MAURITIUS

WAVE 3
TECHNICAL REPORT

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International Tobacco Control
Policy Evaluation Project

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Table of Contents

1. Introduction

1.1 Background

The International Tobacco Control (ITC) Project is a prospective cohort survey designed to evaluate national level tobacco control policies. Since the ITC Project began in 2002, the ITC survey has been administered in 23 countries: Canada, United States, United Kingdom, Australia, Ireland, Thailand, Malaysia, South Korea, Uruguay, Mexico, China, New Zealand, France, Germany, the Netherlands, Sudan (pilot only), Bangladesh, Brazil, Mauritius, Bhutan, Kenya, Zambia, Nigeria, and India. Wave 1 of the ITC Mauritius Survey was conducted between April 20 and May 24, 2009; Wave 2 of the ITC Mauritius Survey was conducted between August 30 and October 2, 2010; and, Wave 3 was conducted from June 20 to July 11, 2011. The information contained in this report is from the Wave 3 ITC Mauritius Survey.

The objectives of the ITC Mauritius Survey are:

a) **To examine patterns of smoking behaviour among adults in Mauritius.**
The ITC Mauritius Survey gathers very detailed information about smokers' quitting behaviour, consumption patterns, and other important aspects of smoking behaviour.

b) **To examine the impact of specific tobacco control policies that will be implemented in Mauritius during the next 5 years.**
The ITC Mauritius Survey contains several sections that are intended to evaluate the impact of specific policies, such as health warning labels on cigarette packs, anti-smoking campaigns, and price/taxation increases. As a result, the survey is able to examine to what extent policies change smoking behaviour and attitudes towards smoking.

c) **To continue to compare smoking behaviour and the impact of policies between Mauritius and other ITC countries.**
The ITC survey is being administered in 23 countries. Because the vast majority of questions are either identical or functionally equivalent across countries, we will be able to compare patterns of smoking and policies in Mauritius with those of the other 22 countries.

1.2 Survey Design

1.2.1 ITC Mauritius Survey

The ITC Mauritius Survey is a national survey conducted by the Mauritius Institute of Health in conjunction with Mauritius Ministry of Health and Quality of Life, in collaboration with the ITC Mauritius Project team, centered at the University of Waterloo in Canada. Wave 2 was conducted from August 30 to October 2, 2009, and Wave 3 was conducted from June 20 to July 11, 2011.

The ITC Survey is a longitudinal cohort study. In other words, the respondents who participate in this survey will be recontacted in the future to answer follow-up surveys. The longitudinal cohort design allows the evaluation studies arising from the survey data to address research questions of greater precision and complexity because the same individuals are tracked over time, and their responses to tobacco control policies and programs and other important factors in tobacco use (including tobacco industry activities) can be linked to potential changes in behavior over time. Cohort designs can measure policy impact in a more fine-grained, individual-level way, compared to repeat cross-sectional designs (having separate samples of respondents at multiple points in time). The International Agency for Research on Cancer (IARC) Cancer Prevention Handbook, *Methods for Evaluating Tobacco Control Policies* (2008) provides background on the advantages of cohort designs in the evaluation of policies.

1.3 The Research Team

The ITC Mauritius Project is being conducted through cooperation between researchers at the University of Waterloo, Canada, and public health leaders at the Mauritius Institute of Health (MIH), together with other public health leaders from Mauritius. The team members at MIH have made Mauritius a leader for tobacco control in Africa and the world. This team comprises the Principal Investigator, Mr. Premduth Burhoo, Senior Research Officer at the Mauritius Institute of Health; Mr. DeowanMohee, Health Information and Promotion Officer at the World Health Organization; Mrs. Véronique Le Clézio, president of ViSa (a non-governmental organization dedicated to reducing tobacco use); and Mrs. LeelmaneeMoussa, Senior Research Officer at the Mauritius Institute of Health.

This study was supported by the ITC Project through a grant from the Ontario Institute for Cancer Research and the government of Mauritius.

Maps of Mauritius

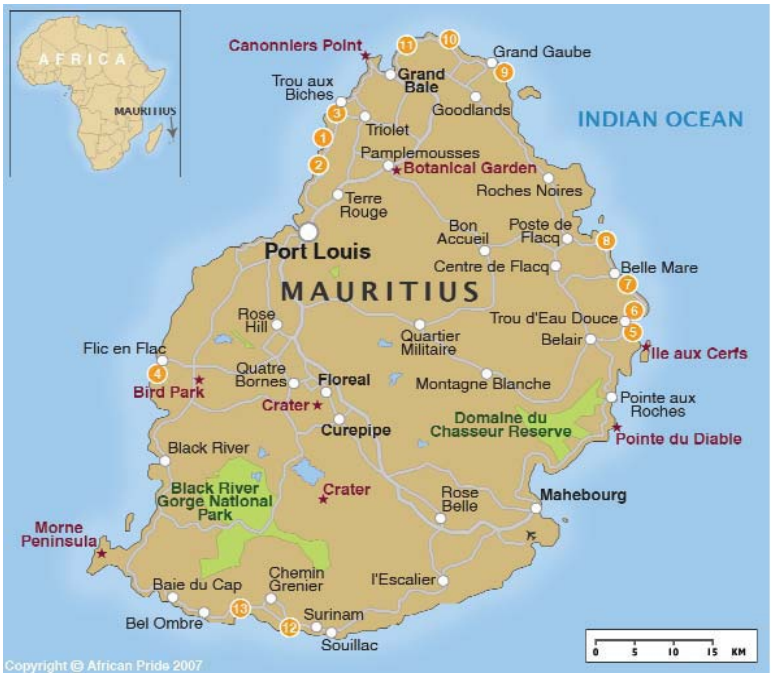

Figure 1. Map of Mauritius [1]

Figure 2. Political Map of Mauritius [2]

2. Sampling Design

2.1 Target Population

There were two categories of respondents. **Smokers** were adults (aged ≥18 years) who (1) reported having smoked at least 100 cigarettes in their life, and (2) had smoked at least once in the previous 30 days. **Non-smokers** were adults (aged ≥18 years) who had not smoked in the previous 30 days, or had not smoked 100 cigarettes in their lifetime. Individuals in jail and those living in institutions were ineligible for the survey. A maximum of three respondents were selected from each household (one female adult smoker, one male adult smoker and one adult non-smoker).

2.2 Sampling design

For the ITC Mauritius Wave 1 Survey, the sample comprised 60 Enumeration Areas (EAs), which each included approximately 100-125 households. Of these households, 50 from each EA were randomly selected to be contacted. A total of 1,750 households were enumerated (see below for the details of the enumeration process). In Wave 1, a total of 598 smokers and 239 non-smokers aged18 years and older were surveyed via face-to-face interviews. In Wave 2, 601 smokers and 239 non-smokers were surveyed. At Wave 3, a total of 602 cohort smokers and quitters, and 238 non-smokers were recontacted and successfully re-interviewed.

The retention rate at Wave 3 was 96.2% for smokers and 95.8% for non-smokers. These retention rates are exceptionally high among longitudinal cohort surveys (on average, the retention rate of the ITC Survey is between 75% and 80%). As such, approximately 3.9% of the Wave 3 sample was generated by replenishment. A total of 50 new households were enumerated at Wave 3, of which 48 agreed to participate. From these new households, 24 new smokers and 9 new non-smokers were randomly selected for participation and interviewed at Wave 3. This resulted in a total sample of 602 smokers and 238 non-smokers aged 18 years and older.

2.3 Sampling Frame

The multi-cluster sampling frame was designed in collaboration with the Mauritius Central Statistics Office to ensure random selection of households within strata defined by the nine geographic districts spanning the island. The urban-rural population split in Mauritius is 43% urban and 57% rural. The stratification by district provided similar urban-rural representation in the study sample. Mauritius is divided into 3600 enumeration areas (EAs), each with about 100-125 households.

2.4 Stages of Sampling

For Wave 3, the study sample was selected from 62 EAs chosen with probability proportional to size within strata. New respondents were selected based on the same sampling method used in Waves 1 and 2. That is, in the 62 Wave 3 EAs, new randomly selected households were enumerated, and interviews conducted, until enough interviews were obtained to replace respondents lost to follow-up in the EA. and a total of 50 new households were enumerated in Wave 3.A maximum of three respondents per household was allowed.

2.5 Sample size

The sample for Wave 3 included the Wave 2 cohort as well as new respondents recruited to account for attrition. Approximately 3.9% (24 new smokers and 9 new non-smokers) of the Wave 3 sample was generated by replenishment. In total, the sample consisted of 602 smokers and 238 non-smokers aged 18 years and older.

2.6 Private Homes

Dwellings were eligible if they were **private homes.**

A private home is any dwelling that is considered to be the usual place of residence for at least one of the persons living there. That person may be:

- a family member
- a roomer / boarder
- an employee

There are many types of private homes in Mauritius, and for the purposes of this survey they included independent homes, duplexes, apartments and private homes out of which a business was run. Independent homes are considered those that do not share a wall, roof or entrance with another dwelling. Duplexes may share a wall or roof with another dwelling, but are distinct from the other dwelling by having separate facilities. Apartments are private homes within a collection of similar dwellings, all located in the same building. Private homes where businesses were a part of the home were still eligible for inclusion, so long as the dwelling was not solely for the purposes of the business.

Surveys were not conducted in dwellings that were strictly businesses or with individuals living in institutions such as hospitals, nursing homes, jails, or religious institutions. For the purposes of this survey a household is defined as “any person or group of persons living in a dwelling that share meal expenses with other persons in that dwelling”. It may consist of:

- One person living alone
- A family sharing the same dwelling
- A group of people who are not related but share the same dwelling

Table 1.Demographic Characteristics of ITC Mauritius Survey Respondents Participating at Wave 3.

	Recontact				Replenishment			
	Smokers/Quitters N=578		Non-Smokers N=229		Smokers N=24		Non-Smokers N=9	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Gender								
Male	546	92.0	67	30.2	23	92.5	3	33.7
Female	32	8.0	162	69.8	1	7.5	6	66.3
Age								
18-24	49	11.9	17	15.1	2	6.6	-	-
25-39	175	30.3	79	30.8	9	35.5	4	56.9
40-54	222	34.3	80	27.8	8	40.1	4	41.9
55+	132	23.5	53	26.2	4	17.9	1	1.2
Annual household income (MUR)								
<15,000	370	60.5	127	53.2	13	55.9	4	26.0
15,000 to < 25,000	138	27.3	60	31.3	6	30.1	1	14.8
= 25,000	67	12.2	37	15.5	3	14.0	2	59.2
Education								
Up to Form 4	403	71.5	131	53.2	13	60.3	3	14.4
SC/HSC/Vocational	138	22.1	79	37.9	10	33.5	5	74.9
Some/completed university	37	6.4	19	8.9	1	6.2	1	10.7
Marital status								
Married	443	73.4	160	64.9	16	64.9	6	66.6
Divorced or Separated	23	3.0	10	7.3	1	7.5	-	-
Widowed	16	3.0	31	12.9	-	-	1	0.9482
Single	96	20.5	28	14.8	7	27.6	2	32.5

3. Survey Development and Content

3.1 Survey Development

The ITC Mauritius Survey was first developed by the project team (at Waterloo and in Mauritius together) in English. Two versions of the survey were created: one each of a smoker and non-smoker questionnaire. The surveys were translated into Mauritian Creole by team members at the Mauritius Institute of Health. The translated surveys were then reviewed by a committee composed of five members who were bilingual in English and Creole and who also had experience in population surveys. Nuances in wording were checked by this bilingual committee, which resolved discrepancies and checked nuances by discussion. This committee method of translation is known to be generally superior to traditional double translation methods and is being employed throughout the ITC countries in the development of the ITC surveys.

3.2 Types of Surveys

3.2.1 Recontact Surveys

In Wave 3, five versions of the survey were developed and fielded. The greater number of surveys was required to account for (1) two types of respondents at Wave 3—those who had already participated in Wave 2 (recontact smokers and recontact non-smokers) and those who were being newly recruited to replace those Wave 2 respondents who were lost to attrition (replenishment smokers and replenishment non-smokers); and (2) those respondents who were smokers at Wave 2 but who reported not smoking at Wave 3 (quitters). The ITC Mauritius Wave 2 and Wave 3 Surveys (smoker and non-smoker versions) are available at www.itcproject.org. The resulting five survey types, the participant type to whom the survey would be administered, and the average length of each type of Wave 3 survey is provided in Table 2.

Table 2.Wave 3 Survey Characteristics

Types of Survey at Wave 3	Participant Characteristics	Average Time (Mins)
1) Recontact Smoker Survey	Smokers who participated in Wave 2 and were still smoking at Wave 3.	60
2) Recontact Non-Smoker Survey	Non-smokers who participated in Wave 2 and were still non-smokers at Wave 3.	30
3) Recontact Quitter Survey	Smokers who participated in Wave 2, but who had quit smoking by Wave 3.	60
4) Replenishment Smoker Survey	Smokers who were newly recruited into the cohort at Wave 3 to replace a participant from Wave 2 who had dropped out or become ineligible.	60
5) Replenishment Non-Smoker Survey	Non-smokers who were newly recruited into the cohort at Wave 3 to replace a participant	30

	from Wave 2 who had dropped out or become ineligible.	

3.3 Survey Content

Respondents who were smokers(or quitters at Wave 3) were asked the following types of survey questions:

1. Smoking- and Cessation-Relevant Questions. Smoking history and frequency, as well as current smoking behaviour and dependence, and quitting behaviours;
2. Knowledge and Basic Beliefs About Smoking. Knowledge of the health effects of smoking and important beliefs relevant to smoking and quitting, perceived risk and perceived severity of tobacco-related diseases;
3. Policy-relevant questions. Awareness of, impact of, and beliefs relevant for each of the FCTC demand reduction policy domains (warning labels, taxation/price, advertising/promotion, smoke-free bans, light/mild);
4. Media campaigns. Awareness of the "Sponge Campaign" including cognitive, affective, and behavioural impacts.
5. Other important psychosocial predictors of smoking behaviour and potential moderator variables (e.g., normative beliefs, self-efficacy, intentions to quit);
6. Individual difference variables relevant to smoking (e.g., depression, stress, time perspective)
7. Demographics (e.g., age, marital status, income, education).

Respondents who were non-smokers were asked parallel survey questions from categories 2 to 7, as listed above. Question phrasing was revised where necessary for the non-smoker context. The inclusion of non-smoker survey items is important in allowing accurate interpretation of survey results for the entire population of Mauritius.

Between Wave 2 and Wave 3, each questionnaire type was updated to ensure that it was relevant for the target respondent (i.e., continuing smoker, quitter, etc.) within the context of the tobacco control landscape in Mauritius.

The following change to the survey content for the Wave 3 Survey was made:

(1) The addition of questions to all surveys regarding the impact of the World Lung Foundation's 'Sponge Campaign'.

4. Protocols and Quality Control

4.1 ITC Mauritius Survey Protocol

The protocols and scripts used in the ITC Mauritius Survey were similar to those used in the ITC Southeast Asia and ITC China Surveys. At the time of recruitment, the participants were given a survey requesting basic information on demographic variables, smoking status, and preferred

cigarette brands. Cohort respondents were qualified by their responses to the first part of the cohort surveys. Those who qualified and agreed to participate were then surveyed in full. The method of the interview was face to face, with interviewers using pen-and-paper surveys to collect the interviewees' responses. The majority of survey items offered multiple-choice response options, and there were several 'open-ended' questions with options that indicated "other-specify", to which the interviewer was required to record the participant's response verbatim. All survey interviews were conducted with strict confidentiality, and proxy interviews were not conducted under any circumstances. For both recontact and replenishment surveys, the length of the interviews was 60 minutes for smokers and quitters and 30 minutes for non-smokers on average. Each participant was given an information and consent letter as well as 250 MUR (approximately $9 CAD) in appreciation of their time.

4.2 Respondents

- For the Wave 3 Survey, the sample constructed in Wave 2 was recontacted for participation in Wave 3. 3.9% of the Wave 3 sample was generated by replenishment
- The sample consisted of a total of 840 respondents, of which 602 were adult smokers or quitters and 238 were adult non-smokers.
- People eligible to respond were those who had responded in Wave 2, and those who lived within the households newly enumerated in each EA.
- The respondents were smokers, non-smokers, and quitters aged ≥18 years. The first part of the main interview contained the questions that are used to confirm whether the individual meets the criteria for inclusion.

4.3 Components of the ITC Mauritius Survey Fieldwork

The ITC Mauritius Wave 3Survey protocol consisted of five main steps:

1. Recontact Survey Interview (Phase 1)
2. New Household Enumeration (including demographic information) (Phase 2)
3. Participant Selection & Consent
4. Replenishment Survey Interview
5. Remuneration and Conclusion

4.3.1 Recontact Survey Interview (Phase 1)

Interview Methods and Procedure

1. Confirmation of Household Information collected at Wave 2 using the Household Recontact Form.

2. Accurate identification of the recontact survey respondent(s) in the household. A maximum of three respondents per household participated in Wave 2.
3. Completion of the Written Consent Form (WCF), or documentation of verbal consent by the interviewer using the Verbal Consent Form (VCF).
4. Use screener to determine the correct recontact survey to administer.
5. Completion of the survey questionnaire.
6. Providing the token of appreciation of 250 Mauritian Rupees (MUR) in cash per participant.

4.3.2 Household Enumeration (including demographic information) (Phase 2)

For the Wave 3 Survey, the sample constructed in Wave 2 was recontacted for participation in Wave 3. The retention rate was 96.2% for smokers 95.8% for non-smokers. If participants from Wave 2 were unable or refused to participate at Wave 3, then they were to be replaced in the cohort by a new participant who has been recruited into the study cohort at Wave 3. Approximately 3.9% of the Wave 3 sample was generated by replenishment.

- In the EAs that had been selected in the Wave 3 sampling plan from the 9 districts across Mauritius, new households were selected at random. However, as in two EAs, all the households have already been enumerated so, new households were selected from two new EAs added to the initial sampling plan.
- Each EA was assigned to an interviewer, and the interviewer went to the newly selected households, in the (random) order that the households had been selected. Enumeration of the households continued until enough respondents had been recruited to be interviewed, to replace those in the EA who had dropped out.
- If a member of the household agreed to participate in the enumeration of his/her household, then information on all adults (aged 18 years or older) in the home was collected, including their smoking status. The number of children residing in the dwelling was also recorded.
- After enumerating a household, the interviewer used the selection criteria to determine if any members of the household were eligible to participate in the ITC Mauritius Survey. The criteria and protocol for participant selection and consent are described below.
- If a member of the household refused to participate in enumeration, the interviewer would then request the following two pieces of information:

  1) The number of children in each enumerated household, and
  2) The smoking status of all adults living within the dwelling.

- A maximum of 4 attempts were made to enumerate each household.
- Enumerators kept careful records of which dwellings were visited, the outcome of each visit, and whether or not a listing or an interview was obtained.

4.3.3 Survey Participant Selection and Consent

- In each enumeration area, a quota of 10 completed smoker interviews and 4 completed non-smoker survey interviews was expected.
- Respondents were selected based on their smoking status, and completed the appropriate survey accordingly.
- Within each enumerated household, a maximum of three respondents could be interviewed—a male smoker, a female smoker, and one non-smoker (either male or female).
- If there were several respondents from each category (i.e. male smokers) willing to participate in the survey then the next birthday method was used, and the adult whose birthday appeared next in the calendar year was selected.
- A substitution from the same household was allowed only if a selected respondent had outcome code I2 (Language barrier) or I3 (Health/mentally incapable), or would be away for the entire survey period (refer to Section 4 for details on Individual Outcome Codes).
- In the case of a refusal by an individual who had been selected as a potential survey respondent for a given quota category (e.g., for the male smoker category), the interviewer recorded the outcome code as I5 (Refusal), and moved on to the next household to fill the category quota (i.e., substitution from the same household was not permitted in the case a refusal).
- Consent (either verbal or written) was obtained from each participant and each eligible, consenting participant was interviewed independently of one another, using a standardized consent form (either the smoker or non-smoker version) that had been reviewed and cleared by ethics committees at the University of Waterloo and the Mauritius Ministry of Health and Quality of Life.
- If a selected potential survey respondent (identified through the household enumeration process) was unavailable to complete the survey, the interviewer would return on at least three separate subsequent occasions at different times (i.e., during day/evening on a week day, and during the week evening, and during the day/evening on the weekend). If the interviewer was unable to connect with the selected potential respondent after 4 attempts, then the individual was assigned an individual outcome code of I1 (Missed (after 4 attempts)).

4.3.4 Replenishment Survey Interview

Interview Methods and Procedure

1. Selection of the correct Replenishment survey questionnaire -- Smoker or Non-smoker, depending on the smoking status of respondents collected from the enumeration.

2. Completion of the survey questionnaire.
3. Providing the token of appreciation of 250 MUR in cash per participant.

4.3.5 Remuneration and Conclusion

Conclusion of the survey interview

- At the end of each survey interview, the interviewer thanked the participant for his/her participation. The interviewer then checked to ensure that the participant had been provided with a copy of his/her signed consent form, and ensured that any of the participant's questions or concerns had been addressed to his/her satisfaction.

Remuneration

- 250 MUR (i.e., approximately $9.00 CAD) was given to both recontact and replenishment respondents as remuneration for their time.

4.4 Fieldwork Teams

Fieldwork teams consisted of a single enumerator conducting enumeration independently, as well as a Field Supervisor. Each Enumeration Area had one enumerator conducting fieldwork within it, for a total of 60 enumerators. A second neighbouring enumeration area was assigned to an enumerator when all the households in his/her initial enumeration area were already listed. Supervision of fieldwork was conducted by 10 supervisors and 3 senior supervisors.

4.5 Monitoring & Quality Assurance

All surveys were checked for quality assurance by fieldwork supervisors working at the Mauritius Institute of Health (MIH). The forms submitted by the enumerators were checked for accuracy and completeness. Any surveys or forms that had incorrect or missing information were completed a second time, in the presence of a fieldwork supervisor.

4.6 Retention in subsequent waves as a function of smoking status

- All respondents are retained in consecutive waves; even if they have quit smoking (there will be a set of questions in the recontact (cohort) survey for those respondents from Wave 3 who have quit smoking since that time.

5. Disposition Codes and Response Rates

5.1 Outcome Codes: Household

The list of Household Outcome codes on the Enumeration and RecontactForms represents FINAL dispositions, that were assigned either when the household was enumerated or after the 4th visit (a maximum of 4 attempts was made to enumerate each household). See the first page of the Household Enumeration Form in Appendix B.

1. Could not find
2. Vacant Dwelling/Lot
3. Not a household (e.g. Business)
4. Threat to safety
5. No Contact- Weather Condition
6. No Answer- 4 Attempts
7. No answer- Survey Period Ends
8. Household Refusal
9. Language Barrier
10. No one capable of answering
11. Enumeration prevented for other reasons
12. Enumerated

5.2 Outcome Codes: Individual

Individual outcome codes were to be assigned to everyone enumerated for the survey on the household enumeration form. See the third page of the Household Enumeration Form in Appendix B.

1. I1 Missed (after 4 attempts)
2. I2 Language Barrier
3. I3 Health/Mentally Incapable
4. I4 Proxy Refusal
5. I5 Refusal
6. I6 Incomplete (start, breakoff)
7. I7 Complete

5.3 Respondent ID

Each participant was assigned an 11-digit number, which was a combination of the 2-digit District Number, the 4-digit EA Number, the 3-digit Dwelling Number, and the 2-digit Household Member Number (from the right-hand column on Module B). This number was recorded to ensure that each participant had a unique identification number, which could be referred to for recontact and also to indicate the location of the respondent within the districts of Mauritius.

Household Response Rate

Successfully enumerated households	48
Refusals	2
Potentially eligible households, no contact	0
Total doors knocked	50
Household contact rate	100%
Household cooperation rate	96%
Number of households with at least one eligible person	48
Estimated household eligibility rate	100%
Estimated eligible households approached	50

Individual response rate

Total completed interviews	33
Excluded	0
Total completed	33
Total individuals selected AND capable of responding	33
Individual cooperation rate	100%
Individual response rate (= household response rate* individual cooperation rate)	**96%**

6. Weights Construction

Sampling Design and Weight Construction for the International Tobacco Control (ITC) Mauritius Survey

C. Boudreau[1,2] and M.E. Thompson[1,2]

Updated: Feb. 10, 2012 (Waves 1–3)

This technical report details the sampling design and weight construction for waves 1–3 of the International Tobacco Control (ITC) Mauritius Survey. The ITC Mauritius Survey is a prospective longitudinal survey of a national representative random sample of approximately 600 adult smokers and 200 adult non-smokers.

This technical report is organized as follows: Section 1 describes the sampling design of the ITC Mauritius Survey, and section 2 details the construction of the sampling weights for wave 1 (section 2.2), wave 2 (section 2.3) and wave 3 (section 2.4).

1 Sampling design

The ITC Mauritius Survey is a prospective longitudinal study, and its sampling design was chosen to yield representative random samples of adult smokers and non-smokers residing in that country. Respondents were first interviewed in Apr.–May 2009 (wave 1), and followed-up in Aug.–Oct. 2010 (wave 2) and in Jun.–Jul. 2011 (wave 3). Those lost to follow-up at either waves 2 or 3 were replenished by new randomly selected respondents. All interviews where face-to-face.

To qualify for the study, respondents must be 18 years of age or older. Those that had smoked more than 100 cigarettes in their life and smoked at least once in the 30 days prior to recruitment were considered to be smokers, whereas the others were considered to be non-smokers.

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[2]Data Management Core (DMC) – ITC Project, University of Waterloo.

1.1 Wave 1

The ITC Mauritius Survey follows a stratified multi-stage sampling design. Hence, the population was first stratified into 9 geographic strata corresponding to the 9 districts; see Figure 1. Each district was further subdivided into Enumeration Areas (EAs) or Primary Sampling Units (PSUs), most having around 100–125 households. There is a total of 3600 EAs in Mauritius, and it was decided to sample respondents from 60 of them; with the EAs being allocated to the districts proportionally to their populations. EAs were then randomly selected within districts with probability proportional to size, namely the population size from the 2000 Mauritian Census.

Once selected, the EAs were mapped and the dwelling units listed by field workers. The dwelling units were approached in random order for enumeration and possible recruitment into the survey. Each was to be visited up to 4 times in an attempt to make contact. Where possible, the household enumeration and individual interviews were carried out during the same visit.

Overall, the plan was to select 600 smokers and 200 non-smokers. The prevalence of smoking is thought to be currently about 35% for adult males and less than 3% for adult females. Thus, the proportion of households with smokers was thought to be about 35%. To achieve a sample size of 600 smokers it was necessary to obtain 10 smokers from each EA. There was also a quota for 3 or 4 non-smokers per sampled EA, and this quota was expected to be filled easily. With an expected household cooperation rate of about 75%, it was thought to be necessary to contact 40–50 households to obtain 10 smokers.

A male and a female smoker were sampled from a household where available. If there was more than one eligible male smoker, one was randomly selected using the Next-Birthday method (Binson et al. (2000)). Similarly, if there was more than one eligible female smoker, one was randomly selected using the Next-Birthday method. While the non-smoker quota was opened, a non-smoker was sampled at random from the adult non-smokers in the household. Again, the Next-Birthday method was used if there was more than one eligible respondent.

The ITC Mauritius wave 1 sample consists of 598 adult smokers and of 239 adult non-smokers, for a total of 837 respondents.

1.2 Wave 2

Out of the 837 wave 1 respondents, 555 smokers and 225 non-smokers were successfully recontacted at wave 2; yielding a retention rate of 93.2% (92.8% for smokers and 94.1% for non-smokers). To compensate for the attrition, 60 new respondents (46 smokers and 14 non-smokers) were randomly sampled and interviewed at wave 2, yielding a total of

Figure 1: Strata/districts of the ITC Mauritius Survey.

840 respondents (601 smokers and 239 non-smokers) interviewed at wave 2 (see Figures 2 and 3).

This sample of 60 respondents is referred to as the wave 2 replenishment sample or cohort #2. As with other ITC surveys, replenishment for wave 2 of the ITC Mauritius Survey was carried out using the same sampling design and interview protocol as in wave 1 (see section 1.1).

1.3 Wave 3

Out of the 840 wave 2 respondents, 578 smokers and 229 non-smokers were successfully recontacted at wave 3; yielding a retention rate of 96.1% (96.2% for smokers and 95.8% for non-smokers). To compensate for the attrition, 33 new respondents (24 smokers and 9 non-smokers) were randomly sampled and interviewed at wave 3, yielding a total of 840 respondents (602 smokers and 238 non-smokers) interviewed at wave 3 (see Figures 2 and 3).

This sample of 33 respondents is referred to as the wave 3 replenishment sample or cohort #3. As with other ITC surveys, replenishment for wave 3 of the ITC Mauritius Survey was carried out using the same sampling design and interview protocol as in wave 1 (see section 1.1).

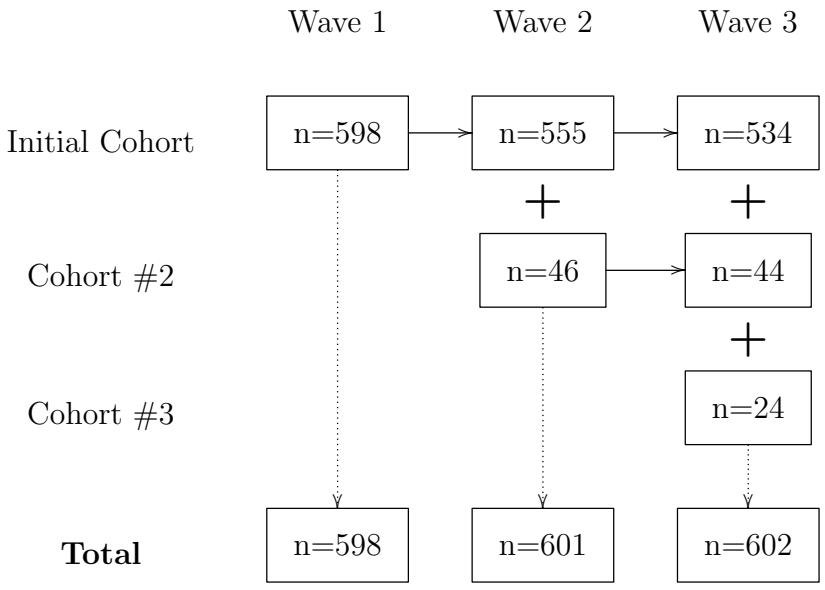

Figure 2: Attrition and replenishment of the smoker sample.

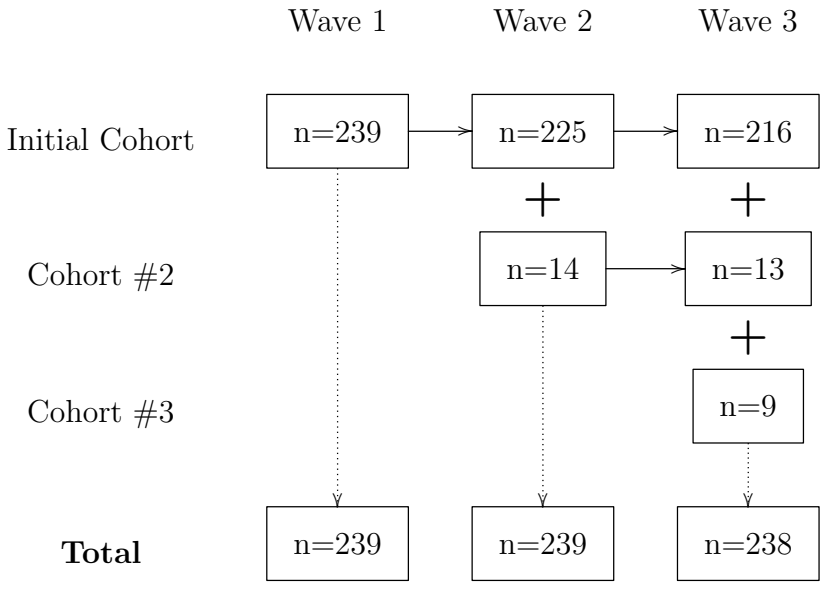

Figure 3: Attrition and replenishment of the non-smoker sample.

2 Weight construction

2.1 General comments about weight construction

As with most survey weights, the ITC Mauritius weights are constructed to correct and adjust for sample misrepresentation caused by unequal sampling probabilities, frame error (i.e., under-coverage and multiplicity), and non-response as well as improving precision of estimates through the use of auxiliary information (e.g., smoking prevalences). We briefly describe these key concepts of weight construction in this section, but refer the reader to Levy & Lemeshow (2008), chapter 16, for more detailed information.

At their base, sampling weights are defined as the inverse of selection probabilities, and thus adjust for sample misrepresentation caused by unequal sampling probabilities. For example, a smoker residing alone has a probability of selection twice that of a smoker residing with another smoker.

Great efforts are made to create a complete/perfect sampling frame (i.e., a frame that would include all members of the target population, without duplicate and without any erroneous inclusions[1]). However, this is rarely achieved and, consequently, some members of the target population are not part of the sampling frame (i.e., have a 0 probability of being selected). This is referred to as frame under-coverage, and can result in non-coverage bias. To reduce non-coverage bias in the ITC Mauritius Survey, post-stratification adjustments were performed on the sampling weights to ensure that, for each sex/age group, the totals of the sampling weights equal known benchmarks; see step 3 in section 2.2.2 for smokers and step 4 in section 2.2.3 for non-smokers. Note that these benchmark figures are also referred to as calibration or target figures, and thus the post-stratification adjustment is also referred to as weight calibration.

If non-respondents behave differently than respondents, inference based solely on the sample of respondents will be biased unless adjustments are made. The greater the expected proportion of non-response, the greater this bias is likely to be. In the ITC Mauritius Survey, the post-stratification adjustments described in the above paragraph also adjust for non-coverage bias. It should be noted that if data are missing completely at random (MCAR, see Little & Rubin (2002)) within each sex/age group, then non-response bias will be completely eliminated. Realistically, non-response bias is greatly reduced, but not eliminated in the ITC Mauritius Survey.

It is well known, from survey sampling theory, that in the vast majority of cases, the ratio estimator has much greater precision than the commonly used Horvitz-Thompson estimator. Heuristically, this is due to the fact that the ratio estimator utilizes auxiliary

[1] Erroneous inclusions refers to units that are not part of the target population, but included in the sampling frame.

(i.e., additional) information in addition to the sampling weights, whereas the Horvitz-Thompson estimator does not. As mentioned above, smoking prevalence figures were used to calibrate the ITC Mauritius sampling weights in order to reduce biases from frame errors and non-response. A consequence of using this auxiliary information in weight computation is that the precision of most estimates is increased. Our calibrating procedure yields the so-called ratio weights, which enable all estimators to inherit the increased precision of the ratio estimator.

All weights for wave 1 of the ITC Mauritius Survey were computed using the statistical software SAS (http://www.sas.com), whereas R (http://www.r-project.org) was used at waves 2 and 3.

2.2 Wave 1 weights

Four sets of weights were computed at wave 1:

1- Computation of the **enumeration household weights (EHWT)** is described in section 2.2.1.

2- Computation of the **interviewed household weights (IHWT)** is described in section 2.2.1.

3- Computation of the **cross-sectional wave 1 weights for smokers** for the 598 smokers who completed the wave 1 survey is described in section 2.2.2.

4- Computation of the **cross-sectional wave 1 weights for non-smokers** for the 239 non-smokers who completed the wave 1 survey is described in section 2.2.3.

2.2.1 Household weights

Computation of the sampling weights for the 1794 households enumerated (i.e., contacted and listed) at wave 1 proceeded as follows:

Step 1: Each enumerated household was first assigned an Enumeration Area (EA) level weight $w_j^{(1)}$. This weight can be viewed as the inverse of the probability of selection of the j^{th} household given that its EA was sampled at stage 1. Formally,

$$w_j^{(1)} = \frac{N_{k(j)}}{n_{k(j)}} ,$$

where j stands for the j^{th} household, $k(j)$ denotes the EA to which household j belongs, $N_{k(j)}$ is the total number of households in that EA, and $n_{k(j)}$ is the number of enumerated households in that same EA. Note that 60 EAs were sampled at stage 1 (see section 1.1), and that the N_k's for those EAs were obtained from the 2000 Mauritian Census.

Step 2: The $w_j^{(1)}$ weights were then multiplied by a factor to obtain the $w_j^{(2)}$ weights. This factor corresponds to the inverse probability of selection of the k^{th} EA. These $w_j^{(2)}$ weights are generally referred to as the **enumeration household weights (EHWT)**, and are formally given by

$$w_j^{(2)} = w_j^{(1)} \times \frac{P_{h(k)}}{m_{h(k)}\, Q_{k(j)}} \,,$$

where k stands for the k^{th} EA, $h(k)$ denotes the district/stratum ($h = 1, \ldots, 9$) to which EA k belongs, $m_{h(k)}$ is the number of EAs sampled in district h, $P_{h(k)}$ is the estimated population of district h, and $Q_{k(j)}$ is the estimated population of k^{th} EA. As with the N_k's in step 1, the P_h's and Q_k's are population estimates based on the 2000 Mauritian Census. The P_h's used in the computation of the $w_j^{(2)}$ weights are given in column 2 of Table A.1.

Note: prevalence estimates of smoking computed in appendix, and used for weight calibration in sections 2.2.2 and 2.2.3, are based on the EHWT weights.

Step 3: **Interviewed household weights (IHWT)** were computed for the 785 households (i.e., 43.8% of the households enumerated at wave 1) where one or more (i.e., up to 3) respondents completed either the smoker or the non-smoker survey. Computation of the IHWT weights proceeded as follows,

$$w_j^{(3)} = \begin{cases} w_j^{(2)} \times \dfrac{SH^*_{k(j)}}{SH_{k(j)}} & \text{if household } j \text{ is a smoking household} \\ w_j^{(2)} \times \dfrac{NH^*_{h(j)}}{NH_{h(j)}} & \text{if household } j \text{ is a non-smoking household} \end{cases}$$

where $w_j^{(2)}$ is the EHWT weight of household j computed above, $SH_{k(j)}$ is the number of households interviewed in the EA of household j, and $SH^*_{k(j)}$ is the number of households enumerated in that same EA. Similarly, for non-smoking households, $NH_{h(j)}$ is the number of households interviewed in the district/stratum of household j, and $NH^*_{h(j)}$ is the number of households enumerated in that same district.

Note: the ratio NH_h/NH^*_h is an estimate of the probability that the non-smoker quota was opened when interviewing a random household in stratum h ($h = 1, \ldots, 9$). The inverses of these 9 ratios (i.e., NH^*_h/NH_h) ranged from 4.30 for the Black River district to 9.75 for the Pamplemousses district; whereas, the values of SH^*_k/SH_k ranged from 1.00 to 1.56.

2.2.2 Smoker weights

Computation of sampling weights for the 598 smokers who completed the wave 1 survey proceeded as follows:

Step 1: Each respondent was first assigned a **within-household weight** $w_i^{(1)}$, which can be viewed as the inverse of the probability of selection of an adult (i.e., 18 years of age and older) smoker of the same sex as the i^{th} respondent in his/her household. Formally, the $w_i^{(1)}$ weights are given by

$$w_i^{(1)} = \begin{cases} \#\text{male smokers}_{j(i)} & \text{if } i^{\text{th}} \text{ respondent is a male} \\ \#\text{female smokers}_{j(i)} & \text{if } i^{\text{th}} \text{ respondent is a female} \end{cases}$$

where $j(i)$ denotes the household in which respondent i lives, $\#\text{male smokers}_{j(i)}$ is the number of adult male smokers in that same household, and $\#\text{female smokers}_{j(i)}$ is the number of adult female smokers in that same household.

Step 2: Each $w_i^{(1)}$ weight was then multiplied by the corresponding IHWT weight. The resulting weights are labelled $w_i^{(2)}$, and are formally defined as

$$w_i^{(2)} = w_i^{(1)} \times w_{j(i)}^{(3)} \ ,$$

where $w_{j(i)}^{(3)}$ is the IHWT weight of the j^{th} household (computed in section 2.2.1).

Step 3: A post-stratification adjustment was then performed to calibrate the $w_i^{(2)}$ weights to smoking prevalence by sex/age groups. To this end, age was first divided into 5 intervals (i.e., [18, 30), [30, 40), [40, 50), [50, 60) and [60, 100)); thus yielding the 10 sex/age cells of Table A.2. For respondents in cell C_k, this post-stratification adjustment consisted in multiplying their $w_i^{(2)}$ weights by a factor c_k/t_k to produce calibrated $w_i^{(3)}$ weights. These $w_i^{(3)}$ weights are such that their sum over all respondents in cell C_k is equal to the estimated number of adult smokers in that cell. Formally,

$$w_i^{(3)} = w_i^{(2)} \times \frac{c_k}{t_k} = w_i^{(2)} \times \frac{c_k}{\sum\limits_{i \in C_k} w_i^{(2)}} \ ,$$

where $c_1, \ldots, c_{10}$ are given in column 3 of Table A.2, and C_k is the set of all respondents in cell k ($k = 1, \ldots, 10$).

Step 4: To facilitate comparisons with other ITC countries, the $w_i^{(3)}$ weights were rescaled to have a mean equal to 1 or, equivalently, sum to $n_s = 598$ (the number of smokers who completed the wave 1 survey). This yielded the $w_i^{(4)}$ weights, which are formally defined as

$$w_i^{(4)} = w_i^{(3)} \times \frac{n_s}{\sum\limits_{i \in S_{\text{smk}}} w_i^{(3)}} \ ,$$

where S_{smk} is the set of all smokers who completed the wave 1 survey.

The $w_i^{(3)}$ weights are labelled as variable `aDE73915v` in the ITC Mauritius dataset, and the $w_i^{(4)}$ weights are labelled as variable `aDE73919v`.

2.2.3 Non-smoker weights

Computation of sampling weights for the 239 non-smokers who completed the wave 1 survey proceeded alike that for the smoker's weights; i.e.,

Step 1: Each respondent was first assigned a **within-household weight** $w_i^{(1)}$, which can be viewed as the inverse of the probability of selection of an adult (i.e., 18 years and older) non-smoker of the same sex as the i^{th} respondent in his/her household. Formally, the $w_i^{(1)}$ weights are given by

$$w_i^{(1)} = \begin{cases} \#\text{male non-smokers}_{j(i)} & \text{if } i^{\text{th}} \text{ respondent is a male} \\ \#\text{female non-smokers}_{j(i)} & \text{if } i^{\text{th}} \text{ respondent is a female} \end{cases}$$

where $j(i)$ denotes the household in which respondent i lives, $\#\text{male non-smokers}_{j(i)}$ is the number of adult male non-smokers in that same household, and $\#\text{female non-smokers}_{j(i)}$ is the number of adult female non-smokers in that same household.

Step 2: Each $w_i^{(1)}$ weight was then multiplied by the corresponding IHWT weight. The resulting weights are labelled $w_i^{(2)}$, and are formally defined as

$$w_i^{(2)} = w_i^{(1)} \times w_{j(i)}^{(3)} \ ,$$

where $w_{j(i)}^{(3)}$ is the IHWT weight of the j^{th} household (computed in section 2.2.1).

Step 3: Since a non-smoker residing with one or more smokers could only be selected while the non-smoker quota was opened, the $w_i^{(2)}$ weights of such non-smokers were multiplied by the estimated probability that the non-smoker quota was opened when interviewing a random household in stratum h. This yielded the $w_i^{(3)}$ weights, which are formally defined as

$$w_i^{(3)} = \begin{cases} w_i^{(2)} & \text{if } i^{\text{th}} \text{ respondent lives in a non-smoking household} \\ w_i^{(2)} \times \dfrac{NH^*_{h(j)}}{NH_{h(j)}} & \text{if } i^{\text{th}} \text{ respondent lives in a smoking household} \end{cases}$$

where $NH_{h(j)}$ and $NH^*_{h(j)}$ were defined in the computation of the IHWT weights in section 2.2.1.

Step 4: The weights were then calibrated to non-smoking prevalence by sex/age groups. This was done the same way as step 3 of section 2.2.2 with the exception that the calibration figures for non-smokers (i.e., column 4 of Table A.2) were used instead of those for smokers. Formally,

$$w_i^{(4)} = w_i^{(3)} \times \frac{c_k}{\sum_{i \in C_k} w_i^{(3)}} \ ,$$

where $c_1, \ldots, c_{10}$ are given in column 4 of Table A.2, and C_k is the set of all respondents in cell k ($k = 1, \ldots, 10$).

Step 5: As in step 4 of section 2.2.2, the $w_i^{(4)}$ weights were rescaled to facilitate comparisons with other ITC countries. However, this was done slightly differently than with the smoker weights. The non-smokers were first divided into two groups: adult non-smokers in non-smoking households ($g = 1$), and adult non-smokers in smoking households ($g = 2$). The weights were then rescaled to have mean equal to 1 in each of the two groups. This yielded the $w_i^{(5)}$ weights, which are formally defined as

$$w_i^{(5)} = w_i^{(3)} \times \frac{n_g}{\sum_{i \in S_g} w_i^{(4)}} ,$$

where S_g is the set of all sampled non-smokers in group g, and n_g is the size of that sample.

The $w_i^{(4)}$ weights are labelled as variable `aDE73915v` in the ITC Mauritius dataset, and the $w_i^{(5)}$ weights are labelled as variable `aDE73919v`. These are the same variable names as the smoker weights, but non-smokers are in separate datasets. Moreover, no respondent can have both a smoker and a non-smoker weight.

2.3 Wave 2 weights

The various weights computed at wave 2 can be divided into 3 categories:

1- Computation of the **waves 1–2 longitudinal weights** is described in section 2.3.1.

2- Computation of the **wave 2 recontact cross-sectional weights** is described in section 2.3.2.

3- Computation of the **wave 2 replenishment cross-sectional weights** is described in section 2.3.3.

2.3.1 Waves 1–2 longitudinal weights

This sub-section can be further divided into three parts: a) longitudinal household weights, b) longitudinal smoker weights, and c) longitudinal non-smoker weights.

a) Starting with $w_j^{(0)}$, the wave 1 IHWT weight for the j^{th} household (i.e., weight $w_j^{(3)}$ computed in section 2.2.1), computation of the **waves 1–2 longitudinal household weights** proceeded as follows:

Step 1: The $w_j^{(0)}$ weights were adjusted for attrition between waves 1 and 2, yielding the $w_j^{(1)}$ weights. For smoking households, the $w_j^{(1)}$ weights are given by

$$w_j^{(1)} = w_j^{(0)} \times \sum_{j \in SH^1_{k(j)}} w_j^{(0)} \Big/ \sum_{j \in SH^2_{k(j)}} w_j^{(0)} \ ,$$

where $k(j)$ denotes the EA to which household j belongs, $SH^1_{k(j)}$ is the set of smoking households in the k^{th} EA for whom one or more household members were interviewed at wave 1, and $SH^2_{k(j)}$ is the subset of those smoking households for whom one or more household members were interviewed at both waves.

Similarly, for non-smoking households, the $w_j^{(1)}$ weights are given by

$$w_j^{(1)} = w_j^{(0)} \times \sum_{j \in NH^1_{h(j)}} w_j^{(0)} \Big/ \sum_{j \in NH^2_{h(j)}} w_j^{(0)} \ ,$$

where $h(j)$ denotes the district/stratum to which household j belongs, $NH^1_{h(j)}$ is the set of non-smoking households in the j^{th} district/stratum for whom one or more household members were interviewed at wave 1, and $NH^2_{h(j)}$ is the subset of those non-smoking households for whom one or more household members were interviewed at both waves.

b) The **waves 1–2 longitudinal smoker weights** are the wave 1 weights adjusted for attrition and re-calibrated to the wave 1 smoking prevalence figures. Their computation proceeded as follows:

Starting with $w_i^{(0)}$, the within-household weight for the i^{th} respondent (i.e., weight $w_i^{(1)}$ computed in step 1 of section 2.2.2), computation of the 555 waves 1–2 longitudinal weights for smokers proceeded as follows:

Step 1: The $w_i^{(0)}$ weights were first multiplied by the updated household weights computed above; i.e.,

$$w_i^{(1)} = w_i^{(0)} \times w_{j(i)}^{(1)} \ ,$$

where (as before) $j(i)$ denotes the household in which respondent i lives, and $w_{j(i)}^{(1)}$ is the corresponding waves 1–2 longitudinal household weights computed above.

Step 2: The $w_i^{(1)}$ weights were then re-calibrated to smoking prevalence estimates by sex/age groups. This was done the same way as in step 3 of section 2.2.2, and used the same data of Table A.2 with the exception that prevalence figures for females were collapsed into a single group. Hence,

$$w_i^{(2)} = w_i^{(1)} \times \frac{c_k}{\sum_{i \in C_k} w_i^{(1)}} \ ,$$

where $c_1, \ldots, c_6$ are given in column 3 of Table A.2, and C_k is the set of all respondents in cell k ($k = 1, \ldots, 6$).

Step 3: Lastly, in the same way as step 4 of section 2.2.2, the $w_i^{(2)}$ weights were rescaled to have a mean equal to 1 or, equivalently, sum to $n_s = 555$ (the number of smokers who completed both the waves 1 and 2 surveys).

c) As with the above smoker weights, the **waves 1–2 longitudinal non-smoker weights** are the wave 1 weights adjusted for attrition and re-calibrated to the wave 1 non-smoking prevalence figures. Their computation proceeded as follows:

Starting with $w_i^{(0)}$, the within-household weight for the i^{th} respondent (i.e., weight $w_i^{(1)}$ computed in step 1 of section 2.2.3), computation of the 225 waves 1–2 longitudinal weights for non-smokers proceeded as follows:

Step 1: The $w_i^{(0)}$ weights were first multiplied by the updated household weights computed above; i.e.,

$$w_i^{(1)} = w_i^{(0)} \times w_{j(i)}^{(1)} \ ,$$

where (as before) $j(i)$ denotes the household in which respondent i lives, and $w_{j(i)}^{(1)}$ is the corresponding waves 1–2 longitudinal household weights computed above.

Step 2: As in step 3 of section 2.2.3, the $w_i^{(1)}$ weights of non-smokers residing with one or more smokers were multiplied by the estimated probability that the non-smoker quota was opened when interviewing a random household in the stratum of the i^{th} non-smoker. This yielded the $w_i^{(2)}$ weights, which are formally defined as

$$w_i^{(2)} = \begin{cases} w_i^{(1)} & \text{if } i^{\text{th}} \text{ respondent lives in a non-smoking household} \\ w_i^{(1)} \times \dfrac{NH^*_{h(j)}}{NH_{h(j)}} & \text{if } i^{\text{th}} \text{ respondent lives in a smoking household} \end{cases}$$

where $NH_{h(j)}$ and $NH^*_{h(j)}$ were defined in the computation of the IHWT weights in section 2.2.1.

Step 3: The $w_i^{(2)}$ weights were then re-calibrated to non-smoking prevalence estimates by sex/age groups. This was done the same way as in step 4 of section 2.2.3, and used the same data of Table A.2. Hence,

$$w_i^{(3)} = w_i^{(2)} \times \frac{c_k}{\sum_{i \in C_k} w_i^{(2)}} \ ,$$

where $c_1, \ldots, c_{10}$ are given in column 4 of Table A.2, and C_k is the set of all respondents in cell k ($k = 1, \ldots, 10$).

Step 4: Lastly, in the same way as step 5 of section 2.2.3, the $w_i^{(3)}$ weights were rescaled to have a mean equal to 1 in each of the following two groups: adult non-smokers in non-smoking households ($g = 1$), and adult non-smokers in smoking households ($g = 2$).

The rescaled smoker and non-smoker waves 1–2 longitudinal weights are labelled as variable `bDE73921v` in the ITC Mauritius datasets.

2.3.2 Wave 2 recontact cross-sectional weights

As with section 2.3.1, this sub-section can be further divided into three parts: a) recontact cross-sectional household weights, b) recontact cross-sectional smoker weights, and c) recontact cross-sectional non-smoker weights.

a) Starting with $w_j^{(0)}$, the $w_j^{(1)}$ wave 1 weight for the j^{th} household computed in step 1 of section 2.2.1, computation of the **wave 2 recontact cross-sectional household weights** proceeded as follows:

Step 1: As in step 2 of section 2.2.1, the $w_j^{(0)}$ weights were then multiplied by a factor corresponding to the inverse probability of selection of the k^{th} EA. This yielded the wave 2 enumeration household weights (EHWT), which are formally given by

$$w_j^{(1)} = w_j^{(0)} \times \frac{P_{h(k)}}{m_{h(k)}\, Q_{k(j)}} \,,$$

where $k(j)$ denotes the EA to which household j belongs, $h(k)$ denotes the district/stratum ($h = 1, \ldots, 9$) to which EA k belongs, $m_{h(k)}$ is the number of EAs sampled in district h, $P_{h(k)}$ is the estimated population of district h, and $Q_{k(j)}$ is the estimated population of k^{th} EA. As in wave 1, the Q_k's are population estimates based on the 2000 Mauritian Census, whereas the P_h's are based on the 2009 figures from the Mauritian Central Statistics Office; see column 3 of Table A.1.

Step 2: Interviewed household weights (IHWT) were computed for the 694 households where one or more (i.e., up to 3) respondents completed either the wave 2 smoker survey or the wave 2 non-smoker survey. Computation of the IHWT weights proceeded as in step 3 of section 2.2.1, with the exception that $SH_{k(j)}$ is the number of households interviewed at wave 2 in the EA of household j and that $NH_{h(j)}$ is the number of households interviewed at wave 2 in the district/stratum of household j.

b) Computation of the **wave 2 recontact cross-sectional smoker weights** proceeded the same way as for the waves 1–2 longitudinal smoker weights, with the exception that wave 2 recontact cross-sectional household weights (computed above) were used instead of the waves 1–2 longitudinal household weights of section 2.3.1.

c) Computation of the **wave 2 recontact cross-sectional non-smoker weights** proceeded the same way as for the waves 1–2 longitudinal non-smoker weights, with the exception that wave 2 recontact cross-sectional household weights (computed above) were used instead of the waves 1–2 longitudinal household weights of section 2.3.1.

The calibrated (but un-rescaled) smoker and non-smoker wave 2 cross-sectional weights are labelled as variable `bDE73917v` in the ITC Mauritius datasets. The corresponding rescaled weights are labelled as variable `bDE73919v`.

2.3.3 Wave 2 replenishment cross-sectional weights

As with sections 2.3.1 and 2.3.2, this sub-section can be further divided into three parts: a) replenishment cross-sectional household weights, b) replenishment cross-sectional smoker weights, and c) replenishment cross-sectional non-smoker weights.

a) Computation of the **wave 2 replenishment cross-sectional household weights** followed the same steps as detailed in section 2.2.1, with the exception that the updated figures in column 3 of Table A.1 were used instead of those in column 2. In particular, computation of wave 2 replenishment EHWT for the 127 households enumerated at wave 2 followed steps 1–2 of section 2.2.1, whereas computation of wave 2 replenishment IHWT for the subset of 56 households, where one or more respondents completed either the smoker or non-smoker interview at wave 2, followed step 3 of section 2.2.1.

b) Computation of the **wave 2 replenishment cross-sectional smoker weights** for the 46 smokers recruited at wave 2 proceeded alike that of the wave 1 smoker weights described in section 2.2.2. The only two differences being that: i) the wave 2 replenishment cross-sectional household weights (computed above) were used instead of household weights computed in section 2.2.1, and ii) the 10 sex/age groups of Table A.2 used for calibration were collapsed into a single group because the sample consisted of only 46 respondents.

c) Computation of the **wave 2 replenishment cross-sectional non-smoker weights** for the 14 non-smokers recruited at wave 2 proceeded alike that of the wave 1 non-smoker weights described in section 2.2.3. The only two differences being that: i) the wave 2 replenishment cross-sectional household weights (computed above) were

used instead of household weights computed in section 2.2.1, and ii) the 10 sex/age groups of Table A.2 used for calibration were collapsed into a single group because the sample consisted of only 14 respondents.

The calibrated (but un-rescaled) smoker and non-smoker wave 2 cross-sectional weights are labelled as variable `bDE73915v` in the ITC Mauritius datasets. The corresponding rescaled weights are labelled as variable `bDE73919v`.

Important remarks:

- The 555 rescaled wave 2 recontact cross-sectional smoker weights and the 46 rescaled wave 2 replenishment cross-sectional smoker weights can be combined together to perform analyses on all 601 smokers who completed the wave 2 survey. This is why both set of weights have the same variable name (i.e., `bDE73919v`). Combining the corresponding un-rescaled weights should not be done. This is why different variable names were used (i.e., `bDE73917v` and `bDE73915v`).
- The same also applies to the wave 2 recontact cross-sectional non-smoker weights and the wave 2 replenishment cross-sectional non-smoker weights.
- The wave 2 cross-sectional smoker and non-smoker weights should not be combined to perform analyses using all 840 respondents (601 smokers and 239 non-smokers) who completed the wave 2 survey. Doing so would imply that the proportion of smokers in the Mauritius population is the same as the proportion of smokers in the sample (i.e., 601/840 = 71.5%). To do this kind of analyses, the wave 2 cross-sectional smoker and non-smoker weights must first be modified to adjust for this difference in the proportions of smokers. Such adjusted overall cross-sectional weights are not part of the ITC Mauritius datasets, but are available by contacting the lead author.

2.4 Wave 3 weights

The various weights computed at wave 3 can be divided into 3 categories:

1- Computation of the **waves 1–3 longitudinal weights** is described in section 2.4.1.

2- Computation of the **waves 2–3 longitudinal weights** and of the **wave 3 recontact cross-sectional weights** is described in section 2.4.2.

3- Computation of the **wave 3 replenishment cross-sectional weights** is described in section 2.4.3.

The waves 2–3 longitudinal weights and the wave 3 recontact cross-sectional weights are computed for the 807 respondents (578 smokers and 229 non-smokers) who completed both the waves 2 and 3 surveys; see Figures 2 and 3. The only differences between the two weights are that: i) the waves 2–3 longitudinal household weights are based on population estimates around the time of wave 2 data collection, whereas the wave 3 cross-sectional household weights are based on population estimates around the time of wave 3 data collection, and ii) waves 2–3 longitudinal respondent weights are calibrated to wave 2 prevalence figures, whereas the wave 3 cross-sectional respondent weights are calibrated to wave 3 prevalence figures. In the present case, the same populations estimates were used at waves 2 and 3 (see column 3 of Table A.1); hence, both households weights are exactly the same. Similarly, the same prevalence figures were used at all three waves (see Table A.2); hence, both smokers weights are the same, and so are both non-smoker weights. In summary, the waves 2–3 longitudinal weights and the wave 3 recontact cross-sectional weights are identical, and thus no additional calculations are required.

2.4.1 Waves 1–3 longitudinal weights

This sub-section can be further divided into three parts: a) longitudinal household weights, b) longitudinal smoker weights, and c) longitudinal non-smoker weights.

a) Let $w_j^{(0)}$ be the waves 1–2 longitudinal household weight for the j^{th} household computed in section 2.3.1. Starting with the $w_j^{(0)}$'s, computation of the **waves 1–3 longitudinal household weights** proceeded as follows:

Step 1: The $w_j^{(0)}$ weights were adjusted for attrition between waves 2 and 3, yielding the $w_j^{(1)}$ weights. For smoking households, the $w_j^{(1)}$ weights are given by

$$w_j^{(1)} = w_j^{(0)} \times \sum_{j \in SH^1_{k(j)}} w_j^{(0)} \Big/ \sum_{j \in SH^3_{k(j)}} w_j^{(0)} \ ,$$

where $k(j)$ denotes the EA to which household j belongs, $SH^1_{k(j)}$ is the set of smoking households in the k^{th} EA which completed the wave 1 household interview, and $SH^3_{k(j)}$ is the subset of those smoking households for whom one or more household members were interviewed at all three waves.
Similarly, for non-smoking households, the $w_j^{(1)}$ weights are given by

$$w_j^{(1)} = w_j^{(0)} \times \sum_{j \in NH^1_{h(j)}} w_j^{(0)} \Big/ \sum_{j \in NH^3_{h(j)}} w_j^{(0)} \ ,$$

where $h(j)$ denotes the district/stratum to which household j belongs, $NH^1_{h(j)}$ is the set of non-smoking households in the j^{th} district/stratum which completed the wave 1 household interview, and $NH^3_{h(j)}$ is the subset of those non-smoking households for whom one or more household members were interviewed at all three waves.

b) The **waves 1–3 longitudinal smoker weights** are the waves 1–2 longitudinal smoker weights adjusted for attrition between waves 2 and 3, and re-calibrated to the wave 1 smoking prevalence figures. Their computation proceeded as follows:

Starting with $w_i^{(0)}$, the within-household weight for the i^{th} respondent (i.e., weight $w_i^{(1)}$ computed in step 1 of section 2.2.2), computation of the 534 waves 1–3 longitudinal weights for smokers proceeded as follows:

Step 1: The $w_i^{(0)}$ weights were first multiplied by the updated household weights computed above; i.e.,

$$w_i^{(1)} = w_i^{(0)} \times w_{j(i)}^{(1)} \ ,$$

where (as before) $j(i)$ denotes the household in which respondent i lives, and $w_{j(i)}^{(1)}$ is the corresponding waves 1–3 longitudinal household weights computed above.

Step 2: The $w_i^{(1)}$ weights were then re-calibrated to smoking prevalence estimates by sex/age groups. This was done the same way as in step 3 of section 2.2.2, and used the same data of Table A.2, with the exception that prevalence figures for females were collapsed into a single group. Hence,

$$w_i^{(2)} = w_i^{(1)} \times \frac{c_k}{\sum_{i \in C_k} w_i^{(1)}} \ ,$$

where $c_1, \ldots, c_6$ are given in column 3 of Table A.2, and C_k is the set of all respondents in cell k ($k = 1, \ldots, 6$).

Step 3: Lastly, in the same way as step 4 of section 2.2.2, the $w_i^{(2)}$ weights were rescaled to have a mean equal to 1 or, equivalently, sum to $n_s = 534$ (the number of smokers who completed the all three waves).

c) As with the above smoker weights, the **waves 1–3 longitudinal non-smoker weights** are the waves 1–2 longitudinal non-smoker weights adjusted for attrition between waves 2 and 3, and re-calibrated to the wave 1 non-smoking prevalence figures. Hence, their computation proceeded alike that of the waves 1–3 longitudinal smoker weights, with the exception that:

i) Step 3 of section 2.2.3 was added before re-calibrating the weights;

ii) The non-smoking prevalence figures given in column 4 of Table A.2 were used instead of the smoking prevalence figures of column 3;

iii) No sex/age groups were collapsed;

iv) Rescaling proceeded as in step 5 of section 2.2.2.

The rescaled smoker and non-smoker waves 1–3 longitudinal weights are labelled as variable `cDE73921v` in the ITC Mauritius datasets.

2.4.2 Wave 3 recontact cross-sectional weights

As in section 2.4.1, this sub-section can be further divided into three parts: a) recontact cross-sectional household weights, b) recontact cross-sectional smoker weights, and c) recontact cross-sectional non-smoker weights.

a) Let $w_j^{(0)}$ be the wave 2 cross-sectional household weight for the j^{th} household; i.e., the wave 2 recontact cross-sectional household weight (computed in section 2.3.2) if the members of that household were first interviewed at wave 1, and the wave 2 replenishment cross-sectional household weight (computed in section 2.3.3) if the members of that household were first interviewed at wave 2. Starting with the $w_j^{(0)}$'s, computation of the **wave 3 recontact cross-sectional household weights** proceeded as follows:

Step 1: As in step 2 of section 2.2.1, the $w_j^{(0)}$ weights were then multiplied by a factor corresponding to the inverse probability of selection of the k^{th} EA. This yielded the wave 3 enumeration household weights (EHWT), which are formally given by

$$w_j^{(1)} = w_j^{(0)} \times \frac{P_{h(k)}}{m_{h(k)}\, Q_{k(j)}} \,,$$

where $k(j)$ denotes the EA to which household j belongs, $h(k)$ denotes the district/stratum ($h = 1, \ldots, 9$) to which EA k belongs, $m_{h(k)}$ is the number of EAs sampled in district h, $P_{h(k)}$ is the estimated population of district h, and $Q_{k(j)}$ is the estimated population of k^{th} EA. As in wave 1, the Q_k's are population estimates based on the 2000 Mauritian Census, whereas the P_h's are based on the 2009 figures from the Mauritian Central Statistics Office; see column 3 of Table A.1.

Step 2: Interviewed household weights (IHWT) were computed for the 723 households where one or more (i.e., up to 3) respondents completed either the wave 3 smoker survey or the wave 3 non-smoker survey. Computation of the IHWT weights proceeded as in step 3 of section 2.2.1 with the following exceptions:

i) $SH_{k(j)}$ is the number of households interviewed at wave 3 in the EA of household j;
ii) $SH^{*}_{k(j)}$ is the number of households enumerated at either wave 1 or 2 in that same EA;
iii) $NH_{h(j)}$ is the number of households interviewed at wave 3 in the district/stratum of household j;
iv) $NH^{*}_{h(j)}$ is the number of households enumerated at either wave 1 or 2 in that same district/stratum.

b) Computation of the **wave 3 recontact cross-sectional smoker weights** proceeded the same way as for the waves 1–3 longitudinal smoker weights, with the exception that: i) the wave 3 recontact cross-sectional household weights (computed above) were used instead of the waves 1–3 longitudinal household weights of section 2.4.1, and ii) the within-household weights computed in section 2.3.3 were used for respondents recruited at wave 2 (i.e., cohort #2).

c) Computation of the **wave 3 recontact cross-sectional non-smoker weights** proceeded the same way as for the waves 1–3 longitudinal non-smoker weights, with the exception that: i) the wave 3 recontact cross-sectional household weights (computed above) were used instead of the waves 1–3 longitudinal household weights of section 2.4.1, and ii) the within-household weights computed in section 2.3.3 were used for respondents recruited at wave 2 (i.e., cohort #2).

The calibrated (but un-rescaled) smoker and non-smoker wave 3 cross-sectional weights are labelled as variable `cDE73917v` in the ITC Mauritius datasets. The corresponding rescaled weights are labelled as variable `cDE73919v`. For completeness and to ensure homogeneity across datasets from various ITC countries, the rescaled weights were also labelled as variable `cDE73923v`; the later variable name being used to denote the waves 2–3 longitudinal weights, which are the same as the wave 3 recontact cross-sectional weights in the ITC Mauritius Survey.

2.4.3 Wave 3 replenishment cross-sectional weights

As with sections 2.4.1 and 2.4.2, this sub-section can be further divided into three parts: a) replenishment cross-sectional household weights, b) replenishment cross-sectional smoker weights, and c) replenishment cross-sectional non-smoker weights.

a) Computation of the **wave 3 replenishment cross-sectional household weights** followed the same steps as detailed in section 2.2.1, with the exception that the updated figures in column 3 of Table A.1 were used instead of those in column 2. In

particular, computation of wave 3 replenishment EHWT for the 50 households enumerated at wave 3 followed steps 1–2 of section 2.2.1, whereas computation of wave 3 replenishment IHWT for the subset of 29 households where one or more respondents completed either the smoker or non-smoker interview at wave 3 followed step 3 of section 2.2.1.

b) Computation of the **wave 3 replenishment cross-sectional smoker weights** for the 24 smokers recruited at wave 3 proceeded alike that of the wave 1 smoker weights described in section 2.2.2. The only two differences being that: i) the wave 3 replenishment cross-sectional household weights (computed above) were used instead of household weights computed in section 2.2.1, and ii) the 10 sex/age groups of Table A.2 used for calibration were collapsed into a single group because the sample consisted of only 24 respondents.

c) Computation of the **wave 3 replenishment cross-sectional non-smoker weights** for the 9 non-smokers recruited at wave 3 proceeded alike that of the wave 1 non-smoker weights described in section 2.2.3. The only two differences being that: i) the wave 3 replenishment cross-sectional household weights (computed above) were used instead of household weights computed in section 2.2.1, and ii) the 10 sex/age groups of Table A.2 used for calibration were collapsed into a single group because the sample consisted of only 9 respondents.

The calibrated (but un-rescaled) smoker and non-smoker wave 3 cross-sectional weights are labelled as variable `cDE73915v` in the ITC Mauritius datasets. The corresponding rescaled weights are labelled as variable `cDE73919v`.

The important remarks made at the end of section 2.3 also apply to the wave 3 cross-sectional weights.

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Appendix: Benchmark/calibration figures

The estimated number of smokers and non-smokers given in Table A.2 were obtained using the household enumeration data from wave 1 of the ITC Mauritius Survey. The estimated number of smokers for the k^{th} sex/age group combination ($k = 1, \ldots, 10$) of Table A.2 is given by

$$\hat{N}^k_{\text{smk}} = \sum w_j \, S^k_j \ ,$$

where the sum is over all households enumerated at wave 1, S^k_j is the number of adult smokers from the j^{th} household within the sex/age group combination of cell k, and w_j is the EHWT of the j^{th} household computed in step 2 of section 2.2.1. Similarly, the estimated number of non-smokers for the k^{th} sex/age group combination is given by

$$\hat{N}^k_{\text{nsmk}} = \sum w_j \, NS^k_j \ ,$$

where NS^k_j is the number of adult non-smokers from the j^{th} household within the sex/age group combination of cell k.

The smoking prevalence for the k^{th} sex/age group combination is given by

$$\hat{p}^k_{\text{smk}} = \frac{\hat{N}^k_{\text{smk}}}{\sum w_j \, A^k_j} = \frac{\sum w_j \, S^k_j}{\sum w_j \, A^k_j} \ ,$$

where both sums are over all households enumerated at wave 1, and A^k_j is the total number of adults from the j^{th} household within the sex/age group combination of cell k.

	Population estimates	
District	as of Jul. 2000	as of Jul. 2009
Black River	60587	74600
Flacq	126839	139100
Grand Port	106665	114900
Moka	75479	80900
Pamplemousses	122352	136700
Plaines Wilhems	358182	383000
Port Louis	127855	129400
Rivière du Rempart	98854	108400
Savanne	66356	70300

Table A.1: Mauritius population estimates by district.

Sex	**Age**	**#smokers**	**#non-smokers**
male	[18, 30)	24652	78213
male	[30, 40)	25710	39408
male	[40, 50)	31665	55414
male	[50, 60)	26756	46024
male	[60, 100)	17358	43501
female	[18, 30)	3547	90593
female	[30, 40)	2597	77717
female	[40, 50)	2084	82384
female	[50, 60)	1144	75543
female	[60, 100)	1567	77365

Table A.2: Estimated # of smokers and non-smokers, per sex/age groups, used for weight calibration.

Appendix A: Household Enumeration Form

Page 1
Page 2

INTERNATIONAL TOBACCO CONTROL POLICY SURVEY – MAURITIUS (W3)

Form completed: ☐

HOUSEHOLD ENUMERATION FORM

MODULE A

Interviewer ID: ☐ - ☐☐

☐☐ District ☐☐☐☐ EA ☐☐☐ Dwelling

Contact details:

Name of Head of Household: _____

Address: _____

Phone House: ☐☐☐☐☐☐☐ Mobile: ☐☐☐☐☐☐☐

Name of Informant: _____ Email: _____

VISITING RECORD – HOUSEHOLD LEVEL *(FILL IN AFTER END OF EACH VISIT)*

No. of visit	Date (dd/mm/yyyy)	Time	Notes	Next Appointment	
				Date	Time
1					
2					
3					
4					

Final Household Outcome Code (circle one below):

1. Could not find
2. Vacant Dwelling / Lot
3. Not a Household (e.g. Business)
4. Threat to safety
5. No Contact-Weather Condition
6. No Answer- 4 attempts
7. No Answer –Survey Period Ends
8. Household Refusal
9. Language Barrier
10. No one capable of answering
11. Enumeration prevented for other reasons
    Specify:
12. Enumerated

IF HOUSEHOLD REFUSAL:

i) How many people aged 18 years and above live in this household?	
ii) How many of them smoke regularly?	
iii) Reason for refusal:	

1

MODULE B

HOUSEHOLD ENUMERATION FORM – W3

Columns A, B and C: Determining Eligibility and Smoker / Non-smoker Status:

Please ask each adult the following 3 questions and record the response in the appropriate column below.

A. Do you [*Does <name>*] currently smoke cigarettes? Yes or No → (Record Y or N in A Column)

B. Have you [*Has <name>*] smoked 100 or more cigarettes in your [*his/her*] lifetime? Yes or No → (Record Y or N in B Column)

C. Do you [*Does <name>*] smoke at least once a month? Yes or No → (Record Y or N in C Column)

To Calculate Status (for Status Column):

Status ⇒ Smoker (**S**) = Respondent *must* answer 'Yes' to each of A, B and C. → (Record **S** in Status Column)

⇒ Non-smoker (N) = Respondent *must* answer 'No' to each of A and C (can answer *either* 'Yes' or 'No' to B). → (Record N in Status Column)

⇒ Not Eligible (**NE**) = Respondent answers any other combination to A, B and C. → (Record **NE** in Status Column)

No.	ADULT NAME	Sex (M/F)	Date of Birth* (dd/mm/yyyy)	Age*	Age Level*	A (Y/N)	B (Y/N)	C (Y/N)	Status (S/N/NE)	Selected (Y/N)
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										

Selection Criteria for Survey Participant(s)

A *maximum of 3 persons from each household* can be interviewed:

1) **Male Smoker** with next birthday

2) **Female Smoker** with next birthday

3) **ONE (male or female) non-smoker** with next birthday

- In the case of a SUBSTITUTION, ask the eligible person with the *next* birthday.
- If no person meets criteria, or if quota has been filled, then go to next household.

***Date of Birth / Age / Age Level**

One of Date of Birth, Age, or Age Level must be obtained.
If respondent will not provide Date of Birth, then please obtain Age.
If respondent will not provide Age, then please record **Age Level**.

Age Levels

Level **1** = 18 to 24 years → (Record **L1** in Age Level Column)
Level **2** = 25 to 39 years → (Record **L2** in Age Level Column)
Level **3** = 40 to 54 years → (Record **L3** in Age Level Column)
Level **4** = 55 years and older → (Record **L4** in Age Level Column)

Number of Children in HH	
Number of children (≤17 years old) in HH	

Age(s) of Child(ren) in HH
List the age of each child (in years)*: For example, 2 years, 7 years, etc.
_____
*If informant refuses to provide each child's exact age, leave above section blank, but record the number of children within each **Age Category** below.

Number of Children in HH by Age Category (*Complete this section for ALL Households)	
Number of children < 1 year old in HH	
Number of children between 1- 5 years old in HH	
Number of children between 6-12 years old in HH	
Number of youth between 13-17 years old in HH	

Number of Smokers and Non-Smokers by Gender §	
Number of male smokers aged 18+ years in HH	
Number of female smokers aged 18+ years in HH	
Number of male non-smokers aged 18+ years in HH	
Number of female non-smokers aged 18+ years in HH	
Total	

§ Must include the Informant

Number of Total Household Members	
Total number of HH members (adults and children)	

INDIVIDUAL OUTCOMES – Record an Individual Outcome for *all* HH members marked with "Y" in the Selected Column (on previous page).

Respondent ID**	Type	Selected Respondent Name	Outcome Code

Individual Outcome Codes (write in table):

21 Missed (after 4 attempts)
22 Language Barrier
23 Health/Mentally Incapable
24 Proxy Refusal
25 Refusal
26 Incomplete (start, breakoff)
27 Complete
28 Away for the entire survey period

****Copy the household member identification number from the right-hand column ("No." Column) on previous page**

Type definitions: MS – male smoker; FS – female smoker; N – non-smoker (male or female). The additional two rows are for use in the case of substitution. A substitution from the same household is allowed only if a selected respondent has outcome code '22' (language barrier) or '23' (health/mentally incapable), or will be away for the entire survey period '28'. Before reaching the household, put an "X" in the third column for each Type for which the quota is already filled.

CONTACT PERSON (Note: This is important to obtain)

Name (of person who would be able to provide contact information at next survey if respondents move): _____

Address of contact person: _____

_____ Telephone number: _____

Appendix B: Household Recontact Form

Page 1

INTERNATIONAL TOBACCO CONTROL POLICY SURVEY – MAURITIUS (W3) | Form completed: ☐

MODULE A

HOUSEHOLD RECONTACT FORM

Interviewer ID: ☐ - ☐☐

☐☐ District ☐☐☐☐ EA ☐☐☐ Dwelling

Contact details:

Name of Head of Household: _____

Address:

Phone House: ☐☐☐☐☐☐☐ Mobile: ☐☐☐☐☐☐☐

Name of Informant: _____ Email: _____

VISITING RECORD – HOUSEHOLD LEVEL *(FILL IN AFTER END OF EACH VISIT)*

No. of visit	Date (dd/mm/yyyy)	Time	Notes	Next Appointment	
				Date	Time
1					
2					
3					
4					

Final Household Outcome Code (circle one below):

1. Could not find
2. Household moved, could not trace
3. Household moved, out of range
4. Threat to safety
5. No Contact-Weather Condition
6. No Answer-4 attempts
7. No Answer–Survey Period Ends
8. Household Refusal
9. Language Barrier
10. No one capable of answering
11. Recontact prevented for other reasons Specify:
12. Recontacted successfully

1

Page 2

MODULE B **ITC MAURITUS W3 HOUSEHOLD RECONTACT FORM**

Number of Children in HH	
Number of children (≤17 years old) in HH	

Age(s) of Child(ren) in HH

List the age of each child (in years)*: For example, 2 years, 7 years, etc.

_____

_____

*If informant refuses to provide each child's exact age, leave above section blank, but record the number of children within each **Age Category** below.

Number of Smokers and Non-Smokers by Gender §	
Number of male smokers aged 18+ years in HH	
Number of female smokers aged 18+ years in HH	
Number of male non-smokers aged 18+ years in HH	
Number of female non-smokers aged 18+ years in HH	
Total	

§ Must include the Informant

Number of Children in HH by Age Category (*Complete this section for ALL Households)	
Number of children < 1 year old in HH	
Number of children between 1- 5 years old in HH	
Number of children between 6-12 years old in HH	
Number of youth between 13-17 years old in HH	

Number of Total Household Members	
Total number of HH members (adults and children)	

ID (at W2)	RESPONDENT NAME	Wave respondent joined study (i.e., W1, W2)	Gender (M/F)	Age (at W2)	Smoking Status (at W2): S/N/Q	Individual Outcome Code	New Address? Y/N (record in the next page)	Notes

Smoker Status:
S = Smoker
N = Non – smoker
Q = Quitter

Individual Outcome Codes (write in table above):

20 No longer part of household, and out of range or untraceable
21 Missed (after 4 attempts)
22 Language Barrier
23 Health/Mentally Incapable
24 Proxy Refusal
25 Refusal
26 Incomplete (start, break off)
27 Complete
28 Away for the entire survey period
29 Deceased

2

ITC MAURITUS W3 HOUSEHOLD RECONTACT FORM

CONTACT PERSON (Note: This is important to obtain)
Name (of person who would be able to provide contact information at next survey if respondents move): _____
Address of contact person: _____
_____ Telephone number: _____

New Contact details for any respondents who have changed address between Wave 2 and Wave 3:

Name: _____

Address: _____

Phone

House: ☐☐☐☐☐☐☐ Mobile: ☐☐☐☐☐☐☐☐

Name: _____

Address: _____

Phone

House: ☐☐☐☐☐☐☐ Mobile: ☐☐☐☐☐☐☐☐

Name: _____

Address: _____

Phone

House: ☐☐☐☐☐☐☐ Mobile: ☐☐☐☐☐☐☐☐

3

Appendix C: Sample of Consent Form (Smoker)

PARTICIPANT WRITTEN CONSENT FORM (WCF)

Research Project: International Tobacco Control Policy Evaluation Project in Mauritius – Wave 3
(The ITC Mauritius Project – Wave 3)
Mauritius National Ethics Committee, Clearance Date: XXX XX, 2011
Human Research Ethics Committee of the University of Waterloo Clearance Number: ORE 15487

I agree to take part in the above international research project conducted in Mauritius by a research team at the Mauritius Institute of Health in conjunction with the Mauritius Ministry of Health and Quality of Life. I have been given the participant information sheet, which I may keep for my records. I have been informed that:

- This project is being conducted for research purposes.
- I will be given a token of appreciation each time that I participate in the study.
- Participation in the research is voluntary, and that I am free to withdraw from the research at any time or to withdraw any information previously supplied, without penalty or loss of 250 MUR.
- Participation in this research involves completing a face-to-face interview lasting about 30 to 55 minutes today and possibly again on another occasion, in approximately one year from now.
- Only those people involved with this research will have access to any information I supply. After 2 years, researchers interested in tobacco control will have access to the survey data, but this data will not include my name or any other identifying information.
- All the information I provide is treated as strictly confidential.

I, _____ give my consent to take part in this research.
[PARTICPANT NAME – please write clearly]

Signed: ..... ***Date***: ...../...../.....
[PARTICPANT SIGNATURE] (dd) (mm) (yyyy)

Witness Name:.....

Witness Signature:.....

CONFIRMATION OF VERBAL CONSENT FORM (VCF)*

Research Project: International Tobacco Control Policy Evaluation Project in Mauritius – Wave 3
(The ITC Mauritius Project – Wave 3)
Mauritius National Ethics Committee, Clearance Date: XXX XX, 2011
Human Research Ethics Committee of the University of Waterloo Clearance Number: ORE 15487

***NOTE: This form should be completed by the interviewer if the participant agrees to participate in the study, but chooses not to provide written consent.**

I,_____ have provided the study participant with the following
[Interviewer name – please write clearly]
information describing the international research project conducted in Mauritius by a research team at the Mauritius Institute of Health in conjunction with the Mauritius Ministry of Health and Quality of Life:

- This project is being conducted for research purposes.
- Participants will be given a token of appreciation each time that they participate in the study.
- Participation in the research is voluntary. Participants are free to withdraw from the research at any time or to withdraw any information previously supplied, without penalty or loss of 250 MUR.
- Participation in this research involves completing a face-to-face interview lasting about 30 to 55 minutes today and possibly again on another occasion, in approximately one year from now.
- Only those people involved with this research will have access to any information that participants supply. After 2 years, researchers interested in tobacco control will have access to the survey data, but this data will not include participants' names or any other identifying information.
- All the information participants provide is treated as strictly confidential.
- Participants will be given a participant information sheet to keep for their records.

After receiving the above information, _____ has provided verbal
[PARTICPANT NAME – please write clearly]
consent to take part in this research.

Signed: ..... ***Date***: ...../...../.....
[Interviewer signature] (dd) (mm) (yyyy)

Appendix D: Sample of the Wave 3 Adult Smoker Survey for Mauritius (in English and Mauritian Creole)

Interviewer ID: ☐ - ☐☐

Mauritius Institute of Health
in conjunction with
Ministry of Health and Quality of Life

International Tobacco Control Policy Evaluation Survey

Mauritius Wave 3

RECONTACT SMOKER SURVEY

(English and Creole)

ID: ☐☐ ☐☐☐☐ ☐☐☐ ☐☐

District EA Dwelling Individual

Date of Survey: _____(dd)_____(mm)_____(yy)

Start Time:_____am/pm

End Time: _____am/pm

Checked by: _____ (Name of Supervisor)

Date checked:_____

2 June 2011

1

Q#	VarName	MU3-CS				
001	BI73270	**Obtain written or verbal CONSENT and SIGNATURE as per protocol in the training manual before proceeding with the survey.**				
001a	HG73010	**Interview Note: Read out response options for all questions EXCEPT:** **a) Where "DO NOT read out response options" is specified** **b) Yes/No questions** **c) True/False questions**				
		CIGARETTES -- SMOKING HISTORY and FREQUENCY				
[002]		*Interviewer Note: Read each option, and select **ALL** that apply.* Why did you start smoking cigarettes? ***Pou ki raison ou finne commence fumer ?*** 1 Yes 2 No 8 Refused (Don't read) 9 Don't Know (Don't read)				
002a	TC73101	My friends smoked. ***Ou banne camarade fumer***	1	2	8	9
002b	TC73102	Members of my family smoked. ***Membres de ou famille fumer***	1	2	8	9
002c	TC73110	People in the media (public figures/artists/ role models) smoked. ***Dimoune couma banne acteurs, artistes, top models ek dimoune populaires fumer***	1	2	8	9
002d	TC73103	I wanted to lose weight. ***Ou ti envi perdi poids***	1	2	8	9
002e	TC73104	I wanted to reduce my stress. ***Ou ti envi diminuer ou stress/ tracas***	1	2	8	9
002f	TC73105	I was curious about whether I would enjoy smoking. ***Ou ti envie conner si ou pou gagne plaisir fumer***	1	2	8	9
002g	TC73106	Smoking makes me feel sophisticated/ smart. ***Fumer faire ou senti ou élégant/important***	1	2	8	9
002h	TC73108	I needed something to do, to occupy the time. ***Ou ti bizin trouve kitchose pou faire pou passe létemps***	1	2	8	9
002i	TC73119	Other (specify): _____ ***Ene lotte raison***	1	2	8	9
Interviewer Note: If respondent answers 1 (Yes) to any of 002a/TC73101 to 002i/TC73119⇒ Go to 003/FR73211						
002j	TC73109	I didn't have a particular reason. ***Ou péna ene raison particulier***	1	2	8	9
003	FR73211	Do you smoke every day or less than every day? ***Eski ou fumer tous les jours oubien pas tous les jours?*** 1 Every day ***Tous les jours*** 2 Less than every day ***Pas tous les jours⇒ Go to* 005/FR73221** 8 Refused (Don't read) **⇒*Go to* 005/FR73221** 9 Don't Know (Don't read) **⇒*Go to* 005/FR73221**				

Appendix E: Summary of Tobacco Control Policies in Mauritius

Prior to the ITC Mauritius Survey, the most recent prevalence estimates for smoking in Mauritius were 35.9% for men and 5.1% for women, according to the Non-Communicable Diseases Survey conducted in Mauritius in 2004[3]. The ITC Mauritius Survey Wave 1 found 32.4% of adult men (18 years and older) in Mauritius smoke, and 2.6% of adult women smoke. These smoking prevalence estimates are comparable with those from the 2004 Mauritius Non-Communicable Diseases Survey; caution should be applied in making comparisons because of differences in survey methods.

Mauritius ratified the FCTC on May 17, 2004. In 2007, the Mauritius government, in collaboration with the World Health Organization and the International Research Development Centre (IDRC) and several other stakeholders, developed a National Action Plan on Tobacco Control 2008-2012. The main objective of the National Action Plan was to reduce tobacco-related mortality and morbidity by preventing the use of tobacco products, promoting cessation and protecting from exposure to environmental tobacco smoke.

On November 28, 2008, Mauritius passed new regulations on tobacco known as the Public Health (Restrictions on Tobacco Products) Regulations 2008[4]. These comprehensive regulations updated previous tobacco control regulations that had been in place since 1999[5]. The 2008 Regulations were consistent with the FCTC Articles 6-16 and were implemented as of March 1, 2009 (with the exception of those related to the graphic health warnings which were implemented on June 1, 2009). The section below summarizes the tobacco control policies in Mauritius at the time of the ITC Mauritius Wave 3Survey organized according to the FCTC articles.

Article 6: Price and tax measures designed to reduce the demand for tobacco

Mauritius does not manufacture tobacco products domestically. This means that 100% of the cigarettes sold to consumers in Mauritius have been imported from other countries. Since May 2008, an import tax of 15% of the cigarette price has been imposed on all tobacco. A custom excise duty of Rs 2,750 ($90.00 US) applies per thousand cigarette sticks, and a final tax of 15% of the total of both aforementioned taxes plus the base cost of cigarettes is applied prior to sale.

Article 7: Non price-related measures for tobacco control in Mauritius

Article 7 of the FCTC guidelines encompasses non-price measures to reduce the demand for tobacco. There are no policies specific to this article, but it includes all measures from Article 8 to 13.

Article 8: Protection from exposure to tobacco smoke

The 1999 Regulations included a provision that banned smoking indoors in health care institutions, educational institutions, sports premises, public transportation, office premises or workplaces open to the public, public places (museums, post office, etc.) as well as when preparing, serving, or selling food to the public. In 2008, the Regulations were revised to be more comprehensive and now include: indoor and outdoor premises of health and educational institutions, indoor and outdoor sporting premises, any public conveyance, bus stands and stations, any indoor workplace (excluding designated smoking areas), any indoor area open to the public, recreational public places like gardens (except beaches), cafés, bars, night clubs, and restaurants, while preparing, serving or selling food for/to the public, and while driving or travelling in a private vehicle carrying passengers. “No smoking” signs (with regulated colour, size, and text font) have been placed in public places.

Article 9: Regulation of the contents of tobacco products

No provision has been made regarding testing and measuring the contents and emissions of tobacco products or for the regulation of these contents and emissions in Mauritius.

Article 10: Regulation of tobacco product disclosures

The 2008 Regulations state that cigarette packages must *not* display the tar or nicotine content or the carbon monoxide yield (i.e., the numerical values).

Article 11: Packaging and labeling of tobacco products

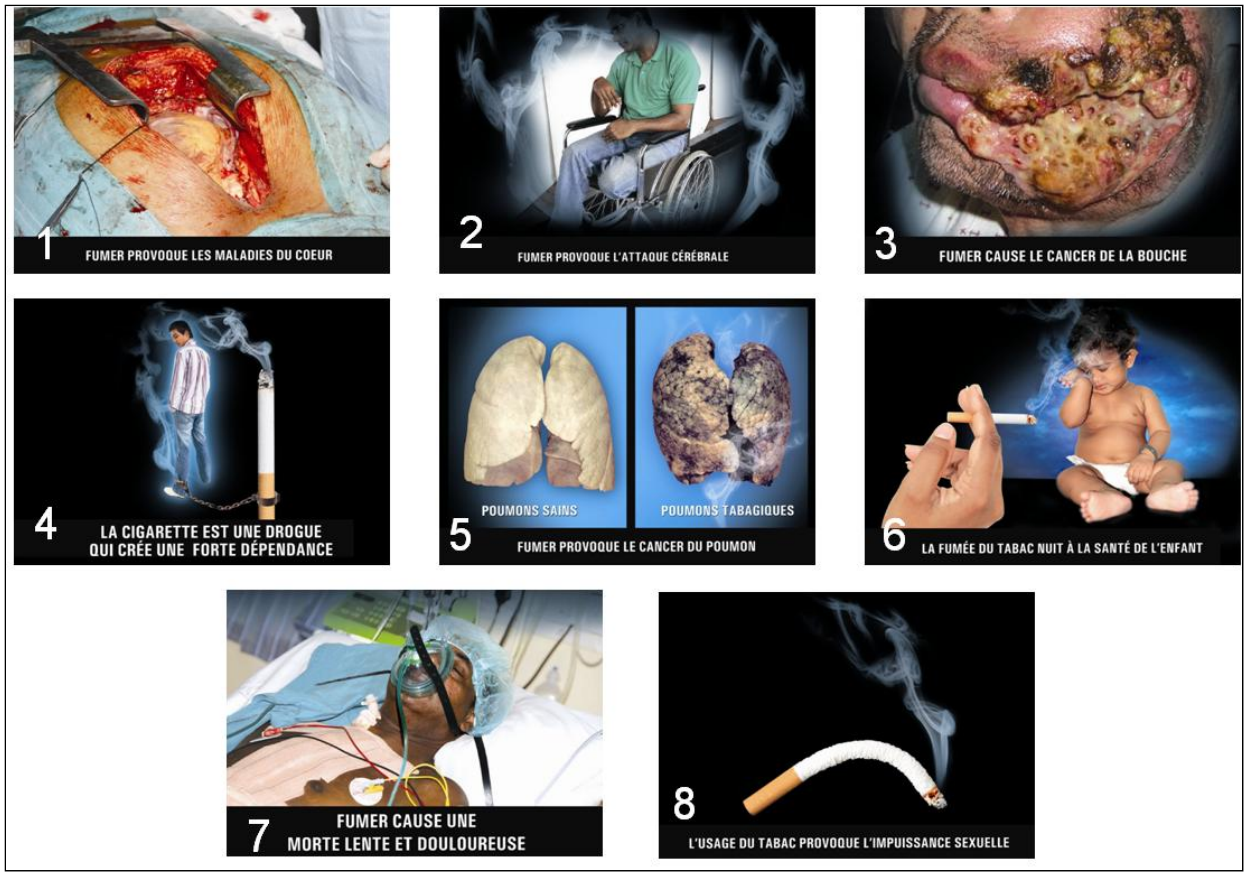
Article 11 of the FCTC stipulates that each Party shall adopt and implement effective packaging and labeling measures. New Article 11 Guidelines recommend pictorial warnings on at least 50% of the package and call for key requirements for the content, position, and size of warnings.

The packaging and labeling of tobacco products in Mauritius was a major focus of the 2008 Regulations. Since 1999, health warning labels on cigarette packages in Mauritius had only one text-based message that read: “GOVERNMENT WARNING: Smoking causes cancer, heart disease and bronchitis”, which appeared on the side of the pack. There were no requirements to set the warning apart from the packaging design, such as a thick black border and different-colored background. As a result, the warning was not noticeable, blending into the background of the pack design.

Mauritius was the first nation in the African Region to implement pictorial health warning labels—a set of eight rotating images appearing on the front and the back of packs, in both English (occupying 70% of back) and French (occupying 60% of front) in 2009. These labels

are among the largest in the world. Text messages also appear on 65% of the side of packs in both French and English.[1]The images of the set of eight warning labels officially implemented in Mauritius on June 1, 2009.

Figure X. Set of Eight Pictorial Health Warning Labels Implemented in Mauritius as of June 1, 2009.



Furthermore, per the 2008 Regulations, misleading descriptors on cigarette packages such as "light" and "mild" are not permitted; cigarette packages must not display the tar or nicotine content or the carbon monoxide yield (as described above); the sale of single/loose cigarettes and packages containing 10 cigarettes was banned – cigarette packages must contain 20 cigarettes; and distributors of tobacco products must not obscure any part of the warnings.

Article 12: Education, communication, training, and public awareness

[1] For more about Mauritius' Pictorial Health Warning Label images, please see the Tobacco Labeling Resource Centre website, http://www.tobaccolabels.ca/currentl/mauritiu

Mauritius has made efforts to increase public awareness and communication about the harmful effects of exposure to tobacco smoke and the use of tobacco products. In addition to an ongoing public education campaign, the government launched campaign to raise awareness of the new regulations through mass media and other channels in February 2009. As part of their Action Plan the Mauritius government has also planned to organize awareness-raising and advocacy sessions in order to bring consensus and support amongst key stakeholders for the implementation and enforcement of the smoke-free policy.

Article 13: Tobacco advertising, promotion, and sponsorship

A ban on tobacco advertising, promotion and sponsorship have been in place in Mauritius since 1999. Effective as of March 1, 2009, the regulations were made more comprehensive to include a ban on the offer or supply of tobacco products free of charge or at a discounted price. The display of tobacco products at point of sale was also banned, with the exception of airport duty free shops in Mauritius and Rodrigues.

Article 14: Demand reduction measures concerning tobacco dependence and cessation

Reduction measures concerning tobacco dependence and cessation efforts in Mauritius include a pilot smoking cessation clinic implemented in December 2008 by the Ministry of Health and Quality of Life. Additional cessation clinics may be implemented as part of World Health Organization initiative at seven sites across Mauritius in 2011. Currently, counselling, nicotine patches of 5, 10, and 15 mg doses, and Bupropion Hydrochloride tablets of 150 mg (Zyban) are all available at the pilot smoking cessation clinic. Nicotine replacement therapy (NRT) items like nicotine spray, gum, patches, and lozenges are available over the counter without prescriptions in private pharmacies. In addition, private physicians and psychiatrists can prescribe NRT and Bupropion to their patients.

Article 15: Illicit trade in tobacco products

To curb illicit trade of tobacco products in Mauritius, the 2008 Regulations included a provision that requires the country of origin to be noted on the cigarette packages. The package must also carry the statement “sale allowed in Mauritius only” and must have an affixed excise stamp on the package.

Article 16: Sales to and by minors

The sale of tobacco to minors in Mauritius has been illegal since 1999; however, the sale of tobacco *by* minors was made illegal in March 2009. To discourage the uptake of smoking by youth, the sale of single or “loose” cigarettes is now banned, and packages being sold must contain 20 cigarettes (as described above). The sale of tobacco through vending machines was

prohibited and any person selling tobacco must seek out evidence of legal age. The seller of tobacco must also display a prohibition sign. The sale of sweets, toys, etc., in the form of cigarettes has also been banned.

Penalties for failures to adhere to the Public Health (Restrictions on Tobacco Products) Regulations 2008

Penalties for failures to adhere to the conditions of the smoke-free laws include the following: at first conviction, a fine of not less than MUR 5,000 and not more than MUR 8,000; at second conviction, a fine of not less than MUR 8,000 and not more than MUR 10,000; and at third or subsequent conviction, an imprisonment for a term not exceeding 12 months (as per the Mauritius Public Health Act 2008)[4].

Policy Implications for the ITC Mauritius Survey Wave 3

Wave 3 of the ITC Mauritius Survey will provide strong evaluation of the ongoing tobacco control policies and interventions that are being implemented in Mauritius, including the impact of the pictorial warning labels, and support for/ adherence to the new smoke-free ban.

Appendix F: Benchmark / calibration figures

The estimated number of smokers and non-smokers given in Table A.2 were obtained using the household enumeration data from wave 1 of the ITC Mauritius Survey. The estimated number of smokers for the k^{th} sex/age group combination ($k = 1, \ldots, 10$) of Table A.2 is given by

$$\hat{N}^k_{\text{smk}} = \sum w_j \, S^k_j \, ,$$

where the sum is over all households enumerated at wave 1, S^k_j is the number of adult smokers from the j^{th} household within the sex/age group combination of cell k, and w_j is the EHWT of the j^{th} household computed in step 2 of section 2.2.1. Similarly, the estimated number of non-smokers for the k^{th} sex/age group combination is given by

$$\hat{N}^k_{\text{nsmk}} = \sum w_j \, NS^k_j \, ,$$

where NS^k_j is the number of adult non-smokers from the j^{th} household within the sex/age group combination of cell k.

The smoking prevalence for the k^{th} sex/age group combination is given by

$$\hat{p}^k_{\text{smk}} = \frac{\hat{N}^k_{\text{smk}}}{\sum w_j \, A^k_j} = \frac{\sum w_j \, S^k_j}{\sum w_j \, A^k_j} \, ,$$

where both sums are over all households enumerated at wave 1, and A^k_j is the total number of adults from the j^{th} household within the sex/age group combination of cell k.

	Population estimates	
District	as of Jul. 2000	as of Jul. 2009
Black River	60587	74600
Flacq	126839	139100
Grand Port	106665	114900
Moka	75479	80900
Pamplemousses	122352	136700
Plaines Wilhems	358182	383000
Port Louis	127855	129400
Rivière du Rempart	98854	108400
Savanne	66356	70300

Table A.1: Mauritius population estimates by district.

Sex	Age	#smokers	#non-smokers
male	[18, 30)	24652	78213
male	[30, 40)	25710	39408
male	[40, 50)	31665	55414
male	[50, 60)	26756	46024
male	[60, 100)	17358	43501
female	[18, 30)	3547	90593
female	[30, 40)	2597	77717
female	[40, 50)	2084	82384
female	[50, 60)	1144	75543
female	[60, 100)	1567	77365

Table A.2: Estimated # of smokers and non-smokers, per sex/age groups, used for weight calibration.

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[1] Map of Mauritius (October 21, 2009). http://mauritiusseychelles.co.uk/wpcontent/uploads/2008/06/mauritius-map.jpg

[2] Political Map of Mauritius (October 21, 2009). http://aadicon.com/img/mauritius-political-map.jpg

[3] Republic of Mauritius Ministry of Health and Quality of Life. Mauritius Non-Communicable Diseases Survey 2004. July 2006. http://www.who.int/chp/steps/STEPS_Report_Mauritius.pdf.

[4] Government of Mauritius, (2008). *The Public Health Act.* Regulations made by the Minister under sections 193 and 194 of the Public Health Act. Government Notice No. 263 of 2008.

[5] Government of Mauritius, (1999). *The Public Health Act.* Regulations made by the Minister under section 193 of the Public Health Act. Government Notice No. 62 of 1999. http://www.globalink.org/tobacco/docs/af-docs/legislation/0101mauritius.shtml.

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