden houses. The figure does not account for the health care costs and loss of productivity due to smoking related illness and death among the more than 1 million adult cigarette smokers of the nation. Moreover, such an amount in wasted resources could easily fill deficits in the national budget for reconstruction and social projects (i.e. health centers).

Using NATSC 2011 data, we will report that the annual cash expenditure on manufactured cigarettes is in excess of 99 million USD and that 41 million of it is being spent by those who can least afford it - adults earning less than 2 USD per day.

Health Impact of Tobacco Use in Cambodia

The health effects of smoked and smokeless tobacco are wide ranging in their public health impact. In many developed nations, the death rate from cigarette smoking alone exceeds the deaths from human immunodeficiency virus (HIV), illegal drug use, alcohol use, motor vehicle injuries, suicides, and murders combined²³. Moreover, 90% of lung cancer and respiratory diseases (chronic obstructive pulmonary disease, bronchitis, emphysema) is attributable to cigarette smoking²³. Cigarette smoking also increases the risk of coronary heart disease and cancers of several sites other than the lung (i.e. acute myeloid leukemia, bladder, cervix, esophagus, kidney, larynx, oral cavity, pharynx, stomach, uterus)²³.

Translating the known effects of smoking on chronic disease into estimating disease burdens in Asia is complex. Jha and Chen³⁴ have noted that the patterns of smoking-related fatal disease seem to occur differently throughout Asia. For example, in China major causes of death from smoking are chronic lung disease, lung cancer, and smoking is also a contribution to tuberculosis deaths. In contrast, in India, tuberculosis and heart disease are the leading causes of death attributable to cigarette smoking.

For Cambodia, where life expectancy is beginning to increase, income is increasing, and secular trends toward urbanization are occurring in some areas, the health burden due to tobacco use falls in four focal areas that require present and future surveillance efforts: 1) the increase in smoking-related chronic disease (cardiovascular disease) as life expectancy increases and communicable disease deaths decrease, 2) a persistent burden of oral cancer, sub-mucosal fibrosis, and oral lesions due to the use

of smokeless tobacco in the form a betel quid, 3) an increased risk of infant mortality due to maternal use of smokeless tobacco, and 4) an increased risk of tuberculosis due to constant impairment of lung function from smoke inhalation from habitual cigarette consumption and/or environmental tobacco smoke.

1.2 Current Tobacco Control Policies in Cambodia

FCTC Implementation Efforts and National Legislation

The World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC) became the world's first international public health treaty on February 27, 2005. In support of this global health treaty, the Kingdom of Cambodia ratified the implementation of FCTC on November 15, 2005. The current status of implementation efforts and national legislation is summarized in table 1.1. The most recent efforts include: 1) a proposal to increase the rate of tobacco taxation, and 2) a sub-decree passed in 2011 that bans tobacco advertising. NATSC 2011 findings provide broad support for: 1) an increase in cigarette pricing that is too low and targeting the poorest and youngest Cambodians, and 2) an enforcement of the ban on tobacco advertising given that the data indicate more Cambodians see tobacco advertisements, sponsorships, and promotions than see anti-tobacco messaging.

Table 1.1 Current Status of FCTC Implementation in Cambodia – NATSC Cambodia, 2011.		
FCTC Article	Summary of Article	Current Status
5.2 Adopting and implementing effective legislative measures for preventing and reducing tobacco consumption.	Each party shall adopt and implement effective legislative, executive, administrative and/or other measures and cooperate, as appropriate, with other Parties in developing appropriate policies for preventing and reducing tobacco consumption, nicotine addiction and exposure to tobacco smoke.	Advocacy to pass the Law on Tobacco Control is on process.
5.3 Protecting tobacco control measures from tobacco industry interference.	Each Party shall act to protect public health policies with respect to tobacco control from commercial and other vested interests of the tobacco industry in accordance with national law.	The Guidelines for implementation of FCTC's article 5.3 were translated and disseminated to the members of parliament and the Economic, Social and Cultural Council of the Council of Ministers.
6 Price and tax measures to reduce the demand for tobacco.	Each Party shall take account of national health objectives when setting tax and price policies on tobacco products, including tax- and duty-free sales; and report on tax rates and consumption trends to the periodic Conferences of the Parties to the FCTC. The excise tax rate should be 2/3 of retail price.	Currently, Cambodia imposes 20% tax on domestic and 25% on imported cigarettes at their retail price. Proposal to increase cigarette tax is in process.
8 Protection from exposure to tobacco smoke	Each Party shall adopt and implement in areas of existing national jurisdiction as determined by national law and actively promote at other jurisdictional levels the adoption and implementation of effective legislative, executive, administrative and/or other measures, providing for protection from exposure to tobacco smoke in indoor workplaces, public transport, indoor public places and, as appropriate, other public places.	12 government ministries have implemented indoor smoke-free circulars. Advocacy for policy on smoking ban in all workplaces and public places is in process.
11 Packaging and labeling of tobacco Product	Each Party shall adopt measures including requirements for the display of a rotated series of health warnings and other appropriate messages on tobacco product packaging that cover at least 30% (but ideally 50% or more) of the principle display areas and include pictures or pictogram, and prevention of false, misleading or deceptive packaging and labeling.	The government of Cambodia has approved the Sub-decree on Health Warning that requires all cigarettes sold in Cambodia to be printed with one of the 5 health messages occupying the bottom 30% of the both principle display areas, effective beginning August 2010.
13 Tobacco advertising, promotion and Sponsorship	Each Party shall undertake a comprehensive ban of all tobacco advertising, promotion and sponsorship.	The government of Cambodia has approved the Sub-decree on measures for the banning of tobacco product Advertising and the Prime Minister signed it on 24 February 2011. Minister in charge of the Council of Ministers, Minister of Economic and Finance, Minister of Health, all relevant Ministers, Secretaries of State, relevant institutions shall implement this Sub-decree from the date of signature. Tobacco companies, local manufacturers, importers of tobacco products, sellers of tobacco products and individuals relevant to advertising and distribution of tobacco products shall have a 6 (six) month period to put an end to this advertising which is on 24 August, 2011.

Current Tobacco Control Initiatives in Cambodia

A number of current tobacco control initiatives in Cambodia are ongoing and findings from the NATSC Cambodia 2011 provide the first evaluation of their efficacy.

Smoke-free Government Building Areas, Health Facilities, and Schools

Cambodia has progressed to the implementation of a smoke-free policy in workplaces. Presently, twelve government ministries have issued smoke-free circulars to ban indoor smoking at their workplaces that include the central ministries, provincial departments, municipal and provincial halls, and district and commune offices.

Cambodia has also aligned with other ASEAN nations in effecting totally smoke-free health facilities and educational facilities. Efforts to make Buddhist Temples a smoke-free area have been ongoing and have the support of many religious leaders in the nation.

An important and overlooked component to the smoke-free area initiative is that most of the environmental tobacco smoke exposure occurs in the home. Previously reported findings from TCLT 2006 indicate that in rural areas which comprise most of Cambodia, environmental tobacco smoke exposure is 2.5 times (odds ratio (OR), 2.52; 95% CI [1.71-3.71]) more likely to occur in the home³⁵. NATSC 2011 reveals that few Cambodians spend much time in government buildings or health facilities, and thus the current smoke-free policies are not addressing the location where most exposure occurs. Moreover, NATSC 2011 indicates that about half of all Cambodian homes continue to: 1) allow smoking (48.3%), 2) allow this smoking to occur in every room of the house (52.9%), and 3) allows this smoking inside the home to occur on a daily basis (53.9%).

Tax Stamps on Cigarette Packs

Currently, the Ministry of Economy and Finance requires all local manufactured and imported cigarettes to affix a tax stamp on each pack before selling them in any market or other vendor location in Cambodia. One 2000 survey of cigarette packs raised the possibility that 75% of cigarette packs sold in Phnom Penh and some provinces did not have tax stamps³³. NATSC Cambodia 2011 indicates that after FCTC ratification in 2005, 95% of cigarette packs, of users who were surveyed, displayed a domestic tax stamp. The finding provides strong evidence for a price increase of cigarettes packs via taxation.

Health Labels on Cigarette Packs

As of August 2010, the approved sub-decree on health warning labels requires all cigarettes sold in Cambodia to be printed with one of the following five messages in a display area that covers 30% of the bottom of the pack: 1) Smoking causes lung cancer, 2) Smoking causes heart disease, 3) Smoking causes emphysema, 4) Smoking cause tooth decay, or 5) Smoking causes stroke. NATSC 2011 indicates that among smokers and non-smokers, 66% had closely read the health warning label on the cigarette pack.

1.3 Survey Objectives of NATSC 2011

The objectives of the NATSC are:

- To systematically monitor adult tobacco use (smoking and smokeless) and track key tobacco control indicators in a nationally representative sample of Cambodia.
- To track implementation of FCTC recommended policies outlined in the MPOWER package.

2. Methodology

2.1 Study Population

The method of selecting the study population (n=15,615) for this survey produced a nationally representative sample that is the largest national survey of adult tobacco use in Cambodia completed to date. A stratified, multi-stage cluster sample of 15,615 subjects was enrolled who were 15 years of age and older and were selected from 6,294 households using the 2008 census as the sample frame as described in section 2.2. The sampling provided coverage of *all* private households – including “single member” households – from all provinces. All household members who were ages 15 and older, present at the home, and consented to participate were included in the survey.

As part of exclusion criteria used by the Ministry of Planning (National Institute of Statistics) in all national surveys of Cambodia during the past decade, the survey did not cover institutional households, such as military barracks, prisons, hospitals, and residents of temples (monks).

2.2 Sampling Design

The sampling design of NATSC Cambodia 2011 was a stratified multi-stage cluster sample. Stratification was achieved by creating 17 census-derived survey domains that represented 12 individual provinces (Banteay Mean Chey, Kampong Cham, Kampong Chhnang, Kampong Speu, Kampong Thom, Kandal, Koh Kong, Phnom Penh, Prey Veang, Pursat, Svay Rieng, and Takeo) and the following 5 groups

of provinces:

- | |
|--|
| <ol style="list-style-type: none">I. <i>Batambang and Pailin</i>II. <i>Kampot, Krong Preah Sihanouk, and Krong Kaeb</i>III. <i>Kracheh, Preah Vihear, and Stueng Traeng</i>IV. <i>Mondol Kiri and Rotanak Kiri</i>V. <i>Odar Mean Chey and Siem Reap</i> |
|--|

These seventeen domains became the sampling frame and were considered as separate strata, within which 2 stages of sampling units were selected. Within each domain, an implicit stratification of geographic and administrative sub-units (i.e. district, commune) was also completed. This was done before sample selection by sorting each domain by geographic and administrative sub-units and by using a probability proportional to size selection at first stage of sampling.

Two-Stage Sampling

For the first stage of sampling we selected 25-26 primary sampling units (PSU), i.e. village or comparable urban unit, from each domain in order to ensure at least a 90% statistical power to estimate national prevalence within 2% accuracy. For each PSU, sample size from the 2008 census was then converted to the number of households and number of enumeration areas (EA) by taking non-response into account, and by using the average number of eligible population members, ages 15 years and older per household. The EA size was the number of households residing in the EA. An EA was then selected from each PSU based on probability proportional to the EA size. After the selection of EA's, and before the main survey, a household listing operation was carried out in all of the selected EA's, and the resulting list of households served as a sampling frame for the selection of households in the second stage. To

minimize the task of household listing, selected EA's that had more than 200 households were segmented. Only one segment was to be selected randomly to be included in the survey -the selection probability then proportional to the final segment size. Household listings were then conducted only in the selected segment. As a result, the final NATSC Cambodia 2011 PSU is either an EA or a segment of an EA.

In the second stage of selection, 12 households were selected from every urban cluster and 15 households were selected from every rural cluster through a circular systematic sampling method. To ensure that all listed households have an equal chance to be selected for the interview, at the time of the main survey, the sampled Households for NATSC 2011 were pre-selected in the provincial ministry office *before* the interviewer team arrived. Thus to minimize selection bias during the survey interview period, the interviewer was asked to interview only the pre-selected households and no replacement was allowed for pre-selected households not found or that did not respond/consent to participate.

Table 2.1 Distribution of households across 437 Primary Sampling Units in the Census-based Sampling Frame for the survey of 15,615 adults (ages 15 and older) – NATSC Cambodia, 2011

	Domains	Sector				Total	
		Urban		Rural		No. of PSU	No. of households
		No. of PSU	No. of households	No. of PSU	No. of households		
1.	Banteay Mean Chey	8	96	18	270	26	366
2.	Kampong Cham	2	24	23	345	25	369
3.	Kampong Chhnang	3	36	23	345	26	381
4.	Kampong Speu	2	24	23	345	25	369
5.	Kampong Thom	2	24	23	345	25	369
6.	Kandal	4	48	21	315	25	363
7.	Koh Kong	9	108	17	255	26	363
8.	Phnom Penh	29	348	2	30	31	378
9.	Prey Veaeang	1	12	24	360	25	372
10.	Pursat	2	24	23	345	25	369
11.	Svay Rieng	1	12	24	360	26	372
12.	Takeo	0	0	24	360	24	360
13.	Battambang	5	60	19	285	24	345
	Pailin	0	0	1	15	1	15
14.	Kampot	2	24	16	240	18	264
	Krong Preah Sihanouk	3	36	4	60	7	60
	Krong Kaeb	0	0	1	15	1	15
15.	Kratie	2	24	12	180	14	180

	Preah Vihear	1	12	6	90	7	90
	Stueng Traeng	1	12	4	60	5	60
16.	Mondol Kiri	1	12	7	105	8	117
	Rotanak Kiri	3	36	15	225	18	261
17.	Odar Mean Chey	1	12	4	60	5	72
	Siem Reap	5	60	16	240	21	300
Total		87	1044	350	5250	437	6294

Table 2.1 shows the final allocation of primary sampling units (PSU) across the 17 geographic strata. Since there was one EA selected per PSU, a total of 437 EA's were surveyed (87 urban, 350 rural).

2.3 Questionnaire

After providing informed consent, all subjects provided data through two questionnaires that we will refer to as "Form 1" and "Form 2". Form 1 was completed during the enumeration of all households in every sample village (or segment of sample village) and was used to randomly select the final households for the sample. It contained information on the number of visits and attempts made to contact the subject and with sampling fraction of the EA. Form 1 also included the informed consent documentation.

Table 2.2 Forms 1 and 2 of the Survey – NATSC Cambodia, 2011.

Form 1: Household Enumeration and Selection data, Interviewer/Enumerator IDs, Informed Consent
Form 2: Core Questionnaire
A. Demographics and Supplement
i. Characteristics such as age, gender, marital status, ethnicity, literacy, education, occupation, and income (refers to gross income).
ii. Tobacco questions from the 2005-2006 survey.
B. Tobacco smoking (GATS)
C. Chewing tobacco (GATS)
D. Cessation (GATS)
i. tobacco smoking
ii. tobacco chewing
E. Second hand smoke (GATS)
F. Economics (includes GATS items)
i. manufactured cigarettes (by industry)
ii. hand rolled cigarettes (local business)
iii. loose tobacco for hand rolled cigarettes
G. Media (GATS)
H. Knowledge and Attitudes about tobacco use
i. Harmful effects
ii. Attitudes about anti-tobacco policies
I. Diet (Supplement)
J. Current health
K. Women's Health (Supplement)

After selection into the sample, Form 1 was retained to have its data entered along with the final survey. The contents of Form 1 (Listing of Household) and Form 2 (Core Questionnaire) are given in Appendix A and described in Table 2.2.

Form 2 (Core Questionnaire) of NATSC Cambodia consists of 11 sections. Eight of these sections contain GATS survey items that have been adapted for use in Cambodia. A general description of each section that contains GATS items is described below (the questionnaire is provided in Appendix A):

- **Tobacco smoking:** Patterns of use (daily consumption, less than daily consumption, not at all), former/past tobacco consumption, age of initiation of daily smoking, consumption of different tobacco products, (cigarettes, pipes, cigars and other smoked tobacco), nicotine dependence, frequency of quit attempts.

- **Smokeless tobacco:** Patterns of use (daily consumption, less than daily consumption, not at all), former/past use of smokeless tobacco, age of initiation of daily use of smokeless tobacco, consumption of different smokeless tobacco products (snuff, chewing tobacco, betel quid, etc.), nicotine dependence, frequency of quit attempts.

- **Cessation:** Advice to quit smoking by health care provider, method used to try to stop smoking. Similar information is asked for cessation on smokeless tobacco as well.

- **Secondhand smoke:** Smoking allowed in the home, exposure to secondhand smoke at home, indoor smoking policy at work place, exposure during the last 30 days in: work place, government buildings/offices, health care facilities, restaurants, public transportation.

- **Economics:** Type of tobacco product and quantity bought, cost of tobacco product(s), brand, type of product purchased, and source of tobacco products.
- **Media:** Exposure to advertisement (television, radio, billboards, posters, newspapers/magazines, cinema, internet, public transportation, public walls, others); exposure to sporting events connected with tobacco; exposure to music, theatre, art or fashion events connected with tobacco; exposure to tobacco promotion activities; reaction to health warning labels on cigarette packages; exposure to anti-tobacco advertising and information. Similar questions are included for smokeless tobacco as well. The reference period for the questions in this section is 30 days.
- **Knowledge, attitudes and perceptions:** Knowledge about health effects of both smoking and smokeless tobacco.

In sum, NATSC 2011 survey items were designed from several sources of input: 1) GAT items, 2) focus groups conducted on tobacco and health issues in rural and urban centers, 3) survey research done as part of the TCLT program, and 4) consultation with local nongovernmental organizations that had conducted provincial surveys on tobacco use. Since the multidisciplinary group who designed the survey included both English and Khmer speaking investigators, there was need for translation from a working English document. The written survey items were translated and back-translated to verify content, criteria and semantic equivalence by bilingual and monolingual experts who used the methods described by Flaherty et al. Pre-testing among subjects in urban and rural centers was also done and the findings were used to refine the final wording of the NATSC survey.

2.4 Data Collection

Implementing Institution

The survey was administered by the National Institute of Statistics (Ministry of Planning, Cambodia) who has conducted all population censuses of the country, all socioeconomic surveys of tobacco use, two Demographic and Health Surveys (2000 and 2005), and the 2006 TCLT survey (adult tobacco use among 13,988 adults ages 18 years and older). Mr. They Kheam is a survey statistician and one of the overall co-principal investigators of the NATSC 2011 funded by the WHO and Fogarty/NIH (Loma Linda University).

Interviewer Training, Data Collection, Data Processing (Coding, Entry, Cleaning)

A total of 86 interviewing staff and their supervisors were recruited and trained by the National Institute of Statistics (Ministry of Planning), Dr. Daravuth Yel (WHO), Dr. Pramil Singh (Loma Linda University, USA), and Dr. Mom Kong (Cambodia Movement for Health). **All staff members hired for data collection activities were trained on all aspects of the interview process (concepts, definitions) and in filling out the questionnaires by hand (handheld computers were not used in the field for this survey).** All training of participating staff was completed in several intensive two to five day sessions at the National Institute of Statistics (Phnom Penh) followed by a quantitative pre-test of the survey and reliability testing of the interviewers. After the pre-test, finalizing of the survey, and printing (one week process), all interviewers were deployed to the seventeen survey domains throughout the country during October 2010. **Data collection, processing, entry, cleaning, and coding was completed during October 2010 through January 2011.** The completed questionnaires were collected by field supervisors within each domain on a specified due date. Manual processing of

questionnaires by the supervisors verified the quality and consistency of the data recorded on the paper-based questionnaires by the interviewer. A detailed coding classification of occupations and industries was used from previous economic surveys and the TCLT survey. The coding and classification scheme were based on the UN International Standard Occupations Classification (ISOC) and UN International Standard Industrial Classification (ISIC) systems, respectively. Manual editing and coding were performed by four personnel (one supervisor and three processors) from the National Institute of Statistics (NIS). After careful examination, each questionnaire was stored for entry.

The editing and coding of each questionnaire was performed manually. For data entry, a verification software package, known as the Census and Survey Processing System (CSPPro), was used to verify data entry, correct inconsistencies, and tabulate survey results. The NIS personnel who used CSPPro had undergone software training on all phases of data entry, verification, coding, and cleaning. Following data entry, a preliminary report was generated. Range checks were performed on all variables included in the survey questionnaire. A final tabulation was reported to the co-PI's of the survey before and after cleaning of data files.

Confidentiality of Information

All survey participants provided their approval and informed consent and were assured that any information provided during the National Tobacco survey would be held confidential and not released. As part of obtaining this informed consent, all subjects were informed that their confidential information will only be reported in large statistical reports that will monitor national levels of adult tobacco use, help

understanding of the effects of tobacco use, and develop a strategic national tobacco policy. All participants were assured that their information would not be used against them in a manner such as identifying persons who failed to pay taxes or for any other legal purpose.

2.5 Statistical Analysis

Data analysis for NATSC 2011 needed to account for the stratified, multistage cluster sampling protocol described above. The 95% confidence intervals (CI) for prevalence, means and odds ratios for tobacco use and health variables were calculated using a standard error from a Taylor series linearized method described in Appendix C. This allowed for the computation of between-cluster variance estimators that accounted for the intra-cluster correlation among subjects within the same village. Point estimates for prevalence, means and odds ratios were further adjusted by sample weights to account for different sampling fractions within each of the 17 domains described above. These statistical analyses were performed with SUDAAN software release 9.0 (RTI International, Research Triangle Park, NC, USA).

3. Sample and Population Characteristics

Response Rates

The analysis of response rates indicates that, similar to previous surveys, less than 1% of all households selected refused to participate in the survey. This finding is expected given the results of previous census efforts, Socioeconomic Surveys, and Demographic and Health Surveys done in the nation. The enumerators, interviewers, and field staff from the National Institute of Statistics are experienced, well trained, personable, and have during the past decade been very well received by subjects in urban and rural areas of Cambodia. Due to extensive phone and personal contact with village chiefs by the NIS personnel, the households selected tend to not be unoccupied or mislabeled at the time of the survey.

Despite the high level of household response, we do note, indicated in table 3.1, that once a household consented to participate, about 30% of eligible urban adults and 18% of eligible rural adults were not at home at the time of the survey. The most common reason for their absence was they were at work outside the house. It could be assumed that the age range of adults who work long hours outside the house does in fact include a disproportionate number of middle-aged adults (i.e. 25-54 years) among whom the rates of cigarette smoking in men are the highest and rates of smokeless tobacco in women are beginning to increase. When considering bias, the question arises as to whether those adults who work long hours outside the house tend to use more or less tobacco than their peers who were found at home and consented to participate in the survey. Since the overall demographics of the surveyed adults (age, education, income, occupation) does not appear to differ substantially from the census

data (that collected proxy data on absent members), the bias, while present, may not be large.

The next most common reason for not being home at the time of the survey was due to studying away from home (presumably over a long period). This is a group that would probably contain more young adults (i.e. 18 to 30 years). Since higher education tends to be associated with less tobacco use in Cambodia, this latter effect may not present an important bias in the sample.

By gender, we found a response rate of 76% among men and 83% among women. Men showed a greater tendency than women to be working outside the house at the time of the survey interview.

Demographics

The demographics of the adult population ages 15 and older show a similar population profile to previous surveys and the census. Specifically, the adult population (ages 15 years and older) tends to be rural (83%), predominantly Khmer ethnicity (97%), Buddhist (97%), married (63%), has less than a primary school education (66%), and earns 2 USD per day or less (69%), (table 3.2).

Table 3.1 Number of persons interviewed and response rates by residence and region (unweighted) – NATSC Cambodia, 2011.

	RESIDENCE		REGION																
	Urban	Rural	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Completed	2527	13088	807	997	1091	748	899	1016	1040	747	613	972	939	915	1030	1059	970	1006	766
Study away from home	254	372	42	5	15	41	24	26	46	141	50	7	11	48	46	32	31	10	51
Work away from home	621	1972	213	13	80	281	151	144	47	348	397	79	40	159	135	134	70	9	293
Seeking for work away from home	59	230	76	6	8	13	60	5	6	27	22	7	4	12	1	4	21	7	10
Visit relatives away from home	82	221	11	1	6	29	15	8	8	49	73	19	11	6	15	16	16	4	16
Vacation away from home	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Medical treatment away from home	10	27	0	2	4	4	5	2	0	4	5	0	1	1	0	3	3	0	3
Working mission away from home	4	8	0	0	0	4	0	0	0	0	1	0	0	0	0	1	2	0	4
Stay away from home for security reason	1	4	0	0	0	0	1	0	4	0	0	0	0	0	0	0	0	0	0
Go abroad	7	39	3	4	7	0	1	0	3	3	17	0	0	0	0	3	1	2	2
Other	12	69	0	0	9	16	0	1	1	7	9	4	0	3	0	0	5	0	26
Number of Sampled Persons	3578	16031	1152	1028	1220	1136	1156	1202	1155	1327	1187	1088	1006	1144	1227	1252	1119	1038	1172
Person-level Response Rate	70.63%	81.64%	70.05%	96.98%	89.43%	65.85%	77.77%	84.53%	90.04%	56.29%	51.64%	89.34%	93.34%	79.98%	83.94%	84.58%	86.68%	96.92%	65.36%

Table 3.2 Distribution of adults ≥ 15 years old by selected demographic characteristics – NATSC Cambodia, 2011.

	Weighted		Unweighted Number of Adults
	Percentage [95% CI ¹]	Number of Adults	
Age			
15-24 years	25.4 [24.5, 26.4]	1,922,413	4,063
25-44 years	40.4 [39.3, 41.5]	3,053,453	6,430
45-64 years	26.6 [25.7, 27.6]	2,014,147	4,092
≥ 65 years	7.5 [6.9, 8.3]	570,317	1,030
Gender			
Women	54.8 [54.0, 55.6]	4,143,147	8,474
Men	45.2 [44.4, 46.0]	3,417,183	7,141
Residence			
Urban	16.9 [13.6, 20.9]	1,279,421	2,527
Rural	83.1 [79.2, 86.4]	6,280,909	13,088
Ethnicity			
Khmer	97.0 [95.2, 98.2]	7,332,942	14,616
Cham	1.5 [0.7, 3.7]	117,360	258
Other	1.5 [1.0, 2.0]	109,262	738
Religion			
Buddhist	97.6 [95.7, 98.6]	7,375,903	14,790
Muslim	1.5 [0.6, 3.6]	114,913	251
Christian	*	3,954	10
Other	0.7 [0.5, 1.0]	54,375	464
None	0.2 [0.1, 0.3]	11,185	100
Marital Status			
Never married	26.0 [24.9, 27.1]	1,962,044	4,072
Currently Married	63.1 [61.9, 64.3]	4,771,664	9,841
Divorced or Separated	3.0 [2.6, 3.3]	223,664	408
Widower/Widow	6.8 [6.3, 7.3]	513,113	964
Live Together	1.2 [0.9, 1.6]	89,845	330
Education²			
0-6 y	65.9 [63.8, 67.9]	4,978,530	10,701
7-12 y	31.6 [29.9, 33.4]	2,389,458	4,562
13-15 y	1.2 [0.9, 1.6]	92,085	178
> 15 y	1.3 [1, 1.7]	96,476	168
Income in USD per day			
< 1 USD	55.7 [54.1, 57.3]	4,212,123	8,822
1-2 USD	13.2 [12.2, 14.2]	996,341	1,992
>2-3 USD	11.3 [10.5, 12.2]	856,207	1,763
> 3 USD	19.8 [18.5, 21.1]	1,495,659	3,038
Occupation			
No Occupation	16.5 [15.4, 17.8]	1,250,769	2,355
Professional	1.2 [1, 1.5]	89,611	190
Health Professional (Physician)	0.4 [0.3, 0.6]	30,507	57
Professional Nurse or Midwife	*	2,868	7
Traditional Healer/Faith Healer	*	4,128	5
Technical	1.5 [1.2, 1.8]	111,438	242
Clerical	0.2 [0.2, 0.4]	18,450	33
Service	0.5 [0.4, 0.8]	39,368	73
Fireman, Police	0.5 [0.3, 0.6]	33,704	73
Sales	8.6 [7.6, 9.8]	651,335	1,292
Tobacco Farming or Preparation	*	7,932	10

¹ 95 % Confidence Interval.

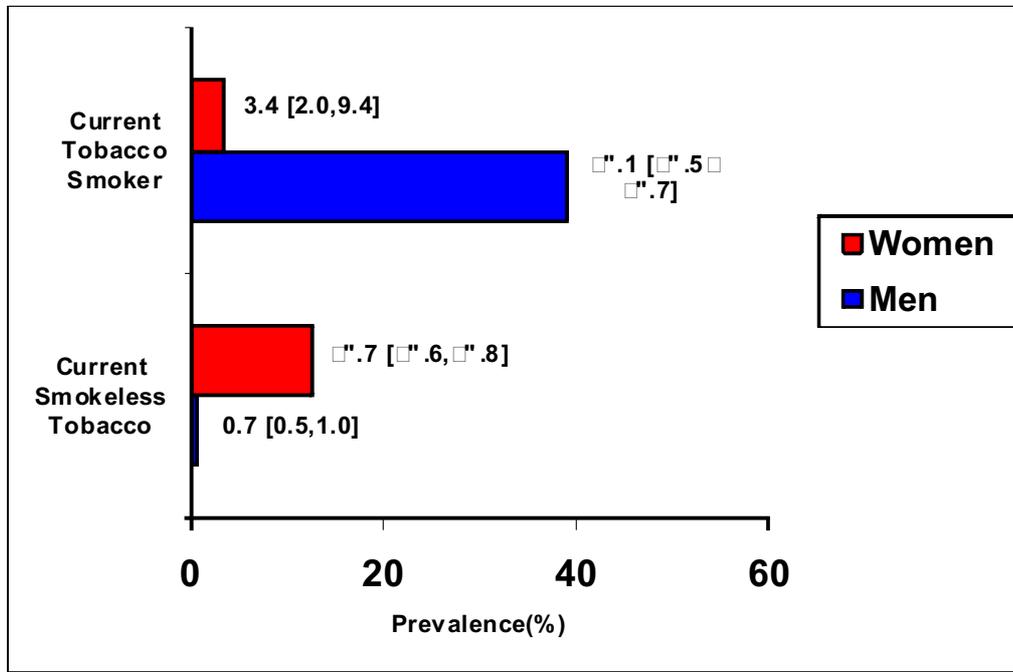
² Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

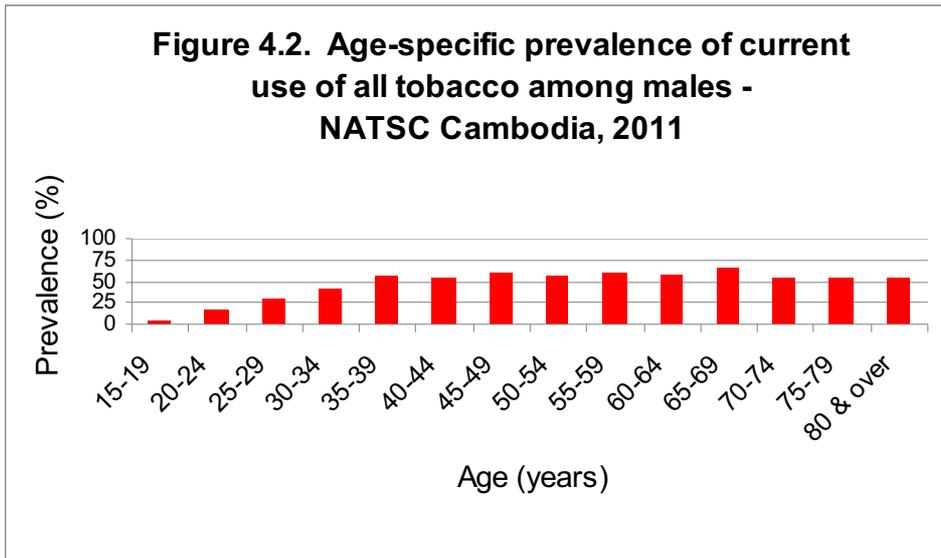
Farming, Livestock	59.8 [56.9, 62.5]	4,518,572	9,804
Labor	7.3 [6.2, 8.6]	554,630	1,022
Trades and Crafts	3.0 [2.4, 3.6]	225,592	404
Armed Forces	0.3 [0.2, 0.4]	21,427	48

4. Tobacco Use

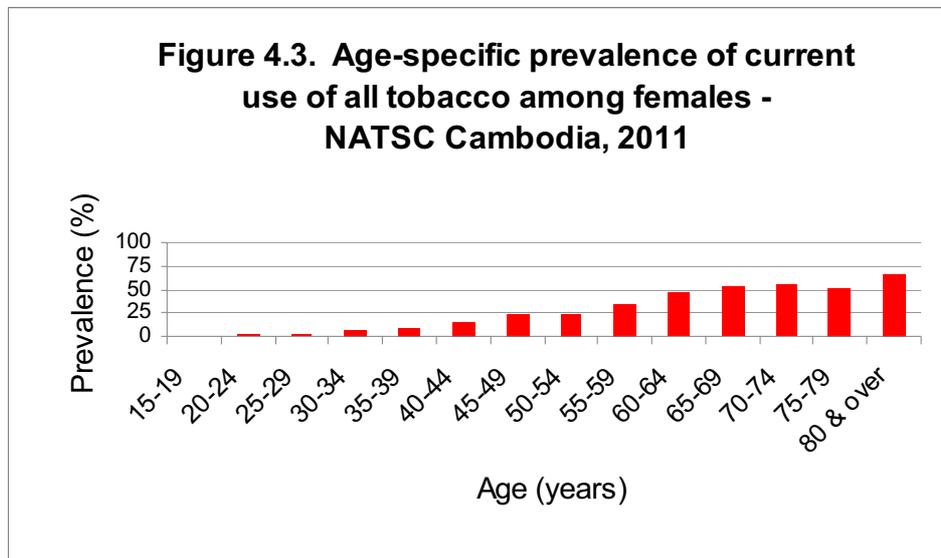
Figure 4.1 National prevalence of tobacco smoking and smokeless tobacco use among 15,615 adults (ages 15 and older) – NATSC Cambodia 2011.



Tobacco use among adults in Cambodia has long followed a pattern (figure 4.1). Men start smoking cigarettes as young adults and by the age of 35 years about half the adult male population of Cambodia are tobacco users through the remainder of their lifespan (figure 4.2).



Among women, the habitual use of smokeless tobacco, typically in the form of a betel quid, starts during the third or fourth decade of life and progresses to the point that about half of the older women are smokeless tobacco users through the remainder of the lifespan (figure 4.3).



In this section we will examine the demographics of tobacco use, type of tobacco use, age at initiation of tobacco use, and measures of dependence on tobacco use in Cambodia.

4.1 Smoked tobacco among Adults of Cambodia

Findings in tables 4.1 to 4.2 indicate that current smoking of tobacco is predominantly a daily habit among adult males (ages 15 years and older). Of the 1,477,000 tobacco smokers in Cambodia, 1,278,000 are males who smoke tobacco daily. The prevalence of daily cigarette smoking is 18.4% [95% CI 17.6, 19.2]; among males the rate was higher (36.9% [95% CI 35.4, 38.5]) than females (3.1% 95% CI [2.6,3.7]).

The following data strongly indicate that in all demographic subgroups of the population, cigarette smoking is an addictive daily habit that, once initiated, seldom results in reduction or cessation. Specifically, we find in tables 4.1 and 4.2 that 1) there are very few occasional (less than daily) smokers (n=65,000), 2) there are very few former daily smokers who reported reducing their daily smoking to become occasional smokers (n=31,000), and 3) among the more than 6 million non-smokers only 189,000 are adults who have successfully quit daily smoking.

Table 4.1 Percentage of adults \geq 15 years old by smoking status and gender – NATSC Cambodia, 2011

Smoking Status	Overall	Men	Women
Current tobacco smoker	19.5 [18.7, 20.4]	39.1 [37.5, 40.7]	3.4 [2.9, 4.0]
Daily smoker	18.7 [17.8, 19.5]	37.4 [35.8, 39.0]	3.2 [2.7, 3.8]
Occasional smoker	0.9 [0.7, 1.0]	1.7 [1.4, 2.1]	0.2 [0.1, 0.3]
Occasional smoker, formerly daily	0.4 [0.3, 0.5]	0.9 [0.6, 1.1]	0.0 [0.0, 0.2]
Occasional smoker, never daily	0.5 [0.4, 0.6]	0.8 [0.6, 1.1]	0.1 [0.1, 0.3]
Non - smoker	80.5 [79.6, 81.3]	60.9 [59.3, 62.5]	96.6 [96, 97.1]
Former daily smoker	2.5 [2.2, 2.9]	5 [4.4, 5.7]	0.4 [0.3, 0.7]
Never daily smoker	78 [77.1, 78.8]	55.9 [54.3, 57.5]	96.2 [95.5, 96.7]
Former occasional smoker	0.2 [0.1, 0.3]	0.3 [0.2, 0.6]	0.1 [0.0, 0.2]
Never smoker	77.8 [76.9, 78.6]	55.6 [53.9, 57.2]	96.1 [95.4, 96.7]

Note: Current use includes both daily and occasional (less than daily) use.

Table 4.2 Number of adults \geq 15 years old by smoking status and gender – NATSC Cambodia, 2011

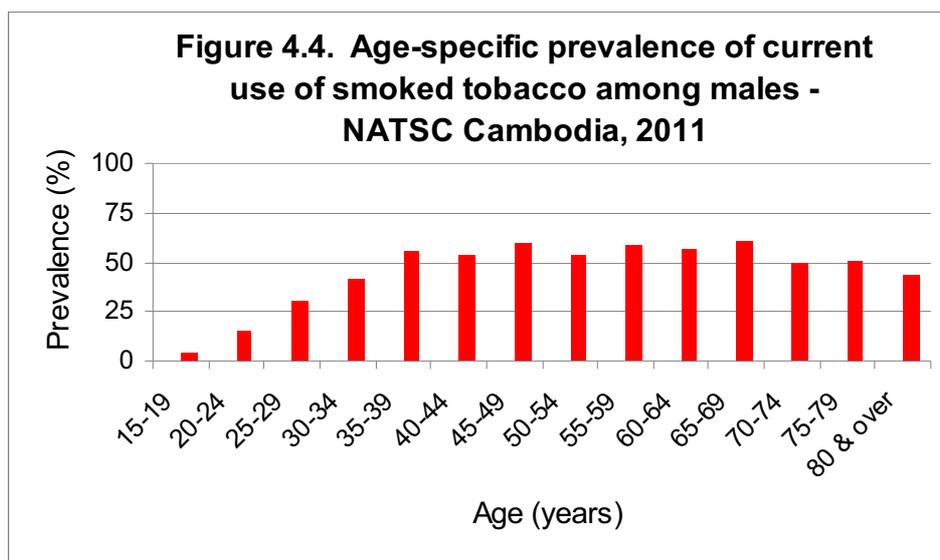
	Overall	Men	Women
Current tobacco smoker	1,477,000	1,336,000	141,000
Daily smoker	1,412,000	1,278,000	134,000
Occasional smoker	65,000	58,000	7,000
Occasional smoker, formerly daily	31,000	29,000	2,000
Occasional smoker, never daily	34,000	29,000	5,000
Non - smoker	6,084,000	2,082,000	4,002,000
Former daily smoker	189,000	171,000	18,000
Never daily smoker	5,894,000	1,911,000	3,984,000
Former occasional smoker	15,000	12,000	4,000
Never smoker	5,879,000	1,899,000	3,980,000

Note: Current use includes both daily and occasional (less than daily) use.

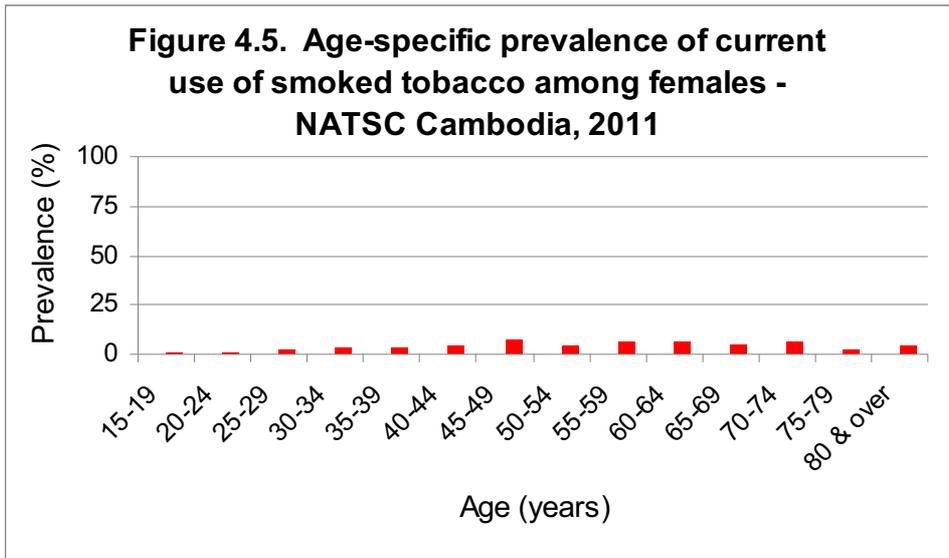
It is important to note that 3.4% of women ages 15 years and older are smokers and virtually all who currently smoke are daily smokers (134,000 daily smokers out of 141,000 current smokers). For the purpose of comparison to the TCLT 2006 data, we restricted the analysis to adults who were ages 18 years and older and analyzed the findings from the same current smoking items administered in 2006 and 2011. We found that the 3.6% prevalence (95% CI [3.0, 4.3]) of current cigarette smoking found in 2006 was virtually identical to 2011 data (3.5%; 95% CI [3.0, 4.2]). In terms of number of female smokers, the data indicates there were 119,000 female smokers (95% CI [99,000 to 139,000]) in 2006 and 135,000 (95% CI [111,000 to 159,000]) in 2011. We note that most of the female smokers are older women and qualitative evidence continues to indicate a cultural stigma for smoking among young Cambodian women¹⁸. Nevertheless, the trend in women needs continued surveillance. Measures to increase the price of cigarettes may address the problem of female smoking in Cambodia since qualitative data¹⁸ indicate that it tends to be female household members who express concern that tobacco purchases are decreasing the budget for food and other household necessities.

Demographics of Tobacco Smokers in Cambodia

Between adolescence (ages 15-17 years) and middle age (ages 25-44 years) the findings (figure 4.4, tables 4.3-4.5) indicate that there is a 20-fold increase in the



prevalence of tobacco smoking among males (2% at ages 15-17 years; 45% at ages 25-44 years). Each successive birth cohort of 15-17 year old males who follow this steep gradient of smoking initiation, almost entirely populates the 1.4 million current smokers of the nation as they age. What characterizes these men who smoke tobacco? Findings in table 4.5 indicate that they tend to be rural (41%), have less than a primary education (49%), and most earn 2 USD per day or less (75%).



Among females (figure 4.5), a trend towards about 5% of women becoming daily smokers after an age of about 45 years was evident in the data and very similar to findings from TCLT 2006¹. The association with income and daily smoking among these women was less clear. Again, the virtual absence of smoking among young women probably indicates that social norms towards this behavior being stigmatized among young women remain prevalent.

Patterns of use of Manufactured versus Hand-rolled Cigarettes in Cambodia

Findings in table 4.3-4.4 indicate that among current cigarette smokers, 1,106,000 smoked manufactured cigarettes while 364,000 smoked hand-rolled cigarettes. There was a very small subgroup of these smokers (n=14,000) who displayed a mixed pattern of smoking both manufactured and hand-rolled cigarettes.

Hand-rolled cigarette users tended to be over the age of 45 years, rural, and have less than a primary education. Of the 364,000 hand-rolled cigarette smokers, 232,000 earned less than 2 USD per day. Continued surveillance of hand-rolled cigarette use is needed because, it provides a low cost alternative if pricing of manufactured brands is increased in the future.

Table 4.3. Percentage of adults ≥ 15 years old who are current smokers of various smoked tobacco products, by gender and selected demographic statistics – NATSC Cambodia, 2011.

	Any smoked Tobacco Product	Any Cigarette ¹	Type of Cigarette		
			Manufactured	Hand-rolled	Other ²
Overall	19.5 [18.7, 20.4]	19.3 [18.4, 20.1]	14.6 [13.9, 15.4]	4.8 [4.3, 5.4]	0.2 [0.1, 0.3]
<i>Age (years)</i>			<i>Percentage [95% CI]</i>		
15-17	1.3 [0.8, 2.1]	1.3 [0.8, 2.0]	0.9 [0.5, 1.6]	*	*
18-24	7.0 [5.8, 8.3]	6.9 [5.7, 8.3]	6.3 [5.1, 7.6]	0.7 [0.4, 1.1]	*
25-44	21.7 [20.5, 22.9]	21.4 [20.2, 22.6]	17.8 [16.8, 18.9]	3.8 [3.1, 4.6]	0.2 [0.1, 0.4]
45-64	27.5 [25.8, 29.2]	27.1 [25.5, 28.8]	19.7 [18.2, 21.2]	7.7 [6.7, 8.8]	0.3 [0.2, 0.6]
65+	28.8 [25.8, 32.1]	28.2 [25.2, 31.4]	14 [11.6, 16.9]	14.4 [11.9, 17.2]	*
<i>Residence</i>					
Urban	13.3 [11.5, 15.4]	13.3 [11.5, 15.3]	12.5 [10.8, 14.3]	0.8 [0.5, 1.4]	0.0 [0.0, 0.3]
Rural	20.8 [19.9, 21.7]	20.5 [19.6, 21.4]	15.1 [14.3, 15.9]	5.6 [5.0, 6.3]	0.2 [0.1, 0.4]
<i>Education³ (years)</i>					
0-6	22.1 [21.1, 23.0]	21.7 [20.7, 22.6]	15.6 [14.8, 16.5]	6.3 [5.6, 7.1]	0.2 [0.1, 0.5]
7-12	15.4 [14.2, 16.7]	15.4 [14.1, 16.7]	13.3 [12.1, 14.6]	2.1 [1.6, 2.7]	*
13-15	6.2 [3.3, 11.4]	6.2 [3.3, 11.4]	6.2 [3.3, 11.4]	*	*
> 15	4.3 [2.2, 8.3]	4.3 [2.2, 8.3]	3.5 [1.7, 6.9]	0.8 [0.1, 5.7]	*
<i>Income</i>					
< 1 USD	12.5 [11.6, 13.4]	12.2 [11.4, 13.1]	8.5 [7.8, 9.4]	3.8 [3.3, 4.5]	0.2 [0.1, 0.5]
1-2 USD	25.7 [23.5, 28.1]	25.4 [23.1, 27.7]	18.5 [16.5, 20.6]	7.0 [5.7, 8.7]	*
>2-3 USD	29.2 [26.4, 32.2]	29.0 [26.2, 31.9]	23.8 [21.3, 26.5]	5.4 [4.2, 6.9]	*
> 3 USD	29.8 [27.6, 32.0]	29.5 [27.3, 31.7]	24.0 [22.1, 26.0]	5.8 [4.8, 7.0]	*
Men	39.1 [37.5, 40.7]	38.6 [37.0, 40.2]	29.9 [28.4, 31.3]	9.1 [8.1, 10.2]	0.3 [0.2, 0.5]
<i>Age (years)</i>					
15-17	2.0 [1.2, 3.3]	2.0 [1.2, 3.3]	1.3 [0.7, 2.5]	0.6 [0.2, 1.5]	*
18-24	13.1 [10.9, 15.7]	13.0 [10.8, 15.5]	11.9 [9.8, 14.4]	1.2 [0.7, 2.0]	*
25-44	45.1 [42.7, 47.5]	44.6 [42.3, 47.0]	38.3 [36.1, 40.6]	6.8 [5.6, 8.3]	*
45-64	57.8 [54.8, 60.8]	57.2 [54.3, 60.1]	41.8 [38.9, 44.7]	16.0 [13.9, 18.3]	*
65+	55.8 [49.4, 62.1]	54.5 [48.2, 60.7]	27.1 [22.4, 32.3]	27.9 [22.7, 33.6]	*
<i>Residence</i>					
Urban	28.2 [24.5, 32.2]	28.1 [24.5, 32.0]	26.4 [23.0, 30.1]	1.7 [1.0, 2.8]	*
Rural	41.2 [39.6, 42.8]	40.6 [39, 42.3]	30.5 [29, 32.1]	10.5 [9.3, 11.9]	0.3 [0.2, 0.6]
<i>Education³ (years)</i>					
0-6	48.8 [46.8, 50.8]	48.0 [46.1, 50.0]	35.4 [33.6, 37.3]	13.2 [11.7, 14.8]	0.4 [0.2, 0.7]
7-12	27.0 [25.0, 29.1]	26.9 [24.9, 29.0]	23.5 [21.5, 25.5]	3.6 [2.8, 4.6]	*
13-15	10.5 [5.5, 18.8]	10.5 [5.5, 18.8]	10.5 [5.5, 18.8]	*	*
> 15	6.6 [3.3, 12.8]	6.6 [3.3, 12.8]	5.3 [2.6, 10.4]	*	*
<i>Income</i>					
< 1 USD	29.0 [27.0, 31.0]	28.5 [26.6, 30.5]	20.6 [18.8, 22.6]	8.3 [7.0, 9.8]	*
1-2 USD	45.6 [41.8, 49.3]	44.9 [41.2, 48.7]	33.2 [29.7, 36.9]	12.0 [9.7, 14.7]	*
>2-3 USD	49.5 [45.5, 53.6]	49.2 [45.1, 53.3]	41 [37.3, 44.7]	8.6 [6.6, 11.0]	*
> 3 USD	46.2 [43.2, 49.3]	45.7 [42.7, 48.7]	37.1 [34.4, 39.9]	9.0 [7.5, 10.9]	*
Women	3.4 [2.9, 4.0]	3.3 [2.8, 3.9]	2.1 [1.7, 2.5]	1.3 [1.0, 1.7]	0.1 [0.0, 0.3]
<i>Age (years)</i>					
15-17	*	0.6 [0.2, 1.7]	*	*	*
18-24	*	1.0 [0.5, 2.1]	*	*	*
25-44	3 [2.4, 3.8]	2.8 [2.2, 3.6]	1.5 [1.1, 2.0]	1.4 [1.0, 2.0]	*
45-64	5.8 [4.7, 7.3]	5.7 [4.6, 7.2]	3.9 [3.0, 5.2]	1.8 [1.3, 2.6]	*
65+	4.5 [2.9, 7.0]	4.4 [2.8, 6.9]	*	2.2 [1.2, 4.0]	*
<i>Residence</i>					
Urban	2.0 [1.2, 3.3]	2.0 [1.2, 3.3]	1.8 [1.1, 3.1]	0.2 [0.1, 0.5]	*
Rural	3.7 [3.1, 4.4]	3.6 [3.0, 4.3]	2.1 [1.7, 2.6]	1.5 [1.2, 2.0]	0.1 [0.0, 0.4]
<i>Education³ (years)</i>					
0-6	4.2 [3.6, 5.0]	4.1 [3.5, 4.9]	2.5 [2.0, 3.0]	1.7 [1.3, 2.2]	0.1 [0.0, 0.4]
7-12	1.3 [0.8, 2.0]	1.3 [0.8, 2.0]	1.0 [0.6, 1.7]	0.3 [0.1, 0.7]	*
13-15	*	*	*	*	*
> 15	*	*	*	*	*
<i>Income</i>					
< 1 USD	3.5 [2.9, 4.2]	3.3 [2.7, 4.0]	2.0 [1.5, 2.5]	1.4 [1.0, 1.9]	0.1 [0.0, 0.4]

1-2 USD	4.0 [2.7, 6.0]	4.0 [2.7, 6.0]	2.4 [1.4, 4.0]	1.7 [0.9, 3.0]	*
>2-3 USD	2.9 [1.8, 4.7]	2.9 [1.8, 4.6]	*	*	*
> 3 USD	2.9 [2.0, 4.2]	2.9 [2, 4.2]	2.5 [1.7, 3.8]	*	*

Note: Current use includes both daily and occasional (less than daily) use.

¹Includes manufactured cigarettes, hand rolled cigarettes, and kreteks.

²Includes "other".

³ Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Table 4.4. Number of adults \geq 15 years old who are current smokers of various smoked tobacco products, by gender and selected demographic statistics – NATSC Cambodia, 2011.

	Any smoked Tobacco Product	Any Cigarette ¹	Type of Cigarette		
			Manufactured	Hand-rolled	Other ²
Overall	1477000	1456000	1106000	364000	13000
<i>Number in Thousands</i>					
<i>Age (years)</i>					
15-17	9000	8000	6000	2000	0
18-24	88000	87000	79000	8000	0
25-44	662000	653000	545000	116000	6000
45-64	553000	547000	396000	155000	6000
65+	164000	161000	80000	82000	1000
<i>Residence</i>					
Urban	171000	170000	159000	10000	0
Rural	1306000	1286000	946000	353000	13000
<i>Education³ (years)</i>					
0-6	1098000	1078000	779000	312000	12000
7-12	368000	367000	318000	50000	2000
13-15	6000	6000	6000	0	0
> 15	4000	4000	3000	1000	0
<i>Income</i>					
< 1 USD	525000	514000	360000	162000	7000
1-2 USD	256000	253000	184000	70000	1000
>2-3 USD	250000	248000	204000	46000	1000
> 3 USD	446000	441000	358000	86000	4000
Men					
<i>Age (years)</i>					
15-17	6000	6000	4000	2000	0
18-24	82000	81000	74000	7000	0
25-44	611000	605000	519000	92000	3000
45-64	485000	479000	350000	134000	5000
65+	151000	147000	73000	75000	1000
<i>Residence</i>					
Urban	156000	155000	146000	9000	0
Rural	1179000	1163000	875000	301000	9000
<i>Education³ (years)</i>					
0-6	971000	955000	705000	262000	8000
7-12	354000	353000	307000	47000	0
13-15	6000	6000	6000	0	0
> 15	4000	4000	3000	1000	0
<i>Income</i>					
< 1 USD	430000	424000	306000	123000	3000
1-2 USD	237000	234000	173000	62000	1000
>2-3 USD	239000	237000	198000	41000	1000
> 3 USD	429000	424000	344000	84000	3000
Women					
<i>Age (years)</i>					
15-17	2000	2000	1000	0	200
18-24	6000	6000	5000	1000	0
25-44	51000	48000	26000	24000	2000
45-64	69000	67000	46000	21000	1000
65+	13000	13000	7000	7000	200

<i>Residence</i>						
	Urban	14000	14000	13000	1000	0
	Rural	127000	122000	72000	52000	4000
<i>Education³ (years)</i>						
	0-6	127000	123000	74000	50000	4000
	7-12	14000	14000	11000	3000	0
	13-15	0	0	0	0	0
	> 15	0	0	0	0	0
<i>Income</i>						
	< 1 USD	94000	90000	54000	38000	4000
	1-2 USD	19000	19000	11000	8000	0
	>2-3 USD	11000	11000	6000	0	200
	> 3 USD	17000	16000	14000	0	100

Note: Current use includes both daily and occasional (less than daily) use.

¹ Includes manufactured cigarettes, hand rolled cigarettes, and kreteks.

² Includes [describe products included in "other" category here].

³ Education level is reported only among respondents 25+ years old.

Table 4.5. Percentage of adults ≥ 15 years old who are daily, occasional, or non-smokers, by gender and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Smoking frequency			Total	
	Daily	Occasional ¹	Non-Smoker		
Overall					
<i>Age (years)</i>					
	15-17	1.2 [0.7, 2.0]	0.1 [0.0, 0.5]	98.7 [97.9, 99.2]	100
	18-24	6.2 [5.1, 7.4]	0.8 [0.5, 1.3]	93.0 [91.7, 94.2]	100
	25-44	20.8 [19.6, 22.0]	0.9 [0.7, 1.2]	78.3 [77.1, 79.5]	100
	45-64	26.6 [25.0, 28.3]	0.9 [0.6, 1.2]	72.5 [70.8, 74.2]	100
	65+	27.1 [24.1, 30.4]	1.8 [1.1, 2.8]	71.2 [67.9, 74.2]	100
<i>Residence</i>					
	Urban	12.7 [11.0, 14.7]	0.6 [0.4, 1.1]	86.7 [84.7, 88.5]	100
	Rural	19.9 [19.0, 20.8]	0.9 [0.7, 1.1]	79.2 [78.3, 80.1]	100
<i>Education² (years)</i>					
	0-6	21.2 [20.3, 22.2]	0.8 [0.6, 1.0]	78.0 [77.0, 78.9]	100
	7-12	14.4 [13.2, 15.7]	1.0 [0.7, 1.3]	84.6 [83.3, 85.8]	100
	13-15	*	*	93.8 [88.6, 96.7]	100
	> 15	*	*	95.7 [91.7, 97.8]	100
<i>Income</i>					
	< 1 USD	11.8 [11.0, 12.7]	0.6 [0.5, 0.9]	87.5 [86.6, 88.4]	100
	1-2 USD	24.5 [22.2, 26.9]	*	74.3 [71.9, 76.5]	100
	>2-3 USD	28.4 [25.7, 31.3]	0.8 [0.5, 1.3]	70.8 [67.8, 73.6]	100
	> 3 USD	28.5 [26.4, 30.7]	1.3 [1.0, 1.8]	70.2 [68.0, 72.4]	100
Men					
<i>Age (years)</i>					
	15-17	1.8 [1.0, 3.1]	*	98.0 [96.7, 98.8]	100
	18-24	11.5 [9.6, 13.8]	*	86.9 [84.3, 89.1]	100
	25-44	43.5 [41.1, 46.0]	1.6 [1.2, 2.2]	54.9 [52.5, 57.3]	100
	45-64	56.0 [53.0, 58.9]	1.9 [1.3, 2.8]	42.2 [39.2, 45.2]	100
	65+	52.1 [45.9, 58.3]	*	44.2 [37.9, 50.6]	100
<i>Residence</i>					
	Urban	26.8 [23.2, 30.7]	*	71.8 [67.8, 75.5]	100
	Rural	39.4 [37.8, 41.1]	1.7 [1.4, 2.2]	58.8 [57.2, 60.5]	100
<i>Education² (years)</i>					
	0-6	47.1 [45.2, 49.0]	1.7 [1.3, 2.2]	51.2 [49.2, 53.2]	100
	7-12	25.3 [23.3, 27.5]	1.7 [1.2, 2.4]	73.0 [70.9, 75.0]	100
	13-15	*	*	89.6 [81.2, 94.5]	100
	> 15	5.4 [2.5, 11.3]	*	93.4 [87.2, 96.7]	100
<i>Income</i>					
	< 1 USD	27.4 [25.4, 29.4]	1.6 [1.1, 2.2]	71.0 [69.0, 73.0]	100

	1-2 USD	43.5 [39.7, 47.4]	*	54.4 [50.7, 58.2]	100
	>2-3 USD	48.2 [44.2, 52.3]	*	50.5 [46.4, 54.6]	100
	> 3 USD	44.4 [41.3, 47.4]	1.9 [1.3, 2.6]	53.8 [50.7, 56.8]	100
Women					
<i>Age (years)</i>					
	15-17	*	*	99.4 [98.3, 99.8]	100
	18-24	*	*	99.0 [97.9, 99.5]	100
	25-44	2.7 [2.1, 3.4]	*	97.0 [96.3, 97.6]	100
	45-64	5.7 [4.5, 7.1]	*	94.2 [92.7, 95.3]	100
	65+	4.5 [2.9, 7.0]	*	95.5 [93.0, 97.1]	100
<i>Residence</i>					
	Urban	2.0 [1.2, 3.2]	*	98.0 [96.8, 98.8]	100
	Rural	3.5 [2.9, 4.2]	*	96.3 [95.6, 96.9]	100
<i>Education² (years)</i>					
	0-6	4.0 [3.4, 4.8]	*	95.8 [95.0, 96.4]	100
	7-12	1.2 [0.8, 2.0]	*	98.7 [98.0, 99.2]	100
	13-15	*	*	99.6 [97.3, 100]	100
	> 15	*	*	99.6 [97.1, 99.9]	100
<i>Income</i>					
	< 1 USD	3.4 [2.8, 4.1]	*	96.5 [95.8, 97.1]	100
	1-2 USD	3.7 [2.4, 5.6]	*	96.0 [94.0, 97.3]	100
	>2-3 USD	2.8 [1.7, 4.6]	*	97.1 [95.3, 98.2]	100
	> 3 USD	2.5 [1.7, 3.7]	*	97.1 [95.8, 98.0]	100

¹ Occasional refers to less than daily use. ² Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Table 4.6. Percentage of cigarettes smoked per day among daily cigarette smokers ≥ 15 years old, by gender and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Number of Cigarettes smoked on average per day ¹					
	<5	5 to 9	10 to 14	15 to 24	≥25	
Overall						
<i>Age (years)</i>						
	15-17	*	*	*	*	
	18-24	*	14.5 [9.7, 21.1]	17.2 [12.0, 24.0]	54.4 [45.5, 63.0]	*
	25-44	6.7 [5.0, 8.8]	11.0 [8.9, 13.4]	19.2 [16.8, 22.0]	56.0 [52.1, 59.8]	7.1 [5.6, 9.1]
	45-64	7.6 [5.8, 10.1]	13.1 [10.8, 15.9]	22.4 [19.5, 25.7]	48.9 [45.0, 52.8]	7.9 [6.1, 10.1]
	65+	18.6 [13.8, 24.6]	17.4 [13.1, 22.7]	21.7 [16.7, 27.7]	38.8 [32.3, 45.7]	*
<i>Residence</i>						
	Urban	*	*	17.5 [13.4, 22.5]	68.2 [61.6, 74.1]	*
	Rural	9.1 [7.6, 11.0]	13.7 [11.8, 15.8]	21.2 [19.0, 23.5]	49.0 [45.6, 52.4]	7.1 [5.9, 8.5]
<i>Education² (years)</i>						
	0-6	9.1 [7.5, 11.1]	13.7 [11.8, 15.8]	21.4 [19.2, 23.8]	48.9 [45.8, 52.1]	6.9 [5.6, 8.4]
	7-12	6.2 [4.4, 8.8]	9.8 [7.3, 13.1]	18.7 [15.1, 22.9]	58.3 [52.8, 63.7]	7.0 [5.0, 9.7]
	13-15	*	*	*	*	*
	> 15	*	*	*	*	*
<i>Income</i>						
	< 1 USD	13.1 [10.4, 16.3]	14.0 [11.6, 16.9]	20.7 [18.8, 22.9]	43.5 [39.5, 47.7]	6.7 [5.0, 8.9]
	1-2 USD	8.2 [5.9, 11.4]	15.3 [11.9, 19.4]	22.7 [19.2, 26.5]	50.3 [44.7, 55.9]	7.4 [5.3, 10.4]
	>2-3 USD	4.8 [3.1, 7.5]	12.4 [9.0, 16.7]	18.8 [15.3, 22.9]	56.9 [51.1, 62.6]	7.2 [4.7, 10.9]
	> 3 USD	5.2 [3.7, 7.2]	10.1 [7.9, 12.8]	18.6 [14.7, 23.4]	57.3 [53.0, 61.5]	6.7 [5.0, 9.1]
Men						
<i>Age (years)</i>						
	15-17	*	*	*	*	
	18-24	*	14.1 [9.2, 20.9]	15.6 [10.6, 22.5]	57.0 [48.3, 65.3]	*
	25-44	5.7 [4.3, 7.5]	10.6 [8.5, 13.2]	18.5 [16.0, 21.3]	57.6 [53.8, 61.4]	7.5 [5.9, 9.7]
	45-64	6.3 [4.7, 8.3]	13.0 [10.6, 15.8]	22.3 [19.1, 25.8]	50.3 [46.2, 54.5]	8.2 [6.3, 10.5]
	65+	18.2 [13.3, 24.4]	17.6 [13.1, 23.3]	21.1 [16.1, 27.2]	39.3 [32.8, 46.1]	*
<i>Residence</i>						
	Urban	*	*	17.9 [13.5, 23.3]	68.1 [61.4, 74.1]	*
	Rural	7.9 [6.6, 9.6]	13.4 [11.5, 15.7]	20.5 [18.4, 22.8]	50.7 [47.3, 54.0]	7.5 [6.2, 9.0]

<i>Education²</i>						
<i>(years)</i>						
0-6	7.7 [6.3, 9.4]	13.3 [11.4, 15.6]	20.9 [18.7, 23.3]	50.7 [47.6, 53.8]	7.3 [6.0, 8.9]	100
7-12	6.2 [4.3, 8.8]	10.0 [7.5, 13.3]	18.2 [14.7, 22.4]	58.6 [53.1, 63.8]	7.0 [5.0, 9.8]	100
13-15	*	*	*	*	*	
> 15	*	*	*	*	*	
<i>Income</i>						
< 1 USD	11.6 [9.0, 14.7]	13.7 [11.1, 16.8]	21.1 [17.5, 25.3]	46.2 [41.9, 50.6]	7.4 [5.6, 9.8]	100
1-2 USD	7.4 [5.2, 10.4]	15.1 [11.5, 19.5]	19.6 [16.0, 23.9]	50.4 [44.6, 56.1]	7.6 [5.3, 10.7]	100
>2-3 USD	*	12.5 [9.1, 17.0]	18.4 [14.5, 23.0]	57.3 [51.4, 63.0]	7.6 [5.0, 11.4]	100
> 3 USD	5.0 [3.6, 7.0]	10.0 [7.8, 12.7]	20.6 [17.4, 24.1]	57.7 [53.4, 61.9]	6.7 [5.0, 9.1]	100
Women						
<i>Age (years)</i>						
15-17	*	*	*	*	*	
18-24	*	*	*	*	*	
25-44	19.2 [10.6, 32.2]	15.5 [8.8, 25.8]	28.5 [20.0, 39.0]	35.0 [24.9, 46.5]	*	100
45-64	17.3 [10.4, 27.4]	14.4 [9.0, 22.2]	23.5 [15.5, 34.0]	38.8 [29.7, 48.8]	*	100
65+	*	*	*	*	*	
<i>Residence</i>						
Urban	*	*	*	*	*	
Rural	20.5 [14.2, 28.7]	15.9 [11.4, 21.7]	27.4 [20.5, 35.6]	32.8 [24.9, 41.8]	3.4 [1.5, 7.5]	100
<i>Education²</i>						
<i>(years)</i>						
0-6	19.9 [13.8, 28.0]	16.3 [11.8, 22.0]	25.4 [18.8, 33.3]	35.0 [27.6, 43.2]	*	100
7-12	*	*	*	*	*	
13-15	*	*	*	*	*	
> 15	*	*	*	*	*	
<i>Income</i>						
< 1 USD	19.8 [13.4, 28.2]	15.7 [10.8, 22.3]	29.5 [22.1, 38.2]	31.5 [23.8, 40.5]	*	100
1-2 USD	*	*	*	*	*	
>2-3 USD	*	*	*	*	*	
> 3 USD	*	*	*	*	*	

¹ Among daily cigarette smokers. Cigarettes include manufactured, hand-rolled, and kreteks.

² Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Number of Cigarettes Smoked in Cambodia

Among adults who were daily smokers, the **median number of cigarettes smoked was 20 cigarettes per day by men and 10 cigarettes per day by women.**

By age, the median daily smoking rate was 10 cigarettes at ages 15-17 years, 20 cigarettes at 18-24 years, 20 cigarettes at 25-44 years, 20 cigarettes at 45-64 years, and 10 cigarettes at 65 years or older. The lower rate in the oldest adults may be reflecting the use of hand-rolled cigarettes that are 2 to 3 times larger in size and tobacco content than manufactured – a possibility indicating that the net exposure to nicotine is remaining constant. Another possibility is a decrease in cigarettes smoked due to respiratory illness in the older males. This effect needs further study.

These data and the findings in table 4.6 clearly indicate that among middle-aged men who comprise most of the 1.3 million daily smokers, the most common habit is 20 cigarettes per day, typically purchased as a manufactured pack (table 4.3). Heavy cigarette smoking (≥ 25 cigarettes per day) does not seem to be as common in any of the adults of Cambodia (7-8% of daily smokers, table 4.6).

4.2 Smokeless Tobacco use Among Adults of Cambodia

Previous findings from TCLT 2006 indicate that it is primarily women who use smokeless tobacco and, after the age of 25 years, the prevalence of this habit more than doubles with each passing decade up to the point that almost half of all rural women are using smokeless tobacco¹. In Cambodia, the behavior is a centuries old practice of chewing the tobacco leaf in combination with the areca nut (Areca Catechu), betel leaf, and slaked lime (a calcium hydroxide paste)⁶. The resulting “betel quid” is a mixture of these substances that remains in contact with the oral mucosa over an extended period of time.

When considering the habitual nature of this type of smokeless tobacco use, it is important to note that in addition to nicotine, the betel quid mixture also contains Areca-derived alkaloid and phenolic compounds that also have highly addictive properties⁷. Cessation of this type of smokeless tobacco use is further challenged by the fact that in the Western Pacific Region betel quid chewing is an integral part of cultural, familial, and traditional medicine practices¹. TCLT 2006 investigators reported that many Cambodian women chew betel quid during pregnancy for relief of morning sickness^{1, 11}. **Consistent with these trends, NATSC 2011 (tables 4.7-4.8) indicates that only 9,000 women in Cambodia who were daily users of smokeless tobacco have been able to quit. The number found by the survey was not sufficient (< 25) to compute prevalence.**

The NATSC 2011 findings (tables 4.7-4.10) continue to show the same trends as 2006, which shows the smokeless tobacco habit in women starts after the age of 25 and progressively doubles every 10-15 years until about the sixth decade of life when more than half of the oldest women chew tobacco. Similar to 2006, the findings in table 4.8 indicate that more than half a million women in Cambodia are chewing tobacco (n=550,000). In men, the habitual chewing of tobacco is rarely seen (n=24,000), and where present, is among the oldest men. The possibility of whether it is adopted after respiratory health is impaired by a lifetime of cigarette smoking needs examination.

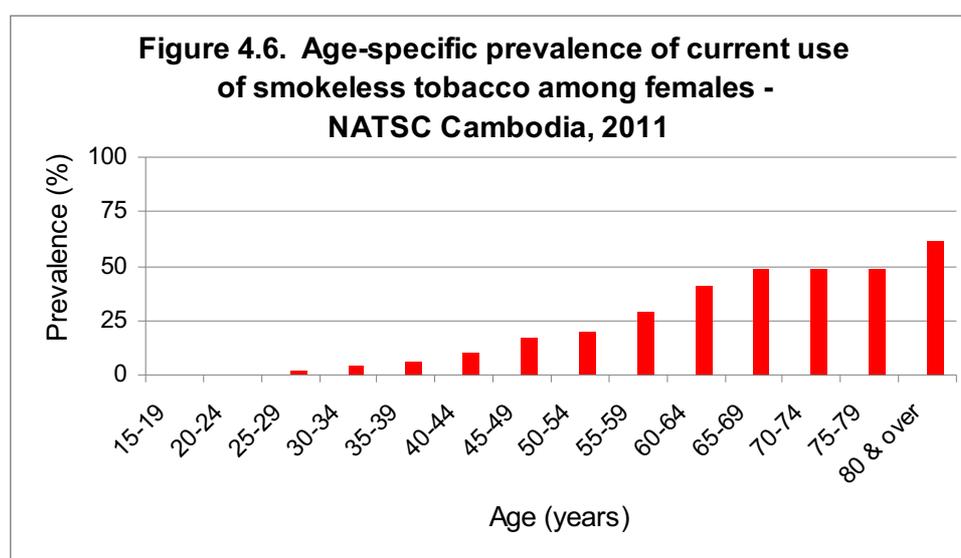


Table 4.7. Percentage of adults ≥ 15 years old by smokeless tobacco (i.e. tobacco chewing in the form of a betel quid) and gender – NATSC Cambodia, 2011.

	Overall	Men	Women
Current tobacco chewer	7.3 [6.7, 7.9]	0.7 [0.5, 1.0]	12.7 [11.6, 13.8]
Daily chewer	7.0 [6.4, 7.7]	0.7 [0.5, 1.0]	12.2 [11.1, 13.3]
Occasional chewer	0.3 [0.2, 0.4]	*	0.5 [0.4, 0.7]
Occasional chewer, formerly daily	*	*	*
Occasional chewer, never daily	0.2 [0.1, 0.3]	*	0.3 [0.2, 0.5]
Non - chewer	92.7 [92.1, 93.4]	99.3 [99.0, 99.5]	87.3 [86.2, 88.4]
Former daily chewer	*	*	*
Never daily chewer	92.6 [91.9, 93.2]	99.3 [99.0, 99.5]	87.1 [85.9, 88.2]
Former occasional chewer	*	*	*
Never chewer	92.6 [91.9, 93.2]	99.3 [99.0, 99.5]	87.1 [85.9, 88.2]

* Percentages not reported for a cell size less than 25.

Table 4.8. Number of adults \geq 15 years old by smokeless tobacco (i.e. tobacco chewing in the form of a betel quid) and gender – NATSC Cambodia, 2011.

	Overall	Men	Women
Current tobacco chewer	550,000	24,000	526,000
Daily chewer	528,000	23,000	505,000
Occasional chewer	22,000	0	21,000
Occasional chewer, formerly daily	8,000	0	7,000
Occasional chewer, never daily	14,000	0	14,000
Non - chewer	7,011,000	3,393,000	3,617,000
Former daily chewer	9,000	0	9,000
Never daily chewer	7,001,000	3,393,000	3,608,000
Former occasional chewer	0	0	0
Never chewer	7,001,000	3,393,000	3,608,000

Demographics of Smokeless Tobacco Use in Cambodia

Findings in table 4.9-4.10 indicate that after the age of 25 years, there is a 5 to 10-fold increase in the prevalence of smokeless tobacco use among females. Female users tend to be rural, have less than a primary school education, and earn less than 1 USD per day. These findings are also of concern for reproductive and infant health. Rural, lower income women with less than 6 years of education, tend to need the most intervention in the area of safe birthing practices. Their use of tobacco during the pregnancy is cause for concern¹⁵.

Table 4.9. Percentage and number of adults ≥ 15 years old who are current users of smokeless tobacco products, by gender and selected demographic statistics – NATSC Cambodia, 2011.

	Percentage [95% CI]	Number in Thousands
Overall		
<i>Age (years)</i>		
15-17	*	1000
18-24	*	1000
25-44	2.9 [2.4, 3.6]	90000
45-64	14.6 [13.3, 16.1]	295000
65+	28.7 [25.6, 32.0]	164000
<i>Residence</i>		
Urban	2.9 [2.1, 4.1]	38000
Rural	8.2 [7.5, 8.9]	512000
<i>Education¹ (years)</i>		
0-6	10.3 [9.5, 11.2]	514000
7-12	1.5 [0.9, 2.3]	35000
13-15	*	0
> 15	*	0
<i>Income</i>		
< 1 USD	9.3 [8.5, 10.2]	391000
1-2 USD	6.5 [5.3, 7.9]	64000
>2-3 USD	5.3 [3.8, 7.4]	46000
> 3 USD	3.3 [2.6, 4.2]	49000
Men		
<i>Age (years)</i>		
15-17	*	0
18-24	*	0
25-44	*	2000
45-64	*	10000
65+	*	11000
<i>Residence</i>		
Urban	*	3000
Rural	0.7 [0.5, 1.1]	21000
<i>Education¹ (years)</i>		
0-6	1.0 [0.7, 1.4]	19000
7-12	0.4 [0.1, 1.0]	5000
13-15	*	0
> 15	*	0
<i>Income</i>		
< 1 USD	*	14000
1-2 USD	*	3000
>2-3 USD	*	4000
> 3 USD	*	3000
Women		
<i>Age (years)</i>		
15-17	*	1000
18-24	*	1000
25-44	5.2 [4.2, 6.4]	88000
45-64	24.2 [22, 26.6]	285000
65+	50.6 [45.2, 56.0]	152000
<i>Residence</i>		
Urban	4.8 [3.4, 6.7]	35000
Rural	14.4 [13.2, 15.7]	491000
<i>Education¹ (years)</i>		
0-6	16.6 [15.3, 17.9]	495000
7-12	2.8 [1.9, 4.2]	30000
13-15	*	0

	> 15	*	0
<i>Income</i>	< 1 USD	13.8 [12.6, 15.1]	376000
	1-2 USD	12.9 [10.4, 15.9]	61000
	>2-3 USD	11.3 [8.2, 15.2]	42000
	> 3 USD	8.2 [6.3, 10.5]	46000

¹ Educational level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Table 4.10. Percentage of adults ≥ 15 years old who are daily, occasional, or non-users of smokeless tobacco (i.e. in the form of a betel quid), by gender and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Frequency of Smokeless Tobacco Use			Total	
	Daily	Occasional ¹	Non-Users		
Overall					
<i>Age (years)</i>					
	15-17	*	*	99.9 [99.3, 100]	100
	18-24	*	*	99.9 [99.8, 100]	100
	25-44	2.7 [2.2, 3.4]	*	97.1 [96.4, 97.6]	100
	45-64	14.1 [12.7, 15.6]	*	85.4 [83.9, 86.7]	100
	65+	28 [24.9, 31.3]	*	71.3 [68.0, 74.4]	100
<i>Residence</i>					
	Urban	2.7 [1.9, 3.9]	*	97.1 [95.9, 97.9]	100
	Rural	7.9 [7.2, 8.6]	0.3 [0.2, 0.4]	91.9 [91.1, 92.5]	100
<i>Education² (years)</i>					
	0-6	12.0 [11.0, 13.0]	0.5 [0.3, 0.7]	87.6 [86.5, 88.5]	100
	7-12	2.4 [1.5, 3.7]	*	97.5 [96.1, 98.4]	100
	13-15	*	*	100	100
	> 15	*	*	99.8 [98.5, 100]	100
<i>Income</i>					
	< 1 USD	9.0 [8.2, 9.9]	0.3 [0.2, 0.5]	90.7 [89.8, 91.6]	100
	1-2 USD	6.0 [4.8, 7.4]	*	93.5 [92.1, 94.8]	100
	>2-3 USD	5.1 [3.6, 7.1]	*	94.7 [92.6, 96.2]	100
	> 3 USD	3.1 [2.4, 4.0]	*	96.7 [95.8, 97.4]	100
Men					
<i>Age (years)</i>					
	15-17	*	*	100	100
	18-24	*	*	100	100
	25-44	*	*	99.9 [99.6, 100]	100
	45-64	*	*	98.8 [98, 99.3]	100
	65+	*	*	95.6 [92.8, 97.3]	100
<i>Residence</i>					
	Urban	*	*	99.6 [98.6, 99.9]	100
	Rural	*	*	99.3 [98.9, 99.5]	100
<i>Education² (years)</i>					
	0-6	1.2 [0.8, 1.7]	*	98.8 [98.3, 99.2]	100
	7-12	*	*	99.4 [98.4, 99.8]	100
	13-15	*	*	100	100
	> 15	*	*	100	100
<i>Income</i>					
	< 1 USD	*	*	99.0 [98.5, 99.4]	100
	1-2 USD	*	*	99.4 [98.6, 99.7]	100
	>2-3 USD	*	*	99.3 [97.4, 99.8]	100
	> 3 USD	*	*	99.7 [99.2, 99.9]	100
Women					
<i>Age (years)</i>					
	15-17	*	*	99.8 [98.7, 100]	100
	18-24	*	*	99.8 [99.5, 99.9]	100
	25-44	4.8 [3.8, 6.0]	*	94.9 [93.6, 95.8]	100
	45-64	23.3 [21.1, 25.7]	*	75.8 [73.4, 78.0]	100
	65+	49.2 [43.8, 54.6]	*	49.4 [44.0, 54.8]	100
<i>Residence</i>					

<i>Education² (years)</i>	Urban	4.4 [3.1, 6.3]	*	95.2 [93.3, 96.6]	100
	Rural	13.8 [12.6, 15.1]	0.5 [0.4, 0.8]	85.6 [84.3, 86.8]	100
<i>Income</i>	0-6	18.7 [17.2, 20.3]	0.7 [0.5, 1.1]	80.6 [79.0, 82.1]	100
	7-12	4.7 [3.1, 7.2]	*	94.9 [92.4, 96.6]	100
	13-15	*	*	100	100
	> 15	*	*	99.3 [94.9, 99.9]	100
	< 1 USD	13.3 [12.2, 14.6]	0.5 [0.3, 0.7]	86.2 [84.9, 87.4]	100
1-2 USD	11.9 [9.5, 14.7]	*	87.1 [84.2, 89.6]	100	
>2-3 USD	10.7 [7.8, 14.5]	*	88.8 [84.8, 91.8]	100	
> 3 USD	7.8 [6.0, 10.1]	*	91.9 [89.5, 93.7]	100	

¹ Occasional refers to less than daily use.

² Educational level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

4.3 Other Features of Tobacco Users in Cambodia: Age at Initiation, Indicators of Dependence, “Mixed Users”

Age at Initiation

The median age at initiation for current male smokers in Cambodia is 20 years [inter-quartile range = 17 to 23 years]. The middle 80% (between the 10th and 90th weighted percentile) of the initiation range is between 15 years and 29 years (i.e. 80% of males start smoking between the age of 15 and 29 years). This is of great significance to preventive efforts since it is this group of 15 to 29 year-old males who become the 1.3 million male smokers of the nation. A focused effort to price cigarettes to be burdensome to each birth cohort of 15 to 29 year old males represents an attainable goal in tobacco control for the immediate future.

The median age of initiation for current female users of smokeless tobacco is 33 years [inter-quartile range = 25 to 41 years]. This initiation trend among women is noteworthy since regional health authorities tend to think of the smokeless tobacco habit among Cambodian women as being a habit of the very old. In fact, by percentile, the middle 80% (between the 10th and 90th percentile) of the initiation range occurs between 20 and 50 years – a range that primarily contains reproductive age women. The use of smokeless tobacco products among reproductive age women and particularly during pregnancy is a needed area of focus by reproductive health and tobacco control professionals in Cambodia.

In tables 4.11 and 4.12 we have categorized the age at initiation variables for smokers and smokeless tobacco users, respectively. **A troubling statistic emerges in table 4.11 indicating that 1 out of 5 of the youngest adult daily smokers (ages 15 to 19) actually started their *daily* habit before the age of 15 years. The cigarette pricing issue arises since the data indicates that the**

youngest Cambodians (age 15-19 years) who desire to smoke are able to afford to start a *daily* habit before the age of 15 years.

Table 4.11. Percentage of age at smoking initiation among ever daily smokers, by selected demographic characteristics – NATSC Cambodia, 2011

Demographic Characteristics	Age at Smoking Initiation (years) ¹				Total
	<15	15 to 16	17 to 19	20+	
Overall	7.8 [6.5, 9.4]	13.5 [12.1, 15.0]	23.6 [21.7, 25.5]	55.2 [52.7, 57.6]	100
<i>Age (years)</i>					
15-19	21.1 [11.2, 36.3]	26.6 [16.5, 40.1]	44.6 [30.9, 59.2]	*	100
20-34	7.9 [5.6, 11.0]	18.4 [15.4, 21.8]	30.3 [26.6, 34.3]	43.4 [38.9, 48.1]	100
35+	7.6 [6.2, 9.1]	11.9 [10.4, 13.6]	21.3 [19.3, 23.5]	59.3 [56.6, 61.8]	100
<i>Gender</i>					
Male	7.4 [6.3, 8.7]	13.8 [12.3, 15.4]	24.6 [22.7, 26.7]	54.2 [51.8, 56.7]	100
Female	12.2 [7.6, 18.9]	10.8 [7.3, 15.7]	13.0 [9.1, 18.1]	64.1 [55.6, 71.7]	100
<i>Residence</i>					
Urban	3.7 [2.1, 6.4]	7.9 [5.2, 11.8]	21.5 [17.6, 26.0]	67.0 [60.6, 72.8]	100
Rural	8.4 [6.9, 10.1]	14.3 [12.7, 16.0]	23.8 [21.9, 26.0]	53.5 [50.8, 56.2]	100

¹ Among respondents 20-34 years of age who are ever daily smokers. ???

* Percentages not reported for a cell size less than 25.

Table 4.12. Percentage of age at initiation of smokeless tobacco use (i.e. tobacco chewing in the form of a betel quid) among ever users, by selected demographic characteristics– NATSC Cambodia, 2011

Demographic Characteristics	Age at Smoking Initiation (years) ¹			
	<15	15 to 16	17 to 19	20+
Overall	*	3.6 [2.3, 5.5]	5.2 [3.4, 7.7]	89.3 [86.0, 91.8]
<i>Age (years)</i>				
15-19	*	*	*	*
20-34	*	*	*	72.2 [49.9, 87.1]
35+	*	*	4.7 [3.0, 7.3]	90.1 [86.9, 92.7]
<i>Gender</i>				
Male	*	*	*	70.6 [47.5, 86.5]
Female	*	3.5 [2.2, 5.4]	4.8 [3.0, 7.4]	90.1 [87.1, 92.5]
<i>Residence</i>				
Urban	*	*	*	91.1 [80.7, 96.2]
Rural	*	3.7 [2.4, 5.8]	5.0 [3.2, 7.7]	89.1 [85.7, 91.8]

¹ Among respondents 20-34 years of age who are ever daily smokers. ???

* Percentages not reported for a cell size less than 25.

Measures of Dependence

Table 4.13 provides quit ratio of the number of “former daily smokers” who have quit as a percentage of those who have been an ever daily smoker in Cambodia. **The findings indicate that 11.5% of adults who ever smoked daily were able to quit.** When interpreting this number it is important to note age-specific data in the table, indicating the quit ratio is about 3 times higher in those ages 65 years or older relative to middle-aged adults ages 25-44 (22.7% versus 7.6%). Such

an effect may be an indicator that cessation is occurring after the onset of illness and thus not an indicator of prevention.

We note here that there were so few former daily chewers in the survey (< 25 completed surveys) that a quit ratio could be computed. This is a measure of the extremely addictive nature of the habit that involves substances beyond nicotine.

Table 4.13. Percentage of all adults and ever daily smokers ≥ 15 years old who are former daily smokers, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Former Daily Smokers ¹ (Among All Adults)	Former Daily Smokers ¹ (Among Ever Daily Smokers) ²
Overall	2.5 [2.2, 2.9]	11.5 [10.1, 13.1]
<i>Gender</i>		
Male	5.0 [4.4, 5.7]	11.5 [10.1, 13]
Female	0.4 [0.3, 0.7]	12.0 [7.7, 18.2]
<i>Age (years)</i>		
15-17	*	*
18-24	*	*
25-44	1.8 [1.4, 2.3]	7.6 [5.9, 9.6]
45-64	4.3 [3.6, 5.2]	13.7 [11.4, 16.5]
65+	8.2 [6.5, 10.3]	22.7 [18, 28.1]
<i>Residence</i>		
Urban	2.4 [1.8, 3.3]	15.3 [11.0, 20.9]
Rural	2.5 [2.2, 2.9]	11.0 [9.5, 12.7]
<i>Education³ (years)</i>		
0-6	3.2 [2.7, 3.7]	11.2 [9.7, 13.0]
7-12	4.0 [3.2, 4.9]	14.4 [11.7, 17.7]
13-15	*	*
> 15	*	*

¹ Current non-smokers.

² Also known as the quit ratio for daily smoking.

³ Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

The time since quitting data is presented in table 4.14. Sparse values preclude detailed interpretation of the findings. The limitation of the data is due to extremely low prevalence of former daily smokers in Cambodia (2%).

When considering other measures of dependence, a profile of smoked and smokeless tobacco emerges indicating daily use of a pack a day among smokers and two quids per day among daily chewers. Table 4.15 adds to this profile - about 70% of all tobacco users need to use tobacco within 30 minutes of waking and 90% within an hour of waking. Thresholds for addiction of both habits are clearly met.

Table 4.14. Percentage of time since quitting among former daily smokers ≥ 15 years old, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Time since quitting smoking (years) ¹			
	<1	1 to <5	5 to <10	≥10
Overall	*	30.7 [25.7, 36.2]	22.9 [17.9, 28.9]	45.7 [39.5, 52.1]
<i>Gender</i>				
Male	*	32.3 [26.8, 38.3]	23.3 [18.2, 29.4]	43.8 [37.6, 50.3]
Female	*	*	*	*
<i>Age (years)</i>				
15-17	*	*	*	*
18-24	*	*	*	*
25-44	*	34.7 [25.2, 45.6]	30.4 [22.0, 40.5]	34.7 [25.5, 45.3]
45-64	*	29.6 [22.9, 37.3]	17.5 [11.7, 25.5]	*
65+	*	*	*	34.7 [25.5, 45.3]
<i>Residence</i>				
Urban	*	*	*	*
Rural	*	34.1 [28.5, 40.2]	23.6 [17.9, 30.4]	42.4 [35.8, 49.2]
<i>Education² (years)</i>				
0-6	*	33.7 [27.4, 40.6]	23.3 [17.5, 30.4]	42.9 [35.7, 50.4]
7-12	*	21.5 [14.1, 31.2]	*	54.7 [42.9, 66.1]
13-15	*	*	*	*
> 15	*	*	*	*

¹ Among former daily smokers (current non-smokers).

² Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Table 4.15. Percentage of time to first tobacco use upon waking among daily smokers and/or smokeless tobacco users ≥ 15 years old, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Time to first smoke or smokeless tobacco use			
	≤5 minutes	6-30 minutes	31-60 minutes	>60 minutes
Overall	19.8 [17.9, 21.8]	48.0 [45.3, 50.7]	19.3 [17.3, 21.4]	13.0 [11.2, 15.0]
<i>Gender</i>				
Male	23.0 [20.7, 25.5]	49.4 [46.3, 52.4]	17.4 [15.4, 19.7]	10.2 [8.4, 12.3]
Female	13.1 [11.0, 15.6]	45.2 [41.5, 48.8]	23.0 [20.0, 26.3]	18.7 [15.9, 22.0]
<i>Age (years)</i>				
15-17	*	*	*	*
18-24	19.5 [13.8, 26.9]	43.2 [35.1, 51.7]	25.6 [18.1, 34.8]	11.7 [7.4, 18.1]
25-44	21.5 [18.8, 24.5]	50.4 [46.8, 54.0]	16.1 [13.6, 18.9]	12.0 [9.8, 14.7]
45-64	19.5 [17.2, 21.9]	46.6 [43.2, 50.0]	20.5 [17.9, 23.4]	13.4 [11.3, 15.9]
65+	17.1 [13.5, 21.4]	47.5 [41.6, 53.5]	20.8 [17.2, 25.0]	14.6 [11.3, 18.7]
<i>Residence</i>				
Urban	19.8 [15.1, 25.5]	55.1 [48.7, 61.3]	20.2 [15.9, 25.4]	4.9 [2.8, 8.6]
Rural	19.8 [17.7, 22.0]	47.2 [44.3, 50.1]	19.1 [17.0, 21.4]	13.9 [12, 16.1]
<i>Education¹ (years)</i>				
0-6	19.9 [17.8, 22.2]	47.9 [45.0, 50.8]	19.0 [17.0, 21.2]	13.2 [11.4, 15.4]
7-12	19.5 [15.9, 23.8]	49.9 [44.8, 55.0]	18.4 [14.7, 22.8]	12.2 [9.2, 16.0]
13-15	*	*	*	*
> 15	*	*	*	*

¹ Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Mixed Users

Similar to TCLT 2006, the NATSC 2011 findings in table 4.16 indicate that there are virtually no mixed users of smoked and smokeless tobacco in the nation. The smoked and smokeless tobacco habits in Cambodia emerge differently by gender, age, and cultural norms.

Table 4.16. Percentage of adults who are current tobacco users and the percentage of tobacco use patterns among current tobacco users ≥ 15 years old by selected demographic characteristics– NATSC Cambodia, 2011.

Demographic Characteristics	Current Tobacco Users ¹	Type of Current Tobacco Use		
		Smoked Only	Both Smoked and Smokeless	Smokeless Only
Overall	26.7 [25.5, 27.8]	19.4 [18.5, 20.2]	*	7.1 [6.5, 7.8]
<i>Gender</i>				
Male	39.7 [38.1, 41.3]	39.0 [37.4, 40.6]	*	0.6 [0.4, 0.9]
Female	15.9 [14.7, 17.2]	3.2 [2.7, 3.8]	*	12.5 [11.4, 13.6]
<i>Age (years)</i>				
15-17	1.4 [0.9, 2.2]	1.3 [0.8, 2.1]	*	*
18-24	7.1 [5.9, 8.4]	7.0 [5.8, 8.3]	*	*
25-44	24.5 [23.2, 26.0]	21.6 [20.5, 22.8]	*	2.9 [2.3, 3.5]
45-64	41.8 [39.5, 44.1]	27.1 [25.5, 28.8]	*	14.3 [12.9, 15.8]
65+	57.1 [53.2, 60.9]	28.4 [25.3, 31.7]	*	28.3 [25.2, 31.6]
<i>Residence</i>				
Urban	16.3 [14.1, 18.7]	13.3 [11.5, 15.4]	*	2.9 [2.1, 4.1]
Rural	28.8 [27.6, 30.0]	20.6 [19.7, 21.5]	*	8.0 [7.3, 8.7]
<i>Education² (years)</i>				
0-6	37.1 [35.7, 38.6]	24.7 [23.6, 25.8]	*	12.2 [11.2, 13.2]
7-12	27.0 [24.8, 29.3]	24.4 [22.3, 26.7]	*	2.5 [1.6, 3.9]
13-15	10.4 [5.6, 18.5]	10.4 [5.6, 18.5]	*	*
> 15	6.2 [3.2, 11.7]	6.0 [3.1, 11.5]	*	*

¹ Includes daily and occasional (less than daily) smokers or smokeless users.

² Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

5. Cessation

NATSC 2011 findings from chapter 4 indicate that in a population of 7.5 million adults with 1.9 million persons who are current daily users of tobacco, there are only 189,000 adults who were able to quit daily use of cigarettes, and 9,000 adults who were able to quit daily use of smokeless tobacco. With such a low success rate for tobacco cessation, an examination of cessation behaviors among the current users is needed to gain insight as to how to approach the problem in Cambodia.

Quit Attempts and Cessation Methods

Among current cigarette smokers, NATSC 2011 finds 7.9% [95% CI 6.6, 9.5] made a quit attempt in the past 12 months and 38.1% [95% CI 32.4, 44.2] were advised to quit by a health care professional (table 5.1).

Table 5.1. Percentage of smokers ≥ 15 years old who made a quit attempt and received health care provider assistance in the past 12 months, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Smoking cessation and health care seeking behavior			
	Made quit attempt ¹	Visited a HCP ^{1,2}	Asked by HCP if a smoker ³	Advised to quit by HCP ³
Overall				
<i>Gender</i>				
Male	8.0 [6.7,9.6]	17.4 [15.1,19.9]	40.9 [35.2,46.9]	37.5 [31.8,43.7]
Female	6.9 [4,11.7]	20.1 [15.4,25.7]	46.9 [31.2,63.2]	42.7 [29.7,56.8]
<i>Age (years)</i>				
15-17	*	*	*	*
18-24	*	17.4 [11.8,24.9]	*	*
25-44	8.8 [7.0,11.0]	14.8 [12.4,17.7]	36.2 [27.9,45.3]	36.6 [28.6,45.5]
45-64	7.6 [5.9,9.9]	19.6 [16.7,22.9]	44.0 [36.4,51.9]	40.6 [32.4,49.5]
65+	6.8 [3.9,11.6]	22.9 [17.4,29.4]	49.8 [35.4,64.1]	39.1 [27.6,51.9]
<i>Residence</i>				
Urban	11.9 [8.0,17.4]	20.1 [14.2,27.6]	46.9 [34.5,59.7]	46.4 [34.5,58.7]
Rural	7.4 [6.0,9.1]	17.3 [14.9,20.0]	40.8 [34.4,47.5]	36.9 [30.6,43.7]
<i>Education⁴ (years)</i>				
0-6	7.3 [6.0,8.9]	21.0 [19.2,22.9]	41.7 [35.4,48.3]	38.5 [31.9,45.4]
7-12	10.6 [8.0,13.9]	19.1 [16.7,21.7]	43.7 [33.7,54.2]	40.6 [30.9,51.0]
13-15	*	*	*	*
> 15	*	33.2 [19.3,50.9]	*	*

Note: Estimates in this table are based on current smokers and former smokers who have been abstinent for less than 12 months.

¹ Among current smokers and former smokers who have been abstinent for less than 12 months.

² HCP = health care provider.

³ Among current smokers and former smokers who have been abstinent for less than 12 months, and who visited a HCP during the past 12 months.

⁴ Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

The data further indicates that for the 8 out of 100 male smokers who attempt to quit, about 4 are using pharmacotherapy, and 4 attempt using counseling (table 5.2). In contrast, among the 7 out of 100 female smokers who attempt to quit, 6 are opting for counseling (table 5.2). Among the group of predominantly female smokeless tobacco users, 3% have attempted to quit and the attempt was primarily through counseling and advice (tables 5.3-5.4).

Table 5.2. Percentage of smokers ≥ 15 years old who made a quit attempt in past 12 months and used various cessation methods for their last quit attempt, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Use of Cessation Method ¹		
	Pharmacotherapy ²	Counseling/Advice ³	Other ⁴
Overall			
<i>Gender</i>			
Male	4.7 [3.8,5.8]	4.8 [3.8,6.1]	1.8 [1.4,2.4]
Female	2.5 [1.4,4.5]	6.0 [3.3,10.5]	*
<i>Age (years)</i>			
15-17	*	*	*
18-24	*	*	*
25-44	5.3 [4.1,6.9]	5.3 [4.0,7.0]	2.6 [1.9,3.7]
45-64	4.4 [3.2,5.9]	4.3 [3,6.3]	1.5 [1,2.3,0]
65+	*	*	*
<i>Residence</i>			
Urban	7.3 [4.3,12.1]	6.8 [3.9,11.5]	*
Rural	4.1 [3.2,5.2]	4.7 [3.5,6.2]	1.7 [1.3,2.4]
<i>Education⁵ (years)</i>			
0-6	4.1 [3.2,5.3]	4.6 [3.5,6.0]	1.6 [1.2,2.3]
7-12	6.0 [4.0,8.7]	6.3 [4.4,9.0]	2.8 [1.8,4.3]
13-15	*	*	*
> 15	*	*	*

Note: Estimates in this table are based on current smokers and former smokers who have been abstinent for less than 12 months.

¹ Among current smokers who made a quit attempt in the past 12 months and former smokers who have been abstinent for less than 12 months.

² Pharmacotherapy includes nicotine replacement therapy and prescription medications.

³ Includes counseling at a cessation clinic and a telephone quit-line/helpline.

⁴ Other includes traditional medicines and other products.

⁵ Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Table 5.3. Percentage of current smokeless tobacco users (i.e. in the form of a betel quid) ≥ 15 years old who made a quit attempt and received health care provider assistance in the past 12 months, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Smoking cessation and health care seeking behavior			
	Made quit attempt ¹	Visited a HCP ^{1,2}	Asked by HCP if a smoker ³	Advised to quit by HCP ³
Overall				
<i>Gender</i>				
Male	*	*	*	*
Female	3.2 [2.1,4.8]	25.0 [21.6,28.8]	28.3 [22.7,34.6]	25.1 [20.0,31.0]
<i>Age (years)</i>				
15-17	*	*	*	*
18-24	*	*	*	*
25-44	*	16.3 [11.1,23.1]	*	*
45-64	*	26.2 [22.1,30.7]	23.0 [17.3,30.0]	3.6 [2.6,4.9]
65+	*	26.1 [20.5,32.6]	33.4 [23.7,44.7]	9.0 [6.1,13.2]
<i>Residence</i>				
Urban	*	*	56.0 [34.4,75.5]	*
Rural	2.5 [1.6,3.8]	23.9 [20.4,27.9]	25.6 [20.0,32.1]	22.9 [17.8,29.0]
<i>Education⁴ (years)</i>				
0-6	2.9 [1.9,4.3]	25.1 [21.6,28.8]	17.6 [12.8,23.7]	3.6 [2.8,4.8]
7-12	*	16.0 [7.0,32.4]	*	*
13-15	*	*	*	*
> 15	*	*	*	*

Note: Estimates in this table are based on current smokers and former smokers who have been abstinent for less than 12 months.

¹ Among current smokers and former smokers who have been abstinent for less than 12 months.

² HCP = health care provider.

³ Among current smokers and former smokers who have been abstinent for less than 12 months, and who visited a HCP during the past 12 months.

⁴ Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Table 5.4. Percentage of current smokeless tobacco users (i.e. in the form of a betel quid) ≥ 15 years old who made a quit attempt in past 12 months and used various cessation methods for their last quit attempt, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Use of Cessation Method ¹		
	Pharmacotherapy ²	Counseling/Advice ³	Other ⁴
Overall			
<i>Gender</i>			
Male	*	*	*
Female	*	2.4 [1.5, 3.6]	*
<i>Age (years)</i>			
15-17	*	*	*
18-24	*	*	*
25-44	*	*	*
45-64	*	*	*
65+	*	*	*
<i>Residence</i>			
Urban	*	*	*
Rural	*	2.0 [1.2, 3.1]	*
<i>Education⁵ (years)</i>			
0-6	*	2.2 [1.4, 3.5]	*
7-12	*	*	*
13-15	*	*	*
> 15	*	*	*

Note: Estimates in this table are based on current smokers and former smokers who have been abstinent for less than 12 months.

¹ Among current smokers who made a quit attempt in the past 12 months and former smokers who have been abstinent for less than 12 months.

² Pharmacotherapy includes nicotine replacement therapy and prescription medications.

³ Includes counseling at a cessation clinic and a telephone quit-line/helpline.

⁴ Other includes traditional medicines and other products.

⁵ Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Pre-contemplation, Contemplation of Tobacco Cessation

Among current smokers (table 5.5), about 2% had a plan to quit cigarette smoking during the next 30 days, 42% of the current smokers were in a pre-contemplation category of considering quitting in the future, and 56% had no interest in quitting. By age, the youngest current smokers at ages 15-17 years and 18-24 years were the least likely to have a plan to quit with 81% and 68%, respectively having no interest in quitting.

The survey estimates indicating that there are only 9,000 persons in the entire country who have quit daily betel quid use, are concordant with data indicating that less than 25 current betel quid users (prevalence cannot be estimated) in the survey had a plan to quit in the next 30 days (table 5.6). About 21% of female betel quid users were in some form of pre-contemplation to quit. The pharmacologic modalities for such cessation are limited, since the addiction is likely not solely due to nicotine, but also other addictive alkaloids in the betel quid (i.e. arecoline). Not surprisingly, 79% of women and 85% of men who currently chew tobacco have no interest in quitting (table 5.6).

Table 5.5. Percentage of current smokers \geq 15 years old by interest in quitting smoking and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Interest in Quitting ¹				Total
	Planning to quit Next Month	Thinking about Quitting Within Next 12 Months	Will Quit Someday, But not in the next 12 months	Not Interested in Quitting	
Overall	2.2 [1.7,2.9]	6.7 [5.6,8.1]	34.9 [32.2,37.7]	56.2 [53.3,59.0]	100
<i>Gender</i>					
Male	2.3 [1.7,3.0]	6.9 [5.7,8.3]	35.0 [32.2,37.8]	55.9 [53.0,58.7]	100
Female	1.6 [0.7,3.7]	5.0 [2.6,9.2]	34.2 [28.5,40.4]	59.2 [52.4,65.7]	100

<i>Age (years)</i>					
15-17	*	*	*	81.2 [56.4,93.6]	100
18-24	*	*	23.3 [16.9,31.1]	67.6 [59.1,75.0]	100
25-44	2.3 [1.6,3.3]	7.0 [5.4,9.0]	35.9 [32.5,39.4]	54.9 [51.3,58.3]	100
45-64	2.3 [1.5,3.4]	6.1 [4.4,8.3]	37.1 [33.3,41.1]	54.6 [50.4,58.7]	100
65+	*	*	30.5 [24.1,37.8]	59.8 [52.7,66.5]	100
<i>Residence</i>					
Urban	4.6 [2.8,7.6]	*	37.2 [29.4,45.7]	52.9 [44.3,61.3]	100
Rural	1.9 [1.4,2.6]	6.9 [5.6,8.4]	34.6 [31.6,37.7]	56.6 [53.5,59.7]	100
<i>Education² (years)</i>					
0-6	1.9 [1.3,2.8]	6.2 [5.0,7.8]	34.4 [31.3,37.6]	57.5 [54.2,60.7]	100
7-12	3.3 [2.1,5.2]	7.6 [5.7,10.2]	39.9 [35.3,44.7]	49.2 [44.2,54.2]	100
13-15	*	*	*	*	
> 15	*	*	*	*	

¹ Among current daily or less than daily users.

² Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Table 5.6. Percentage of current smokeless tobacco users (i.e. in the form of a betel quid) ≥ 15 years old by interest in quitting smoking and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Interest in Quitting ¹				Total
	Planning to quit Next Month	Thinking about Quitting Within Next 12 Months	Will Quit Someday, But not in the next 12 months	Not Interested in Quitting	
Overall					
<i>Gender</i>					
Male	*	*	*	84.7 [69.2,93.2]	100
Female	*	2.8 [2.0,4.0]	18.2 [15.0,21.8]	78.2 [74.5,81.5]	100
<i>Age (years)</i>					
15-17	*	*	*	*	
18-24	*	*	*	*	
25-44	*	*	25.1 [18.3,33.5]	70.7 [62.4,77.7]	100
45-64	*	*	17.7 [13.9,22.3]	78.5 [73.6,82.6]	100
65+	*	*	13.7 [8.6,21.0]	83.1 [76.0,88.5]	100
<i>Residence</i>					
Urban	*	*	*	75.8 [63.0,85.2]	100
Rural	*	2.6 [1.8,3.9]	17.8 [14.7,21.5]	78.7 [74.9,82.0]	100
<i>Education² (years)</i>					
0-6	*	2.5 [1.7,3.8]	17.3 [14.3,20.8]	79.3 [75.7,82.5]	100
7-12	*	*	*	68.7 [47.5,84.2]	100
13-15	*	*	*	*	
> 15	*	*	*	*	

¹ Among current daily or less than daily users.

² Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

6. Secondhand Smoke

Secondhand smoke exposure is hazardous to human health and has been linked to higher rates of cardiovascular disease and lung cancer in adults²³⁻²⁴. In infants and children, secondhand smoke exposure can impair lung development and has been associated with severe asthma attacks, respiratory infections, and sudden infant death syndrome (SIDS)²⁷. Comprehensive analyses of the clinical, biological, and public health data have concluded that *“there is no risk-free level of exposure to secondhand smoke”*²³⁻²⁴.

In this context, the findings for NATSC 2011 are of great public health concern due to high rates of exposure that the Cambodian people are experiencing at home, at indoor work sites, and in certain public areas.

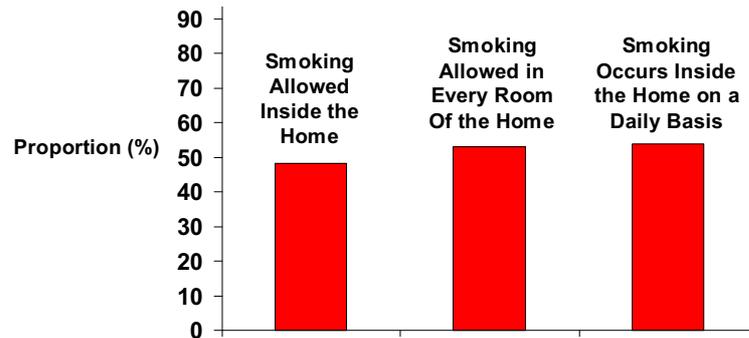
Second-hand smoke Exposure at Home and at Work

NATSC 2011 data in figure 6.1 indicate that about half of Cambodian homes allow smoking in the home (48.3%), allow smoking to occur in every room of the home (52.9%), and allow smoking inside the home to occur on a daily basis (53.9%). Thus, NATSC 2011 identifies smoking inside the home as a major environmental health, public health, and child health issue for Cambodia. Community-based health education programs to inform the public of the dangers to adult and child health of smoking inside the home need to be a high priority for tobacco control efforts for the new decade.

When considering the concept of second-hand smoke exposure at work we note that most Cambodians are employed in farming/livestock, labor, and sales (outdoor street vendors), and thus the number of indoor, enclosed work areas remains low. The findings in table 6.1 indicate that at the indoor work sites that do

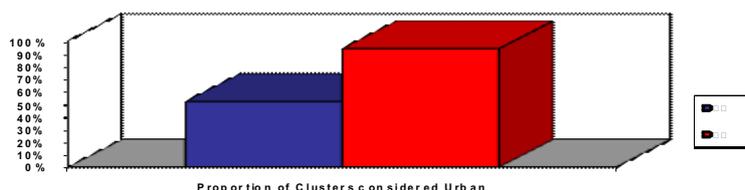
exist in Cambodia, about 179,000 persons (141,000 of whom are non-smokers) are exposed to tobacco smoke. The persons exposed tend to be male, ages 25 and older, and have less than 12 years of education.

Figure 6.1. Household behaviors relating to smoking inside the home reported by adults (ages 15 and older) – NATSC Cambodia, 2011.



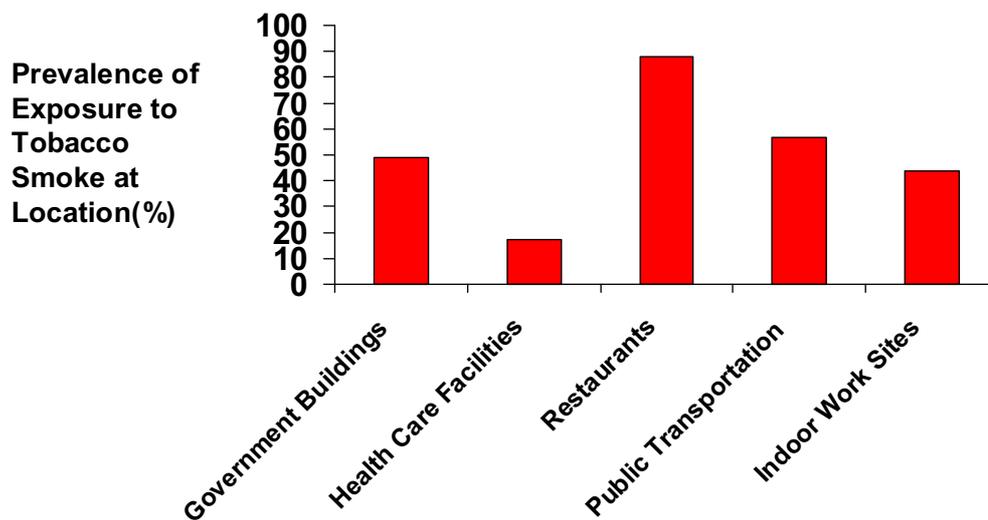
We note here that parts of Cambodia are experiencing the beginnings of urbanization. For example, in Phnom Penh the number sampling clusters considered “urban” has doubled since 2006. With such urbanization will almost certainly come a proliferation of indoor work sites. Cambodia is at a stage where a strong policy on smoke-free indoor work areas could prevent a much larger public health impact of second-hand smoke exposure in the future

Figure 6.2. Urbanization effect in Phnom Penh shown by proportion of urban clusters in TCLT 2006 and NATSC 2011 – NATSC Cambodia, 2011.



Second-hand smoke Exposure in Public Places

Figure 6.3. Exposure to tobacco smoke at locations frequented by adult respondents during the past 30 days – NATSC Cambodia, 2011.



Cambodia has designated certain smoke-free areas of government buildings, hospitals, and schools. This progress in national tobacco control is supported by NATSC 2011 findings in figure 6.3 and table 6.2 indicating that rates at hospitals are lower. However, when considering the public health impact on the total burden of second-hand smoke exposure in the nation, during the 30 days before survey interview, only 8% of all adults reported visiting government buildings and 11% reported visiting hospitals.

To increase the impact of future measures to reduce second-hand smoke exposure in public places, tobacco control policies need to focus on an area that is more highly trafficked. The extremely high rate of exposure occurring in restaurants (84% exposed in urban restaurants; 90% exposed in rural restaurants) and public transport vehicles (62% exposed in urban transport vehicles; 55% exposed in rural

transport vehicles) is noteworthy. The data in table 6.2 indicate that exposure remains high regardless of gender, age, residence, or education – suggesting that a broad range of Cambodians are exposed to the harm on a daily basis at these locations.

We note that NATSC 2011 does not further classify “restaurants” by type and the extent to which the establishment is indoors. Further work on the variation in exposure across restaurants, enclosed food stores, stalls, indoor nightclubs, and indoor bars is needed – both at the level of environmental sampling and surveys that continue to assess an individual’s reported indoor exposures.

Table 6.1. Percentage and number of adults ≥ 15 years old who work indoors and are exposed to tobacco smoke at work, by smoking status and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Adults Exposed to Tobacco Smoke at Work ¹	
	Percentage [95% CI]	Number
Overall	44.3 [37.9,51.0]	179000
<i>Gender</i>		
Male	53.5 [45.6,61.1]	118000
Female	33.3 [26.5,40.9]	61000
<i>Age (years)</i>		
15-17	*	8000
18-24	39.5 [27.5,53.0]	39000
25-44	44.8 [37.4,52.5]	81000
45-64	48.9 [39.1,58.8]	49000
65+	*	1000
<i>Residence</i>		
Urban	39.8 [28.5,52.3]	61000
Rural	47.1 [40.0,54.4]	118000
<i>Education² (years)</i>		
0-6	47.7 [38.8,56.7]	52000
7-12	48.0 [39.6,56.5]	63000
13-15	*	7000
> 15	*	10000
Non-smokers	41.8 [35.1,48.8]	142000
<i>Gender</i>		
Male	51.2 [42.3,60.1]	82000
Female	33.5 [26.7,41.1]	61000
<i>Age (years)</i>		
15-17	*	8000
18-24	39.1 [26.8,53.0]	37000
25-44	40.7 [32.9,49.0]	63000
45-64	48.4 [37.8,59.1]	34000
65+	*	1000
<i>Residence</i>		
Urban	38.2 [26.7,51.2]	52000
Rural	44.2 [36.6,52.1]	90000

<i>Education² (years)</i>			
0-6	41.5	[31.5,52.3]	35000
7-12	47.2	[38.1,56.5]	46000
13-15	*		6000
> 15	*		9000

¹ In the past 30 days. Among those respondents who work outside of the home who usually work indoors or both indoors and outdoors.

² Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Table 6.2. Percentage of adults ≥ 15 years old who were exposed to tobacco smoke in public places in the past 30 days, by smoking status and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Adults Exposed to Tobacco Smoke ¹ in...			
	Government Buildings	Health Care Facilities	Restaurants	Public Transportation
Overall	48.8 [43.1,54.4]	17.1 [14.4,20.2]	88.1 [85.7,90.1]	56.7 [52.5,60.8]
<i>Gender</i>				
Male	55.5 [49.9,61.1]	19.2 [15.8,23.2]	89.4 [87.2,91.3]	56.5 [52.0,60.9]
Female	39.4 [32.1,47.1]	15.7 [12.9,18.9]	86.6 [83.6,89.1]	56.9 [52.4,61.3]
<i>Age (years)</i>				
15-17	34.1 [23.2,47]	*	83.9 [77.4,88.9]	52.4 [42.9,61.7]
18-24	39.2 [30.8,48.3]	13.8 [9.1,20.3]	85.3 [80.7,89.0]	50.4 [44.1,56.6]
25-44	54.2 [47.3,61.0]	18.8 [15.3,22.7]	88.8 [86,91.1]	61.7 [56.8,66.5]
45-64	52.9 [45.7,60.1]	16.7 [13.2,21.0]	90.0 [87.2,92.2]	55.0 [48.5,61.4]
65+	39.4 [22.7,59.1]	*	85.7 [76.5,91.7]	48.8 [40.4,57.3]
<i>Residence</i>				
Urban	56.0 [45.8,65.8]	23.2 [16.8,31.1]	83.5 [77.3,88.2]	62.2 [52.6,70.9]
Rural	45.7 [38.8,52.8]	15.7 [12.8,19.1]	90.1 [87.8,92.0]	55.4 [50.6,60.1]
<i>Education² (years)</i>				
0-6	52.3 [45.5,59.0]	17.3 [14.3,20.8]	90.4 [88.3,92.2]	56.1 [49.4,62.6]
7-12	54.5 [46.1,62.7]	17.6 [12.9,23.6]	89.0 [85.4,91.7]	58.6 [29.6,82.7]
13-15	47.6 [27.5,68.5]	*	74.6 [59.0,85.8]	*
> 15	50.4 [31.3,69.4]	*	73.9 [59.9,84.4]	*
Non-smoker				
<i>Gender</i>				
Male	52.6 [45.9,59.1]	17.1 [13.3,21.6]	87.2 [84.0,89.8]	55.0 [49.8,60.2]
Female	39.5 [32.4,47.0]	15.5 [12.8,18.8]	86.4 [83.3,88.9]	56.9 [52.3,61.5]
<i>Age (years)</i>				
15-17	33.4 [22.6,46.4]	*	83.5 [76.8,88.5]	52.2 [42.7,61.6]
18-24	38.9 [30.4,48.2]	13.8 [8.9,20.8]	84.6 [79.6,88.6]	50.1 [43.7,56.5]
25-44	49.1 [41.3,56.8]	16.7 [13.3,20.7]	87.7 [84.6,90.3]	61.3 [55.8,66.5]
45-64	51.2 [43.5,58.8]	16.3 [12.4,21.0]	87.6 [83.8,90.5]	54.1 [47.0,61.0]
65+	48.7 [27.4,70.5]	*	86.2 [73.0,93.5]	54.0 [44.6,63.1]
<i>Residence</i>				
Urban	54.1 [42.7,65.2]	22.8 [16.1,31.2]	82.5 [75.9,87.5]	61.3 [51.6,70.3]
Rural	41.4 [34.7,48.4]	14.3 [11.4,17.7]	88.9 [86.0,91.2]	54.9 [49.7,60.0]
<i>Education² (years)</i>				
0-6	47.0 [39.1,55.1]	15.8 [12.8,19.4]	88.9 [86.2,91.1]	60.3 [55.6,64.8]
7-12	54.7 [46.7,62.5]	16.7 [11.9,22.9]	87.8 [83.4,91.2]	55.1 [47.7,62.3]
13-15	*	*	75.4 [61.0,85.7]	*
> 15	49.7 [29.3,70.2]	*	76.1 [62.5,85.9]	*

¹ In the past 30 days.

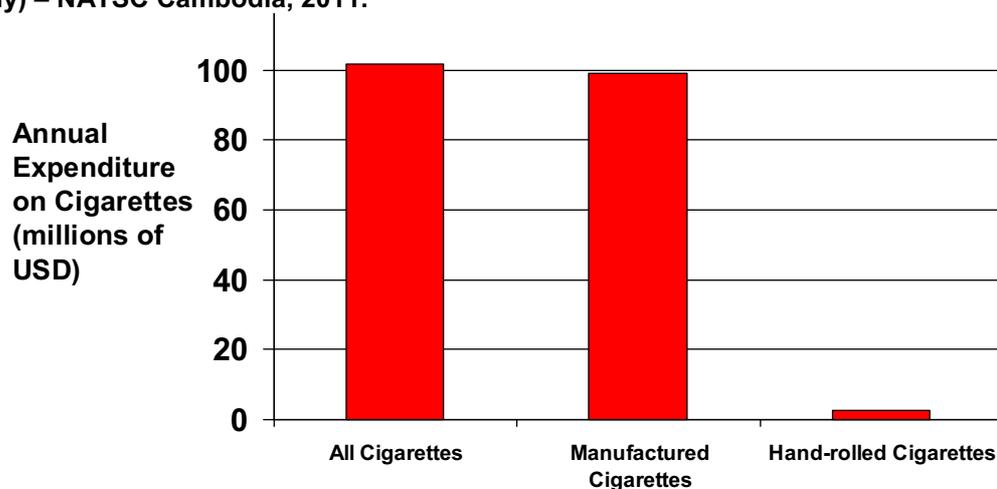
² Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

7. Economics

Manufactured cigarettes are the primary tobacco product sold in Cambodia and generate virtually the entire revenue base of cigarette sales in the nation. In figure 7.1, we provide the total annual cash expenditure on cigarettes (manufactured, hand-rolled) that indicates that **during a one-year period , 101,789,000 USD was spent on cigarettes by current adult smokers of Cambodia.** Of this amount **99,144,000 USD was spent on manufactured cigarettes and 2,645,000 USD was spent on hand-rolled cigarettes.**

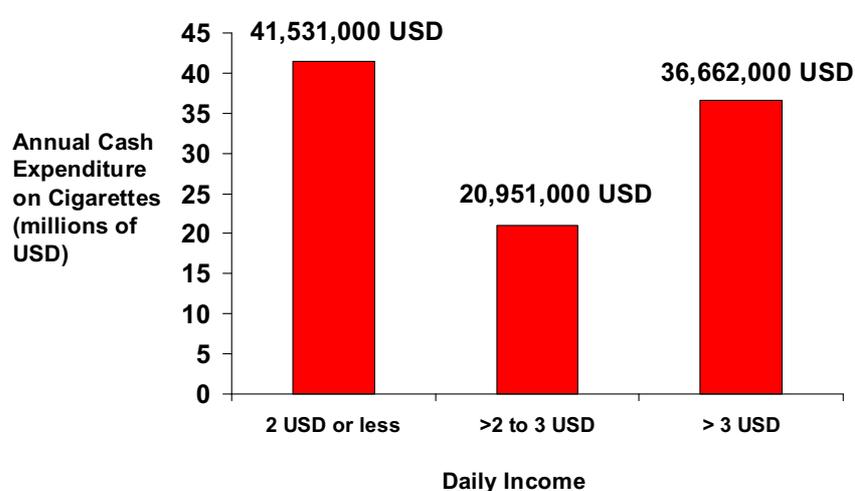
Figure 7.1. Annual current expenditure on cigarettes by current adult smokers (daily, less than daily) – NATSC Cambodia, 2011.



It is important to note that despite the substantially smaller cash expenditure on hand-rolled cigarettes relative to manufactured brands, there are 364,000 hand-rolled cigarette smokers among the 1,477,000 current smokers in Cambodia. Hand-rolled cigarettes represent a low cost alternative to manufactured brands and the distribution of this form of smoked tobacco through sales, trade, and gifts needs continued surveillance.

In figure 7.2 we provide the annual expenditure by income. These data indicate that the largest expenditure was occurring among the poorest Cambodians who were earning 2 USD per day or less. The expenditure remained high (26,837,000 USD) even among those Cambodians earning less than 1 USD per day.

Figure 7.2. Annual current expenditure on cigarettes by current adult smokers (daily, less than daily) given by income – NATSC Cambodia 2011.



Patterns of Cash Expenditure on Cigarettes

Among all manufactured cigarette smokers, findings in table 7.1 indicate that, at the last purchase, these smokers purchased an average of 21 cigarettes that were almost all in the form of a pack (means across all smokers indicate 18 cigarettes were sold as a pack, 2 cigarettes as single cigarettes, and 1 as a carton).

Table 7.1. Number of manufactured cigarettes obtained at the last purchase by current smokers – NATSC Cambodia, 2011.

The last time you bought manufactured cigarettes for yourself, how many cigarettes did you buy?	Mean [95% CI]
TOTAL	20.5 [19.8, 21.2]
Number bought as Single Cigarettes	1.5 [1.2, 1.8]
Number bought as Packs	18.4 [17.7, 19.1]
Number bought as Cartons	0.6 [0.1, 1.8]
Other	*

* Percentages not reported for a cell size less than 25.

Among hand-rolled cigarette smokers, the pattern of purchasing about 21 cigarettes at each purchase remained, but was distributed as about 8 as single cigarettes, 11

as bags, and 2 as tied bundles. As mentioned in chapter 4, a very small group of current smokers (14,000 out of all adults) have a “mixed product” cigarette habit of smoking both manufactured and hand-rolled cigarettes.

Table 7.2. Number of hand-rolled cigarettes obtained at the last purchase of hand-rolled cigarettes by current smokers – NATSC Cambodia 2011.

	Mean [95% CI]
The last time you bought hand-rolled cigarettes for yourself, how many cigarettes did you buy?	
TOTAL	20.9 [14.8, 27.0]
Number bought as Single Cigarettes	7.6 [3.3, 11.9]
Number bought as Bags	11.0 [7.2, 14.9]
Number bought as tied bundles	2.3 [0.0, 4.9]
Other	*

* Percentages not reported for a cell size less than 25.

What is the average price of a pack of manufactured cigarettes?

To estimate this price, we considered the NATSC 2011 data indicating that of the 1,477,000 current smokers in Cambodia, 857,000 purchased exactly 20 cigarettes at their last purchase and did so in the form of one pack of a manufactured brand. When plotting the distribution of the amount paid for that pack, we found a positively skewed distribution. We computed the median of the distribution to be 791 Riels (95% CI [774 to 934 Riels]). **Thus, we can say that the average price of the last pack of manufactured cigarettes purchased by current smokers was 791 Riels (95% CI 774 to 934 Riels) or 0.20 USD (95% CI [0.19 to 0.23 USD]).**

For comparison, we note that the median price smokers paid at the last purchase of hand-rolled cigarettes (sold as singles, bags, or bundles) was 0.07 USD. It appears that manufactured brands have been priced to be only about 0.13 USD above hand-rolled cigarettes and access those adults earning less than 2 USD per day – a group representing 69% of the nation.

Table 7.3 indicates that those earning less than 2 USD per day spend about 5 to 6 USD per month on cigarettes. It is noteworthy that many of the adults in this category are spending 10% or more of their cash income on cigarettes.

Table 7.3. Average cigarette expenditure per month among manufactured cigarette smokers ≥ 15 years old, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics		Cigarette expenditure per month (USD)
Overall		7.0 [6.4,7.5]
<i>Gender</i>		
	Male	7.2 [6.6,7.8]
	Female	4.7 [4.2,5.2]
<i>Age (years)</i>		
	15-24	5.5 [4.7,6.2]
	≥25	7.1 [6.5,7.7]
<i>Residence</i>		
	Urban	10.8 [9.1,12.4]
	Rural	6.3 [5.7,6.9]
<i>Education¹ (years)</i>		
	0-6	6.5 [5.9,7.2]
	7-12	8.4 [7.4,9.4]
	13-15	*
	> 15	*
<i>Income</i>		
	< 1 USD	5.9 [5.3,6.4]
	1-2 USD	6.1 [5.5,6.7]
	>2-3 USD	8.0 [6.2,9.9]
	> 3 USD	7.9 [7.0,8.8]

¹ Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Using our estimate of 0.20 USD spent on each pack of manufactured cigarettes we can compute that expenditure on 100 packs of cigarettes (20.00 USD) as a percentage of Cambodia's 2010 per capita GDP (776 USD)³⁶ is **2.6%**.

Patterns of use of Brands of Manufactured Cigarettes

The top five brands of manufactured cigarettes (ARA, Luxury, Cambo, Romdoh, Lapin) represent 68% of all manufactured cigarettes sold in Cambodia. At 21% of the last packs purchased, ARA has a significantly higher market share as compared to the next 4 brands that range from 11 to 13%. ARA appears to be slightly more favored by urban dwelling males, ages 25 years or older. By age, Luxury and Cambo appear to be slightly more favored by those ages 15 to 24 years old.

The most conspicuous trend within each brand is that there is no relation with regard to income. **This trend suggests that pricing of the top brands makes them as accessible to an adult earning < 1 USD per day as they are to an adult earning > 3 USD per day. These data are concordant with the findings from the last section indicating that the brands were last purchased for about 0.19 USD to 0.23 USD – a price range accessible to the poorest of Cambodians.**

Table 7.4. Percentage of current manufactured cigarette smokers ≥ 15 years old, by last brand purchased and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Last Brand Purchased				
	ARA	Luxury	Cambo	Romdoh	Lapin
Overall	20.8 [18.4,23.4]	13.7 [11.1,16.8]	11.8 [9.4,14.7]	11.2 [9.4,13.3]	10.8 [8.8,13.1]
<i>Gender</i>					
Male	21.2 [18.7,23.8]	13.8 [11.3,16.9]	11.4 [9.1,14.1]	11.4 [9.5,13.6]	10.7 [8.7,13.0]
Female	15.9 [10.5,23.3]	*	16.7 [10.2,26.2]	8.4 [4.7,14.7]	*
<i>Age (years)</i>					
15-24	13.6 [8.3,21.4]	20.3 [13.5,29.6]	18.3 [10.7,29.6]	*	*
≥25	21.3 [18.8,24]	13.2 [10.5,16.4]	11.3 [9.0,14.0]	11.4 [9.5,13.5]	10.9 [8.8,13.4]
<i>Residence</i>					
Urban	29.8 [22.9,37.7]	17.6 [11.1,26.7]	*	*	*
Rural	19.2 [16.5,22.2]	13.1 [10.0,16.8]	13.3 [10.5,16.7]	12.5 [10.4,15.0]	11.8 [9.5,14.6]
<i>Education¹ (years)</i>					
0-6	18.2 [15.6,21.2]	13.0 [10.3,16.3]	13.4 [10.7,16.7]	11.7 [9.6,14.1]	13.3 [10.8,16.4]
7-12	28.7 [24.2,33.6]	14.0 [10.3,18.7]	6.3 [4.0,9.6]	10.7 [7.9,14.2]	5.3 [3.4,8.2]
13-15	*	*	*	*	*
> 15	*	*	*	*	*
<i>Income</i>					
< 1 USD	17.8 [14.3,21.9]	13.0 [9.0,18.4]	13.4 [9.1,19.2]	10.5 [7.9,13.7]	13.8 [10.7,17.6]
1-2 USD	19.7 [15.2,25.2]	14.5 [9.9,20.6]	11.9 [8.0,17.3]	11.8 [8.5,16.1]	9.3 [5.9,14.2]
>2-3 USD	21.5 [16.4,27.5]	17.5 [11.3,26.1]	12.8 [8.7,18.3]	10.7 [7.6,15.0]	11.0 [7.8,15.3]
> 3 USD	23.8 [19.9,28.2]	12.0 [9.2,15.5]	9.6 [7.2,12.7]	11.8 [9.0,15.3]	8.4 [6.0,11.6]

Note: Current manufactured cigarette smokers includes daily and occasional (less than daily) use. The top five reported brands last purchased among all manufactured cigarette smokers are shown here.

¹ Education level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Point of Sale

NATSC 2011 findings indicate that about half of all manufactured cigarettes are sold by street vendors followed by grocery stores and traditional markets.

Table 7.5. Percentage of the source of last purchase of cigarettes among manufactured cigarette smokers \geq 15 years old, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Source		
	Street Vendor	Traditional Market	Grocery Store
Overall			
<i>Gender</i>			
Male	50.0 [46.5,53.5]	11.8 [9.8,14.2]	36.9 [33.7,40.2]
Female	40.6 [32.6,49.2]	14.2 [9.4,21.0]	44.5 [35.1,54.3]
<i>Age (years)</i>			
15-24	54.0 [44.5,63.2]	10.2 [6.1,16.6]	35.0 [26.7,44.3]
\geq 25	48.9 [45.4,52.4]	12.2 [10.1,14.6]	37.6 [34.3,41.1]
<i>Residence</i>			
Urban	48.7 [38.9,58.5]	15.1 [9.2,23.7]	35.6 [26.1,46.4]
Rural	49.3 [45.6,53.0]	11.7 [9.7,14.2]	37.6 [33.9,41.5]

Tax Stamps

At 20% tobacco taxation on the retail price of domestic cigarette brands and 25% tobacco taxation on the retail price of imported cigarette brands, Cambodia has been cited as having one of the lowest rates of tobacco taxation in the Western Pacific Region. NATSC 2011 findings provide insight from survey work, where the interviewers examined the last available pack of cigarettes smoked by current smokers. Interviewers had been trained by the Ministry to recognize domestic tax stamps and foreign tax stamps. The findings indicate that 95% of the packs examined did in fact have the domestic tax stamp. Such findings have two important implications: **1) FCTC compliance is being accomplished on this point during the 5 years since ratification, and 2) a further increase on the tax on cigarettes would increase the pricing of about 95% of packs sold to all current smokers throughout the nation.**

Table 7.6. Presence of tax stamps and labeling on the last pack of cigarettes smoked by daily and less than daily smokers - NATSC Cambodia, 2011.			
	Domestic Tax Stamp identified by Interviewer	Foreign Tax Stamp Identified by Interviewer	Bar Code Identified by Interviewer
Proportion of Packs [95% CI]	95.1 [93.8, 96.2]	7.8 [6.4, 9.6]	76.0 [72.9, 79.0]

8. Media

NATSC 2011 findings are being reported after the recent passage of Sub Decree No. 35.ANKR.BK that bans the advertising of tobacco products in the form of picture, text, radio, television, magazine, CD, VCD, DVD, and telecommunication. In this chapter, we compare public exposure to anti-tobacco messaging (media, health labels on packs) with public exposure to the advertisements, sponsorships, and promotions by the tobacco industry posted throughout the nation.

Anti-Tobacco Messaging in Media

Findings in table 8.1 indicate that 75% of all adults have seen anti-tobacco messaging in print, television, radio, billboard or other locations. The most commonly seen anti-tobacco messaging in the nation is on television or radio, where 70% of the adults have noticed a message on the harms of cigarettes during the past 30 days. Television or radio messaging seems to effectively reach a wide range of adults with all subgroups by gender, age, and residence having about 70% exposure or more. As might be expected, newspaper, magazine, and billboards exposure are more common in urban areas.

Anti-Tobacco Messaging in the Form of Health Warning Labels on the Pack

NATSC 2011 findings indicate that **the written health warning labels on the cigarette pack are an important part of anti-tobacco messaging in the nation.**

Among current smokers (figure 8.1 and table 8.2), 82% had noticed the label and 79% had read the label closely. Among the smokers, men and adults less than 65 years old tended to give the health label more attention.

We note that the health warning label is also being widely seen by non-smokers, among whom, 67% had also noticed the health warning and 62% closely read it. The potential of the latter finding in preventing smoking initiation needs further study. **When the interviewers examined the packs of current smokers, they found that 90% of the packs displayed a health warning label in Khmer (figure 8.2) – evidence of compliance with the sub-decree on written health warning labels.**

Graphic health warning labels (figure 8.2) have been part of legislative initiatives but have not passed. NATSC 2011 indicates that 90% of adults support a graphic health warning label.

Figure 8.1. Findings on reading and support for health warning labels on manufactured packs – NATSC Cambodia, 2011.

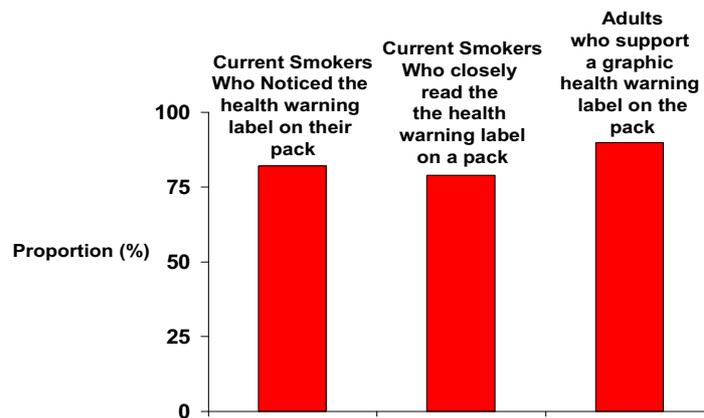


Figure 8.2. Written and graphic health warning labels proposed for cigarette packs in Cambodia (written labels are enforced by sub-decree) – NATSC Cambodia, 2011.



Table 8.1. Percentage of adults ≥ 15 years old who noticed anti-cigarette smoking information during the last 30 days in various places, by smoking status, and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Places where Anti-Cigarette Information was Noticed:						
	Newspapers or Magazines	Television or Radio	Television	Radio	Billboard	Somewhere Else	Any Location
Overall	17.4 [15.7, 19.2]	70.4 [68.5, 72.2]	59.6 [57.4,61.7]	52.9 [50.7,55.0]	32.9 [30.3,35.6]	7.2 [6.1,8.4]	75.0 [73.2,76.7]
<i>Gender</i>							
Male	20.4 [18.3,22.6]	73.1 [71.1,75.1]	61.9 [59.5,64.3]	56.0 [53.6,58.3]	36.8 [33.9,39.7]	8.1 [6.8,9.6]	78.5 [76.6,80.3]
Female	14.9 [13.3,16.7]	68.2 [66.2,70.1]	57.6 [55.4,59.9]	50.3 [48.2,52.5]	29.7 [27.3,32.3]	6.5 [5.5,7.6]	72.1 [70.2,73.9]
<i>Age (years)</i>							
15-24	20.0 [17.6,22.6]	71.3 [68.5,74.0]	61.3 [58.0,64.6]	52.5 [49.5,55.6]	36.6 [33.2,40.2]	7.5 [6.0,9.3]	76.8 [74.1,79.3]
≥25	16.5 [14.8,18.3]	70.1 [68.2,72.0]	59.0 [56.9,61.1]	53.0 [50.8,55.2]	31.6 [29.1,34.3]	7.1 [6.0,8.3]	74.4 [72.6,76.1]
<i>Residence</i>							
Urban	32.9 [26.4,40.1]	77.6 [72.3,82.1]	71.7 [65.5,77.1]	49.6 [42.3,57.0]	50.5 [41.5,59.5]	8.0 [5.6,11.2]	81.8 [76.8,85.9]
Rural	14.2 [12.6,16.0]	69.0 [66.8,71.1]	57.1 [54.6,59.6]	53.5 [51.1,56]	29.3 [26.7,32.1]	7.0 [5.8,8.4]	73.6 [71.5,75.6]
Current Smoker¹							
<i>Gender</i>							
Male	18.4 [16.2,20.9]	71.9 [69.3,74.4]	59.2 [56.5,61.9]	55.8 [52.9,58.8]	35.6 [32.4,38.9]	8.2 [6.6,10.0]	78.3 [75.9,80.5]
Female	8.5 [5.1,13.7]	54.6 [46.3,62.6]	42.9 [35.2,51.0]	42.6 [34.5,51.2]	21.8 [16.7,27.9]	3.2 [1.6,6.4]	60.2 [52.5,67.5]
<i>Age (years)</i>							
15-24	15.8 [10.4,23.2]	69.8 [62.1,76.6]	53.7 [46.0,61.2]	55.3 [47.4,63.0]	38.8 [30.7,47.7]	*	76.8 [69.7,82.7]
≥25	17.6 [15.4,20.0]	70.3 [67.4,73.0]	58.0 [55.1,60.8]	54.5 [51.4,57.7]	33.9 [30.8,37.2]	7.3 [5.9,9.1]	76.6 [73.9,79.0]
<i>Residence</i>							
Urban	31.6 [24.6,39.5]	73.5 [66.3,79.5]	65.9 [58.4,72.6]	50.4 [42.1,58.7]	53.7 [44.0,63.0]	8.2 [5.7,11.7]	83.3 [76.8,88.2]
Rural	15.6 [13.4,18.1]	69.9 [66.7,72.8]	56.6 [53.5,59.7]	55.1 [51.7,58.5]	31.7 [28.5,35.2]	6.8 [5.6,8.2]	75.7 [72.9,78.3]
Non-smoker²							
<i>Gender</i>							
Male	21.6 [19.3,24.2]	73.9 [71.6,76.1]	63.6 [60.8,66.4]	56.1 [53.3,58.8]	37.5 [34.3,40.9]	8.0 [6.6,9.7]	78.6 [76.4,80.7]
Female	15.2 [13.5,17]	68.7 [66.6,70.6]	58.2 [55.9,60.4]	50.6 [48.4,52.8]	30 [27.5,32.6]	6.6 [5.5,7.8]	72.5 [70.6,74.4]
<i>Age (years)</i>							
15-24	20.2 [17.8,22.8]	71.4 [68.4,74.1]	61.7 [58.3,65.1]	52.4 [49.2,55.6]	36.5 [32.9,40.2]	7.2 [5.7,9]	76.8 [74.0,79.4]
≥25	16.2 [14.4,18.1]	70.1 [68.0,72.1]	59.3 [57.0,61.6]	52.5 [50.1,54.8]	30.9 [28.2,33.7]	7.0 [5.9,8.2]	73.7 [71.7,75.6]
<i>Residence</i>							
Urban	33.1 [26.3,40.6]	78.2 [72.7,82.9]	72.6 [66.2,78.1]	49.5 [42.0,57.1]	50.0 [40.7,59.4]	6.5 [4.0,10.5]	81.6 [76.4,85.8]
Rural	13.9 [12.3,15.6]	68.7 [66.5,70.9]	57.2 [54.7,59.8]	53.1 [50.6,55.6]	28.7 [26.1,31.5]	7.8 [6.3,9.8]	73.1 [70.8,75.2]

¹ Includes daily and occasional (less than daily) smokers.

² Includes former and never smokers.

* Percentages not reported for a cell size less than 25.

Table 8.2. Percentage of current smokers \geq 15 years old who noticed health warnings on cigarette packages and considered quitting because of the warning label on cigarette packages during the last 30 days, by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics		Current Smokers who Noticed Health Warnings on Cigarette Package
		<i>Percentage [95% CI]</i>
Overall		82.0 [79.5,84.3]
<i>Gender</i>		
	Male	83.5 [81.2,85.7]
	Female	67.3 [59.1,74.5]
<i>Age (years)</i>		
	15-17	*
	18-24	85.8 [79.4,90.5]
	25-44	86.1 [83.0,88.7]
	45-64	80.2 [76.9,83.1]
	65+	70.6 [63.8,76.6]
<i>Residence</i>		
	Urban	86.2 [78.2,91.5]
	Rural	81.5 [78.7,83.9]
<i>Education¹ (years)</i>		
	0-6	79.1 [76.2,81.8]
	7-12	89.8 [86.4,92.4]
	13-15	*
	> 15	*

¹ Educational level is reported only among respondents 25+ years old.

* Percentages not reported for a cell size less than 25.

Tobacco Company Advertisements, Sponsorships, and Promotions

NATSC 2011 findings indicate that 83% of all adults (table 8.3), 86% of current smokers (table 8.4), and 82% of non-smokers (table 8.5) have been exposed to cigarette company advertisements, sponsorships, or promotions during the 30 days before completing the survey.

Advertisements were the principal form of exposure to tobacco company campaigns and comprised 82% of exposure relative to 6% exposed to sponsorships, and 26% exposed to promotions. Among the advertisements, television, radio, stores, posters, and billboards were the principal media. Billboards, posters, and print media had more exposure in urban areas.

Table 8.3. Percentage of adults ≥ 15 years old who noticed cigarette marketing during the last 30 days in various places, by selected demographic characteristics – NATSC Cambodia, 2011.

Place	Overall	Gender		Age (years)		Residence	
		Male	Female	15-24	≥25	Urban	Rural
<i>Noticed Advertisements</i>	82.0 [80.2,83.6]	84.8 [83.0,86.5]	79.6 [77.7,81.4]	82.5 [80.1,84.7]	81.8 [80.0,83.4]	90.5 [85.8,93.7]	80.2 [78.1,82.2]
In stores	43.5 [40.8,46.2]	48.1 [45.2,51.1]	39.7 [37.1,42.4]	43.1 [39.7,46.5]	43.7 [41.0,46.4]	58.7 [51.5,65.5]	40.4 [37.5,43.5]
On television	49.4 [47.2,51.6]	51.2 [48.7,53.7]	47.9 [45.8,50.1]	51.2 [47.9,54.4]	48.8 [46.7,50.9]	63.5 [56.2,70.2]	46.5 [44.0,49.1]
On the radio	44.3 [42.2,46.5]	47.0 [44.6,49.4]	42.0 [39.9,44.2]	44.2 [41.3,47.2]	44.3 [42.2,46.5]	43.9 [36.0,52.2]	44.4 [41.9,46.9]
On billboards	33.8 [31.3,36.5]	38.4 [35.4,41.4]	30.1 [27.6,32.7]	36.2 [32.8,39.7]	33.1 [30.4,35.8]	53.4 [44.6,62.0]	29.9 [27.1,32.8]
On posters	41.3 [38.8,43.8]	45.1 [42.4,47.9]	38.2 [35.7,40.7]	43.0 [39.7,46.4]	40.7 [38.2,43.3]	55.3 [46.8,63.6]	38.5 [35.7,41.3]
In newspapers or magazines	11.0 [9.5,12.7]	13.2 [11.4,15.2]	9.2 [7.9,10.8]	13.3 [11.2,15.7]	10.2 [8.8,11.8]	26.0 [19.3,33.9]	8.0 [6.8,9.3]
In cinemas	0.6 [0.4,0.8]	0.7 [0.5,1.0]	0.5 [0.3,0.8]	0.7 [0.4,1.2]	0.5 [0.4,0.8]	1.2 [0.8,2.0]	0.4 [0.3,0.7]
On the internet	0.4 [0.2,0.5]	0.5 [0.3,0.7]	0.3 [0.2,0.4]	*	0.4 [0.3,0.6]	0.8 [0.5,1.5]	0.3 [0.2,0.4]
On public transportation	17.8 [16.0,19.7]	20.8 [18.7,23.1]	15.2 [13.6,17.1]	19.4 [16.9,22.3]	17.2 [15.5,19.1]	24.5 [19.3,30.6]	16.4 [14.4,18.6]
Tobacco Company Vehicles	35.2 [32.5,38.0]	38.4 [35.4,41.4]	32.6 [30.0,35.4]	36.8 [33.2,40.6]	34.7 [32.1,37.4]	50.5 [43.4,57.6]	32.1 [29.3,35.1]
Umbrella	35.1 [32.4,37.9]	37.7 [34.8,40.6]	33.0 [30.4,35.7]	37.5 [34.0,41.2]	34.3 [31.6,37.0]	47.1 [38.9,55.4]	32.7 [29.8,35.6]
Banner	22.1 [19.9,24.3]	24.1 [21.8,26.6]	20.3 [18.2,22.7]	23.7 [20.8,26.7]	21.5 [19.3,23.9]	35.2 [27.7,43.6]	19.4 [17.1,21.8]
Public Walls	26.4 [23.9,29.0]	28.8 [26.0,31.6]	24.4 [22.0,27.0]	27.6 [24.5,31.0]	25.9 [23.5,28.6]	35.9 [28.9,43.6]	24.4 [21.5,27.6]
Concert	3.6 [2.7,4.7]	3.9 [2.9,5.2]	3.3 [2.5,4.3]	5.9 [3.8,9.1]	2.8 [2.2,3.5]	8.0 [5.3,12.0]	2.6 [1.8,3.8]
Ad Counter	5.5 [4.2,7.2]	6.4 [4.9,8.2]	4.7 [3.5,6.4]	5.0 [3.7,6.8]	5.6 [4.3,7.4]	17.8 [11.9,25.8]	3.0 [2.2,4.1]
Anywhere Else	0.7 [0.5,1]	0.8 [0.6,1.2]	0.6 [0.4,0.9]	0.6 [0.4,1.0]	0.8 [0.5,1]	1.1 [0.6,2.2]	0.6 [0.4,0.9]
<i>Noticed Sports Sponsorship</i>	6.2 [4.9,7.9]	9.2 [7.3,11.5]	3.8 [2.8,5.2]	7.0 [5.4,9.2]	6.0 [4.7,7.6]	11.7 [7.0,18.8]	5.1 [3.9,6.8]
<i>Noticed Cigarette Promotions</i>	26.4 [24.1,28.7]	31.1 [28.4,34.0]	22.4 [20.3,24.6]	26.4 [23.4,29.6]	26.3 [24.1,28.7]	32.6 [26.4,39.4]	25.1 [22.5,27.9]
Free Samples	7.4 [6.4,8.7]	10.4 [8.9,12.2]	4.9 [4.1,5.9]	7.6 [6.1,9.3]	7.4 [6.3,8.6]	15.3 [11.7,19.8]	5.8 [4.8,7.0]
Cigarettes at Sale Prices	7.0 [5.8,8.3]	9.2 [7.6,11.0]	5.2 [4.3,6.3]	6.8 [5.2,8.7]	7.0 [5.9,8.4]	12.0 [8.4,17.0]	5.9 [4.8,7.4]
Coupons	2.9 [2.2,3.9]	4.1 [3.0,5.4]	2.0 [1.5,2.7]	2.7 [1.9,3.8]	3.0 [2.3,3.9]	6.9 [4.4,10.7]	2.1 [1.5,3.0]
Free Gifts/discounts on other products	14.8 [13.1,16.8]	17.3 [15.3,19.6]	12.8 [11.2,14.6]	13.9 [11.7,16.5]	15.2 [13.3,17.2]	14.3 [10.3,19.4]	15 [12.9,17.3]
Clothing/item with brand name or logo	16.5 [14.7,18.5]	18.6 [16.5,20.9]	14.8 [13.1,16.7]	17.7 [15.3,20.4]	16.1 [14.3,18.0]	19.5 [14.9,25.2]	15.9 [13.8,18.2]
Mail promoting cigarettes	4.9 [4.1,5.9]	6.3 [5.1,7.6]	3.8 [3.1,4.7]	5.0 [3.9,6.4]	4.9 [4.1,5.9]	7.1 [4.7,10.6]	4.5 [3.6,5.5]
<i>Any advertisements, sponsors, promotions</i>	83.0 [81.3,84.6]	85.8 [84.0,87.4]	80.7 [78.8,82.4]	83.6 [81.2,85.7]	82.8 [81.0,84.4]	90.9 [86.3,94.0]	81.4 [79.3,83.3]

* Percentages not reported for a cell size less than 25.

Table 8.4. Percentage of current smokers ≥ 15 years old who noticed cigarette marketing during the last 30 days in various places, by selected demographic characteristics – NATSC Cambodia, 2011.

Place	Overall	Gender		Age (years)		Residence	
		Male	Female	15-24	≥25	Urban	Rural
<i>Noticed Advertisements</i>	85.3 [82.9,87.5]	86.3 [84.0,88.2]	76.7 [69.1,82.8]	88.3 [80.7,93.1]	85.1 [82.7,87.3]	93.8 [84.6,97.6]	84.2 [81.6,86.6]
In stores	51.5 [48.3,54.7]	52.8 [49.5,56.1]	39.3 [32.2,46.8]	61.0 [52.6,68.8]	50.8 [47.6,54.1]	69.7 [60.5,77.5]	49.1 [45.6,52.6]
On television	48.1 [45.0,51.3]	49.3 [46.2,52.4]	36.9 [29.0,45.6]	44.9 [36.8,53.2]	48.4 [45.1,51.6]	59.2 [49.0,68.6]	46.7 [43.2,50.2]
On the radio	44.9 [41.9,48.0]	45.8 [42.7,48.8]	37.1 [29.0,46.0]	45.2 [36.8,53.8]	44.9 [41.8,48.1]	41.8 [33.5,50.6]	45.3 [41.9,48.8]
On billboards	35.7 [32.7,38.8]	37.3 [34.2,40.4]	20.9 [15.7,27.2]	35.7 [28.2,44.0]	35.7 [32.6,38.9]	56.8 [47.3,65.8]	32.9 [29.8,36.2]
On posters	44.6 [41.6,47.7]	45.6 [42.6,48.7]	35.1 [27.3,43.8]	44.1 [35.8,52.8]	44.7 [41.6,47.8]	64.3 [55.2,72.5]	42 [38.7,45.5]
In newspapers or magazines	10.0 [8.5,11.7]	10.6 [8.9,12.5]	4.0 [1.9,8.1]	10.3 [6.4,16.1]	9.9 [8.4,11.7]	25.3 [18.7,33.2]	8.0 [6.5,9.7]
In cinemas	*	*	*	*	*	*	*
On the internet	*	*	*	*	*	*	*
On public transportation	18.4 [16.3,20.7]	19.5 [17.3,22.0]	7.5 [4.5,12.2]	19.2 [13.3,27.1]	18.3 [16.2,20.6]	24.9 [18.9,32.0]	17.5 [15.2,20.1]
Tobacco Company Vehicles	35.9 [32.9,39.0]	37.3 [34.3,40.4]	22.7 [17.2,29.3]	43.4 [34.9,52.3]	35.4 [32.4,38.4]	54.5 [46.3,62.4]	33.5 [30.4,36.7]
Umbrella	36.2 [33.2,39.4]	37.3 [34.2,40.5]	25.7 [19.3,33.3]	45.2 [37.0,53.7]	35.6 [32.5,38.8]	52.6 [43.6,61.5]	34.1 [30.8,37.5]

Banner	21.6 [19.1,24.3]	22.3 [19.7,25.1]	15.1 [10.7,20.7]	22.2 [16.3,29.4]	21.5 [19.0,24.3]	36.8 [28.3,46.3]	19.6 [17,22.5]
Public Walls	26.9 [24.0,30.0]	27.5 [24.6,30.7]	20.9 [15.1,28.1]	36.2 [28.2,45.0]	26.3 [23.4,29.3]	37.5 [28.7,47.3]	25.5 [22.4,29.0]
Concert	2.7 [2.0,3.6]	2.8 [2.1,3.8]	*	2.7 [2.0,3.8]	2.7 [2.0,3.8]	8.2 [4.6,14.3]	2.0 [1.4,2.7]
Ad Counter	4.9 [3.7,6.6]	5.3 [4.0,7.1]	*	5.1 [3.8,6.9]	5.1 [3.8,6.9]	19.1 [11.8,29.4]	3.1 [2.2,4.2]
Anywhere Else	*	0.8 [0.4,1.3]	*	*	0.7 [0.4,1.2]	*	*
<i>Noticed Sports Sponsorship</i>	8.6 [6.6,11.0]	9.1 [7.1,11.6]	*	14.0 [8.6,21.9]	8.2 [6.3,10.6]	12.1 [6.9,20.5]	8.1 [6.1,10.8]
<i>Noticed Cigarette Promotions</i>	33.4 [30.1,37.0]	34.4 [31.0,37.9]	24.4 [18.4,31.6]	35.9 [28.1,44.5]	33.3 [29.9,36.8]	43.9 [35.6,52.5]	32.1 [28.4,36.0]
Free Samples	10.8 [9.1,12.8]	11.5 [9.6,13.7]	*	14.6 [9.2,22.5]	10.5 [8.8,12.6]	21.8 [15.2,30.2]	9.3 [7.6,11.4]
Cigarettes at Sale Prices	10.1 [8.0,12.5]	10.9 [8.7,13.6]	*	*	10 [7.9,12.5]	17.6 [11.8,25.2]	9.1 [7.0,11.7]
Coupons	4.6 [3.2,6.5]	4.8 [3.4,6.9]	*	*	4.6 [3.2,6.6]	9.2 [4.8,17.0]	4.0 [2.6,6.0]
Free Gifts/discounts on other products	19.2 [16.7,22.1]	19.6 [17.0,22.4]	16.1 [10.8,23.3]	17.1 [12.0,23.6]	19.4 [16.7,22.3]	17.9 [11.9,26.1]	19.4 [16.6,22.5]
Clothing/item with brand name or logo	19.7 [17.1,22.5]	19.9 [17.3,22.7]	17.6 [12.4,24.4]	22.1 [16.0,29.6]	19.5 [16.9,22.4]	27.0 [19.1,36.7]	18.7 [16.0,21.8]
Mail promoting cigarettes	6.6 [5.2,8.4]	7.2 [5.7,9.2]	*	*	4.3 [3.5,5.2]	8.4 [4.4,15.4]	6.4 [4.9,8.3]
<i>Any advertisements, sponsors, promotions</i>	86.4 [84.0,88.5]	87.2 [85.0,89.2]	78.7 [71.2,84.7]	88.3 [80.7,93.1]	86.3 [83.9,88.4]	94.2 [84.8,97.9]	85.4 [82.7,87.7]

Note: Current smokers includes daily and less than daily smokers.
* Percentages not reported for a cell size less than 25.

Table 8.5. Percentage of non-smokers ≥ 15 years old who noticed cigarette marketing during the last 30 days in various places, by selected demographic characteristics – NATSC Cambodia, 2011.

Place	Overall	Gender		Age (years)		Residence	
		Male	Female	15-24	≥25	Urban	Rural
<i>Noticed Advertisements</i>	81.1 [79.3,82.9]	83.9 [81.7,85.9]	79.7 [77.8,81.5]	82.2 [79.7,84.5]	80.7 [78.8,82.4]	90.0 [85.5,93.2]	79.2 [76.9,81.3]
In stores	41.6 [38.8,44.5]	45.1 [41.7,48.6]	39.7 [37.1,42.5]	42.1 [38.6,45.7]	41.4 [38.5,44.3]	5.07 [49.5,64.1]	38.2 [35.1,41.3]
On television	49.7 [47.5,52.0]	52.4 [49.5,55.3]	48.3 [46.2,50.5]	51.5 [48.2,54.9]	49.0 [46.8,51.1]	64.2 [57.0,70.7]	46.5 [44.0,49.1]
On the radio	44.1 [41.9,46.4]	47.8 [45.0,50.7]	42.2 [40.0,44.4]	44.1 [41.1,47.2]	44.1 [41.8,46.5]	44.3 [36.1,52.8]	44.1 [41.5,46.7]
On billboards	33.4 [30.7,36.2]	39.1 [35.7,42.6]	39.1 [35.7,42.6]	36.2 [32.7,39.9]	32.2 [29.4,35.2]	52.9 [43.8,61.8]	29.1 [26.2,32.1]
On posters	40.5 [37.9,43.2]	44.8 [41.6,48.1]	38.3 [35.8,40.8]	4.03 [39.5,46.5]	39.5 [36.8,42.2]	53.9 [45.0,62.5]	37.5 [34.7,40.4]
In newspapers or magazines	11.3 [9.6,13.1]	14.9 [12.6,17.4]	9.4 [8.0,11.0]	13.5 [11.3,15.9]	10.3 [8.7,12.2]	26.1 [19.1,34.4]	.08 [6.8,9.4]
In cinemas	0.6 [0.4,0.9]	0.8 [0.5,1.2]	0.5 [0.3,0.8]	0.7 [0.4,1.2]	0.6 [0.4,0.9]	1.4 [0.8,2.2]	0.4 [0.3,0.8]
On the internet	0.3 [0.2,0.5]	*	0.2 [0.2,0.4]	*	0.4 [0.3,0.6]	*	*
On public transportation	17.6 [15.7,19.7]	21.6 [19.2,24.3]	15.5 [13.8,17.4]	19.5 [16.8,22.4]	16.8 [15.0,18.9]	24.5 [19.2,30.7]	16.1 [14.0,18.4]
Tobacco Company Vehicles	35.1 [32.3,38.0]	39.0 [35.6,42.6]	33.0 [30.3,35.8]	36.4 [32.7,40.3]	34.5 [31.6,37.4]	49.9 [42.7,57.2]	31.8 [28.8,34.8]
Umbrella	34.8 [32.1,37.7]	37.9 [34.6,41.2]	33.2 [30.6,36.0]	37.1 [33.5,40.9]	33.9 [31.0,36.8]	46.2 [37.8,54.9]	32.3 [29.4,35.3]
Banner	22.2 [19.9,24.6]	25.3 [22.6,28.2]	20.5 [18.4,22.9]	23.7 [20.8,27.0]	21.5 [19.2,24.1]	35.0 [27.3,43.6]	19.3 [17.0,21.9]
Public Walls	26.2 [23.7,29.0]	29.5 [26.5,32.8]	24.5 [22.1,27.2]	27.2 [23.9,30.7]	25.8 [23.3,28.6]	35.6 [28.6,43.4]	24.2 [21.1,27.5]
Concert	3.8 [2.8,5.0]	4.6 [3.3,6.4]	3.3 [2.5,4.4]	6.1 [3.9,9.5]	2.8 [2.1,3.5]	8.0 [5.2,12.1]	2.8 [1.9,4.2]
Ad Counter	5.6 [4.2,7.5]	7.0 [5.3,9.3]	4.9 [3.6,6.6]	5.2 [3.8,7.1]	5.8 [4.3,7.8]	17.6 [11.7,25.8]	2.9 [2.1,4.1]
Anywhere Else	0.7 [0.5,1.0]	0.9 [0.6,1.3]	0.6 [0.4,0.9]	0.6 [0.3,1.0]	0.8 [0.5,1.1]	1.2 [0.6,2.3]	0.6 [0.4,0.9]
<i>Noticed Sports Sponsorship</i>	5.7 [4.4,7.4]	9.2 [7.1,11.8]	3.9 [2.8,5.2]	6.7 [5.0,8.9]	5.3 [4.0,6.9]	11.6 [6.8,19.0]	4.4 [3.3,5.8]
<i>Noticed Cigarette Promotions</i>	24.6 [22.4,27]	29.0 [26.2,32.1]	22.3 [20.3,24.6]	25.9 [22.9,29.2]	24.1 [21.8,26.5]	30.8 [24.6,37.8]	23.3 [20.7,26.0]
Free Samples	6.6 [5.6,7.9]	9.8 [8.0,11.9]	5.0 [4.2,6.0]	7.2 [5.7,9.0]	6.4 [5.3,7.7]	14.3 [10.7,19.0]	4.9 [3.9,6.1]
Cigarettes at Sale Prices	6.2 [5.1,7.6]	8.0 [6.3,10.1]	5.3 [4.3,6.4]	6.5 [5.0,8.5]	6.1 [5.0,7.5]	11.2 [7.6,16.2]	5.1 [4.0,6.5]
Coupons	2.6 [1.9,3.4]	3.6 [2.6,5.0]	2.0 [1.5,2.7]	2.6 [1.9,3.8]	2.5 [1.8,3.4]	6.5 [4.1,10.2]	1.7 [1.2,2.4]
Free Gifts/discounts on other products	13.8 [12.1,15.7]	15.9 [13.7,18.4]	12.7 [11.1,14.5]	13.8 [11.5,16.5]	13.8 [12.0,15.8]	13.7 [9.8,18.9]	13.8 [11.8,16.1]
Clothing/item with brand name or logo	15.7 [14.0,17.7]	17.8 [15.6,20.1]	14.7 [13.0,16.6]	17.5 [15.0,20.2]	15.0 [13.3,16.9]	18.4 [13.9,23.9]	15.1 [13.1,17.5]
Mail promoting cigarettes	6.6 [5.2,8.4]	7.2 [5.7,9.2]	0.0 [0.0,0.0]	5.0 [3.9,6.4]	4.3 [3.5,5.2]	6.9 [4.5,10.5]	4.0 [3.1,5.0]
<i>Any advertisements, sponsors, promotions</i>	82.2 [80.4,83.8]	84.9 [82.8,86.7]	80.8 [78.9,82.5]	83.3 [80.9,85.5]	81.7 [79.8,83.4]	90.4 [86.1,93.4]	80.3 [78.1,82.4]

Note: Non-smokers includes both former and never smokers.
* Percentages not reported for a cell size less than 25.

9. Knowledge, Attitudes and Perceptions

Overall, NATSC 2011 findings indicate that the belief that cigarette smoking is harmful is widely known among Cambodians across a wide range of demographic subgroups. Specifically, we found that 96% of adults believe that smoking is harmful to one's health, 92% believe that the smoke from someone else's cigarette or pipe is harmful to the health of others, and 91% believe that smoking during pregnancy harms the fetus.

By disease, data in table 9.1 indicate that 95% of adults believe that smoking causes lung cancer, 92% believe that smoking causes heart disease, and 79% believe that it causes "any illness" but are not specific as to which one. The findings in tables 9.1 and 9.2 indicate that these beliefs are widely held among males and females, in all age groups (even the youngest adults ages 15 to 17 years old), in urban and rural areas, and among smokers and non-smokers.

In conjunction with data in chapter 5, indicating a very low rate of smoking cessation, we can postulate that knowledge of harms due to cigarette use does not appear to be a strong pre-disposing factor to cessation in Cambodia.

Table 9.1. Percentage of adults ≥ 15 years old who believe that smoking causes disease is given by selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Adults who believe that smoking causes...		
	Any Illness	Heart Disease	Lung Cancer
Overall	78.6 [75.9,81.1]	92.9 [91.7,93.9]	95.3 [94.5,96.1]
<i>Gender</i>			
Male	78.1 [75.2,80.8]	92.6 [91.3,93.7]	95.2 [94.2,96.0]
Female	79.0 [76.3,81.4]	93.1 [91.9,94.2]	95.5 [94.6,96.2]
<i>Age (years)</i>			
15-17	79.4 [75.0,83.2]	93.6 [91.3,95.3]	95.7 [93.7,97.1]
18-24	81.5 [78.4,84.2]	94.7 [93.1,95.9]	95.7 [93.7,97.1]
25-44	79.0 [75.8,81.9]	93.2 [91.8,94.5]	95.8 [94.8,96.7]
45-64	78.5 [76.0,80.7]	92.7 [91.4,93.9]	95.2 [94.2,96.1]
65+	69.6 [62.8,75.7]	86.7 [83.1,89.6]	89.1 [86.1,91.6]
<i>Residence</i>			
Urban	88.0 [80.5,92.9]	98.0 [97.0,98.7]	98.6 [97.7,99.2]
Rural	76.7 [73.2,79.8]	91.8 [90.4,93.1]	94.7 [93.7,95.5]
<i>Education¹ (years)</i>			

	0-6	77.0 [74.4,79.5]	91.0 [89.5,92.3]	93.8 [92.8,94.8]
	7-12	79.0 [74.1,83.1]	96.1 [94.8,97.1]	97.8 [97.0,98.4]
	13-15	92.4 [81.0,97.2]	95.9 [87.6,98.7]	98.2 [88.6,99.7]
	> 15	94.9 [84.7,98.4]	100	100
Current Smoker²		72.6 [69.3, 75.7]	89.3 [87.3, 90.8]	91.7 [90.0, 93.2]
<i>Gender</i>				
	Male	73.5 [70.4,76.4]	89.3 [87.5,90.8]	92.2 [90.7,93.5]
	Female	63.8 [55.0,71.7]	86.3 [79.9,91.0]	87.2 [80.7,91.7]
<i>Age (years)</i>				
	15-17	79.2 [74.8,83.1]	92.4 [75.7,97.9]	92.4 [75.7,97.9]
	18-24	82.1 [78.9,84.9]	88.6 [83.5,92.3]	91.8 [87.1,94.9]
	25-44	80.5 [77.2,83.5]	89.3 [86.7,91.5]	92.3 [89.8,94.3]
	45-64	80.6 [78.3,82.8]	89.7 [87.5,91.6]	92.3 [90.4,93.9]
	65+	70.4 [62.2,77.4]	85.0 [80.4,88.7]	87.5 [83.2,90.9]
<i>Residence</i>				
	Urban	79.8 [67.3,88.4]	98.6 [97.7,99.2]	99.2 [98.3,99.6]
	Rural	71.7 [67.8,75.2]	92.8 [91.3,94.0]	95.5 [94.5,96.4]
<i>Education¹ (years)</i>				
	0-6	71.3 [67.8,74.6]	92.2 [90.7,93.5]	90.0 [87.8,91.9]
	7-12	75.3 [69.3,80.5]	96.8 [95.4,97.8]	97.0 [95.6,98.0]
	13-15	*	97.5 [88.8,99.5]	*
	> 15	*	100	*
Non-smoker³		80.0 [77.3, 82.6]	94.7 [93.3, 95.9]	96.2 [95.4, 96.9]
<i>Gender</i>				
	Male	81.1 [77.7,84.0]	94.7 [93.3,95.9]	97.1 [96.1,97.8]
	Female	79.5 [76.9,81.9]	93.4 [92.1,94.4]	95.7 [94.9,96.5]
<i>Age (years)</i>				
	15-17	92.4 [75.7,97.9]	93.6 [91.3,95.4]	95.7 [93.7,97.1]
	18-24	72.7 [63.8,80.1]	95.1 [93.6,96.3]	97.3 [96.1,98.1]
	25-44	73.3 [69.3,77.0]	94.3 [92.9,95.5]	96.8 [95.9,97.5]
	45-64	72.8 [68.7,76.6]	93.9 [92.4,95.0]	96.3 [95.3,97.1]
	65+	67.8 [60.5,74.3]	87.4 [83.1,90.7]	89.8 [85.7,92.8]
<i>Residence</i>				
	Urban	89.3 [82.2,93.8]	94.2 [90.6,96.5]	94.9 [91.4,97.0]
	Rural	78.0 [74.4,81.2]	88.3 [86.2,90.1]	91.3 [89.4,92.9]
<i>Education¹ (years)</i>				
	0-6	78.9 [76.2,81.4]	87.3 [84.9,89.4]	95.1 [94.1,96.0]
	7-12	80.1 [74.7,84.6]	94.0 [91.8,95.6]	98.1 [97.1,98.8]
	13-15	93.6 [80.7,98.1]	*	*
	> 15	94.5 [83.8,98.3]	*	*

¹ Education level is reported only among respondents 25+ years old.

² Includes daily and occasional (less than daily) smokers.

³ Includes former and never smokers.

* Percentages not reported for a cell size less than 25.

Table 9.2. Percentage of adults ≥ 15 years old who believe that breathing other people's smoke causes serious illness in non-smokers, by smoking status and selected demographic characteristics – NATSC Cambodia, 2011.

Demographic Characteristics	Belief that breathing other people's smoke causes serious illness in non-smokers		
	Overall	Current Smokers ¹	Non-smokers ²
Overall	92.4 [91.1,93.5]	87.6 [85.6,89.4]	93.6 [92.3,94.7]
<i>Gender</i>			
	Male	92.1 [90.8,93.3]	94.7 [93.2,95.8]
	Female	92.6 [91.3,93.8]	93.0 [91.7,94.2]
<i>Age (years)</i>			
	15-17	94.1 [92.1,95.7]	94.2 [92.1,95.8]
	18-24	94.4 [92.4,95.9]	94.8 [92.7,96.3]
	25-44	92.8 [90.9,94.3]	94.3 [92.5,95.7]
	45-64	91.7 [90.2,92.9]	93.3 [91.8,94.6]
	65+	86.3 [82.9,89.1]	85.4 [81.2,88.8]
<i>Residence</i>			

Urban	94.4 [90.1,97.0]	89.8 [83.6,93.8]	95.2 [90.4,97.6]
Rural	92.0 [90.6,93.2]	87.3 [85.1,89.2]	93.2 [91.9,94.4]
<i>Education</i> ³ (years)			
0-6	91.3 [89.9,92.6]	86.6 [84.1,88.8]	92.9 [91.5,94.0]
7-12	92.7 [90.6,94.4]	89.8 [86.9,92.1]	93.7 [91.1,95.5]
13-15	100	100	100
> 15	92.8 [76.0,98.1]	89.8 [86.9,92.1]	93.4 [76.6,98.4]

¹ Includes daily and occasional (less than daily) smokers.

² Includes former and never smokers.

³ Education level is reported only among respondents 25+ years old.

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Appendix A

Questionnaire: National Adult Tobacco Survey of Cambodia, 2011

CONFIDENTIAL

All information collected in this survey is strictly confidential and will be used for statistical purposes only

**Royal Government of Cambodia
National Institute of Statistics,
Ministry of Planning**

NATSC 2011

A. To be completed by supervisor before interview										B. To be completed by interviewer																													
Province /City										Name of household head																													
District /Khan										Address (house No., street...) of other identification																													
Commune/Sangkat										Date of the interview			Day:			Month:			Year: 2010																				
Sample Village/Mondol										Date of last visit			Day:			Month:			Year: 2010																				
Domain number (1 to 17)										Interviewer's name:																													
Sector (Urban=1, Rural=2)										Interviewer's signature: (Indicates survey completed and consent obtained)																													
Sample reference number of household										Team Number:																													
C. To be completed by supervisor after checking completed questionnaire thoroughly										D: To be completed after re-interview (when required)																													
Supervisor's name:					Id:					Name of re-interviewer:					Id:																								
Date checked by supervisor			Day:			Month:			Year: 1 0			Date of re-interview			Day:			Month:			Year: 2010																		
Date of re-interview (if necessary)					Day:					Month:					Interviewer's signature:																								
Supervisor's signature:										Remarks of re-interviewer:																													
Reception										Preparation										Data Entry										Approval									
Id:		Date:		Id:		Date:		Id:		Date:		Id:		Date:		Id:		Date:		Id:		Date:		Id:		Date:													

Section A.1 Demographics

Please provide the total number of household members ages 0-14 years: and the following information on all members **ages 15 years and older** usually residing in this household. Try to ask each member individually

ID No	Name	Sex 1=Male, 2=Female (Enter Code)	Date of Birth		What is [NAME]'s age in completed years? Write '96' if 96 years or more and 98 if don't know	Ethnicity (see ethnicity codes)	Religion (see Religion Codes)	Marital Status (see marital status codes)	Education					Is [NAME]'s present at home during the entire period of the survey? 1 = Yes (if yes >> Col. 15) 2 = No	Reason for not present at home during the entire period of the survey? Enter code	
			Write '98' if don't know, for day or month and '99' for Year	Year					Can [NAME] ... read and write a simple message in any language? 1=yes 2=no	Has [NAME] ... ever attended school? 1=yes 2=no (if no >> Col. 14A)	What is the highest level [NAME] successfully completed? (see grade level codes)	Is [NAME] currently in the school system? 1 = Yes 2 = No (if no >> Col. 14A) if the child is on holidays, he/she must be considered as being in the school system	What's [NAME]'s current grade? (see grade level codes)			
(1)	(2)	(3)	(4A)	(4B)	(4C)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14A)	(14B)
01																
02																
03																
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06																
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08																
Ethnicity codes (Col 6)		1 = Khmer, 2 = Cham, 3 = Other local ethnic group, 4 = Chinese, 5 = Vietnamese, 6 = Thai, 7 = Lao, 8 = Other (specify)														
Religion codes (Col 7)		1 = Buddhist, 2 = Islamic, 3 = Christian, 4 = Other (specify), 5 = None														
Marital status (Col. 8)		1 = Never Married, 2 = Currently Married, 3 = Live Together, 4 = Widowed, 5 = Divorced, 6 = Separated														
Grade level codes (Col 11 and Col.13)		99 = none; 0 = preschool/kindergarten, 1 = class one, 2 = class two, 11 = class eleven, 12 = class twelve, 13 = secondary, 14 = technical/vocational pre-secondary, 15 = technical/vocational post-secondary, 16 = college undergraduate, 17 = college graduate, 18 = post graduate, 19 = other (specify)														
Reason for not present at home (Col. 14B)		1 = Study away from home, 2 = Work away from home, 3 = Seeking for work away from home, 4 = Visit relatives away from home, 5 = Vacation away from home, 6 = Medical treatment away from home, 7 = Working mission away from home, 8 = Stay away from home for security reason, 9 = Go abroad, 10 = Other (Specify)														

Section A. Demographics (Continued)

ACTIVITY STATUS DURING THE PAST MONTH

Please provide information on all members aged 15 years and older who usually reside in this household. Try to ask each member individually

ID No	Primary Economic Activity					Secondary Economic Activity						
	Did .[NAME].. do any work at all, even one hour (if no but having a job), for primary occupation during the past month 1=yes 2=no (if no >>Col.2 of Q20 of next section)	What was .[NAME]..'s primary occupation during the past month? (Write specific occupation) Note: beggar and sex worker are occupations	In what kind of primary economic activity, like agriculture, manufacturing, construction, trade or service, did .[NAME].. work in the past month?	What was .[NAME]..'s employment status? Enter code	Under what type of employer did .[NAME].. work? Enter code	What was your income (in riel) from the primary occupation during the past month? (Write in amount in riel) Enter "98" if no income from primary occupation	Did .[NAME].. do any work at all, even one hour (if no but having a job), for secondary occupation during the past month 1=yes 2=no (if no >>Col.2 of Q20 of next section)	What was .[NAME]..'s secondary occupation during the past month? (Write specific occupation) Note: beggar and sex worker are occupations	In what kind of secondary economic activity, like agriculture, manufacturing, construction, trade or service, did .[NAME].. work in the past month?	What was .[NAME]..'s employment status? Enter code	Under what type of employer did .[NAME].. work? Enter code	(in riel) from the secondary occupation during the past month? (Write in amount in riel) Enter "98" if no income from secondary occupation
	Occupation description	Code (NIS)	Industry description	Code (NIS)	In cash	In kind	Occupation description	Code (NIS) *	Industry description	Code (NIS)	In cash	In kind
(1)	(16A)	(16B)	(16C)	(16D)	(16E)	(16F)	(16G)	(16H)	(16I)	(16J)	(16K)	(16L)
01												
02												
03												
04												
05												
06												
07												
08												
Employment status Codes (Col.16E and Col.19E)												1=Paid employee, 2=Employer, 3=Own account worker, /self-employed, 4=Unpaid family worker, 5=Other(specify)
Type of employer Codes (Col.16F and Col.19F)												01 = Government, 02 = State enterprise, 03 = Private enterprise, 04 = Joint venture, 05 = Foreign govt, international organization and NGO, 06 = Local NGO, 07 = Self-employed farm , 08 = Non-farm self-employed, 09 = Domestic servant, 10 = Other (specify)

Section A.2 2005 Tobacco Questions (exact wording and format)

ID	A2.1 Do you currently smoke cigarettes? 1= yes, 2=no	A2.2 Do you currently smoke a tobacco pipe? 1= yes, 2=no	A2.3 Do you currently chew tobacco? 1= yes, 2=no
01			
02			
03			
04			
05			
06			
07			
08			

SECTION B. TOBACCO SMOKING

I would now like to ask you some questions about smoking tobacco (Show Card 0). "To smoke" means at least one puff. Please do not answer about smokeless tobacco at this time (Show Card 1).

		DAILY SMOKER																	
ID	B1. Do you currently smoke tobacco daily, less than daily, or not at all? 1= DAILY skip to B4 2= LESS THAN DAILY skip to B3 3= NOT AT ALL skip to B3	B2. Have you smoked tobacco daily in the <u>past</u> ? 1= YES skip to B7 2= NO skip to B8	B3. In the past, have you smoked tobacco on a daily basis, less than daily, or not at all? 1= DAILY skip to B9 2= LESS THAN DAILY skip to B10 3= NOT AT ALL skip to section C	B4. How old were you when you first started smoking tobacco <u>daily</u> ? In years IF DON'T KNOW, ENTER "99"	B5. Usually, how many of the following types of tobacco do you currently smoke each day? a-d Number of cigarettes or cigars. Smoking part of cigarette or cigar and throwing it away counts as one cigarette. e-f Number of pipe loads (define pipe loads using Card 0) Show Card 0 to help the subject select						B6. How soon after you wake up in the morning do you usually have your first smoke of tobacco? 1=Less than 5 minutes 2=5 to 30 minutes, 3=31 to 60 minutes, or 4=More than 60 minutes?								
					a. Manufactured cigarettes Complete B11-B12	b. Hand-rolled cigarettes (made by local business)	c. Hand-rolled cigarettes (rolled by self, home-made) Complete B13-B14	d. Cigars	e. Tobacco pipe (exclude waterpipe)	f. Water- pipes		Number of cigarettes	Number of cigars	Number of pipe-loads	pipe-loads				
01																			
02																			
03																			
04																			
05																			
06																			
07																			
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SECTION B. TOBACCO SMOKING (Cont.)

Before going to Section C, check items B5a, B8a, B5c, B8c!

Complete Manufactured Cigarette (card 0,a) items for subjects reporting > 0 cigarettes in B5a or B8a. Complete Handrolled by Self (card 0, c) items for subjects reporting > 0 cigarettes in B5c or B8c.

ID	M A N U F A C T U R E D C I G A R E T T E				H A N D R O L L E D B Y S E L F	
	B11. Request the last empty pack of cigarettes purchased by the subject. The interviewer should answer the following questions by inspecting the pack. Does the empty pack given to you by the subject display the following?: 1= YES 2=NO 8= Refused to answer 9=DK	B12. Could an empty pack be obtained from the respondent? 1= YES 2=NO	B13. Diameter of the hand rolled cigarette Show CARD 2 and have subject select diameter from the card. Enter code (A, B, C)	B14. Length of the hand rolled cigarette Show CARD 2 and have subject select length from the card. Enter length in cm from the ruler in card 2	(1)	(15)
(1)	(12a)	(12b)	(12c)	(12d)	(13)	(14)
01						
02						
03						
04						
05						
06						
07						
08						

SECTION C. CHEWING TOBACCO

The next questions are about chewing tobacco. [INTERVIEWER NOTES: SHOW CARD 1 DURING QUESTIONS C1-C3]

----- D A I L Y -----													
ID	C1. Do you currently chew tobacco on a daily basis, less than daily, or not at all? 1= DAILY skip to C4 2= LESS THAN DAILY 3= NOT AT ALL skip to C3	C2. Have you chewed tobacco daily in the past? 1=Yes skip to C7 2=No skip to C8	C3. In the past, have you chewed tobacco on a daily basis, less than daily, or not at all? 1=DAILY skip to C9 2=LESS THAN DAILY skip to C10 3=NOT AT ALL skip to SECTION D	C4. How old were you when you first chewed tobacco daily? Enter age in years IF DON'T KNOW, ENTER "99"	C5. Usually, how many times a day do you chew the following? Show CARD 3 to help subject select a choice(s). Non-users of an item should be enter as 0.	C5-1. Amount of tobacco chewed (with or without betel quid) (Interviewer note: show CARD 4 and have subject select amount from the card, enter code)	C5-2. Betel quid ingredients Show CARD 5 and have subject select amount of each ingredient and enter code 1= about the same 2= less than the amount 3= more than the amount 4= not used	C6. How soon after you wake up in the morning do you usually chew tobacco for the first time? 1=Less than 5 minutes 2=5 to 30 minutes 3=31 to 60 minutes 4=More than 60 minutes					
	a. Betel quid with tobacco <i>Times per day</i>	b. Betel quid without tobacco <i>Times per day</i>	c. Tobacco without quid <i>Times per day</i>	d. Chewing tobacco from a commercial tin <i>Times per day</i>	(7)	a. Betel leaf (8a)	b. Betel nut (8b)	c. Slaked lime (8c)	(8a)	(8b)	(8c)	(9)	
(1)	(2)	(3)	(4)	(5)	(6a)	(6b)	(6c)	(6d)	(7)	(8a)	(8b)	(8c)	(9)
01													
02													
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07													
08													

SECTION C. CHEWING TOBACCO (Cont.)

The next questions are about chewing tobacco

		D O N O T C H E W T O B A C C O A T A L L (C U R R E N T L Y)															
		- - - - - L E S S T H A N D A I L Y - - - - -															
ID	C7. How old were you when you first chewed tobacco daily? Enter age in years IF DON'T KNOW, ENTER '99'	C8. How many times a week do you usually chew the following? ENTER 888 IF LESS THAN 1 PER WEEK BUT MORE THAN 0 Show Card 3 to help subject select choice(s).				C8-1. Amount of tobacco chewed (with or without betel quid) Show CARD 4 and have subject select amount from the card, enter code 1= about the same 2= less than the amount 3= more than the amount 4= not used				C8-2. Betel quid ingredients Show CARD 5 and have subject select amount of each ingredient and enter code 1= about the same 2= less than the amount 3= more than the amount 4= not used		C9. How old were you when you first chewed tobacco daily? Enter age in year IF DON'T KNOW, ENTER '99'		C10. How long has it been since you stopped using smokeless tobacco? Number of year/month to D			
		a. Betel quid with tobacco	b. Betel quid without tobacco	c. Tobacco without betel quid	d. Chewing tobacco from a commercial tin	1. Amount	2. Without	3. With	4. Betel	a. Betel leaf	b. Betel nut	c. Slaked lime	(13a)	(13b)	(13c)	(14)	(15a)
(1)	(10)	(11a)	(11b)	(11c)	(11d)	(12)	(13a)	(13b)	(13c)	(14)	(15a)	(15b)					
01																	
02																	
03																	
04																	
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08																	

SECTION D. CESSATION

I would now like to ask you questions about use of health care services and cessation of tobacco use

ID	D1. How many times did you visit a doctor or health care provider in the past 12 months? Would you say 0 times, 1 or 2 times, 3 to 5 times, or 6 or more times? 1 = 0 times skip to D6 2 = 1 or 2 3 = 3 to 5 4 = 6 or MORE	D2. During any visit to a doctor or health care provider in the past 12 months, were you asked if you chew tobacco? 1 = Yes 2 = No	D3. During any visit to a doctor or health care provider in the past 12 months, were you asked if you smoke tobacco? 1 = Yes 2 = No	D4. (Check if subject chews tobacco before reading question) During any visit to a doctor or health care provider in the past 12 months, were you advised to stop chewing tobacco? 1 = Yes 2 = No 3 = Do not chew tobacco	D5. (Check if subject smokes tobacco before reading question) During any visit to a doctor or health care provider in the past 12 months, were you advised to stop smoking tobacco? 1 = Yes 2 = No 3 = Do not smoke tobacco	D6. (Check if subject chews tobacco before reading question) During the past 12 months, did you use any of the following methods to try to stop chewing tobacco? 1 = Yes 2 = No 3 = Do not chew tobacco (if do not chew tobacco, check 3 for each method)					
	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(7c)	(7d)	(7e)	(7f)
(1)											
01											
02											
03											
04											
05											
06											
07											
08											

SECTION D. CESSATION (Cont.)

ID	D7. (Check if subject smokes tobacco before reading question) During the past 12 months, did you use any of the following methods to try to stop smoking tobacco? 1= Yes 2= No 3= Do not smoke tobacco							D8. (Check if subject smokes tobacco before reading question) Which of the following best describes your thinking about quitting smoking? 1= I am planning to quit within the next month 2= I am thinking about quitting within the next 12 months 3= I will quit someday, but not within the next 12 months 4= I am not interested in quitting tobacco 5= I do not smoke tobacco	D9. (Check if subject chews tobacco before reading question) Which of the following best describes your thinking about quitting chewing tobacco? 1= I am planning to quit within the next month 2= I am thinking about quitting within the next 12 months 3= I will quit someday, but not within the next 12 months 4= I am not interested in quitting 5= I do not chew tobacco
	a. Counseling to stop smoking tobacco (examples: at a clinic, health center school, Wat)?	b. Medical Treatment to stop smoking tobacco (example: nicotine patch, nicotine gum)?	c. Other prescription medications to stop smoking tobacco (not related to nicotine)?	d. Traditional medicines to stop smoking tobacco	e. Smoking telephone support line to stop smoking tobacco	f. Switching from smoking tobacco to chewing tobacco (example betel quid, chewing tobacco)?	g. Anything else? Specify by writing in		
(1)	(8a)	(8b)	(8c)	(8d)	(8e)	(8f)	(8g)	(9)	(10)
01									
02									
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SECTION E. SECONDHAND SMOKE

It would now like to ask you a few questions about smoking in various places.

ID	E1. Which of the following best describes the family rules about smoking inside of your home: Smoking is allowed, sometimes is allowed, or never allowed? 1= ALLOWED; 2= SOMETIMES IS ALLOWED 3= NEVER ALLOWED SKIP TO E4	E2. Inside your house, is smoking allowed in every place? 1=Yes 2 =No	E3. How often does <u>anyone</u> smoke inside your home? Would you say daily, weekly, monthly, or less than monthly? 1= DAILY 2= WEEKLY 3= MONTHLY 9= LESS THAN MONTHLY	E4. Are you currently employed outside of your home? 1=Yes 2 =No Skip to E8	E5. Where do you usually work? Would you say: inside a building, outdoors or both? 1 INSIDE A BUILDING 2= OUTDOORS Skip to E8 3= BOTH	E6. Which of the following best describes the smoking policy in the building where you work: Smoking is allowed anywhere, smoking is allowed only in some places, or smoking is not allowed in any indoor areas? 1= ALLOWED ANYWHERE 2= ALLOWED ONLY IN SOME PLACES 3= NOT ALLOWED IN THE BUILDING 9= DON'T KNOW	E7 During the past 30 days, did anyone smoke in the building where you work? 1=Yes 2 =No	E8. During the past 30 days, did you visit any government buildings or government offices? 1=Yes 2 =No Skip to E10 9= DON'T KNOW Skip to E10
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
01								
02								
03								
04								
05								
06								
07								
08								

SECTION E. SECONDHAND SMOKE (Cont.)

It would now like to ask you a few questions about smoking in various places.

ID	E9. Did you see anyone smoke inside of any government buildings or offices that you visited in the past 30 days? 1=Yes 2=No 9= DON'T KNOW	E10. During the past 30 days, did you visit any health care facilities? 1=Yes 2=No 9= DON'T KNOW Skip to E12	E11. Did you see anyone smoke inside of any health care facilities that you visited in the past 30 days? 1=Yes 2=No 9= DON'T KNOW	E12. During the past 30 days, did you visit any restaurants/food stores? 1=Yes 2=No Skip to E14 9= DON'T KNOW Skip to E14	E13. Did you see anyone smoke inside of any restaurants/food stores that you visited in the past 30 days? 1=Yes 2=No 9= DON'T KNOW	E14. During the past 30 days, did you use any public transportation? 1=Yes 2=No Skip to E16 9= DON'T KNOW Skip to E16	E15 Did you see anyone smoke inside of any public transportation vehicles that you used in the past 30 days? 1=Yes 2=No 9= DON'T KNOW
(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
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SECTION F1. ECONOMICS – MANUFACTURED CIGARETTES

The next few questions are about how you obtain manufactured cigarettes (i.e. sold in commercial packs) for yourself.

ID	F1.1. The last time you bought manufactured cigarettes for yourself, how many cigarettes did you buy? Enter number of cigarettes Enter 888 in "total" column if NEVER BOUGHT MANUFACTURED CIGARETTES and then skip to F2					F1.2. Amount spent on the TOTAL in (total column 2a). Enter price in Riels Enter '00' if don't smoke purchased cigarette	F1.3. Value of the manufactured cigarettes obtained during the last time you traded for them. Enter price in Riels. Enter '00' if don't smoke cigarette taken in trade	F1.4. Value of the manufactured cigarettes obtained during the last time you received them as a gift. Enter price in Riels Enter '00' if don't smoke cigarette received from gift	F1.5. What brand did you buy the last time you purchased cigarettes for yourself? Show CARD 6 and ENTER CODE for the BRAND Other Brand (not on the card)= 49	F1.6. The last time you purchased manufactured cigarettes for yourself, where did you buy them? 1= SUPERMARKET 2= TRADITIONAL MARKET 3= STREET VENDOR 4= GROCERY STORE 5= RESTAURANT BAR, BEER GARDEN 6= NIGHTCLUB, KARAOKE 7= HOTEL/GUESTHOUSE 8= INTERNET 9= TRADE 10= GIFT 99= DON'T REMEMBER	F1.7. How much did you spend on manufactured cigarettes in the past week? Enter price in Riels
	Total	SINGLE CIGARETTES	PACKS	CARTONS	OTHER SPECIFY						
(1)	(2a)	(2b)	(2c)	(2d)	(2e)	(3)	(4)	(5)	(6)	(7)	(8)
01											
02											
03											
04											
05											
06											
07											
08											

SECTION F2. ECONOMICS – HANDROLLED CIGARETTES (LOCAL BUSINESS)

The next few questions are about how you obtain hand-rolled cigarettes for yourself from a local business.

ID	F2.1. The last time you bought hand-rolled cigarettes for yourself from a local business, how many hand-rolled cigarettes did you buy? Enter 888 in "Total" if NEVER BOUGHT HANDROLLED CIGARETTES FROM A LOCAL BUSINESS and skip to F3				F2.2. Amount spent on TOTAL (total in column 10a). Enter price in Riels Enter '00' if don't smoke purchased hand rolled cigarette	F2.3. Value of the handrolled cigarettes (local business) obtained during the last time you traded for them. Enter price in Riels. Enter '00' if don't smoke hand rolled cigarette taken in trade	F2.4. Value of the handrolled cigarettes (local business) obtained during the last time you received them as a gift. Enter price in Riels Enter '00' if don't smoke hand rolled cigarette received from gift	F2.5. The last time you purchased handrolled cigarettes (local business) for yourself, where did you buy them? 1= TRADITIONAL MARKET 2= STREET VENDOR 3= GROCERY STORE 4= RESTAURANT BAR, BEER GARDEN 5= NIGHTCLUB, KARAOKE 6= HOTEL/GUESTHOUSE 7= TRADE 8=GIFT 9= OTHER 99= DON'T REMEMBER	F2.6. How much did you spend on hand rolled cigarette (local business) in the past week? Enter price in Riels						
	TOTAL	SINGLE CIGARETTES	BAG	TIED/BUNDLED	OTHER SPECIFY	(9a)	(9b)	(9c)	(9d)	(9e)	(10)	(11)	(12)	(13)	(14)
(1)															
01															
02															
03															
04															
05															
06															
07															
08															

SECTION F3. ECONOMICS – Loose Tobacco for Hand-rolled Cigarettes or Chewing

The next few questions are about the last time you obtained loose tobacco for yourself to roll a cigarette or chew tobacco

ID	F3.1. The last time you bought loose tobacco for yourself, how much did you buy (in kam)? 1 kam = 0.1 kg Enter 888 if NEVER BOUGHT LOOSE TOBACCO and skip to G	F3.2. Amount spent on the loose tobacco reported from F3.1. Enter price in Riels Enter '00' if don't smoke purchased loose tobacco for hand rolled cigarette	F3.3. Value of the loose tobacco obtained during the last time you traded for it. Enter price in Riels. Enter '00' if don't smoke loose tobacco for hand rolled cigarette taken in trade	F3.4. Value of the loose tobacco obtained during the last time you received it as a gift. Enter price in Riels Enter '00' if don't smoke loose tobacco for hand rolled cigarette received as a gift	F3.5. The last time you purchased loose tobacco for yourself, where did you buy it? 1= TRADITIONAL MARKET 2= STREET VENDOR 3= GROCERY STORE 4= RESTAURANT BAR, BEER GARDEN 5= NIGHTCLUB, KARAOKE 6= TRADE 7= GIFT 8= Did not obtain it by purchase, trade , or gift 9= OTHER 99= DON'T REMEMBER	F3.6. Did you grow your loose tobacco that you chew or smoke? 1= yes 2=no	F3.7. How much did you spend on loose tobacco in the past week? Enter price in Riels
	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1)							
01							
02							
03							
04							
05							
06							
07							
08							

SECTION G. MEDIA

The next few questions ask about your exposure to the media, advertisements, and health warning label in the last 30 days.

ID	G1. In the last 30 days, have you noticed information about the dangers of smoking tobacco or that encourages quitting in any of the following places? 1=YES 2=NO 9= NOT APPLICABLE				Health Warning Label			
	a. In newspapers or in magazines? (2a)	b. On television? (2b)	c. On the radio? (2c)	d. On billboards? (2d)	e. Somewhere else? Specify (2e)	G2. In the last 30 days, did you notice any health warnings on cigarette packages? 1=Yes 2=No Skip to G5 3= DID NOT SEE ANY CIGARETTE PACKAGES Skip to G5	G3. In the last 30 days, did you look closely at these health warnings on cigarette packages? 1=Yes 2=No G4. Should health warning pictures be included on cigarette packages? 1=Yes 2=No Show picture card 10	
(1)						(3)	(4)	(5)
01								
02								
03								
04								
05								
06								
07								
08								

SECTION G. MEDIA (Cont.)

The next few questions ask about your exposure to the media, advertisements, and health warning label in the last 30 days.

Advertisement, Signs, and Promotion																
G5. In the last 30 days, have you noticed any advertisements for cigarettes in the following places?																
ID	a. In stores where cigarettes are sold?	b. On television?	c. On the radio?	d. On billboards?	e. On posters?	f. In newspapers or magazines?	g. In cinemas?	h. On the internet?	i. On public transportation vehicles or stations?	j. On tobacco company vehicles?	k. Umbrella (ex: at a stall)	l. Banner (in public area)	m. On public walls?	n. Concert?	o. Advertisement counter (example: in a restaurant or other public area)	p. Anywhere else? Specify:
(1)	(6a)	(6b)	(6c)	(6d)	(6e)	(6f)	(6g)	(6h)	(6i)	(6j)	(6k)	(6l)	(6m)	(6n)	(6o)	(6p)
01																
02																
03																
04																
05																
06																
07																
08																

SECTION G. MEDIA (Cont.)

The next few questions ask about your exposure to the media, advertisements, and health warning label in the last 30 days.

No.	Advertisement, Signs, and Promotion (Cont.)								
	G7. In the last 30 days, have you seen any of the following ?								
	G6. In the last 30 days, have you noticed any sport or sporting event that is associated with cigarette brands or cigarette companies? 1=YES 2=NO 9=DK	a. Free samples of cigarettes?	b. Cigarettes at sale prices?	c. Coupons for cigarettes?	d. Free gifts or special discount offers on other products when buying cigarettes?	e. Clothing or other items with a cigarette brand name or logo?	f. Mail promoting cigarettes?	G8. Do you listen to radio programs on the harms of tobacco? 1= yes 2= no (skip to H) (not advertisements!)	G9. On what station? (Write in) To H Enter 99 for don't know (10)
(1)	(7)	(8a)	(8b)	(8c)	(8d)	(8e)	(8f)	(9)	(10)
01									
02									
03									
04									
05									
06									
07									
08									

Section H. Knowledge and Attitudes about Tobacco Use

Ask all members aged 15 and over individually who are present during the entire period of the survey

		Knowledge and Attitudes about Harmful Effects									
		H1. Answer the following questions about your beliefs on smoking		H2. Smoking causes the following diseases:				H3. It is a sin for a cigarette or pipe smoker to produce smoke that is inhaled by other persons.	H4. Harming your body with tobacco is a sin	H5. "A man who does not smoke is not a real man"	
		Choose one of the following: 1= No, not harmful 2= Yes, a little harmful or moderately harmful 3= Yes, seriously harmful 9= Don't know or refuse to answer		1 = agree 2 = disagree 9 = don't know/refuse to answer		1 = agree 2 = disagree 9 = don't know/refuse to answer		1 = agree 2 = disagree 9 = don't know/refuse to answer		1 = agree 2 = disagree 9 = don't know/refuse to answer	
ID No		(a) "Is smoking harmful to your health?"	(b) "Is breathing the smoke from someone else's cigarette or pipe harmful to your health?"	(c) "Is smoking during pregnancy harmful to the health of the fetus?"	(a) Bronchitis	(b) Lung Cancer	(c) Heart Disease	(d) Any Illness	(6)	(7)	(8)
(1)		(2)	(3)	(4)	(5a)	(5b)	(5c)	(5d)	(6)	(7)	(8)
01											
02											
03											
04											
05											
06											
07											
08											

Section H. Knowledge and Attitudes about Tobacco Use (Cont.)

Ask all members aged 15 and over individually who are present during the entire period of the survey

ID	H6. Smoking should not be allowed at the following places 1 = agree 2 = disagree 9 = don't know/refuse to answer				H7. All cigarette tax should be increased 1 = agree 2 = disagree 9 = don't know/refuse to answer	H8. The price of cigarettes should be raised to encourage people to stop smoking 1 = agree 2 = disagree 9 = don't know/refuse to answer
	(a) Wat	(b) Restaurant and food store	(c) Public transportation	(d) Workplace inside a building/house		
(1)	(9a)	(9b)	(9c)	(9d)	(10)	(11)
01						
02						
03						
04						
05						
06						
07						
08						

Appendix B

Sampling Design

CONTENTS

	Page
I. Chapter 1	
Introduction.....	3-7
II. Chapter 2	
Role of Interviewers and Supervisors.....	8-10
III. Chapter 3	
The General Rules for Interviewing.....	11-13
IV. Chapter 4	
Outline of Listing and Interview Procedures.....	14
V. Chapter 5	
Some Important Concepts and Definitions.....	15-18
VI. Chapter 6	
Listing Of Households in the Village (NATSC Form 1).....	19-21

CHAPTER 1

Introduction

This chapter introduces the training project on the National Adult Tobacco Survey of Cambodia 2010 (NATSC 2010) and explains its aims and objectives. It also discusses some important aspects of the survey, its scope and coverage, the questionnaires to be canvassed, and the sampling design and sample size.

1.1 An Overview of the Survey

The National Adult Tobacco Survey of Cambodia (NATSC 2010) is the third survey after the Tobacco Control for Leadership Training Survey (TCLT) which is the second survey was conducted in 2005. The survey is conducted as a nationwide sample survey of villages and households and allows the creation of a national representative sample of 10710 subjects age 15 and over. The survey is undertaken as part of a research project, “Tobacco Control for Leadership Training Program (TCLT)” that is sponsored by Loma Linda University, USA. Due to time constraints the TCLT program has contracted out the time-consuming data collection part the survey process to local contractor (National Institute of Statistics) to carry out this work in cooperation with the TCLT program students and staff.

The principal aim of the NATSC 2010 is to collect important information from villages and households and a nationally representative sample of targeted populations on various facets of tobacco prevalence conditions of the people of Cambodia. However, the survey process and data collected would be very useful for the key tobacco researchers to learn and experience a variety of research methods and various steps of techniques. The data collected could be better and perfect as wide ranging indicators of levels of tobacco prevalence in different geographical areas and in different social and economic classes. These will help defining scale of the problem of smoking, understanding the effects of tobacco, help in monitoring and analyzing tobacco prevalence control in Cambodia in order to develop or accelerate national strategic policy on tobacco consumption.

Two main questionnaires will be canvassed for this survey. NATSC Form 1 (Listing of Households), NATSC Form 2 (Core Questionnaire) and other two manuals will be used by field interviewers, field editors, field supervisors and office coders.

1.2 Objectives of NATSC 2010

Specific Objectives

Among specific objectives, the following deserve special mention:

- A1. Demographics
- A2. Tobacco Questions from Survey 2005
- B. Tobacco Smoking
- C. Chewing Tobacco
- D. Cessation
- E. Second Hand Smoke
- F. Economics
- G. Media
- H. Knowledge and Attitudes
- I. Diet
- J. Current Health
- K. Women's Health

1.3 Confidentiality of Information

All information collected in the NATSC from the representatives of sample villages, sample households and a nationally representative sample of targeted populations will be treated as strictly confidential and used for statistical purposes to define scale of the problem of smoking, understand the effects of tobacco, monitor and analyze tobacco prevalence control in Cambodia in order to develop or accelerate national strategic policy on tobacco consumption. Information supplied by any person will not be used against him for taxation, investigation or any other legal purpose.

1.4 Scope and Coverage

The scope of the survey is sufficiently wide to meet the objectives mentioned above. A random sample of 10710-targeted populations 15 year old and over, 6294 sample households and 437 sample clusters will be covered for collecting data through two main questionnaires, Form 1 and Form 2. Out of the 437 sample villages, 87 will be from urban area. Another 350 villages will be covered will be covered in Rural areas. 12 households will be selected at random from each sample village in urban areas and 15 households will be selected at random from sample village in rural areas. Table 1 below shows the number of excluded villages by province.

Seventeen domains were considered as separate strata at the stage of sampling selection of villages. The survey has been designed to cover all private households including single-

member households. Persons living in institutional households like military barracks, prisons, hospitals and boarding houses will be excluded.

The greater part of this Manual will be devoted to instructions for accomplishing these Forms.

NATSC Form 1 will be filled up for the listing of households in every sample village (or segment of sample village) selected at random for the purpose of the survey. This Form will also be used to select the households at random from every village (or segment of the village).

The contents of the Form 1 (Listing of Household) and Form 2 (Core Questionnaire) may be indicated by the following list of items of information to be collected for each sample village through the questionnaires:

Form 1: Listing of Household

Form 2: Core Questionnaire

- A1. Demographic characteristics such as age, gender, marital status, ethnicity, literacy, education, occupation, and income (refers to gross income).
- A2. 2005 Tobacco Questions
- B. Tobacco smoking
- C. Chewing tobacco
- D. Cessation
 - D1. Cessation - tobacco smoking
 - D2. Cessation - tobacco chewing
- E. Second hand smoke
- F. Economics
 - F1. Economics - manufactured cigarettes (by industry)
 - F2. Economics - hand rolled cigarettes (local business)
 - F3. Economics - loose tobacco for hand rolled cigarettes
- G. Media
- H. Knowledge and Attitudes about tobacco use
 - I. Knowledge of harmful effects
 - II. Attitudes about anti-tobacco policies
- I. Diet
- J. Current health
- K. Women's health plus supplement

1.5 Sampling Design and Sample Size

The NATSC 2010 is a stratified sample selected in two stages. Stratification is achieved by separating every survey domain into urban and rural areas. As a result, the 17 domains are stratified into 34 sampling strata in total and called for a nationally representative sample of 10710-target population between the ages of 15 and over. Survey estimates are produced for 12 individual domains or provinces (Banteay Mean Chey, Kampong Cham, Kampong Chhnang, Kampong Spueu, Kampong Thum, Kandal, Kaoh Kong, Phnom Penh, Prey Veang, Pousat, Svay Rieng, and Takaev) and for the following 5 groups of provinces:

- I. Bat Dambang and Krong Pailin
- II. Kampot, Krong Preah Sihanouk, and Krong Kaeb
- III. Kracheh, Preah Vihear, and Stueng Traeng
- IV. Mondol Kiri and Rotanak Kiri
- V. Otdar Mean Chey and Siem Reab.

Samples will be selected independently in every stratum, by a two stages random selection. Implicit stratifications will be achieved at each of the lower level geographical/administrative units by sorting the sampling frame before sample selection, according to geographical/administrative units, and by using a probability proportional to size selection at first stage's sampling.

The allocated sample size is then converted to number of households and number of EAs by taking the non-response into account, and by using the average number of eligible population 15 years per household, and the fact that 12 households will be interviewed per urban EA and 15 households will be interviewed per rural EA. Table1 below shows the sample allocation in number of EAs and number of households by domain and by type of residence. In total, 437 EAs will be needed; among them, 87 will be selected from the urban areas, and 350 will be selected from the rural areas.

In the first stage, the 437 sample EAs will be selected with probability proportional to the EA size according to the sample allocation given in table1 below. The EA size is the number of households residing in the EA. After the sample selection of EAs and before the main survey, a household listing operation will be carried out in all of the selected EAs, and the resulting lists of households will serve as sampling frame for the selection of households in the second stage. Some of the selected EAs may be of big size. In order to minimize the task of household listing, for the selected EAs which have more than 200 households will be segmented; only one segment will be selected randomly to include in the survey, with a selection probability proportional to the segment size. Household listing will be conducted only in the selected segment. So a NATSC's cluster is either an EA or a segment of an EA. In the second stage's selection, a fixed number of 12 households will be selected from every urban cluster, and a fixed number of 15 households will be selected from every rural cluster, by an equal probability systematic sampling.

In order that all listed households have an equal chance to be selected for the interview and in order to prevent bias introduced from interviewer selecting the sample households at the time of the main survey, the sample households for NATSC 2010 will be pre-selected in central office before the main survey. A household selection spreadsheet is prepared for facilitate the household selection in central office. During the main survey, the interviewer is asked to interview only the pre-selected households, no replacement is allowed for not found or not respond households in order to prevent bias. All population found in the selected households are eligible for the individual survey, and will be interviewed in to questionnaire.

The following 5 groups of provinces are included in the Table below:

Table 1

Sr. No	Domains	Sector				Total	
		Urban		Rural			
		No. of EAs	No. of households	No. of EAs	No. of households	No. of EAs	No. of households
1.	Banteay Mean Chey	8	96	18	270	26	366
2.	Kampong Cham	2	24	23	345	25	369
3.	Kampong Chhnang	3	36	23	345	26	381
4.	Kampong Spueu	2	24	23	345	25	369
5.	Kampong Thum	2	24	23	345	25	369
6.	Kandal	4	48	21	315	25	363
7.	Kaoh Kong	9	108	17	255	26	363
8.	Phnom Penh	29	348	2	30	31	378
9.	Prey Veang	1	12	24	360	25	372
10.	Pousat	2	24	23	345	25	369
11.	Svay Rieng	1	12	24	360	26	372
12.	Takaev	0	0	24	360	24	360
13.	Bat Dambang	5	60	19	285	24	345
	Krong Pailin	0	0	1	15	1	15
14.	Kampot	2	24	16	240	18	264
	Krong Preah Sihanouk	3	36	4	60	7	60
	Krong Kaeb	0	0	1	15	1	15
15.	Kratie	2	24	12	180	14	180
	Preah Vihear	1	12	6	90	7	90
	Stueng Traeng	1	12	4	60	5	60

16.	Mondol Kiri	1	12	7	105	8	117
	Rotanak Kiri	3	36	15	225	18	261
17.	Otdar Mean Chey	1	12	4	60	5	72
	Siem Reab	5	60	16	240	21	300
Total		87	1044	350	5250	437	6294

Further the details in the method of sampling of households have been given in Chapter 6 on Listing of Households relating to Form 1.

CHAPTER 2

The Role of Interviewer

The quality of the data greatly depends on the interviewers who actually assigned to collect the data. Thus, the job as interviewers requires a commitment to ensure that all information collected are correct and complete as discussed during the training for interviewers.

Interviewers play a major role in the undertaking of the survey. Fieldworks require tact in approaching people, attention to the smallest detail and a sense of responsibility to keep confidential all information about individuals, households and villages and institutions that the interviewers obtain during enumeration.

This chapter will describe in details on the duties and responsibilities of the interviewers for the NATSC 2010.

2.1 Designation of Interviewer

Interviewers are required to undergo training and to complete the interviews assigned to you. Interviews will be issued an identification card and administrative letters as proof of your authority in relation to the conduct of the survey. Interviews should always wear identification card and show this to the respondent as a proof of identification or to convince him/her to be interviewed.

2.2 Duties and Responsibilities of Interviewer

The interviewers are responsible for filling up Form 1 and Form 2 to respondents. To the best of ability, interviewers must gather correct and precise information according to the instructions discussed in the manual and view data collection as involving the following important tasks:

1. Asking the questions correctly as discussed in the manual
2. Recording/noting down accurately the response given to you
3. Checking each response to see to it that it is reasonable and consistent with every other response

Interviewers must pay careful attention to each of these tasks. The basic duties as an interviewers are as follows:

1. Prepare the sketch map of the sample village or segment, showing the locations of buildings and households.
2. List all housing units and households found in the sample village/segment using NATSC Form 1 and submit accomplished forms and maps to your supervisor after completing the work in the village.
3. Enumerate correctly all sample households in the village/segment using NATSC Forms 2.
4. Submit both accomplished forms to supervisors for field check and regular scrutiny required and attend meetings set by them.

In order to fully carry out these basic duties, interviewers should perform the following:

1. Attend the training for interviewers to gain understanding of the concepts, definitions and instructions regarding the conduct of NATSC 2010.
2. Use the field operations manual as a guide whenever you are not clear or doubtful about the points.
3. Fill out the NATSC forms completely and accurately.
4. Check your work for completeness, reasonableness, consistency, legibility etc. If any omission or inconsistency is made, which cannot be corrected using other information within the questionnaire, revisit the household or other respondent to get the required information.
5. Keep all information collected strictly confidential by not showing the accomplished forms to persons rather than your supervisors and authorised personnel.
6. Prepare, accomplish and submit all pertinent reports and forms to your duly designated supervisor as scheduled.

2.3 Supplies and Materials

After training and prior to the start of interview, the supervisors will provide interviewers with survey forms, administrative forms and supplies that interviewers will need in the course of your work.

The checklist of the NATSC materials and supplies

1. Assignment sheet showing list of sample villages (with names of commune, district, province etc.) assigned to the interviewers and supervisors
2. NATSC Form 1 - Listing Form of Households and Map Sheet in the village
3. NATSC Form 2-Core Questionnaire for Households
4. Field Operations Manual
5. Interviewers' kits

The Role of Supervisor

In general, one supervisor is assigned to supervise several interviewers during the field operations. The major duties and responsibilities of supervisor in relation to the work of interviewers are the follows:

1. The supervisor is responsible for ensuring that all the interviewers do the listing and interview work satisfactorily in time, effectively and completely in the selected areas.
2. The supervisor is required to check all the questionnaires filled by interviewers.
3. The supervisor will visit the enumeration area to check the complete questionnaires and re-interview a few sample households to check whether the information the interviewers have collected are accurate, reliable and valid or not.
4. The supervisor may provide to interviewers all necessary field supplies and questionnaires for fieldwork operation etc.
5. The supervisor serves as a link between interviewers and survey coordinators. The supervisor must inform any problem or difficulty that you or interviewers encounter during the fieldwork operation and then deal with the problems. The supervisor must help interviewers assigned under you establish contact with village chiefs, commune chiefs, and other authorized representatives of the village, commune etc.
6. The supervisor has to prepare a time schedule for meeting all interviewers at their respective assigned villages for checking the work done etc.

CHAPTER 3

The General Rules for Interviewing

For the NATSC 2010 the households of each sample village may be interviewed by one interviewer. The interviewers must interview about 6 households per day in urban areas and about 7 households per day in rural areas.

3.1 Rules for Interview

Whom to Interview

- For NATSC Form 1 – The interviewers will get the listing form of households, map sheet of the village as well as the highlighted sample households done by NIS a few months ago for your field enumerations at each targeted villages.
- For NATSC Form 2 - Core Questionnaire for Households, the interviewer must go from house to house to interview any responsible member(s) or (individual) who can provide accurate answers to the questions and who can give information for the household. The head of the household and/or the spouse would be the most qualified respondent(s) to respond to such questions. There are some questions, which should be best, addressed to all persons targeted or individual to respond.

How to Conduct an Interview

Getting accurate and complete information of NATSC 2010 is the prime objective of a data collecting operation. As an interviewer, being polite, being authoritative enough to win the trust and confidence from the respondent is every important. A good impression during the interview counts much towards the success of data collection. In addition, the interviewers must be guided by the following instructions.

1. Be Presentable

Make a good impression by dressing appropriately and neatly.

2. Introduce Yourself

Respondents will react differently. Try to smile, be cordial and polite always. Prepare all types of questions and give honest answers. The interviewers try to maintain your composure, do not argue or quarrel with the respondents even if they seem irritated or indifferent due to the length of the questionnaire or fatigue to respond etc.

3. Be Polite

Introduction is important. Interviewers may say the following sentence:

"Good morning/afternoon! My name is.....I have been working at (for instance) the National Institute of Statistics, Ministry of Planning. Here is my identification card. Currently (NIS) is conducting the NATSC 2010 in the country. The project is sponsored by the WHO, NIH, Loma Linda University, and SEATCA. I would appreciate very much your answering the questions. I would rest assured that all answers will be treated as strictly confidential and used for statistical purposes only."

4. Explain the objectives of the survey

It is sometimes necessary to explain the objectives of the survey to gain cooperation from a person.

5. Read and follow instructions printed on the body of the questionnaire

carefully. Ask all questions in the questionnaire. Never assume the answer. If the interviewers do not understand a question or a procedure, please ask supervisor for further clarification.

6. Probe if a person's answer is not satisfactory. Do not accept an unsatisfactory answer. The interviewers can do any of the following to probe the answer:
 - a) Repeat the question
 - b) Explain the concept if necessary
 - c) Ask for an estimate, if appropriate
7. Thank the person for his/her cooperation
Always try to leave the respondent with a good feeling toward the survey. Express appreciation for the person's co-operation.
8. After each interview, the interviewers have to review all the different pages of the filled-up questionnaires for possible omissions of entries or for inconsistencies of responses.

How to ask Questions

In asking the questions, observe the following rules:

- a).Ask all questions exactly worded in the questionnaire. Changing the word can change the meaning of the question and, thereby, change the answer. Interviewers should not paraphrase the question or try to make it clearer or easier to answer. If the respondent asks for clarification, it is fine to provide additional information.
- b).As instructed, the interviewers have to ask the questions in the order in the questionnaire. Do not skip any portion, section or items unless it is clearly instructed to do so.
- c).Do not read coded answers to respondents unless it is instructed to do so. The interviewers should attempt to find the response code, which most appropriately fits the answer provided by the respondent. If no code fits, the interviewer should use the code for "other" and specify the answer in the space provided. Moreover it is important that the interviewers should prepare to be a skilled listener to ensure that the survey succeeds in obtaining the correct information and perceptions of respondents.
- d).Verify if all the pages of the questionnaire are accounted for.
- e).Never asks a leading question, that is, one that suggests the answer desired by the interviewer. By asking a leading question, the respondent's mind is set into believing that the answer suggested by the question is the right one. Example of a leading question: *Are you the head of this household?* The right question should be: *Who is the head of this household?* Another example of a leading question is: *"Did you smoke 10 cigarettes a day?"* The right question should be: *How many cigarettes do you smoke per day?*
- f).Be absolutely natural about the subject of the interview. Do not show any surprise, approval or disapproval about the answers given by the respondent. If the respondent asks for giving opinion, the interviewers should explain the purpose of the survey is to find out what the respondents think about these issues. Remember that the interviewers must always strive to be a skilled listener and avoid trying to instruct or "lead" the respondent to give a particular answer.
- g).Maintain the tempo of the interview. Avoid lengthy discussion of the questions

with the respondents. If you receive what appear to be irrelevant or complicated answers do not break in too suddenly; listen carefully to what the respondent is saying and then lead them back to the original question. Recording an answer before asking the next question.

3.2 How to Record Answers in NATSC Forms

- Use a pencil in making entries in the NATSC questionnaires. Do not use any other coloured pencil or ball pen because it is not easy to erase when an error is committed in entering responses.
- Use an eraser to completely erase a wrong entry made. Do not just write over the original entry.
- After the interview, go over the completed questionnaire to make sure that all the answers are legible.
- The interviewers must fill up the questionnaire during the actual interview. Nor should the interviewers count on memory for filling in the answers once leave the household.
- Most of the items are provided with possible answers and their corresponding codes. Encircle or enter the code for the answer given, as the case may be.
- Other items require write-in entries. Enter the specific answer to the question. Be concise but clear.
- Remark all entries, which may appear doubtful/vague to the editor and have corresponding explanations at the bottom of the page.

3.3 How to Check the Completed Questionnaire

- After each interview, review the listing sheet and questionnaires immediately. This means going over the entries to see to it that they are legible, complete, reasonable, and consistent among themselves. Check all questionnaires before submitting to the supervisor and before leaving the sample village.

CHAPTER 4

Outline of Listing and Interview Procedures

This chapter describes the major NATSC Forms to be used during the field enumeration and gives a brief outline of the fieldwork procedures. These topics are discussed in more detail in the succeeding chapters.

4.1 NATSC Forms

Listed below are the Forms that you will use during the field enumeration. Specimen forms are shown in NATSC and copies of actual forms are included in your training kit. NATSC Form 1 (Listing of Households in the Village).

This is a Form wherein the interviewers will list the buildings, housing units and households within the sample enumeration area. He will also record other information pertaining to these buildings and households. Notes that, these forms (form 1) were already done by NIS a few months ago and they will be given to the interviewers for their fieldwork.

NATSC Form 2 (Core Questionnaire for Household)

This is the basic NATSC questionnaire which interviewers will use for interviewing and recording information about a sample household. This questionnaire will collect information on demographic characteristics, tobacco use, knowledge and attitude about smoking, passive smoking, and smoking cessation and relapses smoking, and lifestyle.

4.2 Listing and Enumeration Procedures

Field data collection for NATSC 2010 will consist of the following major operations:

1. **Contacting:** Contact village/ commune leader and obtain his cooperation for the survey.
2. **Selection of enumeration area (only from large village contained more than one EA):** Go over the village area and prepare notional map showing boundaries of sample village and it *enumerations* will select one *enumeration area* from the village.
3. **Mapping and Listing:** Go from door to door and draw a sketch map of the entire village or the selected enumeration indicating the listed buildings and households and other landmarks on the map and also prepare a list of all households in the sample enumeration using NATSC Form 1.
4. **Selection of sample households:** Draw the sample of 12 households from the village or enumeration area in the urban area and 15 households from the village or enumeration area in the rural area.
5. **Enumeration:** Interview head of household/spouse of head/other knowledgeable adults in sample households and fill up NATSC Form 2 (Core Questionnaire for Household) for all (12 or 15) sample households in the sample enumeration area.

CHAPTER 5

Some Important Concepts and Definitions

In order to ensure comparability of data, most of the basic and similar concepts and definitions from other relevant surveys conducted by NIS are also used for NATSC 2010 in the extent feasible. The standard definitions and concepts are appropriately modified to suit local conditions in Cambodia.

This chapter brings together the explanations of some important concepts and terms used in the questionnaires of NATSC 2010.

Housing Unit

- A housing unit is a structurally separated and independent place of abode. It may have been constructed, built, converted or arranged for human habitation, such as commercial, industrial, and agricultural buildings, or natural and man-made shelters such as caves, boats, abandoned trucks, culverts and similar structures which are used as living quarters.

Household

- A household is a group of persons (or a single person) who usually live together and have a common arrangement for food, such as using a common kitchen or a common food budget. The persons may be related to each other or may be non-relatives, including servants or other employees, staying with the employer.
- Students, boarders and employees residing in and having a common food arrangement with the household are considered members of the household if they have been in the household for more than a year or if they have no other place of residence. However, if there are 5 or more boarders/lodgers in a housing unit, they should not be reported as members of the household. They are considered to be living in a dormitory or boarding house operated by the household. Boarding houses with more than 5 persons are considered to be *institutional households*. An institutional household is a group of 5 or more unrelated persons living together. Other examples are military barracks, prisons, student dormitories, etc. Institutional households are not covered by the NATSC 2010.

Note: Households of foreigners will be included in the survey.

Head of Household

- The head of household is the adult member of the household who is accepted and recognized by the other household members as head.

Usual Member of Household

- A usual member of a household is any person who has been normally living in the household and sharing arrangements for food for at least one year, or one who has no other residence. Thus, most students going to school away from home are considered to be members of their family household, rather than a household at the location of their school, unless they have stayed continuously at the household close to their school for more than a year.
- However, a person who has moved recently, i.e., less than one year ago, is considered to be a member of a household at his destination if he does not plan to return to the old household within one year. Similarly, a person who has moved out of a household recently with no intention to return is no longer considered a member of that household.

Illness

- For the purpose of this survey, any short-term or long-term health problem such as a sickness, injury, or a pregnancy related problem was defined as illness.

Literacy

- Literacy is the ability to read and write a simple message. A person is considered literate if he or she can both read and write a simple message in any language or dialect. A person capable of reading only his own name or numbers, or can read but not write and vice versa, is not considered literate.

Work

- Work is defined as an economic activity that a person performs for pay, profit or family gain. It includes paid employment; operating a farm or business; working for a household economic activity (like food processing or raising of livestock) without pay; working as an apprentice in order to learn a skill or craft, without necessarily receiving wages; and production of paddy or vegetables, say, solely for home consumption. Also, included is the holding of a job, even if the person is temporarily absent because of vacation, strike or illness. Production of fixed assets for own house use, such as building or repairing the house is also considered as work.

Labor Force or Economically Active Population

- The labor force or economically active population refers to persons who contribute or are available to contribute to the production of goods and services in the country. They are either employed or unemployed.

Employed

- Employed persons are those who are in the labor force who were reported to be either at work or with a job or business although not at work during the reference week. Persons at work are those who did some work at all, even for an hour, during the reference period (past week). Persons are also considered employed if they are with a job or business even though not at work during the reference period because of temporary illness/injury, vacation or other leave of absence, bad weather, strike/labor dispute or other reason.

Unemployed

- Unemployed persons are persons in the labor force who did not work or had no job or business during the reference week but were reported available and actively looking for work. Also, considered as unemployed are persons without job or business who were reported as available for work but were not looking for work because of their belief that no work was available or because of temporary illness/disability, bad weather, pending job application or waiting for job interview.

Own-Account Worker

- A person who operates his or her own economic enterprise or engages independently in a profession or trade, and hires no employees.

Occupation

- Occupation refers to the type of work, trade or profession performed by the individual during the reference period. If the person is not at work but with a job, occupation refers to the kind of work that the person will be doing when he reports for work.

Primary Occupation

- If any member had more than one economic activity – wage employment or self-employment. The primary occupation was one which the respondent accepts as such based on time spent and/or income earned from different activities and other considerations like social and legal status.

Secondary Occupation

- If any member had more than one economic activity – wage employment or self-employment. The secondary occupation was one which the respondent accepts as the most important based on time spent on and income earned from different activities and other considerations like social and legal status among all occupations of the person excluding the primary occupation.

Industry or Kind of Economic Activity

- Industry or kind of economic activity refers to the nature of work done (goods and services produced) by the institution or the workplace or enterprise where the person works.

Household Expenditure

- Household expenditure refers to the expenses or disbursements made by the household purely for personal consumption. Durable furniture and equipment (e.g. tables and chairs, cars, motor cycles, and appliances) purchased during the reference period mainly for household use is treated as household consumption.

Household Consumption

Household Consumption consists of the following:

- a) Household expenditure
- b) Value of goods and services received as gifts
- c) Value of goods and services consumed from the output of agricultural and non-agricultural activities of the household
- d) Imputed value of owned/rent free house occupied by the household
- e) Imputed value of goods/services received as fringe benefits from the employer or part of the salaries and wages of employed household members during the reference period, which were also consumed during the reference period.

Schooling

- The term schooling includes attendance at a kindergarten, primary, lower or upper secondary school, technical or professional school, college or university.

Students

- Persons of either sex, not economically active, who attend any regular educational institution, public or private, for systematic instruction at any level of education.

Wages

- Wages include remuneration received as cash wages, tips, commissions, piece rate earnings, overtime payment, and imputed value of benefits in kind, such as meals or accommodation provided by the employer.

CHAPTER 6

Listing of Households in the EAs (NATSC Form 1)

This chapter describes in detail the procedures for mapping and canvassing, and instructions for completing the listing of households and selecting sample households through NATSC Form 1 (Listing of Households) for any sample EAs.

As a general rule, the supervisor will accompany the interviewer when the interviewer first goes to the village and EA will help in contacting commune and village leaders in order find out the sample households for interview.

1. Mapping Operation

The sample EAs has been identified on the basis of the files from the 2008 general census of population. The sample EAs has been selected using a computer program. The interviewer will be provided with information containing in the file includes village map showing numbers of enumeration areas (EAs) and EA will be selected for household listing. Even then he should meet the village and/or the commune leaders or other knowledgeable persons to get more information about the sample EA before proceeding with the sketch map.

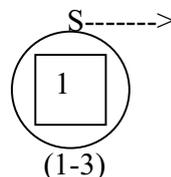
Before proceeding with the listing of buildings, housing units and households in the sample enumeration area, the interviewer must prepare a sketch map of the EA enumeration area showing boundaries and permanent features and landmarks such as roads, hills, rivers, etc. This

map is essential for the listing operation. This will guide the interviewer in locating sample households. It is also necessary for administrative purposes.

Proceed as follows to prepare the sketch map:

- (a) Go round the enumeration area assigned to you and familiarise yourself with the area. Then prepare an outline or sketch map of the enumeration area showing its topographical details.
- (b) Starting from a corner or any convenient point, go round the enumeration area systematically and draw the buildings and similar structures on the sketch map using the symbols given.
- (c) On the sketch map, a circle drawn would stand for a building. Indicate the first building visited by a circle around the number 1 with the letter S and an arrow above it pointing to the direction taken by the interviewer in canvassing the area.
- (d) Inside the circle, write the building serial number, and under the circle, within parentheses, the household serial numbers assigned to the households residing in the building. If more than one household reside in the building, enter the range of serial numbers assigned to these households.

For example, if the first building shown on the map is occupied by 3 households, you should write:



Here, 1 inside the circle is the building serial number, and 1-3 within parentheses the serial numbers of households residing in that building. In a densely populated village or enumeration area, you need not show all the buildings on the map. Avoid cluttering. You may show the first building, second building, third building listed and then skip to sixth building or eighth building thereafter. As far as possible, continue listing in the same direction until all households in that direction are listed. When the direction of canvass is changed, indicate the new direction taken by an arrow.

Visit every building or structure in the area to make sure that all households residing in the area have been listed. Take special care about office/ business buildings and construction sites. Do not exclude households that may be residing in such premises.

Follow the instructions given below to list all buildings, housing units and households within the sample enumeration area in NATSC Form 1.

2. Filling NATSC Form 1 (Listing of Households)

The listing or canvassing of households may be done along with the preparation of the sketch map. When the interviewer finds that one or more households reside in a building or

structure, he/she will first indicate the location of the building on the map as per instructions given above. He/she will then enter the serial numbers of the buildings, the housing units and the households and other information required in NATSC Form 1.

Detailed instructions for filling in Form 1 are given below:

I. Identification Information

This portion is found on the cover page of the set of listing sheets to be used for one enumeration area (PSU). It is the responsibility of the supervisor to make sure that the identification information portion on the cover page has been correctly and completely filled in before he hands the forms to the interviewer. Brief explanations of the different items are given below:

- (1) Province/City- Write down the name of the “Province/City” where the sample EA (PSU) is located, in the space provided after the word "Province/City. Enter the 2-digit Province code in the code boxes provided.
- (2) District/Khan - Write down the name of the District/Khan where the sample EA (PSU) is located, in the space provided and enter the 2- digit District/Khan Code in the code boxes provided.
- (3) Commune/Sangkat - Write down the name of the Commune/Sangkat where the sample EA (PSU) is located, in the space provided and enter the 2- digit Commune/Sangkat Code in the code boxes provided.
- (4) Village/Mondol - Write down the name of the Village/Mondol where the sample EA (PSU) is located, in the space provided and enter the 2- digit Village/Mondol Code in the code boxes provided. Sample EA - Write down the Code in the code boxes provided.
- (5) Sector (Urban/Rural) - Enter code 1 for urban and code 2 for rural in the box provided, using the classification information provided to you.

II. Interview Information

1. **Date of Listing** - Enter the dates (day/month/year) when the listing operation in the enumeration area is undertaken. In the first blank, enter the numeric equivalent of the day the listing operation started. Then enter the numeric equivalent of the month numeric equivalent of year in the second and third blank respectively.

Example: If the listing operation was started on 01 June 2010 and finished on 02 June 2010, the entry should be as follows:

Day	0	1	Month	0	6	Year	1	0
-----	---	---	-------	---	---	------	---	---

Day	0	2	Month	0	6	Year	1	0
-----	---	---	-------	---	---	------	---	---

2. **Interviewer's Name and Signature** - As soon as the listing operation in the village/PSU is completed, the interviewer should print his/her name in the blank labelled 'Name' and affix his/her signature in the blank labelled 'Signature' below the printed name. Record date of signature.
3. **Date of Supervision** - Enter in similar manner as above the inclusive dates (Day/Month/Year) when the listing sheets for the village/enumeration area were reviewed by the supervisor.
4. **Supervisor's Name and Signature** - The supervisor is expected to go over the list of households submitted to him/her by the interviewer. He/she should visit the first fifteen (15) buildings in the list to see if proper listing procedures have been followed and to ensure that no households have been omitted. As soon as the listing sheets for the village/enumeration area have been reviewed and deemed satisfactory by the supervisor, he/she should print his/her name in the blank labelled 'Name' and affix his/her signature in the blank labelled 'Signature' below his/her printed name. Record date of signature.
5. **Remarks** - Record any unexpected or unusual situations under which the listing operation has been conducted and the action taken by the interviewer in dealing with the situation. These remarks would be very necessary in the evaluation of the results of the listing operation.

Appendix C: Estimates of Sampling Errors

Taylor Linearization Methods of Variance Estimation

Tepping (1968) suggested the use of Taylor series linearization for estimating variances in complex sample surveys. Application to means and linear regression coefficients for complex surveys was presented by Kish and Frankel (1974) and Folsom (1974). Some simulation results were presented by Shah et al. (1977). Woodruff (1971) presented general application of the linearization method to explicit functions of observed data. Binder (1983) extended the results to parameters defined as implicit functions or estimating equations. Binder also proved the asymptotic normality of the estimates. Binder (1992) presented the application of Taylor series linearization to the estimation of parameters for Cox's proportional hazard model for the survival data collected from a complex sample survey.

The Taylor series linearization method is illustrated here for statistics that can be defined explicitly as functions of linear statistics estimated from the survey sample. Means, totals, proportions, general ratios of the form $\Sigma wy/\Sigma wx$, and linear regression coefficients all fall into this category of functions. A linearized variable, Z_i , is defined based on the Taylor series expansion of the function, and then substituted into the appropriate variance formula under the specified sample design for the total statistic.

Binder (1981, 1983) proposed—and justified using implicit differentiation—a method for estimating the variance for a vector of survey statistics. Binder's results are particularly useful when the parameters are implicitly defined, but the results also cover the explicit case. Logistic

regression coefficients and survival models fall into this category of parameters that are implicitly defined.

In this section, Binder's technique is illustrated for a statistic that is an explicit nonlinear function of observations. Let $\hat{\theta}$ be an estimate of the population parameter θ , with $\hat{\theta} = F(x_1, x_2, \dots, x_n)$, where the vector is the observed value for the i^{th} unit in the sample. Let $X = (x_1, x_2, \dots, x_n)$, $\mu_x = (\mu_1, \mu_2, \dots, \mu_n)$ and $\mu_x = E(X)$, where the expectation operator E denotes averaging over repeated sampling from the target population. Then $\hat{\theta}$ can be expanded in a Taylor series about μ_x , so that

$$\hat{\theta} = F(\mu_1, \mu_2, \dots, \mu_n) + \sum_{i=1}^n \partial F_{x_i}(\mu_1, \mu_2, \dots, \mu_n)(x_i - \mu_i) + \text{higher order terms,}$$

where the function $\partial F_{x_i}(\mu_1, \mu_2, \dots, \mu_n)$ is the first-order partial derivative of F with respect to x_i evaluated at their respective expectations μ_x . If the higher order terms are negligible, then

$$\text{Var}(\hat{\theta}) = \text{Var} \left[\sum_{i=1}^n \partial F_{x_i}(\mu_1, \mu_2, \dots, \mu_n)(x_i - \mu_i) \right]$$

which reduces to

$$\begin{aligned} \text{Var}(\hat{\theta}) &= \text{Var} \left[\sum_{i=1}^n \partial F_{x_i}(\mu_1, \mu_2, \dots, \mu_n)x_i \right] \\ &= \text{Var} \left(\sum_{i=1}^n z_i \right) \end{aligned}$$

where z_i is the Taylorized deviation for θ with respect to the i^{th} observation defined as

$$z_i = \partial F_{x_i}(\mu_1, \mu_2, \dots, \mu_n)x_i.$$

With the use of Taylorized deviations, the problem of computing the variance of any function is reduced to that of computing the variance of the total of the Taylorized deviations. In the following sections, we present formulas for estimating variance totals for the design options that have been implemented in SUDAAN.

With Replacement: DESIGN=WR

SUDAAN's DESIGN=WR implies

- Sampling with replacement at the first stage (or with small sampling fractions—say less than 10%—in every first-stage stratum). The sampling fraction in a first-stage stratum is the number of primary sampling units (PSUs) selected into the sample divided by the population number of PSUs in the stratum.

- Sampling with or without replacement at subsequent stages.
- Sampling with equal or unequal probabilities of selection at both the first and subsequent stages.

The WR design is the default design in SUDAAN. If you omit the DESIGN= option from your PROC statement, SUDAAN assumes a WR design. For a WR design, SUDAAN estimates the variances using the between-PSU within-stratum variance component. This design is valid when the PSUs are independent (which is implied by with-replacement sampling), and the PSU totals of linearized values can be estimated without bias. In the absence of complete design information, the WR design is often chosen to approximate variances for more complicated designs.

The WR design is used for most nonsurvey applications involving clustered data. It is the most commonly used design option for implementing GEE model-fitting techniques in the regression setting.

See [Section 3.5.1](#) for a summary of the SUDAAN statements used with DESIGN=WR.

Variance Estimation with WR Design

We first derive a simple robust variance estimator for cluster-correlated data and then extend it to a stratified survey design. This estimator is well known in the sample survey literature but not easily applied because of complications due to unequal probability sampling. (For an example, see Section 6.7 of Hansen, Hurwitz and Madow (1953) or Section 4.5 of Särndal, Swenson, and Wretman (1992)). A brief note by Williams (2000) presents a general proof that the estimator is unbiased for cluster-correlated data regardless of the setting. The result is widely applicable to survey data, as well as to designed experiments and other observational data where clusters are assumed to be independent, but the data within clusters may be correlated.

A statistical problem with cluster-correlated data arises from intracluster correlation, or the potential for units within the same cluster to respond similarly. This phenomenon is often referred to as overdispersion, or extra variation, in an estimated statistic beyond what would be expected under independence. Analyses that assume independence of the observations will generally underestimate the true variance and lead to test statistics with inflated Type I errors.

The following presents an unbiased variance estimator for a linear statistic from cluster-correlated data. In the sample survey situation, with replacement sampling of the primary clusters implies that observations between primary clusters are uncorrelated. In the general situation, the critical assumption is that the observations between clusters are uncorrelated.

The following notation describes the general, cluster-correlated data situation. Let z_{jk} be the k^{th} observation ($k=1, 2, \dots, m_j$) from the j -th cluster ($j=1, 2, \dots, n$). Assume, without loss of generality, that $E[z_{jk}] = 0$. Further assume that $Cov(z_{jk}, z_{jk'}) = \sigma_{jkk'}$ and that $Cov(z_{jk}, z_{j'k'}) = 0$ when $j \neq j'$. These assumptions are very general and allow the variance to be heteroscedastic (both between and within clusters), and allow for an arbitrary dependence structure among observations within

a cluster. For example, there could be three or more levels of nesting, as in a dental study context (tooth surfaces, nested within teeth, nested within patients), or an autoregressive process for repeated measurements over time on the same person.

$$\text{Var}[z] = \sum_j \text{Var} \left[\sum_k z_{jk} \right] = \sum_j \sum_k \sum_{k'} \sigma_{jkk'} .$$

First consider the simple linear statistic $z = \sum_j \sum_k z_{jk}$, and note that, letting $z_j = \sum_k z_{jk}$, and $\bar{z} = \sum_j z_j / n$, the *between-cluster variance estimator* is then given by

$$S^2 = \frac{1}{n-1} \sum_j (z_j - \bar{z})^2 = \frac{1}{n-1} \left[\sum_j z_j^2 - n\bar{z}^2 \right]$$

We desire to show that $E[nS^2] = \sum_j \sum_k \sum_{k'} \sigma_{jkk'} = \text{Var}[z]$. First note that

$$E[z_j^2] = \sum_k \sum_{k'} E[z_{jk} z_{jk'}] = \sum_k \sum_{k'} \sigma_{jkk'}$$

Also,

$$E[\bar{z}^2] = \frac{1}{n^2} \sum_j \sum_{j'} E[z_j z_{j'}] = \frac{1}{n^2} \sum_j E[z_j^2] = \frac{1}{n^2} \sum_j \sum_k \sum_{k'} \sigma_{jkk'}$$

because observations from different clusters are uncorrelated. Thus,

$$E[nS^2] = \frac{n}{n-1} \left[\sum_j E[z_j^2] - nE[\bar{z}^2] \right] = \sum_j \sum_k \sum_{k'} \sigma_{jkk'} = \text{Var}[z] .$$

Hence, we have the desired result that the between-cluster variance estimator nS^2 is an unbiased estimator of the variance of a linear statistic. Notice that we only need to know to which cluster each observation belongs, without regard to the dependence structure of observations within a cluster.

Note that the between-cluster variance estimator can be combined with a Taylor series linearization approach (Woodruff (1971) and Binder (1983)) to yield consistent (as the number of clusters grows large) variance estimates of nonlinear statistics. This approach replaces the

original data with a linear approximation that can then be used as shown above. For example, Taylor series linearization with the between-cluster variance estimator was used by Rao and Colin (1991) for the proportion of malformed fetuses for teratology studies; by Fuller (1976), for linear regression coefficients in complex sample surveys; by Bieler and Williams (1995), for logistic regression in teratology studies; and by Williams (1995), for Kaplan-Meier survival functions. The Taylor series linearization approach with the between-cluster variance estimator is closely related to the generalized estimating equation (GEE) approach of Liang and Zeger (1986). In some situations, the two approaches are the same when assuming working independence. The Taylor series linearization approach is much older, with its roots in sample survey research dating back to the early 1950s. The GEE approach attempts to improve estimation by including assumptions about the within-cluster correlation structure in the estimating equations.

Suppose a sample of n_h PSUs is selected with unequal probabilities and with replacement from each of H strata. Let π_{hi} denote the probability of selecting PSU- i . At the second stage, a sample of m_{hi} elements is selected from the M_{hi} units in PSU- i with equal probabilities and with replacement; the selection probability for each element selected from PSU- i is, therefore, m_{hi} / M_{hi} . Cochran (1977, section 11.9) and Hansen, Hurwitz, and Madow (1953, section 9.27) give the unbiased estimator \hat{y}_{sample} of the population total Y_{census} :

$$Y_{census} = \sum_{h=1}^H \sum_{i=1}^{N_h} \sum_{j=1}^{M_{hi}} y_{hij}$$

and

$$\begin{aligned} \hat{y}_{sample} &= \sum_{h=1}^H \sum_{i=1}^{n_h} \frac{1}{\pi_{hi}} \frac{M_{hi}}{m_{hi}} \sum_{j=1}^{m_{hi}} y_{hij} \\ &= \sum_{h=1}^H \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hi} y_{hij} \end{aligned}$$

Where $w_{hi} = \frac{1}{\pi_{hi}} \frac{M_{hi}}{m_{hi}}$ is the sampling weight. The variance of \hat{y}_{sample} is obtained by letting

$Z_{hij} = w_{hi} y_{hij}$, $Z_{hi} = \sum_{j=1}^{m_{hi}} Z_{hij}$, and $Z_h = \sum_{i=1}^{n_h} Z_{hi}$. Summing over strata, the expression reduces to

$$\hat{V}(\hat{Y}) = \sum_{h=1}^H \frac{n_h}{n_h - 1} \sum_{i=1}^{n_h} (Z_{hi} - \bar{Z}_h)^2 .$$

Following the analogy, when the WR design option is specified, SUDAAN uses the formula for variance calculation:

$$\hat{v}_{\text{sample-WR}}(Z_{\text{sample}}) = \sum_{h=1}^H n_h S_h^2 ,$$

where

$$Z_{\text{sample}} = \sum_{h=1}^H \sum_{i=1}^{n_h} Z_{hi}$$

$$S_h^2 = \sum_{i=1}^{n_h} (Z_{hi} - \bar{Z}_h)^2 / (n_h - 1) ,$$

with

$$Z_{hi} = \sum_{j=1}^{m_{hi}} Z_{hij} ,$$

and

$$\bar{Z}_h = \sum_{i=1}^{n_h} Z_{hi} / n_h .$$

Reference

Research Triangle Institute (2008). Chapter 3 - Specifying your sample design. In, *SUDAAN Language Manual, Release 10* (52 – 57). Research Triangle Park, NC: Research Triangle Institute.

Appendix D

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Mr. Hang Veasna	Enumerator
Mr. Kang Vivath	Enumerator
Mr. Ouch Seng	Enumerator
Mrs. Hout Sinath	Supervisor
Mr. Mek Sopheak	Enumerator
Mr. Syn Reaksmeay	Enumerator
Mr. Soun Bonrong	Enumerator
Mr. Nan Sothara	Supervisor
Mr. Mom Sot	Enumerator

Mrs. Yin Leakheana	Enumerator
Mrs. Yan Sophun	Enumerator
Mr. Nheb Chheang	Enumerator
Mr. Seng Sovanang	Supervisor
Mr. Bun Piv	Enumerator
Mr. Seng Bona	Enumerator
Mr. Choeurn Ramach	Enumerator
Mr. Khem Sokhorn	Enumerator
Mr. Sin Sothy	Supervisor
Mr. Kheang Han	Enumerator
Mr. Li Li heng	Enumerator
Mr. Um Leang Khim	Enumerator
Mr. Nhem Boel	Enumerator
Mrs. Mom Bona	Supervisor
Mr. Mom Oudom	Enumerator
Mr. Hak Sotheara	Enumerator
Mrs. Kas Mach	Enumerator
Mrs. Sar PuTheavy	Enumerator

Appendix E

Glossary of Terms (NATSC 2011)

Chapter 4. Tobacco use

1. **Percentage of adults who currently use tobacco:** Number of current daily and less than daily tobacco smokers divided by total number of respondents.
2. **Percentage of adults who use tobacco daily:** Number of current daily tobacco smokers divided by the total number of respondents.
3. **Percentage of adults who currently smoke tobacco:** Number of current daily and less than daily tobacco smokers divided by total number of respondents.
4. **Percentage of adults who currently smoke tobacco daily:** Number of current daily tobacco smokers divided by the total number of respondents.
5. **Percentage of adult daily cigarette smokers:** Number of daily cigarette smokers divided by the total number of respondents.
6. **Percentage of adults who currently use smokeless tobacco:** number of current daily and less than daily smokeless tobacco users divided by total number of respondents.
7. **Percentage of ever daily smokers:**
8. **Former daily tobacco smokers (among all adults):** number of ever daily tobacco smokers who currently do not smoke tobacco divided by total number of respondents.
9. **Former daily tobacco smokers (among ever daily smokers):** number of ever daily tobacco smokers who currently do not smoke tobacco divided by number of ever daily tobacco smokers.
10. **Daily smokeless tobacco users:** number of current daily smokeless tobacco users divided by total number of respondents.
11. **Former daily smokeless tobacco users (among all adults):** number of ever daily smokeless tobacco users who currently do not use smokeless tobacco divided by total number of respondents.
12. **Former daily smokeless tobacco users (among ever daily users):** number of ever daily smokeless tobacco users who currently do not use smokeless tobacco divided by number of ever daily smokeless tobacco users.

Chapter 5. Cessation

- 13. Smoking quit attempt in the past 12 months:** Number of current tobacco smokers who tried to quit during the past 12 months and former tobacco smokers who have been abstinent for <12 months divided by Total number of current tobacco smokers and former tobacco smokers who have been abstinent for <12 months
- 14. Health care provider's (HCP) advice to quit smoking tobacco:** Number of current tobacco smokers and former tobacco smokers who have been abstinent for <12 months who report being advised to quit smoking during a visit to a HCP within the past 12 months divided by Number of current tobacco smokers and former tobacco smokers who have been abstinent for <12 months who visited a HCP in the past 12 months.
- 15. Interest in quitting smoking:** number of current tobacco smokers who are planning or thinking about quitting smoking within the next month, 12 months or someday divided by number of current tobacco smokers
- 16. Smokeless tobacco quit attempt in the past 12 months:** Number of current smokeless tobacco users who tried to quit during the past 12 months and former smokeless tobacco users who have been abstinent for <12 months divided by Total number of current smokeless tobacco users and former smokeless tobacco users who have been abstinent for <12 months
- 17. Health care provider's (HCP) advice to quit smokeless tobacco use:** Number of current smokeless tobacco users and former smokeless tobacco users who have been abstinent for <12 months who report being advised to quit using tobacco during a visit to a HCP within the past 12 months divided by Number of current smokeless tobacco users and former smokeless tobacco users who have been abstinent for <12 months who visited a HCP in the past 12 months.
- 18. Interest in quitting smokeless tobacco:** number of current smokeless tobacco users who are planning or thinking about quitting smokeless tobacco within the next month, 12 months or someday divided by number of current smokeless tobacco users

Chapter 6. Second-hand smoke

- 19. Exposure to second hand smoke at work:** number of respondents who reported being exposed to smoke in indoor areas at work during the past 30 days divided by number of respondents who work outside of the home who usually work indoors or both indoors and outdoors

Chapter 7. Economics

- 20. Average price of a pack of manufactured cigarettes ???** (pg 19 in GATS indicator guidelines) average price of a pack of manufactured cigarettes (in local currency)

21. Cigarette affordability: average price of 100 packs of manufactured cigarettes as a percentage of Gross Domestic Product (GDP) per capita

Chapter 8. Media

22. Awareness of anti-cigarette smoking information on television or the radio: Number of respondents who have noticed information about the dangers of smoking cigarettes or that encourages quitting on TV or radio in the last 30 days divided by total number of respondents.

23. Thinking of Quitting Because of Health Warning Labels on Cigarette Packages: Number of current smokers who thought about quitting smoking in the last 30 days because of the warning labels on cigarette packages divided by Number of current smokers

24. Awareness of In-Store Cigarette Advertising and Promotion: Number of respondents

who have noticed cigarettes at sale prices, free gifts or discount offers on other products when buying cigarettes, or any advertisements or signs promoting cigarettes in stores where cigarettes are sold in the last 30 days divided by total number of respondents

25. Awareness of Cigarette Advertising and Promotion in Other Channels: Number of respondents who have noticed any advertisements or signs promoting cigarettes, cigarette company sponsorship of sporting events, or cigarette promotions in the last 30 days other than in stores where cigarettes are sold. Divided by total number of respondents

26. Awareness of Anti-Smokeless Tobacco Information on TV or the Radio: Number of

respondents who have noticed information about the dangers of smokeless tobacco or that encourages quitting on TV or radio in the last 30 days. Divided by total number of respondents

27. Thinking of Quitting Because of Health Warning Labels on Smokeless Tobacco Products: Number of current smokeless tobacco users who thought about quitting in the last 30 days because of the warning labels on smokeless tobacco products. Divided by number of current smokeless tobacco users.

28. Awareness of In-Store Smokeless Tobacco Advertising and Promotion: Number of

respondents who have noticed smokeless tobacco products at sale prices, free gifts or discount offers on other products when buying smokeless tobacco, or any advertisements or signs promoting smokeless tobacco in stores where smokeless tobacco is sold in the last 30 days. Divided by total number of respondents

29. Awareness of Smokeless Tobacco Advertising and Promotion in Other Channels:

Number of respondents who have noticed any advertisements or signs promoting smokeless tobacco products, smokeless tobacco company sponsorship of sporting events, or smokeless tobacco promotions in the last 30 days in channels other than in stores where smokeless tobacco is sold. Divided by total number of respondents

Chapter 9. Knowledge, attitudes, perceptions

30. Beliefs about the Dangers of Tobacco Smoking: Number of respondents who believe that smoking tobacco causes serious illness. Divided by Total number of respondents.

31. Beliefs about the Dangers of Second-hand Smoke: Number of respondents who believe that breathing other people's smoke causes serious illness in non-smokers Divided by Total number of respondents.

32. Beliefs about the Dangers of Smokeless Tobacco Use: Number of respondents who believe that smokeless tobacco use causes serious illness. Divided by Total number of respondents.

Appendix F
National Ethics Committee for Health
Research Approval



ក្រសួងសុខាភិបាល
MINISTRY OF HEALTH
គណៈកម្មាធិការជាតិរៀបចំស្រាវជ្រាវ
ស្រាវជ្រាវសុខភាពជាតិសម្រាប់ការស្រាវជ្រាវ
National Ethics Committee for Health Research

NECHR

ព្រះរាជាណាចក្រកម្ពុជា
KINGDOM OF CAMBODIA
ជាតិ សាសនា ព្រះមហាក្សត្រ
NATION RELIGION KING

រាជធានីភ្នំពេញ, ថ្ងៃទី ១៥ ខែ កញ្ញា ២០១០

Mr. They Kheam

Project: 2010 National Prevalence Survey of adult Tobacco Use in Cambodia. Version N° 2
 (second survey in Cambodia) dated 24 June 2010.

Reference : - Your letter on 08 September, 2010
 - Report of NECHR's secretaries on 14 September, 2010

Dear Mr. They Kheam

I am pleased to notify you that your protocol "2010 National Prevalence Survey of adult Tobacco Use in Cambodia. Version N° 2 (second survey in Cambodia) dated 24 June 2010," has been approved by National Ethic Committee for Health Research (NECHR). This approval is valid for twelve months after the approval date.

The Principal Investigator of the project shall submit following document to the committee's secretariat at the National Institute of Public Health at #2 Kim Il Sung Blvd, Khan Tuol Kok, Phnom Penh. (Tel: 855-23-880345, Fax: 855-23-881949):

- Annual progress report
- Final scientific report
- Patient/participant feedback (if any)
- Analyzing serious adverse events report (if applicable)

The Principal Investigator should be aware that there might be site monitoring visits at any time from NECHR team during the project implementation and should provide full cooperation to the team.

Regards,

Chairman

H.E. Prof ENG HUOT

រាជរដ្ឋាភិបាលកម្ពុជា
ក្រសួងមហាផ្ទៃ

លេខ: ១៤៤ អនក្រ.បក



ប្រទេសកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

រាជធានីភ្នំពេញ, ថ្ងៃទី ១៤ ខែ កញ្ញា ឆ្នាំ ២០១០

ក្រសួងមហាផ្ទៃ	
ចំនួន	A. ១៤៤ អនក្រ.បក
ថ្ងៃខែឆ្នាំ	១៤ ០៩ ២០១០
លេខ	១៤៤ អនក្រ.បក

សូមជម្រាបជូន

ឯកឧត្តម ទេសរដ្ឋមន្ត្រី រដ្ឋមន្ត្រីក្រសួងមហាផ្ទៃ

កម្មវត្ថុ : ស្តីពីការណែនាំអនុញ្ញាតឱ្យមន្ត្រីក្រសួងផែនការចុះធ្វើអនុវត្តកិច្ចការជាតិស្តីពីការប្រើប្រាស់ថ្នាំជក់ឆ្នាំ២០១០ ។

យោង : -លិខិតលេខ ៦២៩ ផក.វជស ចុះថ្ងៃទី ០៩ ខែ កញ្ញា ឆ្នាំ ២០១០ របស់ក្រសួងផែនការ ។
-ដំណើរការដ៏ទូលំទូលាយរបស់ឯកឧត្តម **ស ខេង** ឧបនាយករដ្ឋមន្ត្រី រដ្ឋមន្ត្រីក្រសួងមហាផ្ទៃ ចុះថ្ងៃទី ១៥-០៩-២០១០ ។

តាមកម្មវត្ថុ និងយោងខាងលើ ខ្ញុំសូមជម្រាបជូនឯកឧត្តម ទេសរដ្ឋមន្ត្រី មេត្តាជ្រាបថា ក្រសួងមហាផ្ទៃ ឯកភាពចំពោះការណែនាំអនុញ្ញាតឱ្យមន្ត្រីក្រសួងផែនការចុះធ្វើអនុវត្តកិច្ចការជាតិស្តីពីការប្រើប្រាស់ថ្នាំជក់ដែលចាប់ផ្តើមពីពេលនេះតទៅដល់ដំណាច់ខែវិច្ឆិកា ឆ្នាំ២០១០ ដោយលើកលែង ។ ចំពោះការបញ្ជាក់ស្នើសុំឯកឧត្តម ទេសរដ្ឋមន្ត្រី មេត្តាចាត់មន្ត្រីធ្វើការទំនាក់ទំនងដោយផ្ទាល់ជាមួយអាជ្ញាធរមូលដ្ឋានពាក់ព័ន្ធ ។

អាស្រ័យហេតុនេះ សូមឯកឧត្តម ទេសរដ្ឋមន្ត្រី មេត្តាជ្រាប និងចាត់តាំង តាមការត្រូវ ។

សូមឯកឧត្តម មេត្តាទទួលនូវការគោរពរាប់អានដ៏ទូលំទូលាយ អំពីខ្ញុំ ។ *dlm*

ទទួលបានជាតិស្ថិតិ	
មកដល់ថ្ងៃទី ១៧ ខែ ១១ ២០១០	
លេខ ១០៧១	
បុរេលេខ ០៤៤	

- មតិយល់ឃើញ :**
- ជំនួយការរដ្ឋមន្ត្រី
 - ឧបនាយករដ្ឋមន្ត្រី ឧបនាយករដ្ឋមន្ត្រី
 - រដ្ឋមន្ត្រីក្រសួងមហាផ្ទៃ
 - ឧបនាយករដ្ឋមន្ត្រីទទួលបន្ទុក
 - ក្រសួងមហាផ្ទៃ - រាជធានី
 - ឯកសារ - ការបញ្ជូន



ទេសរដ្ឋមន្ត្រី
[Signature]
ត្រី សុខា