

**International Tobacco Control Policy
Evaluation Survey
(ITC 4-Country Survey)**

Wave 1 Technical Report

July 2004

Acknowledgments

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Any questions or correspondence regarding this Technical Report should be sent to:

Geoffrey T. Fong, Ph.D.
 Department of Psychology
 University of Waterloo
 200 University Avenue West
 Waterloo, Ontario N2L 3G1 Canada
 Phone: 519-888-4567, x3597
 Mobile: 519-503-4820
 Fax: 519-746-8631
 Email: gfong@uwaterloo.ca

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ITCPES Research Team

Canada

Geoffrey T. Fong, Ph.D. (Chief Principal Investigator), University of Waterloo
 K. Stephen Brown, Ph.D. University of Waterloo
 Sharon Campbell, Ph.D. Centre for Behavioural Research and Program Evaluation
 David Hammond, M.Sc. University of Waterloo
 Paul W. McDonald, Ph.D. University of Waterloo
 Mary Thompson, Ph.D. University of Waterloo
 Mark P. Zanna, Ph.D. University of Waterloo

United States

K. Michael Cummings, Ph.D. (Principal Investigator), Roswell Park Cancer Institute
 Gary Giovino, Ph.D. Roswell Park Cancer Institute
 Andrew Hyland, Ph.D. Roswell Park Cancer Institute
 Frank J. Chaloupka, Ph.D. University of Illinois at Chicago
 Hana Ross, Ph.D. University of Illinois at Chicago
 Fritz L. Laux, Ph.D. University of Illinois at Chicago
 Nancy J. Kaufman, M.S. Strategic Vision Group

United Kingdom

Gerard Hastings, Ph.D. (Principal Investigator), University of Strathclyde
 Susan Anderson, M.Sc. University of Strathclyde
 Ann McNeill, Ph.D. University College London

Australia

Ron Borland, Ph.D. (Principal Investigator), Victoria Centre for Tobacco Control
 Mohammad Siahpush, Ph.D. Victoria Centre for Tobacco Control
 Melanie Wakefield, Ph.D. Victoria Centre for Tobacco Control

Project Support

Tara Elton Marshall, University of Waterloo
 Taryn Sendzik, University of Waterloo
 Sonya Dal Cin, University of Waterloo
 Carol Murray, Health Behaviour Research
 Group, Univ. of Waterloo
 Carol West-Seebeck, HBR

Data Management

Ruth Loewen, HBR

Data Analysis

Pete Driezen, University of Waterloo
 Anne Marie Mackintosh, University of
 Strathclyde
 Hua Yong, VCTC

Survey Fieldwork

Envionics Research Group, Toronto
 (Canada & U.S.)—Donna Dasko
 Roy Morgan Research, Melbourne
 (Australia & U.K.)—Bruce Packard

1.0 Introduction

In the past decade, significant advances have been made in public health policies designed to reduce the health, economic, and societal costs of tobacco use throughout the world. Most notably, the Framework Convention on Tobacco Control (FCTC)—the first-ever international public health treaty—was adopted in May 2003 by all 192 member states of the World Health Organization, representing 95% of the world's population. The FCTC will require signatories to implement a range of tobacco control policies over the coming years. In this context, it is critical to monitor and evaluate the implementation of these key health policies.

The International Tobacco Control Policy Evaluation Survey (ITCPES)¹ is a prospective cohort study designed to evaluate the psychosocial and behavioural impact of key national-level tobacco control policies enacted over a period of four years (2002-2006), in at least one of four countries: the United States, Canada, the United Kingdom, and Australia. Over 2,000 adult smokers were recruited by probability sampling methods in each of the four countries. The first two waves were conducted 8 months apart, but beginning with Wave 3, the survey is being conducted every 12 months. All aspects of the study protocol and survey measures are standardized across the four countries.

This report provides a methodological background and key statistical indicators for Wave 1 of the ITCPE Study. Wave 1 was conducted between October 28 and December 23, 2002 in all four countries. This report provides information on the sampling methods, survey protocol and administration, as well as survey rates, measures of representativeness, and guidelines for data analysis for Wave 1 data.

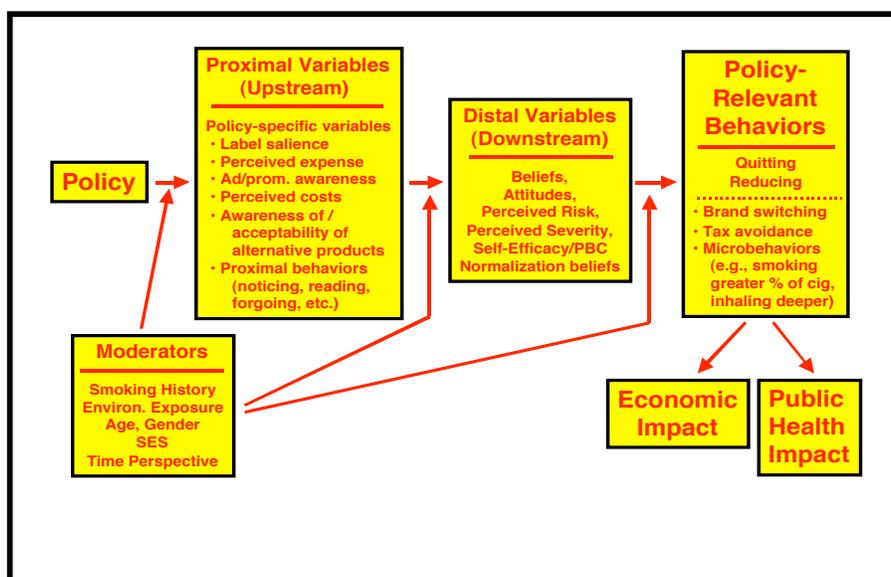
* The ITCPE is also known as the ITC-4 Country Survey (ITC-4), to distinguish it from other national-level tobacco control policy evaluation surveys being conducted by the ITC Project Research Team (e.g., the ITC-Ireland/UK Survey and the ITC-SE Asia Survey).

2.0 Conceptual Framework for Understanding the Effects of Tobacco Control Policies

2.1 Tobacco Control Policies to Be Evaluated and Conceptual Model

The ITCPEs is designed to evaluate the psychosocial and behavioural effects of national-level tobacco control policies that will be initiated or are under serious consideration in one or more of four countries— United States, Canada, United Kingdom, and Australia—in the next few years: (1) Enhancement of warning labels on tobacco packages, (2) Restrictions on the use of “light/mild” descriptors of tobacco products, (3) Restrictions on advertising and marketing of tobacco products, (4) Changes in taxation/price, and (5) (Lifting of) Restrictions on alternative nicotine delivery products (e.g., toxicant-reduced cigarettes and smokeless tobacco products). Figure 1 depicts our conceptual model of the processes by which tobacco control policies affect individuals.

Figure 1. Conceptual Model for Effects of Tobacco Control Policies



The following characteristics of this model are worthy of note:

1. Policies are conceptualized as affecting a variety of psychosocial and behavioural variables. The most immediate effects are those on the *proximal variables*, that is, those variables that are most connected with the policy itself. New graphic warning labels should increase salience and noticeability; price should affect perceived expense or costs of cigarettes (e.g., belief that cigarettes have become too expensive), lifting of restrictions on alternative nicotine products, should lead to increased awareness of the availability of those products. These in turn may

increase the likelihood of discrete behaviours such as smokers hesitating, or even forgoing or stubbing out cigarettes.

2. *Distal variables* are those that are more distant from the policy, but are those that have been demonstrated to predict smoking behaviour and changes in smoking behaviour (e.g., quitting). Among these are variables from well-known psychosocial models of health behaviour, including the Theory of Planned Behavior,¹ Social Cognitive Theory,² the Health Belief Model,³ and Protection Motivation Theory.⁴ We believe that policies will affect these distal variables *indirectly*, through their prior effects on the proximal variables.
3. One important aim of our project is to understand the psychosocial processes that explain how and why a given policy may lead to changes in smoking behaviour. Our longitudinal design allows us to explicitly test the causal chain of effects that is depicted in the model; a repeat cross-sectional design would not.
4. Our conceptual model is a general framework for thinking about policies and their effects on a broad array of important psychosocial and behavioural variables, and we understand that there will be important distinctions across different policies in not only *whether* those policies are effective, but also *how* they achieve their effects. We are explicitly testing those commonalities and differences among policies in this regard.
5. The behaviours that we are measuring include those that confer benefits (e.g., quitting) and also important compensatory behaviours that the smoker may engage in that, although responsive to the policy, may not lead to the economic and public health benefits that are ultimately the goal of such policies. For example, in response to price increases, smokers may switch to discount brands, which would confer no public health benefit. Our evaluation efforts are thus attempting to provide a more complete picture of the effects that may result from the implementation of a tobacco control policy.
6. The general conceptual model is a *causal chain model*, and as such, suggests that the proximal variables play a critical mediating role because they reside between the policy and the outcome variables that are so important in public health, for example, quitting behaviour. We assume that policies vary in the psychosocial “routes” that they take to affect behaviour. For example, if switching to graphic warning labels eventuates in increased quitting, we hypothesize that this occurs by *first* increasing their salience, noticeability, and the likelihood that smokers will think about the messages that appear. Thus, the first step in the causal chain is from labels to increases in these label salience variables, that is, in the proximal variables associated with labels. We should *not* expect the same magnitude of change to take place in a proximal variable associated with some other policy (if that policy is not also being affected at the same time); thus, a comparison of changes in proximal variables that *should* change (those associated with the policy that has changed) with changes in proximal variables that should *not* change (those associated with

some other policy that has *not* changed) is the key comparison. This pattern of results would provide further indication that changes in downstream variables are indeed associated with the policy that has changed. This strategy is an application of the principles of construct validity (specifically, of *discriminant validity*) that are central in making causal inferences from data. It should be noted, too, that the presence of control proximal variables is the analog to the presence of control countries in the ITC PES design. In this way, then, the ITC PES provides both *between-country* and *within-country* controls.

The *second* step is that those changes in the proximal variable should be associated with downstream changes in the distal variables (e.g., quit intentions) and ultimately to quit attempts. Thus, rather than conceptualizing policy as affecting proximal variables and also affecting behaviour, we conceptualize policy as affecting proximal variables, which in turn, affect behaviour. Or put in a different way: policy affects behaviour *because* it causes changes in psychosocial variables that are specific to that policy. The design of our study then is guided by the possibility of disentangling the web of alternative explanations and competing forces through the careful selection of specific mediators and applying the principles of causal inference through a combination of convergent and discriminant validity.

A more complete description and elaboration of the mediational models that underlie the ITC Project is available upon request.

3.0 Sampling Protocol

3.1 Overview

ITCPES participants at Wave 1 are current adult smokers (respondents 18 years or older who have smoked more than 100 cigarettes in their life and who have smoked at least once in the past 30 days). Respondents were selected at random from the population of each country using random-digit dialling (RDD) methods within strata defined by geographic region and community size. In three of the countries—Canada, the U.S., and the U.K.—samples were generated by Survey Sampling International (SSI) using their Random B methodology. In Australia, no comparable sample was available; as a result, a probability sampling frame was created using a similar design as for the other three countries (described below).

3.2 Sampling Frame: Canada, United States, and United Kingdom*

SSI begins with a database of all directory-listed households in the country. Using area code and exchange data, this file of directory-listed telephone numbers is subjected to an extensive cleaning and validation process to ensure that all exchanges are currently valid, assigned to the correct area code, and falling within an appropriate set of zip/postal codes. The SSI samples were generated using a database of “working blocks.” A *block* (also known as a 100-bank or a bank) is a set of 100 contiguous numbers identified by the first two digits of the last four digits of a telephone number. For example, in the telephone number 255-4200, 42 is the block. A block is considered to be *working* if one or more listed telephone numbers are found in that block.

The SSI samples were generated using random sampling procedures in the U.K. and stratified sampling procedures in the U.S. and Canada. Stratified sampling divides the population of sampling units into subpopulations called *strata*. A separate sample is then selected from the sampling units in each stratum. Some details on the procedures for generating the samples for each country are provided in Appendix A.

Random B methodology is an SSI term denoting samples of random numbers distributed across all eligible blocks in proportion to their density of listed telephone households. All blocks within the specified geographical stratum (e.g., county) are organized in ascending order by area code, exchange, and block number. Once the quota has been allocated to all regions in the frame, a sampling interval is calculated by summing the number of listed residential numbers in each eligible block within the county and dividing that sum by the number of sampling points assigned to the county. From a random start between zero and the sampling interval, blocks are systematically selected in proportion to their density of listed households. Once a block has been selected, a two-digit number is systematically selected in the range 00-99 and is appended to the exchange and block to form a 10-digit telephone number.

* This overview of Random B methodology has been modified from a description provided by SSI.

3.3 Sampling Frame: Australia

Due to the lack of a commercially available RDD sampling frame in Australia, our ITCPES team worked together with Roy Morgan Research, our survey firm in Australia, to construct a sampling frame from probability sampling methods that we believe is at least as high in quality as the samples obtained in the other three countries. Briefly, a sampling frame of listed residential numbers was generated from one of the Electronic White Pages (EWP) sources. A file of all EWP telephone numbers was then created and sorted into numerical order. A file of all blocks of n_1 numbers containing a minimum of n_2 EWP numbers was then created. From this, an equal inclusion probability sample of appropriate number of blocks was selected. This sample was sufficiently large to avoid the need to repeat the procedure a second time, taking into account the need to replenish the sample at subsequent waves.

A file of potential numbers for sampled blocks was generated, after which Electronic Yellow Pages (EYP) and non-connected numbers were screened out and all non-eliminated numbers were put in a long list. Roy Morgan Research then conducted automated pre-screening of large numbers from the stock of generated non-EWP/EYP numbers beforehand by ringing each number automatically for a short time during the day. Each number in the file was identified as: 1) an EWP number that is not also an EYP (potentially effective) number, 2) an EYP number, 3) a non-connected number, or 4) other (potentially effective). Non-connected numbers were identified, reported, and discarded by the CATI auto-dial equipment. These eliminated numbers consisted of unlisted business numbers, fax numbers, dedicated Internet lines, and unlisted second numbers of listed-number households in addition to the primary unlisted numbers we included in our stock file of numbers.

The stock of telephone numbers to be called was selected from a large equal probability sample of the resulting list of numbers. Finally, the order of stock was randomized to produce numbers to be called within strata determined by state x (metropolitan vs. non-metropolitan)

3.4 Sampling Design

Within each country, the sample was stratified geographically. That is, quotas were assigned to the numbers of respondents in each of several regions. The numbers in the sampling frame, randomly ordered, were called until these quotas were met. In Canada, the U.K. and the U.S., these quotas were proportional to current estimates of the size of the population 18 and over in the region. In Australia, the quotas were proportional to estimated numbers of telephone households. Some additional details of the sampling design are presented in Appendix A.

3.5 Selecting Respondents From Within Households

Only one respondent was selected from each household. The Next Birthday Method⁵ was used to select respondents in households with multiple smokers. No substitution within household was permitted, except where the selected respondent was known to be unavailable for the entire fieldwork procedure, in which case the person in the household whose birthday is next became the respondent.

3.6 Statistical Power

Power calculations were computed for three representative kinds of effects that span the length of our conceptual model: (1) the effects of a policy change on proximal variables, that is, variables such as label salience; (2) the effects of a policy change on distal variables (that is, those psychosocial variables that have been demonstrated in past research to be predictors and correlates of smoking behaviour (e.g., intentions to quit); and (3) the effects of a policy change on smoking behaviour itself (e.g., quit attempts, successful quitting).

In our power calculations (at $\alpha = .05$, 2-tailed), we assumed: (1) simple random sampling within countries (because ITCPES employs stratified random sampling in two of the four countries—Canada and the U.S.—the assumption of simple random sampling yields power estimates that may be conservative), (2) uniform proportions over the other three countries that have not experienced a policy change against which the country that has experienced a policy change is being compared, and (3) the characteristics of the attrition and replacement process at each survey wave is independent of behaviour. In addition, none of these power calculations considers the reduction in error variance due to the addition of appropriate covariates, and this also makes the computed power estimates more conservative. Sample size calculations for comparison of more general time-related contrasts between groups are provided by Hedeker et al.⁶ Please note that our original conception of the ITCPES was for survey waves to take place every 6 months. The time span between Wave 1 and Wave 2 was about 8 months, and Wave 3 and subsequent waves are every 12 months. Thus, some of the power calculations based on 6 months are likely to be conservative.

3.6.1 Effects of a Policy Change on Proximal Variables

In the North American Student Smoking Survey (NASSS⁷), a longitudinal survey of a total of 12,000 high school students in Canada and the U.S., among smokers, label-salience variables rose dramatically in Canada compared to the U.S. over the change in labels: a difference between the two countries of 9% for noticing the warning labels (from a Canadian pre-label level of 85% and a U.S. pre-label level of 70%), 28% for reports of talking to friends about the labels (from a pre-label level of 30% for Canada and 16% for U.S.), and 15% for perceived effectiveness of the labels in pointing out health problems (from a pre-label level of 69% for Canada and 62% for U.S.). Those effect sizes, if obtained in our present study of 1,500 cohort members (75% retention of our target cohort size of 2,000) in the country with the change in the labels (U.K.

between Wave 1 and Wave 2) and the 1,500 respondents in each of the other 3 countries without a change in labels would yield statistical power over 99%.

3.6.2 Effects of a Policy Change on Distal Psychosocial Variables

In the NASSS, quitting intentions increased among Canadian smokers, relative to the U.S. smokers—net change = 5.1% (from a pre-label level of 86.6% for Canada and 85.1% for U.S.). If this effect size were obtained here, assuming a within-individual correlation between successive survey waves of .60, the statistical power would be 99%. We will have 80% power to detect a 2.9% increase in the policy country, relative to the controls, 85% power for a 3.1% increase, and 90% power for a 3.3% increase.

3.6.3 Effects of a Policy Change on Distal Behaviours

Our conceptual model (presented in Figure 1) posits that the effects of policy diminish as one moves further downstream. In the first post-label survey wave of the NASSS, Canadian and American smoking youth did not differ in quit attempts. In the Borland evaluation of the 1996 enhancement of warning labels in Australia among adults,⁸ there was no pre-post difference in quit attempts.

With regard to quit attempts, approximately 44% of smokers attempt to quit in any given year.⁹ Assuming that our survey waves are every 6 months, we assume that half of the yearly rate will attempt to quit within any two survey waves (we assume a correlation of .2 between any two consecutive waves). We will have 80% power to detect a 4.4% increase in quit attempts in the policy country, relative to the three control countries, 85% power to detect a 4.7% net increase, and 90% power to detect a 5.1% net increase. Because our current schedule for survey waves is greater than 6 months, these power calculations are conservative.

With regard to successful quitting, an estimated 3-5% of smokers successfully quit in any one year for at least one year or longer.¹⁰ Assuming that the quit rate is 4% for one year, and thus 2% for a 6M span between survey waves, we will have 80% power to detect a 1.9% increase in successful quitting in the policy country, relative to the three control countries, and 85% power to detect a 2.1% net increase. Again, because our current schedule for survey waves is greater than 6 months, these power calculations are conservative.

4.0 Study Protocol

4.1 Recruitment Into the Cohort

At recruitment into the study at Wave 1, all respondents were contacted twice. At the first contact, the *Recruitment Survey* was conducted to screen for eligibility and ascertain consent. This Recruitment Survey lasted an average of 9-13 minutes. During the recruitment, qualifying respondents (those at least 18 years old who had smoked at least 100 cigarettes and were currently smoking at least once a month) were asked to participate in a 35-minute survey on smoking being conducted by an international group of universities and research institutions in four countries. (This 35-minute survey, which was typically conducted one week after the recruitment call, is known as the *Main Survey*. Respondents were told they would receive a small payment to thank them for their time and were assured that their responses would be kept strictly confidential. Where necessary, additional information was provided on the study, the survey firm, and the research institutions. Interviewers arranged with respondents who agreed to participate in the survey to set up a time for the administration of the Main Survey. Respondents were also provided with contact information in case they had concerns about ethics or privacy. Finally, respondents were told that they would be contacted in approximately 6 months time to complete a second 35-minute survey, for which they would receive a second payment. A complete description of the Recruitment and Main Surveys is provided in Section 5.0.

4.2 Compensation

A compensation letter, containing the compensation, was mailed immediately after the recruitment call, so that it would arrive before participants were called back to complete the Main Survey, which lasted an average of 35-40 minutes. The compensation letter also included information about the ITC research team and provided contact information for two individuals: (1) the Principal Investigator in the participant's country, and (2) the person in the participant's country to whom concerns about ethics/privacy should be addressed.

The amount of compensation was roughly standardized across each of the four countries: \$10 U.S., \$15 CDN, \$15 AUS, or a £7 voucher for Boots shops in the U.K. Over 90% of respondents in each of the four countries had received this compensation one week later, by the time of the Main Survey call. A second cheque or voucher was mailed to respondents who had yet to receive the incentive at this time. Respondents who had not received compensation by the time of the Main Survey call were given the option of completing the survey at that time or at a later date, after the incentive had arrived. This kind of pre-survey incentive (that is, compensating respondents *before* they have completed the survey) has been shown in randomized experiments to increase response rates by over 10%.^{11,12,13}

4.3 Calling Protocol

Several steps were undertaken to maximize response rates. First, to avoid any call-scheduling bias, recruitment calls were conducted at numerous times of the day (e.g., morning, afternoon, and evening) and different days of the week (e.g., weekday vs. weekend). Second, once respondents had completed the Recruitment Survey, every effort was made to follow them up for the Main Survey. In the event that appointments scheduled for the Main Survey were not kept, follow-up calls were made later in the same day, at similar times of the following day, and then on different days at different times. Up to 25 call attempts were made to follow-up respondents for the Main Survey in accordance with this schedule. In addition, respondents could complete the Main Survey during 2 or more calls if necessary. Respondents indicating a desire to terminate the Main Survey were reminded of the importance of their participation and an offer was made to complete the survey at another time. Appendix B provides a detailed description of the calling protocol used in all countries.

4.4 Cohort Replenishment

Once a respondent is included in the cohort at Recruitment, every effort is made to track and recontact him/her at subsequent waves (see Appendix B). At subsequent waves, however, some proportion of the 2,000 respondents in the initial cohort will fail to complete the survey. This will be due to any of a number of factors such as: (a) failure to contact by phone, (b) moved away and no forwarding number, (c) refusal, (d) missed survey call appointment and subsequent inability to contact.

In order to ensure that the number of completed surveys at each wave is at least 2,000 in each country, respondents lost to attrition are replaced. The number of new recruits necessary to replenish lost panel members is estimated after every week of the recontact phases of Waves 2 and beyond. The rate of attrition is used to guide the number of potential recontact respondents that will be recruited starting at Week 3 of the survey period. Replenishment needs are reviewed and updated every week until the end of the survey period. Sampling procedures and calling protocol for replenishment at subsequent waves are identical to those at Wave 1 Recruitment. Finally, data from continuing and replenished respondents are conducted to assess the influence of “time-in-sample” on the outcome variables. Panel attrition at each wave is being modeled as depending on age, gender, education, and health status from previous wave(s). This enables the construction of attrition weights^{14,15} to adjust for respondents who have dropped out.

5.0 Survey Measures

All Wave 1 survey measures are available upon request. They are also available through the ITCPES website:

<http://www.itcproject.org>

This includes all “raw” measures, as well as a set of key variables (e.g., demographic variables, daily consumption, and measures of dependence) that have been derived from the raw data and standardized for data analysis.

5.1 Survey Questionnaire Development

The ITCPES Survey was developed by an transdisciplinary team of tobacco control experts across the four countries, with backgrounds in psychology, public health, epidemiology, economics, community medicine, marketing, sociology, and statistics/biostatistics. The survey instrument was developed through a series of more than 30 teleconferences and extensive written communications among members of the ITCPES research team, including senior representatives from Environics Research Group and Roy Morgan Research. First, critical domains and policy areas were identified. Next, international benchmarks and standardized measures were identified from which ITCPES measures were drawn and revised, where necessary. Representatives from the survey firms contributed to this process and helped to refine the structure and content of the survey, taking into account interviewer demands and survey administration issues.

5.2 Content of the ITCPES Survey

The ITCPES Survey is standardized across the four countries: respondents in each country are asked the same questions, except for minor variations in wording to account for national differences in colloquial speech (e.g., “at the cinema” in the U.K. vs. “at the movies” in the other three countries) and slight differences on a few questions, omitting response options that do not pertain in some countries (e.g., elimination of “military commissaries” in the U.K. and Australia as a source of cigarettes).

The ITCPES Survey includes questions from the following domains:

1. *Demographic variables*, including age, gender, income, education
2. *Smoking behaviour*, including measures of dependency, quit history, and alternative tobacco use
3. *Warning Labels*, including label salience and perceived effectiveness
4. *Advertising and Promotion*, including self-reported exposure to both messages promoting tobacco products and messages about the dangers of smoking

5. *Light / Mild Brand Descriptors*, including beliefs about the relative risk of such brands
6. *Taxation and Purchase Behaviour*, including brand information, pricing, and purchasing sources
7. *Stop-Smoking Medications and Alternative Nicotine Products*, including Potential Reduced-Exposure Products (PREPs)
8. *Cessation and Quitting Behaviour*
9. *Key Psychosocial Measures*, including intentions to quit, perceived risk, denormalization beliefs, self-exempting beliefs, knowledge of health risks, and other potential moderators (e.g., time perspective and impulsivity).

The survey was developed in English and subsequently translated to French for administration in francophone regions of Canada (i.e., Quebec and New Brunswick). The Environics call centre in Montreal administered survey calls to francophone regions in Canada and upon request from respondents in other parts of Canada. All interviews in the three other countries were administered in English.

Overall, the Recruitment Survey took an average of 9-13 minutes to complete and the Main Survey took an average of 35–40 minutes to complete (see Tables 1 and 2 for average completion times by country).

5.3 Pilot Testing

A pilot survey was conducted in September 2002 to test the study protocol and survey instrument. Approximately 125 participants were recruited in each of the four countries and completed both the Recruitment Survey and the Main Survey. Pilot participants did not participate in the panel study. This Pilot Survey went very smoothly, requiring only minor changes to be made in the protocol and in the survey instrument itself.

6.0 Quality Control and Uniformity

6.1 Survey Firms

The survey was conducted in Canada and the U.S. by Environics Research Group and in the U.K. and Australia by Roy Morgan Research. Both are prominent survey firms who have extensive experience in random-digit-dialled (RDD) phone surveys of this kind, including international health surveys and tobacco-specific research. Senior representatives from each firm participated in the survey and protocol design for the survey in order to ensure standardization across both firms and to consider technical implications.

The survey administration and calling protocol was standardized across both survey firms. All calling specifications, final questionnaires, and daily reports were reviewed and monitored by the ITCPES Research Team at the University of Waterloo to maintain consistency across survey firms and ITCPES countries (see Quality Assurance, below). In Canada and the U.S., interviews were conducted with Dash Computer Assisted Telephone Interviewing (CATI) software (Version 2.9). Interviews in Australia and the U.K. were conducted using Bellview CATI software (Version 6.11).

6.2 Interviewer Training

All interviewers were experienced calling staff who had been trained in the use of the CATI software at each survey firm. All interviewers also received additional training specific to the ITCPES Project. This training included extensive interviewer briefing on the questionnaire itself, with any questions or necessary clarifications being addressed. Interviewer training emphasized issues such as correct coding of callback appointments, proper recording of addresses in each country as well as the importance of maximizing the likelihood that the Wave 1 respondents would continue to participate in the ITCPES Project in the future. In addition, all interviewers conducted supervised “practice” calls prior to the commencing the survey. Interviewer training was conducted by senior research staff and supervised by Principal Investigators at each of the two firms (Geoffrey Fong attended the Environics interviewer training and Ron Borland attended the Roy Morgan interviewer training).

5.3 Supervision and Call Monitoring

Supervisors at each of the call centres monitored interviewers at all times. Supervisors were able to listen in on the interview and simultaneously patch into the interviewer’s terminal, watching for any errors in coding of the responses. Any errors that were detected were then revised upon the completion of the interview. Supervisors also ensured that all probes, clarifications, etc., were executed in the proper manner, with any errors brought immediately to the interviewer’s attention. Approximately 10-15% of interviews were monitored in this fashion, in accordance with Canadian Association of Marketing Research Organization (CAMRO) guidelines. In addition, during Wave 1 recruitment, all contact information provided by the respondent was thoroughly double-

checked by a supervisor, for every recruit. In any cases of incomplete addresses, telephone numbers, etc., the respondent was immediately called back by the supervisor so that the correct information could be obtained. Address-checking software was also used to confirm the accuracy of this information, with Internet checks (electronic white pages) conducted on unobtainable /non-contact numbers.

The progress and performance of the survey firms was monitored by the University of Waterloo Data Management and Analysis Team and the Chief Principal Investigator through regular contact with senior representatives at each firm. To this end, the survey firms provided daily status reports as well as weekly summaries. Daily reports included updates on the number of respondents recruited by sex, age ethnicity, geography, patterns of non-response, and survey length. The survey firms also reported data on the compensation mailing process, including the proportion of respondents called for the survey stage that have received their compensation by that time (one week later). As part of the weekly summaries, field operations managers also compiled difficulties and informed the research team on a daily basis, as necessary.

Patterns of nonresponse are analyzed at the conclusion of each wave, with changes implemented to maximize quality control (Analysis section).¹⁶

7.0 Policy Monitoring

Tobacco control policies at the national level were assessed in each of the four countries prior to administering the Wave 1 survey. Regular contact has been established with key tobacco control informants in each country (both governmental—at both federal and state/provincial levels, and non-governmental), in order to track a variety of relevant features of the tobacco control landscape, such as per capita public spending on tobacco control and state/provincial and federal tobacco control campaigns. These input variables act as covariates in analyses that are designed to estimate policy effects, using methodology as described by Stephens et al. (2001).¹⁷

A policy monitoring team has been established in each country to assess key policies that occur at the sub-national state or provincial level. The ITCPEs monitoring teams conduct a policy review at each subsequent wave to assess any changes in relevant tobacco control policies in any of the four countries. The monitoring tool and policy reviews are available upon request.

Finally, respondents are also used as key informants for monitoring the environment—both policy and industry—that may exert an influence on them. The survey includes questions that ask respondents to report on price changes (e.g., discounts, coupons, and other pricing strategies), tobacco advertising and promotions (some items are mentioned in the section on Advertising/Promotion), and both reports of the presence or absence of clean air policies. The simultaneous collection of information about the policy environment and about tobacco industry initiatives with respondent reports on such activities provides a rich set of data for assessing the sensitivity of respondents to the tobacco control environment—both for and against. This has provided possibilities for validity studies on monitoring.

8.0 Wave 1 Data—Summary of Key Statistics

8.1 Recruitment Call Outcomes

Wave 1 Recruitment Survey calls began on October 28, 2002, with all Main Survey interviews completed by December 23, 2002. All call attempts were assigned an American Association for Public Opinion Research (AAPOR) disposition code.¹⁸ A list of final disposition codes and their definitions are provided in Appendix C. Table 1 presents statistics on survey length and sample size at Recruitment for each of the four countries.

8.2 Recruitment Survey Response Rates

Outcome rates were calculated for each country according to AAPOR¹⁸ and Council of American Survey Research Organizations (CASRO)¹⁹ standards. A flowchart of principal recruitment outcomes is provided in Appendix D. Note that differences in disposition rates between countries may be function of: 1) the respondent, 2) differences in the classification of outcomes across interviewers and research firms, as well as 3) cultural norms and differences in the phone systems between countries.

Table 1 also presents the AAPOR Response Rate #4 for each country. This response rate has 2 distinguishing features: 1) partial interviews are included as respondents (partial respondents were defined as respondents who skipped at least one question, but who completed all screener and smoking behaviour questions and a minimum of 80% of the entire survey); and 2) the proportion of cases of unknown eligibility that are actually eligible is estimated. The ITCPES sample design involves multi-stage screening (CASRO Sample Type IV), yielding eligible units, ineligible units, and units for which eligibility is not ascertained. Given that smoking prevalence in each of the four countries is 20-30%, the majority of initial respondents are ineligible for the survey. As a result, estimating the number of cases of unknown eligibility is critical to calculating an accurate response rate. For cases of unknown eligibility (e.g., household contacts that were terminated before screening was complete), we estimated the proportion that was eligible using the country-specific eligibility rates (see Appendix E and Appendix F). Respondents with insufficient language or cognitive skills were considered ineligible, as were numbers that could not be identified as households after 5 call attempts.

Table 1. Recruitment Survey Statistics

	Canada	U.S.	U.K.	Australia
Total Respondents (10,290)	2,507	2,493	2,728	2,562
 Screener Completion Rate	68.3%	33.7%	53.5%	67.4%
Household Eligibility Rate	8.1%	9.6%	14.1%	14.3%
Cooperation Rate	82.3%	83.2%	78.7%	78.8%
Response Rate (AAPOR#4)	49.5%	25.6%	37.8%	45.8%
Mean Survey Length (min)	11.8	13.2	10.3	9.1

Despite high cooperation rates in all four countries, the country response rates are lower than those typically reported in the literature. It should be noted, however, that survey rates reported in the literature rarely adhere to AAPOR reporting standards. The ITCPES rates reported above are based on these conservative standards and should be interpreted within their proper context. To this end, we identified the largest telephone surveys recently conducted on smoking or health behaviour in each of the four countries. In order to ensure that the same equation was used to calculate the response rates for these surveys as the one reported for ITCPES data, in several cases we calculated these rates using the raw disposition codes, rather than relying on published figures.

In Australia, the National Drug Strategy Household Survey yielded a 46% response rate reported for the 2001 survey, while the National Tobacco Campaign Evaluation Survey, most recently conducted in 2000, reported a 45% response rate. These response rates are nearly identical to the ITCPES rates for Australia.

In Canada, we identified two large national RDD surveys of smoking behaviour. The Survey on Smoking Behaviour, last conducted in 1995, yielded response rates of approximately 70%, while the Canadian Tobacco Use Monitoring Survey—the benchmark for national smoking data—yielded a response rate of 70% for its 2002 cycle. These responses rates are higher than the ITCPES rate for Canada; however, both of these surveys are conducted on behalf of the Government of Canada and benefit from the credibility this association provides.

In the U.S., the 1999 Behavioral Risk Factor Surveillance System study reported a national response rate of approximately 55%. The ITCPES rate for the U.S. sample is considerably lower, mainly due to the relatively high number of terminations prior to completion of the screener. This lower response rate in the U.S. is likely a reflection of the documented trend of declining response rates for RDD surveys in North America.²⁰ For example, median response rates for longitudinal CDC phone surveys have declined from over 71% in 1993 to below 49% in 2000.²¹ Anecdotal evidence suggests that

response rates from more recent surveys, yet to be published, have declined even further.

In contrast to the other 3 countries, RDD telephone surveys in the U.K. are relatively rare, with the majority of social and health research conducted using face-to-face or in-person methodology. We were able to identify only a single RDD survey related to smoking: the “Tobacco in London: Attitudes Towards Smoking” survey. This survey was conducted in 2001 with a final sample over 9,000 and yielded a response rate of approximately 10%. In contrast, an RDD survey examining parental involvement on education by the Department for Education and Skills conducted in 2001 reported a cooperation rate of approximately 56%. Within this context, the ITCPES U.K. response rate seems to fare well against the available, albeit limited, standards.

8.3 Representativeness

Non-contact and non-response should not affect data quality to the extent that they occur randomly. In other words, low response rates will only lead to a biased sample to the extent that non-respondents differ from respondents. As a result, large differences in response rates have been found to have only minor effects on data accuracy.^{21,22,23} Indeed, differences in response rates as large as 45% have been found to yield a predicted difference in smoking prevalence estimates of only 1.5%.²¹

Examining the weights and various summaries of the weights can be useful in assessing the representativeness of the ITCPES sample. The weights are intended to reduce biases from uneven representation, so that a unit with a higher-than-average weight can be thought of as having come from an under-represented region or demographic group. A full description of the weights is provided in Section 8.5.

Appendix G presents brief descriptions of the national benchmark surveys to which the ITCPES sample characteristics are compared and from which we took estimated population values to compute the ITCPES weights. Appendix H presents the demographic profiles of the ITCPES sample and the national benchmark surveys. As Appendix H indicates, there is generally good correspondence between the demographic characteristics of the ITCPES sample and those of the national benchmarks. And the weighting of the ITCPES data serves to close/eliminate the differences. Section 7.5 provides a more detailed account of these differences as they relate to the survey weights.

Weighting will not typically eliminate all biases. For example, weights will not necessarily correct for biases except in characteristics that are highly associated with the variables used to weight the sample (in this case, gender, age, and region). For this reason, we also undertook a comparison of key measures of smoking status from the ITCPES with the national benchmark surveys of adult smokers. These data are presented in Appendix I. As these data indicate, ITCPES data for these key indicators of smoking are generally similar to the benchmark surveys, with slightly higher measures of daily consumption and addiction in the ITCPES sample.

Considering that non-response has been associated with lower socio-economic status,²⁴ and given that there is an inverse relationship between tobacco use and SES,²⁵ the ITCPES data might be expected to yield a sample of lighter, less-addicted smokers than surveys with higher response rates, such as the national benchmarks in the Canada and the U.S., for example. However, the data presented in Appendix I suggest that the ITCPES was successful in surveying traditionally hard-to-reach respondents. Further, the differences between ITCPES and national benchmarks are modest and often no greater than the differences between national benchmarks themselves. Indeed, the variability among these benchmark surveys within each country is worth noting. For example, the two Australian benchmarks yield a difference in daily consumption of 2 cigarettes per day. Although we have made every effort to identify comparable measures and survey dates, it is also worth noting that the exact wording of certain questions and different survey dates might also account for some of these differences between benchmarks estimates and those of the ITCPES. Overall, it would appear that the ITCPES sample is providing reasonable and valid estimates, in line with the best available measures in each country.

8.4 Attrition: Main Survey Follow-Up Rates

Overall attrition from recruitment to Main Surveys varied from a 10.2% to 14.4% (see Table 2). Appendix J presents the flowchart of Main Survey follow-up outcomes for each of the four countries. As expected, attrition rates were higher for males in every broad age group (except for the 50+ group in the U.K.); attrition rates tended to be higher for respondents in large urban areas; attrition rates were somewhat higher in the 18-34 age group for both sexes; and attrition was higher for non-white people in Canada and the U.S. The dependence of attrition on educational attainment was minor and not consistent across the four countries. Attrition was higher for those who rated their health as “poor” in Canada and Australia, but not in the U.S. or the U.K. On the basis of these results, we decided not to incorporate education or perceived health in the adjustments for the Main Survey weights. Nevertheless it is important to consider the determinants of attrition when analyzing the survey results. A detailed analysis of attrition from the Recruitment Survey to the Main Survey has been conducted and is available on request. Based upon this analysis, predictors of attrition that could affect some analyses are marital status (single respondents are more often lost to follow up) and quit attempt history (with those who have never attempted to quit being more likely to be lost).

Table 2. Main Survey Statistics

	Canada	U.S.	U.K.	Australia
Total Respondents (9,058)	2,214	2,138	2,401	2,305
Refusal Rate	4.6%	4.7%	6.5%	3.7%
Non-Contact Rate	7.4%	9.8%	5.6%	6.6%
Follow-Up Rate	88.0%	85.6%	88.0%	89.8%
Mean Survey Length (min)	43.4	44.6	38.6	38.7

8.5 Survey Weights

The sampling design was selected to provide a random, unbiased sample of adult smokers within each geographic stratum. However, even with the most carefully designed and administered sampling, the outcome is subject to practical limitations: not all selected households will yield a response within the fieldwork constraints and not all persons selected will agree to be interviewed or successfully complete an interview. As with all surveys, the ITCPES sample is subject to disproportionate selection and undercoverage of population subgroups. In order to adjust for disproportionate selection of adult smokers in subgroups, weights have been calculated for each respondent. Where estimates in ITCPES results are derived from the sample, they are based on the weighted samples, unless stated otherwise. The following describes the procedures for calculating these weights.

8.5.1 Recruitment Weights

1. Each household was given a multiple phone factor $wt1 = 1$ if it had one personal phone line, and $wt1 = 1/2$ if it had more than one personal phone line (since theoretically the latter households had at least twice as much chance of being contacted).
2. Each respondent's $wt1$ was then multiplied by an adjustment factor = 1 if that person was the only adult smoker in the house, and 2 if that person was one of 2 or more adult smokers in the house.
3. The result was then multiplied by a factor to produce $wt4$ for each respondent, so that the sum of the $wt4$ values for respondents in a stratum was proportional to the general population for the stratum. This compensates for differential achieved sampling fractions from stratum to stratum. General population stratum numbers corresponding to strata actually used in the sampling design were available for Canada, the U.K. and Australia, but not in the U.S. In the U.S., $wt4$ was constructed to produce sums proportional to the general populations of the larger states and regional groups of smaller states + DC. There are a few respondents for which the

variable “state” was missing or ambiguous; such respondents received an average value of wt4.

4. Finally, the weights wt4 were adjusted so that estimates of total numbers of smokers in age-sex groups (and white/non-white groups in the U.S.) agreed with current prevalence numbers, mainly current daily smokers, in these groups. The groups used differed from country to country: In the U.K., population estimates were drawn from census figures, while prevalence for sex*stratum and prevalence by sex*age group was estimated from the General Household Survey (2001). In Australia, we used census estimates for population estimates and data from the National Health Survey, 2001 for estimating prevalence within state*sex*age groups. In the U.S., population estimates were drawn from census data, while prevalence by sex*age group*white/non-white were taken from proportions from the 1998-1999 Current Population Survey applied to a prevalence number estimate from the National Health Interview Survey (2002). For Canada, weights were constructed for region*sex*age groups from 2001 Canadian Community Health Survey prevalence data that were already weighted with current census estimates.

8.5.2 Main Survey Weights

A separate set of weights was created for the subset of those recruits who also completed the Main Survey at least partially (N = 9,046 respondents). Starting from the recruitment weights, Steps 3 and 4 (described above) were repeated with the subset of Main Survey respondents. Respondents who did not complete the Main Survey were assigned a weight of 0. As noted above, based upon our analysis of attrition between the Recruitment Survey and Main Survey, it was decided not to incorporate other variables, such as education and perceived health status in the adjustment for the Main Survey weights.

8.5.3 Descriptive Uses of the Weights

The weight for any respondent can be interpreted as the number of people in the population that we deem that respondent to represent. Thus the recruitment weight for a recruited respondent would vary from respondent to respondent, but would be of the order of (stratum population size)/(stratum recruitment sample size). The sum of the recruitment weights over all recruited respondents will be the same as the population size (which we estimate from other sources). The Main Survey weight for a Main Survey respondent will be a little higher than the recruitment weight for the same respondent. This is because the recruitment weights for those who drop out between the Recruitment Survey and the Main Survey are re-distributed to those who stay in the sample.

Either set of weights might be used in computing estimates of proportions and means for purposes of “description” of attributes of the smoker population in each country. For example, recruitment weights could be used in estimating the proportion of smokers aged 45 and over who smoke at least 20 cigarettes per day, or the mean number of cigarettes smoked per day by women with at least secondary school graduation. (For

the latter, take the sum of weights*consumption for women in the country who have at least secondary school graduation, and divide by the sum of the same weights. SAS and SPSS will do this with appropriate instructions.) The weights should not be used to estimate numbers, such as the number of daily or occasional smokers who intend to quit in a given period, because the weights have been “benchmarked” to approximate numbers of daily smokers from other sources, which typically refer to time periods other than the time period for Wave 1 of the ITC survey (end of 2002). For example, the sum of the recruitment weights (or the main weights) for the Canadian part of the sample is equal to the number of daily smokers aged 18 and over in the provinces of Canada as estimated from the Canadian Community Health Survey (CCHS) of 2001. Because our data were collected over a year after the benchmark CCHS survey of 2001, we cannot use our data to estimate the number of smokers or any other population value.

It should be noted that proportions estimated using these weights (e.g., estimated proportion of smokers in category A = sum of weights for smokers in category A/sum of weights for all smokers in sample) are not standardized across countries with respect to demographic variables. (Standardized proportions are easily calculated as appropriate weighted averages of e.g., age-sex group proportions.)

8.5.4 Standard Errors for Proportions or Means

Where a survey sample cannot be considered a true “simple random sample” consideration must be given to the “design effect.” Departure from “simple random sampling” may sometimes be due to specific requirements of the survey or the nature of the attributes or population being measured, as well as to the practical limitations of field sampling operations. The standard errors must be adjusted for the design effect.

Rough—and likely conservative—standard errors for the proportions or means may be obtained from the corresponding unweighted (simple random sampling) analysis, by multiplying by the square root of F where $F = [n * (\text{sum of squares of weights}) / (\text{sum of weights})^2]$. Here n refers to the size of the sample subgroup of interest, and the sums are taken over that same sample subgroup. The factor F is 1 + the square of the coefficient of variation of the weights in the sample subgroup. (The coefficient of variation of a positive variable is its standard deviation divided by its mean.)

For all four countries the full sample coefficient of variation of the recruitment weights is approximately .45, and the coefficient of variation of the Main Survey weights is about .48. The factor F for the latter is 1.2304, and thus, the variability of the weights may be regarded very crudely as inflating standard errors by a factor equal to the square root of 1.2304, or 1.109. However, the point of using the weights for descriptive aims is to reduce sampling bias. The reduction in bias should compensate at least in part for the gain in variability.

For ITCPEs results, bootstrap weights for the data can be used to adjust standard errors. With bootstrap weights, the analysis is run many times (or “replicated” many times), but each time, all output is ignored except the estimates of the coefficients of

interest. The variability of a slope coefficient, for example, is measured through its observed variation from bootstrap sample to bootstrap sample.²⁶

8.5.5 Analytical Uses of the Weights

The weights may also be used in modelling, for example in logistic regressions. The usual rationale is that the results will then measure relevant attributes of the actual population at hand. Some software packages that use weights in analysis produce unrealistic p-values, because the software “erroneously” takes the sum of the weights to be the sample size. If using such software it may be advisable as a “quick fix” to rescale the weights so that they sum to the sample size.

The method of rescaling the weights (and even the necessity to do it) depends on the software being used and the analysis desired. Some software (e.g., SAS) allows a redefinition of the weight variable so that it sums to the appropriate subsample size, before the main analysis is run. This can be done manually in SPSS, as follows:

1. Calculate the actual (i.e. unweighted) size of the subsample (e.g., Canadian women aged 18-34 at Main Survey). Call this N1.
2. Calculate the “subpopulation size estimate” by summing the Main Survey weights for that subsample. Call this W1.
3. The rescaled weights = original weights * N1 / W1

Alternatively, for some analyses the output can be corrected. For example, if the software “erroneously” takes the sum of the weights to be the sample size, we can correct standard errors for means and proportions as indicated earlier, or less conservatively by multiplying by the square root of (sum of weights in denominator of weighted mean or proportion divided by denominator of unweighted mean or proportion); we can correct a chi-square statistic by multiplying by (unweighted sample size for the frequency table divided by apparent (weighted) sample size for the frequency table).

If the software allows weighted linear regression, as SAS does, the output is usually adjusted automatically, and no rescaling is needed, for an analysis of data from a single country. For logistic regression, weighted, SAS allows a “norm” option to rescale the weights automatically.

Rescaling the ordinary weights provides only crude corrections for test statistics in contexts such as logistic regression. Estimation and testing from ITCPES can be refined using bootstrap weights, described above.

Please note that the prescriptions above assume that data from just one country are being used in the analysis. In an analysis from a sample pooled across countries, additional care must be taken, since the population sizes (and hence the average weights) differ widely from country to country. Using the weights as given will cause the

largest country to dominate the analysis, and will make estimation very inefficient. Scaling the weights so that they sum to the appropriate subsample sizes within countries will eliminate this problem.

8.5.6 When Should Weights Be Used?

For descriptive purposes the use of the weights is necessary, but when the aims are analytic the answer is not so clear. Where possible, modelling analyses should be run both with the weights and without. If the estimates of coefficients or the results of tests agree reasonably well, the weighted analysis can be presented (with standard errors and p-values corrected where necessary). “Agreeing reasonably well” might mean agreeing to within a standard error or two, or, more generally, when the weighted and unweighted analyses yield the same analytic conclusions. If the estimates disagree substantially, it is likely that the model is inadequate in the sense of leaving out important explanatory variables associated with the weights. In that case, neither the weighted nor the unweighted analysis is well-supported.

Because the weights tend to add variability, it is possible to have the situation where coefficient estimates agree, but appear non-significant in a weighted analysis and significant in an unweighted analysis. When this occurs, both analyses should be reported. In all cases, diagnostic checking of models is important, and may include examination of the influence of high or low weights on the analysis.

Appendix A. Sampling Specifications

Description	Survey Firm		Comments
	Environics	Roy Morgan	
Source of samples	Canada: SSI U.S.: SSI	U.K.: SSI Australia: EWP/RDD Sampling plan (see next section)	
Sampling frame	Canada and U.S.: directories used to produce cleaned-up database of working blocks	U.K. and Australia: directories used to produce cleaned-up database of working blocks	
Stratification & allocation (of blocks) in production of number stock	Canada: Census division; allocation proportional to census division's share of total households U.S.: Counties; allocation proportional to census-estimated number of telephone households	Australia: Not stratified U.K.: Not stratified	Stock = Source of numbers from which each survey firm draws its samples. In the case of the SSI samples, these have already gone through a process whereby the samples are prepared as indicated. For Australia, the stock is created from EWP/RDD sampling procedures

Description	Survey Firm		Comments
	Environics	Roy Morgan	
Number stock generation from working blocks	<p>Canada and U.S.: Systematic, with interval = listed units divided by desired sample size; listed units chosen, then last two digits randomized</p>	<p>U.K.: Listed numbers in working blocks are lined up; sampling is systematic, with interval = listed units divided by desired sample size; listed units chosen, last two digits randomized; rechosen if a business number</p> <p>Australia: see below</p>	
Organization of numbers called from stock	<p>Canada: stratified by province x community size</p> <p>U.S.: stratified by four categories of community size (A - largest metropolitan areas; B - those not in A but in metropolitan areas with more than 85,000 households; C -- those not in A or B that have more than 20,000 households; D -- the remainder) within region.</p>	<p>U.K.: Stratified by region: North East, Yorkshire/Humber, East Midlands, Eastern, London, South East, South West, West Midlands, North West, Wales, Scotland, Northern Ireland</p> <p>Australia: Stratified by state x (metropolitan vs. non-metropolitan)</p>	<p>Canada and U.S.: Respondent sample allocated proportionally to stratum sizes based on census</p> <p>U.K.: Respondent sample allocated proportionally to stratum sizes based on census</p> <p>Australia: Respondent sample allocated proportionally to potentially effective numbers in numbers stock.</p> <p>In all 4 countries: to obtain numbers to be called from numbers stock: numbers stock is stratified and the order of numbers is randomized within strata</p>

Description	Survey Firm		Comments
	Environics	Roy Morgan	
Cell phones	Not to be called	Not to be called	Cell phones are not present in the SSI samples (Canada, U.S., U.K.) They are not present in Australia samples if they are not "listed" in EWP.
Selection of respondent within household	Adult (18 years old or older) smoker with next birthday: current smokers who are either daily or occasional smokers and who have smoked at least 100 cigarettes in their life	Adult (18 years old or older) smoker with next birthday: current smokers who are either daily or occasional smokers and who have smoked at least 100 cigarettes in their life	Smoker with next birthday; if does not satisfy refined definition when asked screening questions, go to smoker with next birthday in same household. If target person refuses, eliminate household (i.e., don't ask for another person)
Retention in waves after Wave 1	Respondents are retained until they have reported being non-smokers in two consecutive waves	Respondents are retained until they have reported being non-smokers in two consecutive waves	
Respondents reporting having quit at Wave 2 (or at any post-baseline wave after entry into the panel)	Administer quit version of Main Survey and then recontact at next wave	Administer quit version of Main Survey and then recontact at next wave	Respondents with two consecutive waves of status as a quitter are removed from panel Respondents who report being a quitter at one wave but then relapse at the next are retained in the panel. Respondents reporting quitting at subsequent waves or by calls to survey firm's toll-free number are given the quit version of the survey if still eligible.

Appendix B. Recruitment Contact Protocol

Description of Issue/Situation	Action Taken
Answering machines	Messages are not left on telephone answering devices. If calls were forwarded to a household number, the interviewer proceeds with script as usual. Changed numbers at recruitment are discarded.
Respondent is seriously ill or has passed away	Both firms have considerable experience in dealing with this situation. They will use discretion and tact, per their usual procedures, which are comparable across firms.
Respondent has a close family member who has been diagnosed with smoking-related disease	Both firms have considerable experience in dealing with this situation. They will use discretion and tact, per their usual procedures, which are comparable across firms. It should be noted that the interviewer scripts allow for the possibility that the respondent still wants to participate.
Respondent shows psychological distress	Both firms have considerable experience in dealing with this situation. They will use discretion and tact, per their usual procedures, which are comparable across firms. Interviewers will discern whether the respondent can indeed participate in the survey at that time or at another time.
Respondent asks about treatment options	We will not provide information about treatment options: (1) our interviewers are not trained health professionals and do not have expertise of any kind in treatment for nicotine addiction; (2) providing treatment options would affect the behaviour of our panel, thereby potentially confounding our ability to evaluate national-level tobacco control policies; (3) this is not a clinical study—to offer/recommend treatment options would change the nature of the study.
Number of call attempts: recruitment call	<ul style="list-style-type: none"> • If phone rings, but no answer and no machine: total of 5 call attempts. • If phone rings, but no answer, but answering machine: total of 7 call attempts. • If phone is constantly busy: 7 call-backs. • If a non-adult (<18 years old) answers and no adult home: total of 7 call attempts

Description of Issue/Situation	Action Taken
Main Survey Callback: Missed Appointment Time	<ul style="list-style-type: none"> • If missed appointment time: call back later in the same day twice (first within an hour, and then again later—if time is not too late); if answering machine, leave message; call back 2 more times on each of the next 3 days • If contact with other member of household, leave message, ask for best time to call, and then call at that time and then again once more
Main Survey Callback: Number of Callbacks	<ul style="list-style-type: none"> • Use contact time of respondent's last survey administration as an initial call time • 2 times/day for 3 consecutive days for first week and then repeat for the next week • If answering machine, leave message on first and third days of each week • If other person in household, determine status, location of respondent, leave message as appropriate; record contact—may need to decrease number of subsequent calls depending on info from other person
Thank-you letter	Respondent are sent a thank-you letter one week after survey is completed
Recontact letter sent to complete respondents	A recontact letter is sent to respondent one week prior to next scheduled wave (next wave is 6-8 months after respondent's last survey date).
Refusal conversion	If a respondent initially refuses, they are told that “this is an important international research project and we will be compensating you for your time. Could we ask you a few more questions?” No subsequent refusal conversion calls are attempted.
Other languages: French interviewing in Canada	Canadian respondents are given the option of completing the survey in English or French.

Appendix C. Wave 1 Disposition Codes By Country

Disposition Code	AAPOR Code	Description	Canada	U.S.	U.K.	Aus.
CS 00	4.30	Not in service	13,747	25,806	3,746	23,973
CS 01	4.20	FAX/modem	3,757	9,175	324	5,445
CS 02	4.40	TCI fault	952	1,936	1	—
CS 03	4.50	Non-residential (business, institution)	4,712	15,347	263	8,982
CS 04	4.42	Cell phone/mobile	200	171	31	143
CS 08	1.2	Eligible respondent smoker completes screener but hangs up before end of the Recruitment Survey.	19	16	19	3
CS 09	1.1	Eligible respondent smoker completes recruitment script with no skips	2,454	2,389	2,606	2,449
CS 10	2.21	Appointment type 0: appointment made with initial respondent for next birthday adult smoker; no adult available	156	800	78	2
CS 11	2.21	Appointment type 1: soft callback when no adult available	130	378	151	62
CS 12	2.21	Appointment type 2: appointment with next birthday respondent to complete screener	68	60	—	—
CS 13	2.21	Appointment type 3: appt made with initial respondent for next birthday adult smoker; initial respondent has completed intro	41	30	41	2

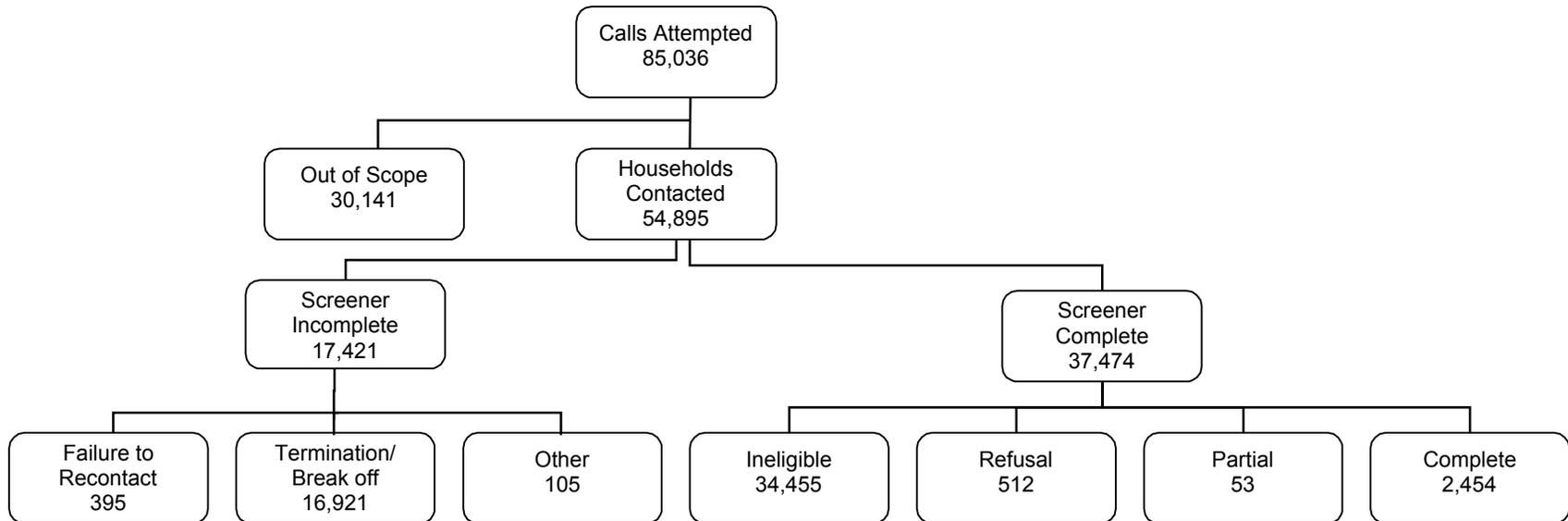
Disposition Code	AAPOR Code	Description	Canada	U.S.	U.K.	Aus.
CS 18	3.21	Initial respondent refuses; initial respondent is asked to give household size and number of smokers but refuses again at some point before completing this	3,289	3,648	9,220	3,506
CS 19	4.7	No household member 18 or older	365	670	469	276
CS 20	4.7	No adult household member smokes cigarettes; household size given	16,483	24,903	18,938	17,355
CS 21	4.7	Initial respondent volunteers no adult household member smokes cigarettes; household size refused	—	—	1,001	818
CS 22	3.24	Initial respondent refuses but answers Q1d, Q1e; >0 smokers	130	124	184	245
CS 24	4.7	No adult household member smokes, number of adults household members unknown (child was the initial respondent)	17,550	1,629	237	399
CS 27	3.25	Next birthday smoker refuses to participate in screener	71	73	57	72
CS 28	3.25	Initial respondent completes intro but refuses to get next birthday smoker	78	89	574	731
CS 30	3.25	Next birthday smoker refuses to give age	41	20	239	118
CS 32	4.7	Next birthday smoker proves to be too young; no others left to try	3	8	9	7
CS 33	4.7	Next birthday smoker has not smoked 100 cigarettes; no others left to try	38	75	51	39
CS 34	4.7	Next birthday smoker does not smoke at least once a month; no others left to try	15	29	11	17

Disposition Code	AAPOR Code	Description	Canada	U.S.	U.K.	Aus.
CS 35	2.111	Eligible respondent smoker refuses	257	245	591	556
CS 40	3.13	Rings only, 5 consecutive attempts	2,939	4,444	5,630	8,585
CS 41	3.12	Busy/engaged at least once, no ans. machine, no contact, 7 attempts	680	1,611	784	2,535
CS 42	3.13	Ans. machine at least once, not clear if resid or non-residential, no contact, 7 attempts	3,017	6,641	152	391
CS 43	3.29	Ans. machine at least once, residential, no contact, 7 attempts	—	—	—	—
CS 44	3.19	Number reached but unknown if residential	137	615	1,824	670
CS 80	3.21	Initial respondent hangs up before screener	11,636	50,318	4,821	3,585
CS 81	3.25	Next birthday smoker hangs up during screener	155	183	7	8
CS 82	2.12	Eligible respondent smoker hangs up during Q11- Q22	236	134	54	42
CS 83	1.2	Eligible respondent smoker skips (refuses/can't answer) one or more questions in Q11 - Q22	22	90	59	69
CS 84	1.2	Eligible respondent smoker completes up to Q22, skips (refuses/can't answer) one or more later questions, reaches end of recruitment script	31	21	63	48
CS 90	3.23	Termination, initial respondent has language problem	828	2,226	365	1,187
CS 91	3.22	Termination, initial respondent is physically/mentally incompetent	189	282	368	255
CS 92	3.29	Termination, other problem with initial respondent	504	1,178	4,753	743
CS 93	2.33	Termination in screener, next birthday smoker has language problem	21	47	15	51

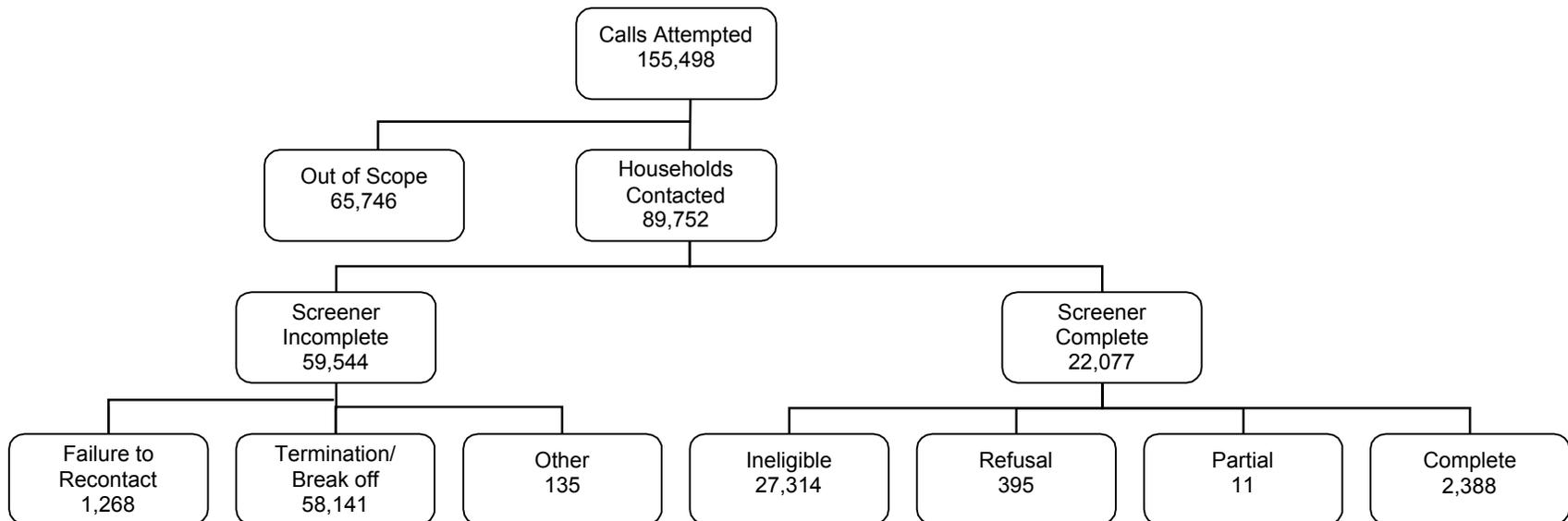
Disposition Code	AAPOR Code	Description	Canada	U.S.	U.K.	Aus.
CS 94	2.32	Termination in screener, next birthday smoker physically/mentally incompetent	12	27	13	6
CS 95	2.35	Termination in screener, other problem	72	61	58	89
		TOTALS	85,035	155,499	57,807	83,464

Appendix D. Recruitment Survey Outcomes

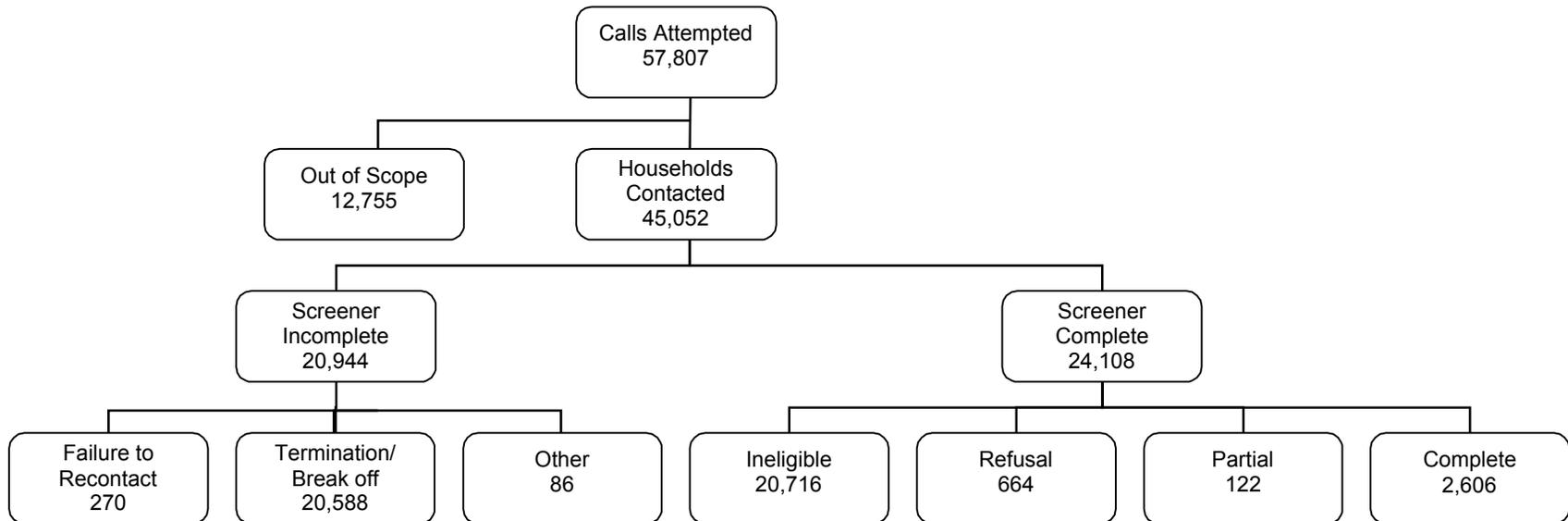
Canada



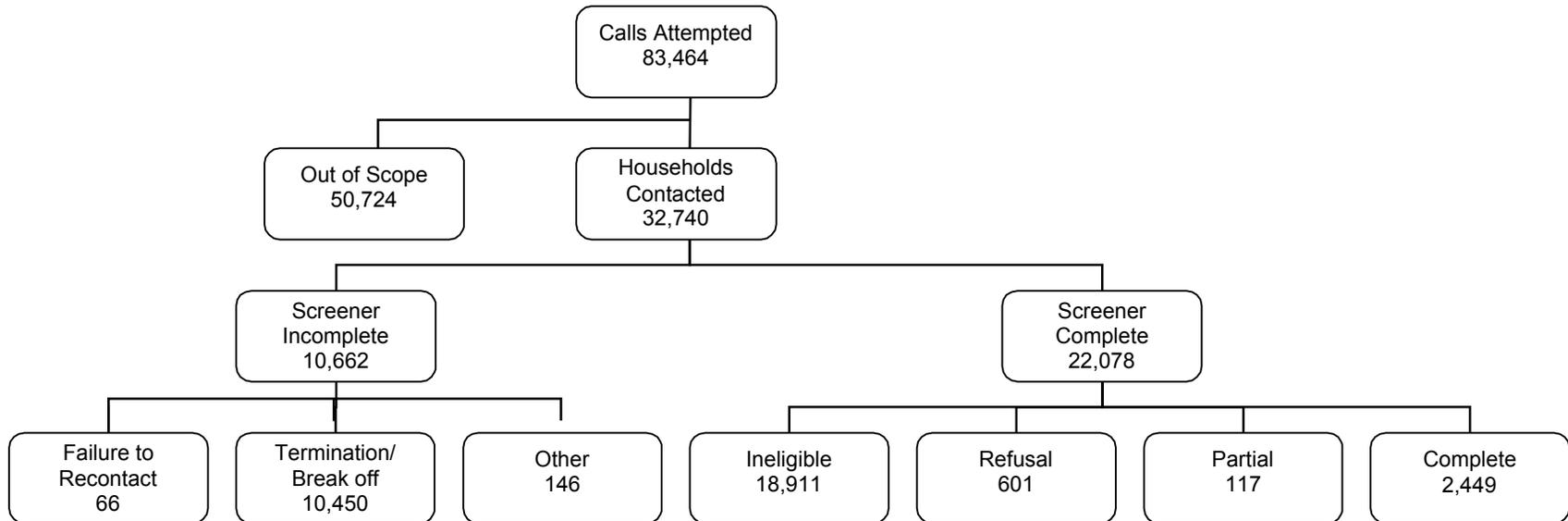
United States



United Kingdom



Australia



Appendix E. Intermediate Outcome Frequencies By Country

Intermediate Outcome Frequencies	Canada	U.S.	U.K.	Aus.
Completed Interviews (I) (CS09)	2,454	2,388	2,606	2,449
Partial Interviews (P) (CS84)	53	111	122	117
Refusal and break-off (R) (CS08+CS35+CS82)	512	395	664	601
Non-Contact (NC) (CS10+CS11+CS12+CS13)	395	1,268	270	66
Other (O) (CS93+CS94+CS95)	105	135	86	146
Total Ineligible (CS00+CS01+CS02+CS03+CS04+CS19+CS20+CS21+ CS24+CS32+CS33+CS34)	57,822	79,749	25,081	57,454
Unknown Eligibility–Household (UH) (CS40+CS41+CS42+CS44)	6,773	13,311	8,390	12,181
Unknown Eligibility–Other (UO) Total (CS18+CS80+CS90+CS01+CS92+CS43+CS44)	16,922	58,141	20,588	10,450
UO.1—Adult smoker, screener incomplete (CS22+CS27+CS28+CS30+CS81)	476	489	1,061	1,174
UO.2—Not known if smoker in household (CS18+CS43+CS80+CS90+CS91+CS92)	16,446	57,652	19,527	9,276

Appendix F. Other Computations Involving Disposition Codes

Computing Estimated Eligibility of Cases of “Unknown Eligibility”

Description	Canada	U.S.	U.K.	Aus.
Total “Screener Eligibles” (CS82+83+08+84+09)	2,785	2,739	2,860	2,680
Total cases found to be ineligible after screener (CS30+32+33+34)	98	132	310	181
Proportion of Total “Screener Eligibles” found to be eligible	0.97	0.95	0.89	0.93
Estimated number of UO.1 Eligibles (UO.1*proportion above)	458	465	946	1,095
Estimated number of eligible respondents from cases of unknown eligibility	1,783	5,990	3,693	2,425

Estimating Eligibility of Non-Contact Cases

Description	Canada	U.S.	U.K.	Aus.
CS11 * Eligibility rate	10	36	21	9
CS10,12,13 * .96	256	847	106	4
Revised Total of Non-Contacts	266	883	127	13

Appendix G. Benchmark Surveys

Canada

Canadian Tobacco Use Monitoring Survey (CTUMS), 2002

CTUMS provides data on tobacco use and related issues from over 10,000 respondents per year. The primary objective of the survey is to track changes in smoking status, especially for populations most at risk, such as the 15-24 year olds. The survey allows Health Canada to estimate smoking prevalence by province-sex-age groups on a semi-annual basis. The sample design is a special two-phase stratified random sample of telephone numbers. The two-phase design is used in order to increase the representation in the sample of individuals belonging to the 15-19 and 20-24 age groups. In the first phase, households are selected using Random Digit Dialling. In the second phase, one or two individuals (or none) are selected based upon household composition. Data are collected using computer-assisted telephone interviewing (CATI).

Canadian Community Health Survey (CCHS), 2000–01

The CCHS is conducted by Statistics Canada to provide timely cross-sectional estimates of health determinants, health status, and health system utilization at a sub-provincial level (health region or combination of health regions). Each two-year collection cycle is comprised of two distinct surveys: a health region-level survey in the first year with a total sample of 130,000 and a provincial-level survey in the second year with a total sample of 30,000. Both computer-assisted personal and telephone interviews are used. The target population of the CCHS includes household residents in all provinces and territories; with the principal exclusion of populations on Indian Reserves, Canadian Forces Bases, and some remote areas. One randomly selected respondent is interviewed per household, although planned over sampling of youths was conducted in a second member of certain households being interviewed. For the first collection cycle, only those 12 years of age and over were eligible for selection.

Survey on Smoking Behaviour (SSB), 1994–95

The major objectives of the SSB were to assess the national prevalence of smoking and to measure attitudes towards tobacco use. The first cycle was administered between April 20 and June 1, 1994 as a random digit dialed (RDD) survey. The target population for the Survey on Smoking in Canada was all persons 15 years of age. Individuals aged 15-24 or 65+ had 50 times the chance of being selected over people aged 25-64. Second, households with only 25-64 year-olds present were sub-sampled.

United States

National Health Interview Survey (NHIS), 2001

The NHIS is a multi-purpose health survey conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), and is the principal source of information on the health of the civilian, noninstitutionalized, household population of the United States. HIS data are collected through a personal household interview by Census interviewers. From each family in the NHIS, one sample adult and one sample child (if any children underage 18 are present) are randomly selected, and information on each is collected. The U.S. Census Bureau is the data collection agent for the NHIS. Further information is available at: <http://www.cdc.gov/nchs/nhis.htm>

Current Population Survey (CPS), 2002²⁷

The Current Population Survey (CPS) is a monthly survey of about 50,000 households conducted by the Bureau of the Census for the Bureau of Labor Statistics. The CPS is the primary source of information on the labor force characteristics of the U.S. population. The sample is selected to represent the civilian noninstitutional population. Respondents are interviewed to obtain information about the employment status of each member of the household 15 years of age and older. The sample provides estimates for the nation as a whole and serves as part of model-based estimates for individual states and other geographic areas.

Behavioural Risk Factor Surveillance Systems (BRFSS), 1999 ^{28,29}

The Behavioral Risk Factor Surveillance System (BRFSS) is a collaborative project of the Centers for Disease Control and Prevention (CDC), and U.S. states and territories. The BRFSS, administered and supported by CDC's Behavioral Surveillance Branch, is an ongoing data collection program designed to measure behavioural risk factors in the adult population 18 years of age or older living in households. The objective of the BRFSS is to collect uniform, state-specific data on preventive health practices and risk behaviours that are linked to chronic diseases, injuries, and preventable infectious diseases in the adult population. Data are collected from a random sample of adults (one per household) through a computer-assisted telephone survey.

United Kingdom

Health Survey for England (HSE), 2001

The HSE is a face-to-face survey designed to provide data at both national and regional level about the population living in private households in England. The sample for the 2001 survey included a cross-section of the population living in private households for which over 13,680 addresses were drawn from the Postcode Address File (PAF). All persons in the private household including those under 2 were eligible for inclusion in the survey. At addresses where there were more than two children under 16, two children were selected at random. Information was obtained directly from persons aged 13 and over. Information about children aged 0-12 was obtained from a parent, with the child present. For all informants, there was a computer-assisted interview by an interviewer with each eligible person (Stage 1), followed by a nurse visit (Stage 2) who undertook a number of measurements and in some cases obtained a blood sample or a saliva sample.

General Household Survey (GHS), 2001 ³⁰

The General Household Survey (GHS) is a multi-purpose face-to-face survey carried out by the Social Survey Division of the Office for National Statistics (ONS) which collects information on a range of topics from people living in private households in Great Britain. The survey consists of two elements: the Continuous Survey and trailers. The main aim of the survey is to collect data on a range of core topics, including health. A sample of approximately 13,000 addresses is selected each year from the Postcode Address File. All adults aged 16 and over are interviewed in each responding household. Demographic and health information is also collected about children in the household.

Australia

National Drug Strategy Household Survey (NDSHS), 2001

The NDSHS is managed by the Australian Institute of Health and Welfare on behalf of the Commonwealth Department of Health and Ageing, and conducted by Roy Morgan Research. The 2001 Survey, which was the seventh in a series, provides data about awareness, attitudes and behaviour relating to drug use, including alcohol and tobacco as well as illicit drugs. The 2001 Survey, as well as utilizing the personal interview and self-completion methodologies adopted in past surveys, also incorporated a sample who were interviewed using Computer Assisted Telephone Interviewing (CATI). All respondents were aged 14 and over. In each household the selected respondent was the person with the next birthday. The questionnaire included both questions about general attitudes to drugs and more sensitive questions about personal drug usage and required approximately 25 minutes to complete.

National Tobacco Survey Evaluation Campaign (NTSEC), 2000

The evaluation surveys were conducted by the Commonwealth Department of Health and Aged Care and conducted by the Roy Morgan Research Centre. The second follow-up survey was conducted following the same methods as the first follow-up and benchmark surveys. An enumeration survey was conducted to identify the smoking status of all adults in the household and to enable selection of subjects. All participants were asked about their cigarette smoking to confirm categorization of participants into smokers, recent quitters and others. The telephone questionnaire included questions about participants' awareness of advertising about health, recent learning about smoking and health, and agreement and disagreement with a range of opinion statements relating to smoking and health.

National Health Survey, 2001

The National Health Survey (NHS) was conducted by the Bureau of Statistics (ABS) from February to November 2001. Approximately 26,900 people from all states and territories and across all age groups were included.

Appendix H. Demographic Profile of Daily Smokers 18 years and Older: ITCPES (Unweighted) and National Benchmarks

Measure	Canada *			U.S.		U.K.		Australia	
	ITCPES Total	ITCPES ≥ 20 yrs	CCHS ≥ 20 yrs	ITCPES	NHIS	ITCPES	GHS	ITCPES	NHS
Age									
18-24	15.0	12.0	11.0	16.5	14.7	9.1	12.7	17.3	15.6
25-39	31.3	32.4	34.6	30.3	31.3	31.8	36.3	36.3	38.8
40-54	35.2	36.4	36.3	34.4	34.7	32.8	27.1	32.5	29.4
55+	18.6	19.2	18.1	18.9	19.4	26.3	24.0	13.8	16.1
Sex									
Female	53.4	53.7	54.4	54.0	52.2	55.1	50.5	51.5	55.6
Male	46.6	46.3	45.6	46.0	47.8	44.9	49.5	48.5	44.4
Race/Ethnicity†									
White	86.8	87.0	91.9	75.7	79.7	94.3	94.3	85.0	86.6
Other/Mixed	13.2	13.0	8.1	24.3	20.3	5.7	5.5	15.0	13.4
Education									
12 years or less	47.9	46.7	51.9	44.8	38.9	65.3	66.2	66.0	–
More than 12 years	52.1	53.3	48.1	55.2	61.1	34.7	33.8	34.0	–

* CCHS data only available for respondents ≥ 20 years old.

† In Australia, for both ITCPEs and NHS samples, Race/Ethnicity was assessed by language spoken at home (English only vs. Any other).

Appendix I. Key Indicators of Smoking: ITCPES and National Benchmarks

Canada

Measure	ITCPES			CTUMS (2002)			ITCPES (≥ 20 years)			CCHS (2001)*		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Cigarettes per day	17.5	14.8	16.0	18.1	14.9	16.6	17.6	14.9	16.2	18.5	15.5	17.1
% quit attempt in last 12 months	46.8	47.7	47.3	43.8%	46.0%	44.9	45.7	46.8	46.3	38.2	38.2	38.2
% Seriously considering or planning to quit in next 6 months†	46.2	43.4	44.7	62.1%	56.5%	59.4	—	—	—	—	—	—
% having first cigarette of day within 5 min of waking	18.3	21.6	20.1	26.6%	24.4%	25.6	—	—	—	—	—	—

* CCHS data includes only respondents 20 years and older

† Differences in question wording: ITCPES = “planning to quit”; CTUMS = “considering quitting”

United States

Measure	ITCPES (2002)			NHIS (2001)		
	Male	Female	Total	Male	Female	Total
Cigarettes per day	19.5	16.5	17.9	19.5	16.2	17.9
% quit attempt in last 12 months	44.5	45.5	45.0	40.1	41.1	40.6

United Kingdom

Measure	ITCPES (U.K. Total)			GHS (2001)			ITCPES (England)			HSE (2001; England)		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Cigarettes per day	18.0	15.8	16.8	15.3	13.5	14.4	18.6	17.0	17.8	15.6	13.4	14.4
% having first cigarette of day within 15 min of waking	41.2	36.8	38.7	32.8	33.0	32.9	32.7	27.3	30.1	34.0	30.2	31.9

Australia

Measure	ITCPES (2002)			NTCES (2002)			NDDS (2001)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Cigarettes per day	19.4	16.6	17.9	17.4	16.2	16.7	19.5	17.8	18.7
% ever tried to quit	82.9	83.3	83.1	80.3	80.0	80.1	—	—	—
% tried to quit in past year	44.2	45.8	45.0	—	—	—	39.5	38.4	39.0
% seriously considering or planning to quit in next month*	13.4	11.0	12.2	15.8	17.0	16.5	10.6	8.9	10.8

* Differences in question wording: ITCPEs and NDDS = “planning to quit”; NTCES = “considering quitting”

Appendix J. Main Survey Follow-up Rates

Definitions for not contacted and contacted:

NOT CONTACTED:

- Not in service/line problem
- Rings only
- Busy
- Answering machine/fax/modem

CONTACTED:

- Respondent has died
- Respondent calls to withdraw
- Household refusal to get respondent
- Respondent unavailable this wave
- Respondent refuses before Qxx is finished
- All questions answered
- All questions asked, respondent refused one or more questions
- Interruption, never completed
- Respondent completes all but income

OF THOSE CONTACTED

NOT CONTACTED

- Respondent has died
- Respondent calls to withdraw
- Respondent unavailable this wave
- Rescheduled, appointment not kept
- Interviewer termination

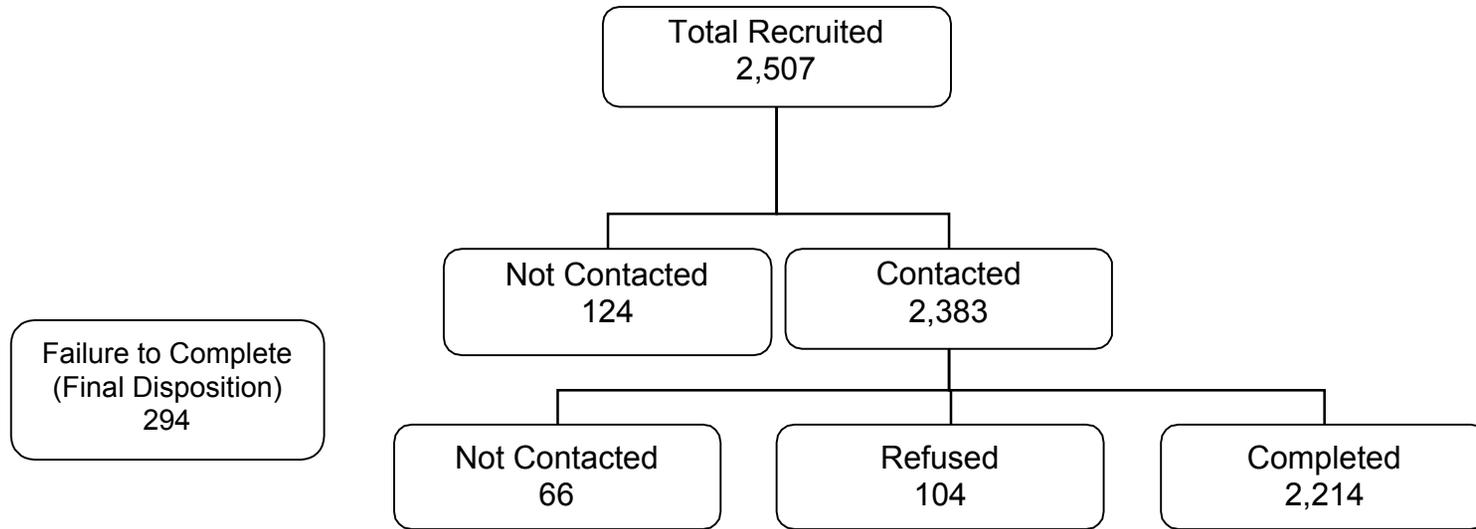
REFUSAL

- Respondent refuses before Qxx is finished
- Household refusal to get respondent

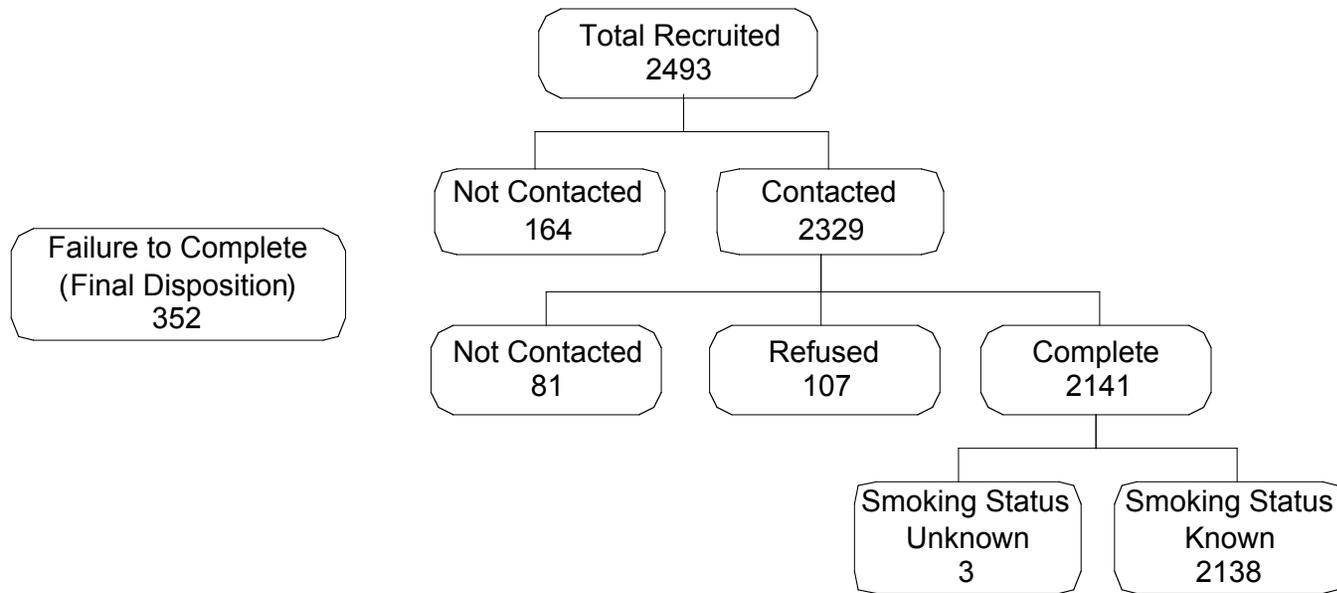
COMPLETE

- All questions answered
- All questions asked, respondent refused one or more questions
- Interruption, never completed
- Respondent completes all but income

Canada



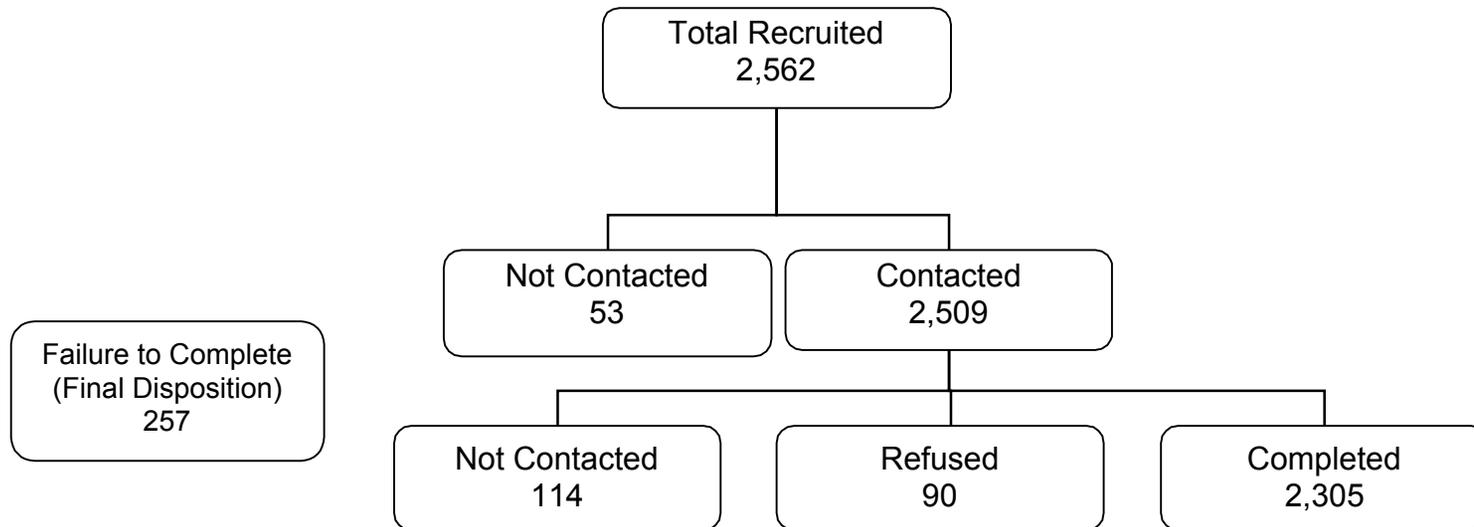
United States



United Kingdom



Australia



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