



International Tobacco Control (ITC)

New Zealand Survey

Wave 1 (Second Cohort)

ITC New Zealand Technical Report

December 2017



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Preface to ITC New Zealand Wave 1 (Second Cohort) Technical Report

The International Tobacco Control Policy Evaluation Project (the ITC Project) is a multi-country research programme that includes prospective cohort studies designed to measure the psychosocial and behavioral impact of key policies of the WHO's Framework Convention on Tobacco Control (FCTC) in 29 countries. In January 2004, New Zealand ratified the WHO FCTC.

The first cohort of the ITC New Zealand (ITC NZ) Survey was conducted from 2006-2009. The sample list was developed through a complex sample selection process, which included systematic boosted-sampling of the Māori, Pacific peoples, and Asian populations. Adult smokers were interviewed by computer-assisted telephone survey in two waves (N=1,376 and N=923), a year apart. Wave 1 was conducted between March 2007 and February 2008. Wave 2 was conducted between March 2008 and February 2009. Funding for the first ITC NZ Project finished in August 2009. The ITC NZ Project fostered enduring international collaborations and produced at least 47 journal publications based on the ITC NZ data (see www.otago.ac.nz/wellington/departments/publichealth/research/otago022619.html), and many presentations and reports, including important findings on roll-your-own smoking, misperceptions about nicotine and menthol, the impact of Pictorial Health Warnings (PHWs), and smokers' views on varied tobacco control policies and interventions.

Following proposals to the New Zealand Health Research Council, a second ITC New Zealand Project with a new cohort was funded in 2015, starting in October of that year. This technical report documents the methods of the first wave of the second cohort of this project. In order to differentiate it from the first cohort (ITC NZ Project), the second cohort was given a 3-letter country code, i.e., ITC NZL Project. The ITC NZL Wave 1 (NZL1) Survey was conducted from August 30, 2016 to April 22, 2017.

1 Introduction

1.1 Background

The International Tobacco Control Policy Evaluation Project (the ITC Project) is a multi-country research programme with a prospective cohort study in each participating country designed to measure the psychosocial and behavioral impact of key policies of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC). The ITC Project is a large global research initiative that currently involves 29 countries (Australia, Bangladesh, Bhutan, Brazil, Canada, China (Mainland), France, Germany, Greece, Hungary, India, Ireland, Japan, Kenya, Republic of Korea, Malaysia, Mauritius, Mexico, Netherlands, New Zealand, Poland, Romania, Spain, Thailand, United Arab Emirates, United Kingdom, Uruguay, United States of America, and Zambia) inhabited by over 50% of the world's population, over 60% of the world's smokers, and over 70% of the world's tobacco users.

1.2 Main Objectives and Research questions

The aims of the ITC New Zealand (NZL) Survey, are to:

1. Describe smoking-related behaviours and attitudes, experiences and perceptions;
2. Identify determinants of smoking-related behaviours;
3. Assess the impact of tobacco control measures on smoking-related behaviours;
4. Explore patterns of use and impacts of alternative nicotine delivery devices;
5. Explore the feasibility and acceptability of novel policy and practice interventions.

This will be achieved by establishing and following-up a cohort of New Zealand smokers and former smokers, with the following specific objectives for the first survey wave:

1. To establish and maintain a nationally representative cohort of up to 1,500 smokers and former smokers.
2. To carry out a Wave 1 Survey in 2016 and perform and write-up the findings of New Zealand specific analyses and international comparative analyses associated with this survey wave.

3. To actively disseminate the findings from the Wave 1 Survey analysis to policy-makers and the health sector.

The research questions which are addressed in the ITC NZL Survey include the following:

1. What are the individual, policy and environmental determinants of key smoking related behaviours (e.g. quit attempts, relapse and cessation) among smokers and former smokers? How do these vary between key population groups, such as Māori and lower socio-economic status groups?
2. What are the impacts of tobacco control policy changes (e.g., tobacco tax; plain packs), smoking cessation interventions (e.g., mass media) and new technologies (e.g., e-cigarettes) on smoking-related behaviours, and what factors mediate these responses? How do these responses and mediators vary between key population groups?
3. What are the attitudes, experiences and perceptions of smokers and former smokers to the Smokefree Aotearoa 2025 goal; the acceptability of smoking; current and possible future tobacco control policies and cessation interventions; and new nicotine-delivery technologies? How do these attitudes, experiences and perceptions change over time and vary between key population groups?
4. What are the prevalence and patterns of use of alternative nicotine delivery devices? How is use associated with key smoking-related behaviours, and how does this vary between key population groups?

1.3 The Research Team

The ITC New Zealand (NZL) Project is a collaborative venture with the ITC Project at the University of Waterloo, Canada, led by Principal Investigator, Geoffrey T. Fong. The ITC NZL Project is based at the Department of Public Health, University of Otago, Wellington, New Zealand. It is led by Principal Investigator, Richard Edwards. Co-investigators are based at the Department of Public Health and Dean's Department at the University of Otago (Wellington), Department of Marketing, University of Otago (Dunedin), Whakauae Research for Māori Health and Development (Whanganui), and the Auckland University of Technology in New Zealand.

2 ITC New Zealand Wave 1 Overview

The ITC NZL Wave 1 (NZL1) Survey was the baseline survey for a prospective longitudinal study. Respondents who participated in Wave 1 will be recontacted at Wave 2 to answer a follow-up survey. The ITC NZL1 Survey included a cohort of smokers and recently-quit former smokers aged 18 and older drawn from respondents from the New Zealand Health Survey (NZHS). Smokers and recent quitters from the NZHS who indicated that they could be approached to participate in other health research were eligible for participation. The ITC NZL Wave 1 Survey was conducted between August 30, 2016 and April 22, 2017.

3 Sampling Design, Sampling Frame, and Sample Size

3.1 Sampling design and frame

ITC NZL1 participants were sampled from respondents in the New Zealand Health Survey (NZHS). The NZHS is a rolling cross-sectional survey that has an annualised achieved sample of 12,000-12,500, of whom around 85% consent to be re-contacted for further studies within 24 months. The NZHS uses a two-stage sampling process based on area-based selection, with oversampling of Māori, Pacific, and Asian members of the NZ population and stratification according to District Health Board (DHBs) area of residence (see Figure 1). Full details of the NZHS sampling scheme are available in the Ministry of Health's 2015-2016 NZHS Methodology Report at the following web link:

<http://www.health.govt.nz/publication/methodology-report-2015-16-new-zealand-health-survey>

ITC NZL1 participants were recruited from NZHS respondents of 2015 and 2016, with the sampling frame spanning the six quarters from the start of 2015 to mid-year 2016. In summary, eligible individuals for the ITC NZL1 were those who:

- participated in the NZHS up to 24 months prior;
- agreed to be contacted about further research when they completed the NZHS;
- were current smokers at the time they completed the NZHS (i.e., someone who has smoked more than 100 cigarettes in their lifetime and currently smokes at least

monthly) OR were former smokers who had quit within the last 12 months at the time they completed the NZHS;

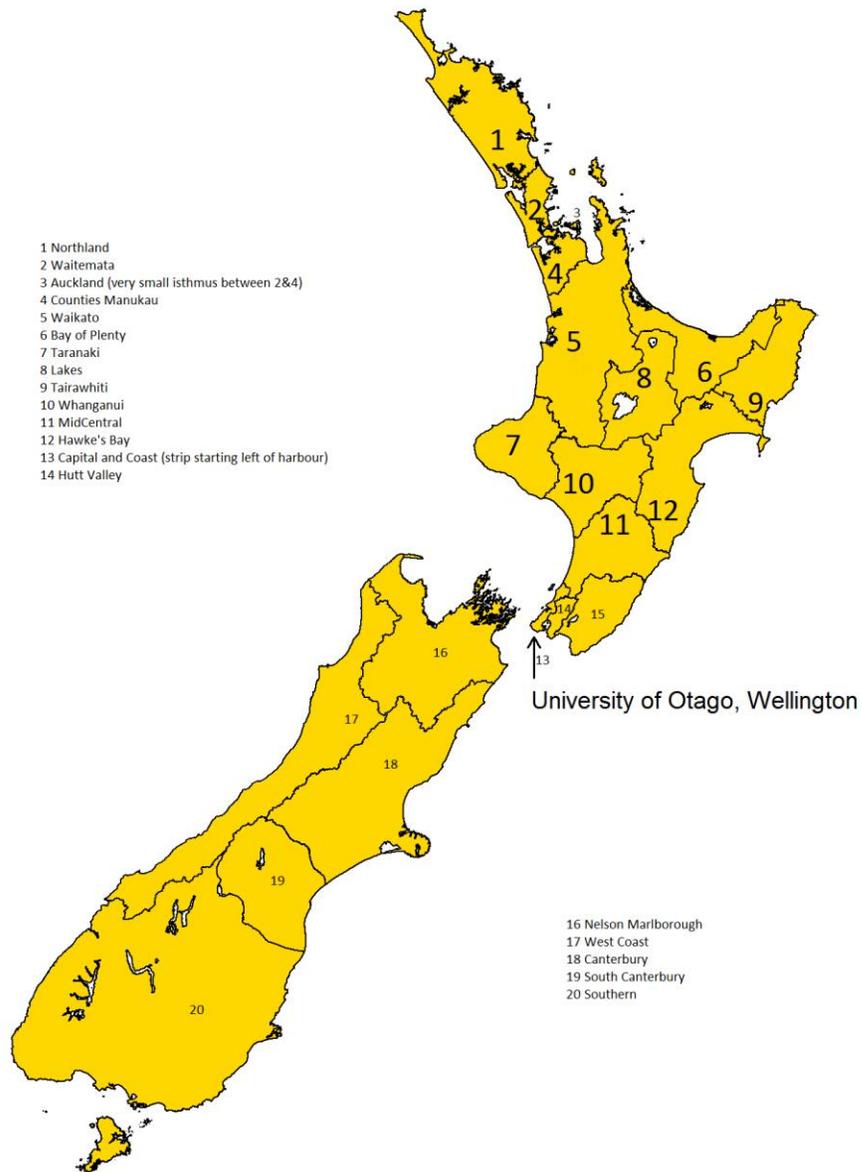
- were born on or before 1 March 1998 (i.e., aged 18 and older at the start of the data collection period)
- were mentally and physically able to complete the interview and with no major language barriers

We aimed to recruit a cohort of 1,500 adult (aged 18 and older) current smokers (N=1,350) and former smokers (N=150). To recruit 1,500 participants, we estimated that we needed to approach a sampling frame of around 2,700 of 3,600 eligible adults (smokers and former smokers). This estimate was based on an anticipated 75% contact rate and 75% cooperation rate (combined recruitment rate of 56%), based on experience with the first ITC NZ Survey.

A stratified sampling design was used to help achieve good estimation precision for specific sub-groups of the New Zealand smoker and recent ex-smoker population, i.e., Māori current smokers, Pacific current smokers, younger smokers (aged 18-24) who are not of Māori /Pacific ethnicity, older smokers (aged 25+) who are not of Māori /Pacific ethnicity, and recently-quit or former smokers. To achieve an adequate sample size of Māori participants, and hence be consistent with FCTC commitments to protect indigenous peoples from tobacco and with New Zealand's Treaty of Waitangi, we included an oversampling of Māori and Pacific peoples group with the aim of achieving ~600 Māori, ~160 Pacific, and ~740 other participants. Due to the limited number of recent quitters available based on NZHS data, all recent quitters in the sampling frame were invited to participate in the ITC NZL Wave 1 Survey.

The University of Otago team prepared sampling lists for each of the five stratified sampling groups. To manage response rates, the sample lists were released in tranches. The ideal numbers of respondents in each tranche were negotiated between the ITC New Zealand team and the survey firm, Research New Zealand (RNZ), to ensure that: a) the RNZ interviewers had sufficient numbers of contacts to follow-up and b) once a sampling strata group was completed there were not significant numbers of people where contact attempts had been initiated but not completed and who were not included in the final sample (thereby reducing response rates).

Figure 1: Map of New Zealand (with District Health Board boundaries)



3.2 Fieldwork dates

The fieldwork for the ITC NZL1 started with a pilot survey on August 30, 2016. The recruitment started on September 14, 2016. On December 14, 2016, RNZ stopped data collection temporarily for the Christmas holiday since most people take their summer vacation over late December/January and behaviours over this period may impact on the data

(e.g., high number of relapses). Data collection resumed on February 07, 2017 and was completed April 22, 2017.

3.3 Achieved Sample Size

A total of 1,155 respondents were recruited and initiated the survey, i.e., 1,018 adult smokers and 137 adult former smokers from the NZHS. However, only 1,059 respondents fully completed the survey, whilst 1,082 completed all of the essential questions and over half of the survey in total. Reasons for stopping sample recruitment before the target sample of 1,500 included needing to keep within study timelines and cost constraints.

Table 1 shows planned and achieved completed interviews by sampling strata groups. There was under-representation of Māori, Pacific and non-Māori non-Pacific young adults in the achieved sample compared to the planned sample numbers and proportions.

Table 1 Completed Interviews by Sampling Stratum in the ITC NZL1 Survey

Sampling stratum from NZHS	Planned sample (n=1500)	Percent of planned sample	Achieved sample (n= 1082)	Percent of achieved sample
1. Māori current smokers	600	40.0	332	30.7
2. Pacific current smokers	100	6.7	49	4.5
3. NMNP younger current smokers (aged 18-24)	80	5.3	40	3.7
4. NMNP remainder current smokers (aged 25+)	570	38.0	530	49.0
5. Recent quitters (last 12 months)	150	10.0	131	12.1

Key: NMNP = non-Māori non-Pacific

Table 2 shows the distribution of participants by smoking and quitting status.

Table 2 Sample Sizes of Current and Former Smokers in the ITC NZL1 Survey

Smoking status	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Daily smoker	717	66.3	717	66.3
Weekly smoker	115	10.6	832	76.9
Monthly smoker	17	1.6	849	78.5
Quit in the last month	74	6.8	923	85.3
Quit 1-6 months ago	54	5.0	977	90.3
Quit more than 6 months ago	37	3.4	1014	93.7
Quit more than one year ago	68	6.3	1082	100.0

4 Questionnaire Development Process

The questionnaire development process began with a series of teleconferences to review the previous questionnaires from the first cohort of ITC NZ Wave 1 and 2 Surveys and current ITC Project questionnaires from other countries. We sought agreement regarding what questions would be dropped from earlier waves and considered new questions to evaluate the impact of tobacco control policies and interventions that had been implemented since the second wave of the first cohort or were planned or under discussion (further detail of these interventions are provided in Appendix A).

The final questionnaire represented a balance between ensuring questions were appropriate and relevant to the New Zealand context, whilst maximizing consistency with other ITC Project surveys to allow comparative analyses.

The smoker questionnaires contained common measures of tobacco use found in all ITC country surveys, including:

- Demographic information
- Current use of cigarettes and other tobacco products
- Quitting attempts and outcomes
- Type of tobacco and brand smoked
- Tobacco dependence
- Knowledge of health effects and constituents, perceived risk
- Awareness and impact of warning labels
- Plain packaging evaluation questions
- Awareness and impact of anti-smoking campaigns
- Sources of tobacco, costs and economic impacts of, support for and impact of tobacco tax
- Support for tobacco control policies and interventions
- Cessation advice and support
- Quitting intentions, motivation and beliefs
- SHS exposure and attitudes/support for smokefree policies
- Attitudes to tobacco industry
- Awareness and attitudes to Smokefree 2025 goal
- Smoking and quitting in social network
- Perceptions and experiences of stigma and denormalisation smoking-related beliefs and norms
- E-cigarette awareness and use, types of product, reasons for use, vaping-related beliefs and behaviours
- Attitudes to e-cigarette-related policies and regulations
- Alcohol use and mental health

5 Contact, Recruitment and Interview Procedures

The New Zealand team oversaw the survey fieldwork of the ITC NZL1 Survey, hiring the survey firm, Research New Zealand (RNZ), to conduct the study's fieldwork. The fieldwork carried out by RNZ included programming and doing initial tests of the questionnaire, scripting the questionnaire for Computer-Aided Telephone Interview (CATI) software, sending out participant invitation letters, contacting participants, conducting the interviews, providing regular reports to the NZ and Waterloo research teams, and performing initial data cleaning procedures prior to forwarding the raw data to the University of Waterloo Data Management team.

5.1 Contact and recruitment procedures

RNZ adapted the calling guidelines in consultation with the ITC New Zealand team to follow the best practices when conducting phone interviews in New Zealand. They used IBM SPSS Data Collection, Version 7 CATI software for the interview data collection process.

A combined invitation and information letter was mailed 7-10 days prior to the launch of the fieldwork. Letters were sent out in tranches corresponding to the release of contact details to the survey firm. Below are details of the agreed procedures that were followed for contacting and recruiting new respondents as stipulated in the ITC NZL1 Protocol document that was submitted to RNZ.

5.1.1 Procedures for recruiting ITC NZL Wave 1 respondents

- Eligibility was determined based on respondents' previous answers to the NZHS (2014/2015 and 2015/2016). The Ministry of Health NZ Health Survey team provided lists of eligible respondents to the ITC New Zealand team.
- The selection of respondents who were invited to participate in the ITC NZL1 Survey was based on these lists of eligible participants. Sampling lists were provided to RNZ by the University of Otago, and RNZ sent out invitation letters.
- Once selected participants had received their invitation letter; they were able to opt-out of the study by contacting the RNZ's 0800 number. To opt out, the person left

their name and contact number. If a person rang on behalf of an invited participant a clear reason had to be given why the selected participant did not call themselves for the invited person to be removed from the contact list.

- Selected respondents were contacted by phone approximately 2-4 weeks after receiving their invitation letter. Where contact was made, the interviewer explained the nature and purpose of the survey and asked if the selected respondent was willing to participate. If they agreed, the interviewer obtained their verbal consent to participate and organised a time for the survey interview.
- At any time, the respondent could suggest an alternate survey interview time, or could withdraw from the survey.

5.1.2 Procedures for calling respondents

- Depending on response, up to seven calls were made to each potential participant.
- To avoid call-scheduling bias, recruitment calls were conducted at various times of the day and on different days of the week, including the weekend.
- More calls were made during the evening and/or weekends in order to increase the chance of contact.
- If no contact had been made by the second contact attempt, subsequent attempts were alternated between cell-phones and landlines (the 3rd attempt being to a cell-phone). Interviewers continued to call at various times of the day and on different days of the week, including weekends. All calls regardless of whether they were to a landline or to a cell phone were counted as a contact attempt.
- Interviewers who made the initial recruitment call did not leave any message (not even a limited one) when recruiting new respondents.
- If interviewers were automatically forwarded to an alternative phone number, they proceeded as per the script's instructions.
- If the respondent disclosed that they had a close family member who had been diagnosed with a smoking-related disease, interviewers used discretion and tact, per their usual procedures. The survey script allowed for the respondent to participate if they still desired to.

- If respondent showed psychological distress, interviewers used discretion and tact, as per their usual procedures. If the interviewer considered that the interview was resulting in distress or the respondent was too distressed to continue they gave the respondent the option to complete interview later, or if this could result in further distress the respondent was given the option to abandon the interview.
- As this is a cohort study and there was a wish to not influence the subsequent behaviours of the participants, the interviewer did not provide any advice or information about quitting support (even just providing the Quitline number) or other health advice, even if information was requested by the respondent. If the respondent requested for such information the interviewer responded (or paraphrase) “I am not qualified to give you clinical advice; however it should be readily available through your local health service or other means.”
- Refusal conversion: this was done following stipulated scripts that were already programmed within the survey.
- If possible the survey firm used the same interviewer at various calls to the same potential respondent, but the priority was to call on the specified day and time requested by respondent.

5.1.3 Number of call attempts – first time calling

- If phone rang, but there was no answer and no answering machine or voicemail: a total of 7 call attempts by landline or cell phone were made.
- If phone rang and there was no answer, but there was an answering machine/voicemail: a total of 7 call attempts were made.
- If phone was constantly busy: a total of 7 call attempts were made.
- If a non-adult (i.e., younger than 18) or an adult answered who was not the respondent from the sampling list and the respondent was not home: a total of 7 call attempts were made.

5.1.4 Number of call attempts – recruits who complete survey in two or more calls

- If a respondent missed their scheduled interview appointment and had an answering machine: interviewers left a message and called back twice a day for the next 3 days.

- If a respondent missed their scheduled appointment time and did not have an answering machine: the interviewer called back later in the same day twice (first within an hour and again later), and then called back twice a day for the next 3 days.
- If a respondent missed their scheduled appointment time and another member of the household answered: the interviewer left a message and asked for the best time to reach the respondent. The interviewer called at that time, and if there was no answer, the interviewer called once more over the next couple of days.

5.1.5 Cell Phones

- Cell phone scripts were programmed into the telephone survey.

5.1.6 Issues/Troubleshooting

- The survey firm RNZ provided an automated toll-free 0800 number for potential or actual survey participants to call. This system provided options for callers to opt out of the survey, to provide details for preferred interview appointment times, or for the survey firm project manager to call them back. Participants selecting any of these options were asked to leave their name and contact details.
- RNZ designated a staff person to check messages on their toll-free number on a daily basis during the fieldwork period.
- Requests to reschedule appointments were integrated into the interviewers' database.
- All other requests were addressed within 24 hours.

5.1.7 Disposition codes

- RNZ used standard ITC disposition codes to track recruitment progress and final outcomes for each respondent throughout the fieldwork period.
- The ITC NZL1 Survey disposition codes are provided in Section 7.1.
- RNZ completed the MS Excel spreadsheet provided by the Data Management Centre (DMC) at the University of Waterloo ITC Project. This information was used by the DMC to compute response and cooperation rates.

5.2 Interview protocol and interview duration

All interviews were conducted by RNZ using Computer-Assisted Telephone Interview (CATI) system as per the standard calling/interview protocol used in the majority of ITC CATI Surveys.

The mean interview durations were as follows:

- 77.1 minutes for smokers.
- 69.5 minutes for former smokers.

For Māori and Pacific participants, interviewers of the same ethnicity were assigned wherever possible. Around 80% of the RNZ interviewers working on the survey were Māori or Pacific ethnicity.

5.3 Token of appreciation and thank-you letters

A thank-you letter and a token of appreciation (\$20 Warehouse voucher) was mailed to a respondent by the survey firm to thank the respondent for participating in the survey within 1-2 days of completing the interview.

6 Quality Control

The ITC NZL1 Survey is part of a global project—the ITC Project, which consists of longitudinal cohort surveys in 29 countries throughout the world. Thus, it was very important that the telephone (CATI) protocol and specifications for ITC NZL1 Survey would be carried out with very high quality and high fidelity in order to allow the ITC Project team to be able to compare the results of the New Zealand survey to those in the other 28 ITC countries.

The ITC Waterloo Project Manager (PM), in collaboration with the DMC, prepared a Protocol to guide the survey firm (RNZ), regarding the standard telephone (CATI) data collection procedures. In addition, the survey firm was in constant communication with the University of Waterloo ITC Project and the ITC New Zealand team throughout the entire duration of the project.

The RNZ call centre was accredited with the industry’s highest quality standard, ‘Interviewer Quality Standard’ or IQS up to 2016. RNZ was one of only a small number of Research Association members that was IQS-accredited. IQS ensures all survey research is completed in conformance with ISO 20252. It was independently audited each year and RNZ held its accreditation for over 14 consecutive years. RNZ withdrew from the accreditation in 2016 when the Research Association decided to no longer have IQS independently audited. However, all RNZ survey work still conforms with ISO 20252.

The key requirements of IQS are as follows:

- All interviewers who work on a project must attend a briefing.
- A minimum of 10 percent of all interviewers’ work must be validated.

Validation is completed by a small team of supervisors, either by listening to an interview as it is taking place (intercepting) or re-contacting respondents and asking them to provide answers to a small selection of key survey questions (verifications).

6.1.1 Pilot and cognitive testing of questionnaire

The survey included several new questions developed for e-cigarette smokers for the wider ITC Project and others developed specifically for the ITC NZL Survey for cigarettes smokers (which included questions relating to e-cigarette use). Nineteen of these questions were subjected to cognitive testing (e.g., comprehension of question and response options) in June 2016 with six e-cigarette users and 10 current smokers. The questions largely performed well, but some changes to wording and response options were made to address issues that arose in the cognitive testing interviews.

6.1.2 Data Monitoring and Quality Checking

Several quality measures were taken to ensure high quality data:

- The survey firm worked with the UW ITC Project prior to finalizing the survey to ensure accuracy of the CATI Program. The ITC New Zealand team was copied in all correspondence between the UW ITC Project and the survey firm throughout this process.
- To achieve this goal, the survey firm provided access to the CATI Program to the UW ITC Project team. The latter assisted the survey firm in reviewing the CATI Program and pointing out any errors. These errors were fixed by the firm prior to the fieldwork launch.
- The Survey Management Group (SMG) at the UW ITC Project provided guidance throughout the process.
- The UW ITC Project and the ITC New Zealand teams both approved the CATI survey program before the survey firm commenced the data collection.

6.1.3 Progress Reports

Weekly reports were sent to the NZ team and ITC Project by the survey firm (RNZ). They also informed the NZ team and the UW Project Manager about any concerns or problems that arose in the field. The progress reports were discussed at the regular (approx. every 2-3 weeks) study team meetings.

6.1.4 Data Delivery, Security and Cleaning

A test of the data collection procedures was done at the beginning of the fieldwork launch. If an issue was identified it was relayed to the survey firm for correction before proceeding on with the full launch of the data collection activity.

Data was transferred to UW DMC team using the SENDIT programme. As an extra precaution to maintain security, data files were encrypted prior to uploading them to the SENDIT website. Once the data were successfully transferred, the University of Waterloo data analyst commenced data cleaning.

The RNZ team and in-country data manager performed initial data checking and identified discrepancies and correction. The data was then sent to the UW ITC data analyst who conducted additional checks on the data to ensure that all skip patterns (routing commands) had been correctly followed and to ensure that the data did not contain invalid values. Respondent identifier codes were also checked thoroughly to ensure the data could be correctly linked within a survey wave and between waves over time. Any additional discrepancies that were identified were also sent back to the in-country data manager for verification. This back and forth communication between the UW ITC data analyst and the in-country data manager went on until the data were deemed clean by the UW ITC data analyst.

The New Zealand team sent a partial data set (encrypted) to DMC on December 20, 2016 for cleaning. DMC cleaned and encrypted the partial data set and sent it back to the New Zealand team on February 16, 2017 to enable them to examine and become familiar with the data early.

Once the data collection of the ITC NZL1 Survey was finished, DMC completed cleaning the full data set. This was followed by the construction of sampling weights (the weighting procedure is described in Appendix E). Finally, the cleaned datasets was released to the country team (September 20, 2017), by posting them on the secure, internal ITC website.

7 Disposition Codes for ITC NZL Wave 1 Survey

Table 3 lists the codes used to track progress on participant recruitment and final interview outcomes for individuals recruited in ITC NZL Wave 1 Survey. Most were entered by the interviewers. The questionnaire refers to the DMC codes as (DC: [code]). The disposition codes are in the first column of the table.

Table 3 Disposition codes used in ITC NZL1 Survey

DMC Code	AAPOR	Type†	Description	Comments
Interview				
P-A1	1.1	D	Respondent completes survey; perhaps refuses a few questions	
P-A2	1.2	D	Respondent completes all essential questions and at least 50% of the survey (see P-B11.9)	
Eligible, non-interview				
P-B11.2	2.11	P	Respondent refuses at consent	
P-B11.3	2.11	I	Respondent completes consent, but refuses later on, either before the interview starts or during/after the interview	This means refusing and withdrawing of previously given consent.
P-B11.4		I	Person who answers phone hangs up before saying whether s/he is the intended respondent	
P-B11.5		P	Person who answers phone refuses to get the respondent	
P-B11.9	2.11	D	Respondent is deemed to be eligible, and enters the survey, but refuses to answer some essential questions and/or answers less than 50% of the survey (see P-A2)	

DMC Code	AAPOR	Type†	Description	Comments
P-B12	2.12	I	Respondent breaks off during the interview	
P-B21	2.21	I	Respondent is deemed to be eligible, but is never available (is away throughout the survey period, or unable to be contacted after multiple call-backs)	
P-B22	2.22	I	Answering machine	
P-B23		I	Rings only and no answer	
P-B24		I	Disconnected or wrong number	
P-B25		I	Always busy, no answering machine, call blocking, or other technical phone problems	
P-B30.1		I	Respondent has died	
P-B30.2	2.3	I	Respondent calls to withdraw before a scheduled appointment without having provided consent	
P-B32	2.32	I	Respondent physically/mentally unable or incompetent	
P-B33	2.33	I	Respondent has language barrier	
P-B39	2.36	I	Any other reason why respondent did not/cannot complete the interview	Unlikely to be used, but left in as a precaution
P-B40.1		I (T)	Call-back needed to complete interview with respondent	
P-B40.3	2.2	P (T)	Person who answers phone makes appointment for respondent	
P-B40.4	2.2	P (T)	Respondent makes an appointment to complete the interview (landline)	

DMC Code	AAPOR	Type†	Description	Comments
P-B41	M	P (T)	Respondent driving or can't talk on mobile/cell phone, call-back to complete screener	Converted to P-B21 if unable to contact respondent after multiple call-backs
Unknown eligibility, non-interview				
P-C11		P	Respondent refuses, can't answer or doesn't know his/her smoking status; thus unknown if he/she is eligible	
P-C90	3.9	I	Any other reason why respondent's eligibility is unknown	Unlikely to be used, but left in as a precaution
Not eligible				
P-D10	4.1	I	Out of sample (e.g., respondent has moved to another country or is no longer part of the 5 groups being studied)	Unlikely to be used, but left in as a precaution
P-D80	4.7	I	Quota/Sampling Strata Group has been filled	Unlikely to be used, but left in as a precaution
P-D90	4.9	I	Other reason why respondent is not eligible	Unlikely to be used, but left in as a precaution

† Type of Disposition code:

- I = Disposition code to be entered by the interviewer or supervisor
- P = Disposition code which can be programmed into the script
- D = Disposition code which can be derived after all data are collected
- T = Temporary code

8 Cooperation and Response Rates for Respondents Recruited at the ITC New Zealand Wave 1 Survey

Aggregated disposition codes for calculating response rates are summarised in Table 4. More detailed data for individual disposition codes are provided in Appendix F. These data describes final disposition codes allocated to the 3974 NZHS participants selected for the ITC NZL1 sample list (excluding those who were found to be ineligible).

The ITC uses the Standard Definitions for calculating response rates developed by the American Association for Opinion Poll Research [[http://www.aapor.org/Standards-Ethics/Standard-Definitions-\(1\).aspx](http://www.aapor.org/Standards-Ethics/Standard-Definitions-(1).aspx)] as a guide for calculating response rates for cohort studies.

Three different response rates were calculated. These capture different dimensions of response to the ITC NZL Wave 1 survey:

1. **Proportion of those selected for the ITC who completed the survey:** This measure gives an indication of the response to the recruitment process and represents the response rate conditional on agreeing to be recontacted for research purposes and being identified as potentially in-scope for ITC.

This was estimated by dividing 1,082 by the number invited to ITC NZL, namely 3,974, giving **27.2%**.

2. **Proportion of those selected and eligible for the ITC who completed the survey.** A second measure of response rate is the response rate conditional on being called by ITC and actually being in-scope for ITC (i.e. after excluding ineligible respondents). This measure has been used as the main estimate of response for the ITC NZL study.

This was estimated by dividing 1,082 by 3,927 (of 3,974 called, 47 were found to be ineligible through dispositions P-B32, P-B33, P-D10 and P-D90) giving **27.6%**.

The number characterised as not eligible is most likely an under-estimate because non-contacts and refusals may mask cases of ineligibility, and hence 27.6% is probably an underestimate of this response rate.

- 3. Proportion of those selected and eligible for the ITC who completed the survey, allowing for NZHS non-response.** The most stringent measure of response is the combined ITC/NZHS response rate, i.e. the proportion of in-scope people selected for the NZHS who provide complete data to the ITC. This can be estimated by the response rate of ITC conditional on responding to the NZHS, multiplied by the NZHS response rate (assuming that smokers and recent quitters have the same response rate as other NZHS potential participants). This gives a combined response rate of **22.0%** (obtained by multiplying 27.6% by 80%).
- 4. Proportion of those contacted who completed the survey.** The least stringent measure of response is the proportion of respondents where some form of contact occurred who completed the survey (i.e. excluding respondents where contact was not successful). This can be estimated as 1,082 divided by 2,610, giving **41.5%**; or as 1,082 divided by 2,029 if only those who were contacted and actively refused to take part or withdrew after starting the interview are included in the denominator, giving **53.3%**

Response was generally lower among Pacific, Māori and under 25 years of age participants and higher among recent quitters. The main reason for the lower response among Pacific, Māori and under 25 years of age participants was a lower rate of contacting selected participants in these groups among these groups (Table 4). Possible reasons include lower access to landline telephones and greater residential mobility.

Several NZHS variables were used to weight the ITC NZL1 back to the NZHS: Age, sex, region, ethnicity and deprivation index benchmarks were used (see Appendix E for details). The use of weighting would be expected to reduce potential bias due to ITC non-response.

Table 4: Disposition codes of potentially eligible participants from NZHS sampling frame and response rates

	All potential participants	Māori current smokers	Pacific current smokers	Other current smokers (> 24 years)	Other current smokers (< 25 years)	Recent quitters
Completed	1082	332	49	530	40	131
Ineligible	47	9	7	25	1	5
No contact achieved	1317	591	109	438	77	102
Some contact but no interview	581	236	37	219	28	61
Contacted but refused or withdrew	947	254	59	509	27	98
Total	3974	1422	261	1721	173	397
Response (% completed) among all potential participants	27.2	23.3	18.8	30.8	23.1	33.0
Response (% completed) among all eligible participants	27.6	23.5	19.3	31.3	23.3	33.4
Response (% completed) among all with any contact	41.5	40.4	33.8	42.1	42.1	45.2
Response (% completed) among all contacted	53.3	56.7	45.4	51.0	59.7	57.2

References

Battaglia, M. P., Hoaglin, D. C. and Frankel, M. (2009) Practical considerations in raking survey data. *Survey Practice* 2, no. 5.

<http://www.surveypractice.org/index.php/SurveyPractice/article/view/176/html>

Clark, R. (2008) Summary of Method for Calculating Estimation Weights for Wave 1 of the 2007 International Tobacco Control Policy Evaluation Project (ITC) – New Zealand Arm.

Ministry of Health (2016) Methodology Report 2015/16: New Zealand Health

Survey <http://www.health.govt.nz/publication/methodology-report-2015-16-new-zealand-health-survey>

Appendix A: New Zealand Tobacco Control Policies

On January 2004, New Zealand ratified the WHO FCTC. A range of tobacco control interventions have been implemented since the original ITC NZ study and others are scheduled for or may be implemented during the period of the current ITC NZL study. This creates opportunities to investigate the impact of these interventions through within country cross-sectional before-after and/or within cohort analyses, and in some instances through cross-country comparison studies.

Some of the key interventions are described below.

- **Smoke-Free Places:** Some indoor workplace smoking restrictions were introduced in the **1990** Smokefree Environments Act. Smoking was prohibited in all indoor workplaces and indoor public places, including bars and restaurants, with very limited exceptions from **December 2004** in the Smokefree Environments Amendment ACT. Smoking was also generally prohibited on all public transportation, again with some very limited exceptions (such as when a taxi is not in use, or when all persons in a small passenger vehicle agree that smoking should be permitted). There were also limited restrictions introduced on smoking in outdoor places, namely in outdoor areas of schools and early childhood education centers. Sub-national jurisdictions may enact smoke free laws that are more stringent than the national law, provided they do not conflict with national law. In recent years (**mainly since 2010**) many towns, cities and districts have introduced further restrictions such as smokefree parks, playgrounds and sports fields.
- **Tobacco Advertising, Promotion and Sponsorship (from 2004):** There is a near comprehensive ban on tobacco advertising and promotion, including a ban on the display of all tobacco products at points of sale. Bans on TV and radio advertising were introduced in 1963 and cinemas and billboards in 1973. All remaining advertising was banned in the 1990 Smokefree Environments Act, with sponsorship banned by 1995. **In 2011**, internet sellers were banned from showing pack or brand images. They had to show health warnings. They were also banned from covert

tobacco sponsorship of events. **In 2012** all tobacco products in shops were required to be kept out of sight.

- **Tobacco Packaging and Labeling (2008):** Warnings on cigarette packs were first introduced in 1973. **In 2008**, New Zealand implemented 14 rotating pictorial warnings. The warning message is in English and the corresponding graphic occupies 30 percent of the front of the cigarette package; the warning message is in English and Te Reo Māori; the corresponding explanatory message, corresponding graphic, and Quitline logo covers 90 percent of the back of the package; and an information message occupies one entire side of the package. However, the requirements for other tobacco products are different, i.e., for loose or pipe tobacco, there is a warning message in English and corresponding graphic, which occupies 30 percent the front of the package; the warning message is in English and Te Reo Māori ; the corresponding explanatory message, corresponding graphic, and Quitline logo cover 50 percent of the back of the package; and an information message occupies one entire side of the package. **In May 2016**, draft regulations for plain packaging were published and passed by parliament and implementation of plain packaging is expected to take place in March 2017 together with new health warnings with enhanced Quitline information and an increased size (at least 75% of the front of packs).
- **Misleading descriptors** or other types of misleading packaging and labeling are not banned. The tobacco industry voluntarily does not use the terms “light” or “mild” but has replaced these terms with the equally misleading terms “mellow” and “smooth.”
- **Tobacco Taxation and Prices:** **In April 2010** there was a 10% increase on excise taxes per year on cigarettes for three years. There was a 25% increase of excise tax on loose tobacco. From **2011** there have been annual 10% above CPI increases in tobacco excise taxes from January 1, and these are scheduled to continue to at least 2020. The price of Marlboro cigarettes in NZ is the second highest worldwide in 2017. Duty free allowances of cigarettes were reduced from 200 to 50 cigarettes in **November 2014**.

- **Retail availability of tobacco products:** There are no current restrictions on where tobacco products can be sold, and they are widely available in dairies, conveniences stores, supermarkets, gas stations and bars.
- **E-cigarettes:** nicotine-containing e-cigarettes and e-liquids are currently not legally sold within New Zealand. Importation for person use is allowed. In practice these products are widely available at specialist vaping shops as the current law is not enforced. The Government has announced the intention to make these products legally available, with a likely implementation date in **2019**.
- **Endgame goal: In 2011:** Government announced the goal for New Zealand to be smoke-free by 2025, commonly interpreted as achieving a prevalence of below 5% for all population groups.

The ITC NZL1 Survey will allow the ITC Study to further evaluate the effectiveness of New Zealand tobacco control laws that have been introduced at national level between 2010 and 2014 through repeated cross-sectional analyses, including:

- Large annual tobacco tax increases starting in 2010 (after almost a decade of inflation-only increases, with a differential increase for roll-your-own tobacco in 2010).
- Smokefree Aotearoa 2025 initiatives. There have also been local level initiatives, notably in the extension of smoke-free policies to outdoor areas such as sports fields, parks and children's playgrounds.
- Primary care targets for smoking cessation support in 2012.
- Ban on point-of-sale retail displays of tobacco products in 2012.
- Revised 'ABC' guidelines for smoking cessation support issued in 2014.
- A substantial reduction in duty free tobacco allowances in November 2014.

Survey changes made to capture new tobacco control policies

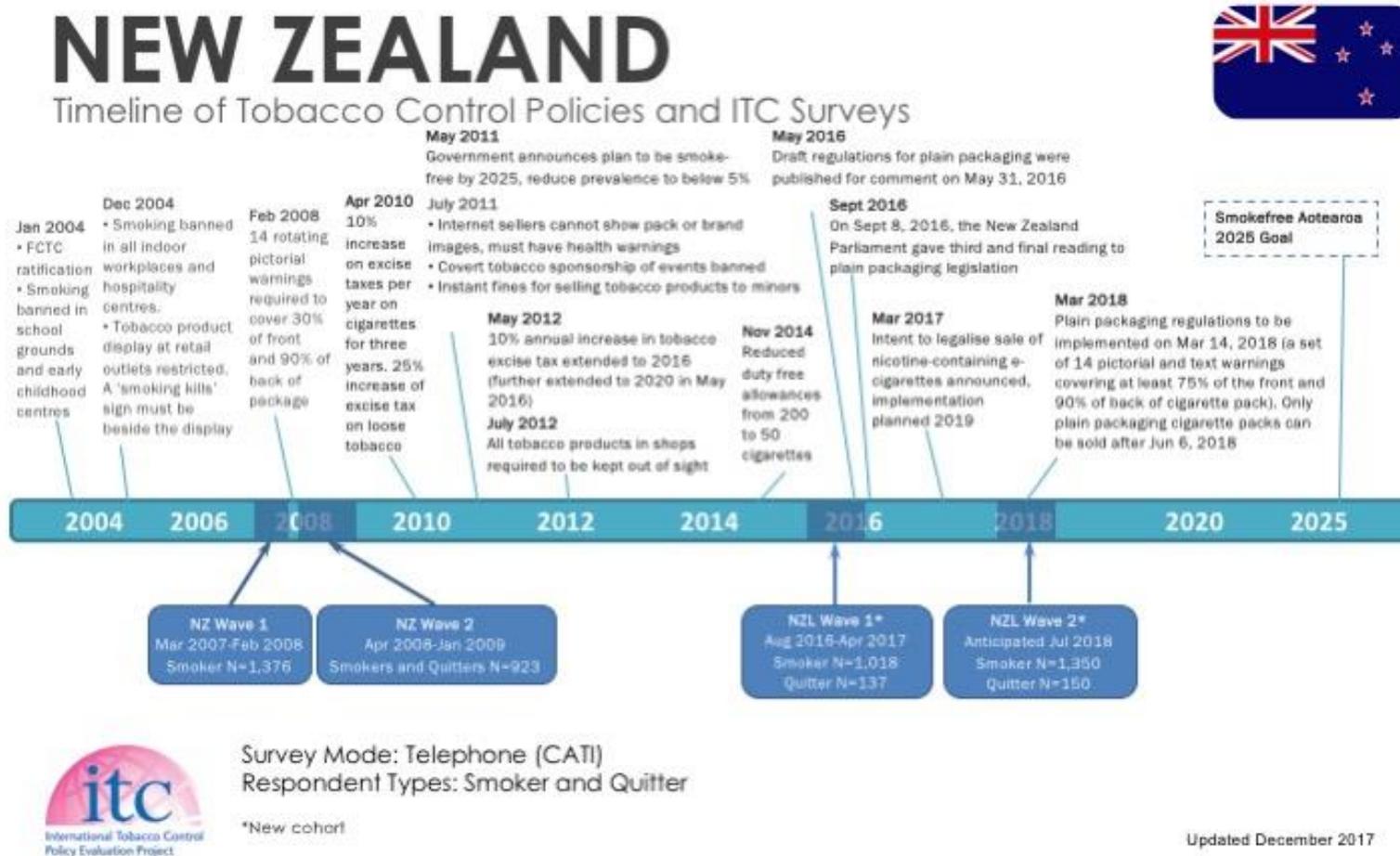
Most of the questions that were asked at ITC NZL1 Survey were similar to the ones from the first cohort of the ITC NZ Wave 1 and 2 Surveys. However, there were several new questions added to the ITC NZL1 Survey. They include;

- E-cigarette: awareness, use, brands, source, purchase, advertising and promotion, cessation, psychosocial beliefs, perceived risk, environmental tobacco smoke and vaping behaviour.
- Flavored capsules in cigarettes: brands and use.
- Smokefree Aotearoa 2025: awareness, attitudes, support, experiences and perceptions of smokers and former smokers to the Smokefree Aotearoa 2025 goal.
- Assessing denormalization of smoking.
- Smoking in social networks.
- Plain packaging.

ITC New Zealand Survey Timelines

The ITC NZL1 Survey was conducted from August 30, 2016 to April 22, 2017. Figure 2 shows details of the ITC New Zealand Surveys timeline including the tobacco control policies that have been implemented so far.

Figure 2: ITC New Zealand Survey Timeline



Appendix B: Introductory Letter

[To Print on Ministry of Health Letterhead.

<first name surname>

<address 1>

<address 2>

<address 3>

<address 4>

Dear <first name surname>

The Ministry of Health and the University of Otago invite you to take part in the International Tobacco Control Policy Evaluation (ITC) Survey

In 2015 you participated in the New Zealand Health Survey, where you were interviewed in your home. At that time, you kindly agreed that we could contact you again to answer further questions of public health importance, and so we would like to invite you to participate in the New Zealand International Tobacco Control (ITC) Survey.

Please see the attached “Question and Answer Sheet” for more information about the survey, or call Dr. Anthea Hewitt at the Ministry of Health on 04 816 4464.

An interviewer from Research New Zealand will contact you by telephone within the next few weeks to see if you would be happy to take part. If you agree to participate, you will be invited to be interviewed again next year. Your participation is entirely voluntary and all your answers will be strictly confidential. To reimburse any costs of participating, we will send you a \$20 Warehouse voucher after each interview. Those who complete interviews in year one and year two (i.e. two interviews) will go into a prize draw for one of three iPad mini tablets.

If you **do not** wish to be contacted about this research, please phone Research New Zealand on 0800 273 732 to be removed from the database.

Your views are important to us. The Ministry of Health and University of Otago hope you decide to participate in this survey.

Kind regards,

Mr Grant Pittams
Manager, New Zealand Health Survey
Ministry of Health

Prof Richard Edwards
Principal Investigator of the
University of Otago ITC Survey Team

Appendix C: Question and Answer Sheet



Frequently Ask Questions about the International Tobacco Control (ITC) Survey

What is the survey about?

New Zealand is participating in the International Tobacco Control Policy Evaluation Survey (the ITC Project). This is a long-term survey that investigates smoking and tobacco control polices through interviews with people who smoke or have recently quit.

Why was I invited to take part?

When you participated in the *New Zealand Health Survey* in 2015, you agreed that the Ministry of Health could re-contact you for further health research. We have contacted you for this survey because you indicated that you smoke (or recently quit), and you are aged 18 year or over.

What if I don't smoke now?

We are still interested in speaking to you. The information that you provide will allow useful comparisons between former smokers and those who continue to smoke.

Why is this survey important?

Smoking is the biggest preventable cause of death worldwide, and high quality research is needed to help develop fair and effective policies to reduce harm caused by smoking. This research will help us understand which polices work, and will gather the opinions of people who smoke, so that this can be taken into account in policy development.

Who is carrying out the survey? The University of Otago is leading this research, in collaboration with Māori and Pacific researchers from other institutions, and the Ministry of Health. Research New Zealand (a market research company) has been contracted by the University of Otago to do the interviewing for the survey. The survey is part of a large international project including similar surveys in over 20 countries that is led by a team at the

University of Waterloo, Canada. Details about the New Zealand researchers and organisations involved are available at: www.otago.ac.nz/ITC and the international partners are listed at: www.itcproject.org

What sort of questions will be asked? The survey gathers information about your beliefs, attitudes, and behaviours related to smoking and smoking-related policies. There will be questions about services available to smokers and your views on topical smoking issues.

How long will the interview take? The telephone interview will take 40 to 60 minutes, depending on how many of the questions are relevant to you. We will schedule appointments to call at a time that is convenient. Please let your household members know that Research New Zealand will be calling to schedule an appointment with you.

Why is a voucher being offered? We want to thank you and reimburse any costs of participation. So each time you complete an ITC telephone interview, a \$20 Warehouse voucher will be mailed out to you. Only Warehouse vouchers will be available. In addition, if you complete interviews in year one and year two (i.e. two interviews), you will go into a prize draw for one of three iPad mini tablets.

Risks and benefits of the study. There are no known risks associated with completing this survey. People usually find the questions quite interesting. You do not have to answer any questions you do not wish to answer, and you can stop the interview at any time. The results from our study will help to guide tobacco policy efforts in New Zealand and throughout the world, to reduce the death and sickness caused by tobacco. So the anticipated benefits to the scientific community and society are high.

How many times will I be asked to participate in the survey? This is a continuing survey, which means that we are interested in your views over time. If you agree to participate, Research New Zealand will contact you again in about 12-15 months to ask if you would take part in a follow-up interview. If the study continues in the future, we will continue to invite you to participate. You can withdraw from the study at any time.

Confidentiality and security of data. The information you provide to the interviewer is confidential and protected by the Privacy Act 1993. Like the *New Zealand Health Survey*, the answers you give in this survey will be added to other people's answers to create in an anonymised dataset. This means that your name is not included and no one will be able to identify you by looking at your answers. The dataset will be stored securely. Your name and contact details will be kept in another secure file, separate from the survey answers, with strictly limited access.

The anonymised dataset will be made available to the International ITC Project administrators at the University of Waterloo, in Canada, who hold the datasets in password-protected data files. After two years, the anonymised data will be shared with researchers in other countries to make comparisons across countries. Use is tightly controlled and each study must gain ethical approval.

The University of Otago will link the data in this survey with your responses to the *New Zealand Health Survey*. This process will be done using an anonymous code number so that your identity will always remain hidden. This linked data will only be available to the University of Otago team and will not be shared with the International ITC Project collaborators.

Participants will not be identifiable in any of the reports or presentations of findings from this survey.

Where can I find survey results? A summary of key findings will be available on the University of Otago website from late 2016: www.otago.ac.nz/ITC

What will the information be used for? The information gathered from this survey will be used to inform and improve national smoking and health policies. It will also be used for international comparisons, e.g. to find out if new tobacco control policies have made a difference by comparing findings with countries that have not introduced that policy.

Who has funded this survey? The Health Research Council of New Zealand is the main funder and the Ministry of Health is also contributing resources and expertise.

What if I don't want to participate? Participation is voluntary. You do not have to participate, and you can withdraw from the study at any time without giving a reason.

Has the study received ethical approval? Yes, this project has been reviewed and approved by the University of Otago, Human Ethics Committee (Reference 15/126) and the University of Waterloo, Office of Research Ethics Committee. If you have any questions or concerns about the ethical conduct of the research, please contact the University of Otago Human Ethics Committee through the Committee Manager (Gary Witte, email: gary.witte@otago.ac.nz phone: 03 479 8256) or Maureen Nummelin of the University of Waterloo's Office of Research Ethics, email: maureen.nummelin@uwaterloo.ca. Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.

How can I update my contact details? Because this is a continuing survey, it is important that we have your current contact details. These can be checked and updated by visiting this website: <https://itc.researchnz.com>. To get to the participant section of the website you

will need to use the following login and password. Your login is [login] and your password is [password].

Or you can email your updated details to Pip.Sutton@researchnz.com or leave a message for her on 0800 273 732.

Where can I find more information or ask questions? For further information about participating in this survey, please visit <https://itc.researchnz.com> or phone 0800 273 732. If you have questions or concerns about the study, please phone the University of Otago ITC Study Administrator, Beck O'Shaughnessy, on 04 918 6251 or Dr. Anthea Hewitt at the Ministry of Health on 04 816 4464.

Appendix D: Thank You Letter

[To Print on University of Otago (UO) Letterhead. Date, Name and Address details to be inserted on the day it is mailed out.

«DATE: »

«First Name» «Last Name»

«Address»,
«Address»,
«Address»,
«Address»,

Dear «First Name» «Last Name»:

Thank you for taking part in the New Zealand International Tobacco Control Policy Evaluation (ITC NZL) Survey. This is a unique long-term study with over 20 other countries involved, including Australia, Canada, the United States, and the United Kingdom.

Your participation greatly enhances our ability to provide excellent research which can help efforts to reduce smoking harm.

During our recent phone call to you on «DATE», we mentioned that we would be sending you a voucher to reimburse any costs of participation. Enclosed you will find a Warehouse Voucher for \$20 as we promised.

We plan to contact you within 18 months to organise an interview for the next wave of the survey. If your contact information changes before then, please let us know:

Your details can be checked and updated by visiting this website: <https://ITC.researchnz.com>. To get to the participant section of the website you will need to use the following login and password. Your login is [login] and your password is [password].

Or you can email your updated details to Pip.Sutton@researchnz.com or leave a message for her on 0800 273 732.

If you have any comments or questions about the study, we would love to hear from you. Please find contact details on the following page, along with information about how to access results of the survey.

Many thanks again for joining the large group of respondents in New Zealand and the other 22 ITC countries who are participating in this important study.

Kind regards

Sincerely,

[Insert Digital Signature]

Insert Digital Signature]

Richard Edwards
Principal Investigator
University of Otago, ITC NZL Survey

Katrina Magill
Research Director
Research New Zealand

- More information -

Sharing Survey Results

This is an ongoing study. Findings will be posted on the New Zealand ITC website www.otago.ac.nz/ITC from late 2016. If you have any questions or comments about the study, please contact the New Zealand ITC Study Administrator

Contact Information:

Beck O'Shaughnessy
Dept. of Public Health
University of Otago
Wellington, New Zealand
Phone: 04 918 6251
E-mail: beck.oshaughnessy@otago.ac.nz

Appendix E: Weights Construction for ITC New Zealand Wave 1 Survey (2016-2017)

Authors: Mary Thompson, Mi Yan and Christian Boudreau

Date: September 19, 2017

1 Introduction

The method for constructing weights for the new ITC New Zealand Survey is based on the method devised by Clark (2008).

The 2016-2017 ITC NZL1 sample was obtained by a complex sampling and response process. The first phase of sampling was the selection of the 2014/2015 and 2015/2016 New Zealand Health Survey (NZHS) sample using an unequal probability, multi-stage sampling design. NZHS respondents were asked if they were willing to be recontacted for further research. Those who had agreed and were eligible (being a regular smoker or recent quitter at the time of the NZHS interview) were subsequently approached for the ITC NZL1 Survey, and complete responses were obtained from a subset of this group.

Calibrated weighting was used to achieve the above objectives for the ITC. In some surveys, calibrated weights are calculated using population benchmarks, for example the NZHS weights were calculated using population benchmarks from Statistics New Zealand's estimated resident population for each calendar quarter, broken down by age, sex, ethnicity and socioeconomic position. The ITC survey has a restricted scope (regular smokers and recent quitters only) and was a subsample of the NZHS sample. Because of this, ITC weights are based on benchmarks calculated from the NZHS sample.

Section 2 summarizes the weighting method used in the NZHS, as this was the starting point for the calculation of the ITC weights. Section 3 describes the calculation of ITC weights and the characteristics of the weights.

2 Weighting in the 2015/2016 NZ Health Survey

A commonly used method for survey weighting is (i) to compute for each respondent an *initial weight* as the reciprocal of an estimate of the respondent's probability of inclusion in the sample; (ii) to calibrate the resulting weights. Calibrated weights are calculated using population benchmark information obtained externally from the survey. The aim in calibrated weighting is for the sum of the weights in the sample, broken down by variables of interest, to agree with external population counts. This means that discrepancies between the responding sample and the population are corrected for in weighted estimates, at least with respect to the variables used in weighting.

In the case of the 2015/2016 NZ Health Survey (NZHS), steps (i) and (ii) were carried out, with the external population counts being based on census-based resident population estimates for the relevant quarter broken down by

- age group (0-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-74, 75+) by sex (male, female) for all people
- age group (0-4, 5-9, 10-14, 15-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-64, 65+) by sex (male, female) for all Māori
- adult population by Pacific and Non-Pacific peoples
- adult population by Asian and non-Asian peoples
- total population by New Zealand Deprivation Index (NZDep2013) quintile

For full details, see the Methodology Report for the 2015/2016 New Zealand Health Survey (Ministry of Health, 2016). The target population for the NZHS is the total NZ population.

3 Two-Phase Calibrated Weighting for ITC NZL1 Survey

NZHS respondents were in the scope (target population) for the ITC Survey if:

- they were aged 18 years or over;
- they had smoked a lifetime total of 100 or more cigarettes (i.e. the NZHS data item A3.14 was equal to 1);

- they smoked at least once a month at the time of the NZHS interview (A3.15 equal to 2, 3 or 4) OR
- they had quit within the 12 months preceding their NZHS interview (A3.16 equal to 1, 2, 3 or 4).

All in scope NZHS respondents who agreed to be recontacted about the possibility of answering other health questions of importance to the Ministry of Health (A6.04 equal to 1) were selected in the ITC sample.

Initially, the ITC NZL sample list(s) were stratified into the following groups, as determined from responses to the NZHS:

1. Māori current smokers
2. Pacific current smokers
3. Younger smokers (aged 18-24) who are not of Māori /Pacific ethnicity.
4. Older smokers (aged 25+) who are not of Māori /Pacific ethnicity.
5. Recently-quit or former smokers (quit within the last 12 months, defined at the time of the NZHS interview).

The initial target sample sizes were:

- 600 Māori current smokers
- 100 Pacific current smokers
- 80 Other ethnicity current smokers <25 years
- 570 Other ethnicity current smokers 25+ years
- Approximately 150 of the recent quitters (as of their NZHS interview) from a combined Māori, Pacific and Other groups

In the end, all NZHS respondents in the chosen 2015/2016 cohorts who met the eligibility requirement were selected in the ITC sample. Of the NZHS respondents who were in scope

for the ITC survey, 4,048 had agreed to be recontacted and were invited, and of these 1,155 people responded fully to the ITC survey.

The numbers achieved in the groups were:

Smoking Status in NZHS	Frequency	Percent
1. Māori current smoker	357	30.91
2. Pacific current smoker	60	5.19
3. NMNP younger current smoker (18-24)	42	3.64
4. NMNP remainder current smoker (age 25+)	559	48.40
5. Recent quitter (last 12 months)	137	11.86

If all in-scope NZHS respondents had agreed to be recontacted and responded to ITC, the NZHS weight for these people could have been used as the weight on the ITC file also. This is because the probability of selection in ITC is the same as the probability of selection in NZHS, for eligible persons. However, only 1,155 of the potential respondents actually responded fully to ITC. Weights are therefore needed to reflect the fact that the responding ITC sample is a subsample from the eligible component of the NZHS sample.

The ITC sample is said to be a two-phase sample, where the first phase consists of the NZHS sample and the second phase sample is the subset of this sample who also responded to ITC. The aim is to produce ITC weights which reflect both the first phase sampling process (i.e. the NZHS sample design), and the fact that the ITC responding sample may differ from the eligible NZHS sample.

Two-phase calibrated weighting was used. This means that the sum of the ITC weight over the ITC sample in various categories (for example Māori adults in a region) was set equal to the sum of the NZHS weight over in-scope NZHS respondents in the category.

Subject to this constraint, the ITC weights were required to be close to the NZHS weights. The approach taken to achieve this is known as *raking*, in which a set of initial weights is rescaled to satisfy several sets of compatible constraints in succession until convergence occurs (Battaglia et al., 2009). The categories of the sets of constraints selected for smokers (as of the time of the NZHS interview) were:

- Region by Māori vs non-Māori (4 regions were used, consisting of the following District Health Boards (DHBs):
 - Northern Region: Northland, Auckland, Waitematā, Counties-Manukau;
 - Midland Region: Bay of Plenty, Lakes, Tairāwhiti, Taranaki, Waikato;
 - Lower North Island: Hawke’s Bay, Midcentral, Wanganui, Wairarapa, Capital & Coast, Hutt Valley;
 - South Island: Nelson-Marlborough, Canterbury, West Coast, South Canterbury, Otago, Southland.)
- Sex by Age (6 age categories: 18-24, 25-34, 35-44, 45-54, 55-64, 65 and over)
- Sex by (Māori , Pacific Islander, other)
- 2006 NZ Deprivation index decile (10 categories)

The categories of the sets of constraints selected for recent quitters (who had quit within the twelve months previous to their NZHS interview) were:

- Sex by Age (3 age categories: 18-34, 35-54, 55 and over)
- All Māori , Female Non-Māori , Male Non-Māori
- 2006 NZ Deprivation index (deciles 1-3, 4-5, 6-10)

Trimming was applied to two smoker weights which were greater than 10 times the median of the final weights as first calculated. After the first raking, there were two very large weights obtained, $W_{t_{max1}} = 6837.634$ and $W_{t_{max2}} = 5937.846$. They were set equal to 10 times

the median (4399.9), and raking was then repeated to obtain the final ITC weights, resulting in the reduction of these two weights to 4908.479 and 5051.426 respectively.

Tables E1a and E1b show the properties of the initial weight, given by the inverse of the probability of inclusion in the NZHS sample, and the final calibrated weight. Some observations on these tables:

- The median calibrated weight for smokers (as of NZHS interview) is about 2.1 times the median of the initial weights. This is because about half of the in-scope respondents identified in the NZHS resulted in a complete ITC interview.
- The coefficients of variation of the initial and final weights are 73.2% and 79.7%, respectively for smokers, and 62.3% and 76.2%, respectively, for recent quitters (as of NZHS interview).
- The distribution of the final weights looks to be reasonable, without excessive variability, or too many weights being trimmed.

Note: Smoking and quitting status will have changed for many of the NZHS respondents in scope for ITC by the time of their ITC survey. Thus those in the Wave 1 ITC survey who are quit at the time of the ITC interview may have been quit for up to three years, while a number of those who are smokers at the time of the Wave 1 ITC survey will have been quitters at their NZHS interview who have relapsed. Table E2 shows the frequencies of the various transitions between the NZHS 2014/2015 survey and the Wave 1 ITC survey.

Table E1a: Properties of Initial Inverse Selection Probability Weights and Final Calibrated Weights for ITC: Smokers (at time of NZHS interview)

	Initial Weights	Calibrated Weights (first raking)	Final Calibrated Weights
Mean Weight	281.475	560.723	560.723
Coefficient of Variation (%) of Weights	73.177	84.515	79.720
Minimum Weight	60.644	79.350	78.952
First Quartile of Weights	158.871	300.303	299.813
Median Weight	212.138	439.993	443.977
Upper Quartile of Weights	349.860	675.237	685.827
95 th Percentile of Weights	635.257	1338.878	1362.550
Maximum Weight	2172.478	6837.634	5051.426

Table E1b: Properties of Initial Inverse Selection Probability Weights and Final Calibrated Weights for ITC: Quitters (at time of NZHS interview)

	Initial Weights	Final Calibrated Weights
Mean Weight	296.442	501.762
Coefficient of Variation (%) of Weights	62.339	76.194
Minimum Weight	81.337	94.097
First Quartile of Weights	164.247	221.851
Median Weight	237.345	394.228
Upper Quartile of Weights	370.280	662.820
95 th Percentile of Weights	631.013	1241.082
Maximum Weight	1028.007	2321.822

Table E2: Frequencies of Transitions between the NZHS interview and the ITC NZL1 Survey for ITC Sample Members

	ITC Wave 1 smoker	ITC Wave 1 quitter up to 12 months	ITC Wave 1 quitter more than 1 year
NHHS smoker	859	136	23
NHHS recent quitter	51	39	47

Appendix F: Final Disposition Codes for the New ITC New Zealand Wave 1 Survey (2016-2017)

Disposition codes by ITC NZL1 respondent sub-groups

DISPOSITION CODES	Māori current smokers	Other current smokers 25yrs plus	Other current smokers < 25yrs	Pacific current smokers	Recent quitters	Total
P-A1_Completed	321	522	40	48	128	1059
P-A2_Completed all essentials and at least 50% of survey	11	8	0	1	3	23
P-B11.2_Respondent refused at consent	208	444	22	40	89	803
P-B11.3_Respondent completed consent, but refused later on	16	28	3	7	2	56
P-B11.5_Person who answered phone refused to get the respondent	21	31	1	5	4	62
P-B11.4_Hung up before saying they were the named respondent	13	10	2	2	8	35
P-B11.9_Started survey but refused some essential and/or refused ≥ 50% of the survey	26	33	2	11	7	79
P-B21_Respondent is eligible but never available	200	177	25	30	49	481
P-B22_Answering machine	220	135	28	41	38	462
P-B23_Rings only and no answer	69	66	12	17	13	177
P-B24_Disconnected or wrong number	299	235	37	50	49	670
P-B25_Always busy, no answer phone, call blocking or other technical problem	3	2	0	1	2	8
P-B30.1 Respondent deceased	3	1	0	1	1	6
P-B30.2_Respondent called to cancel appointment	4	4	0	1	0	9
P-B32_Respondent physically/mentally unable to complete interview	4	6	0	0	1	11
P-B33_Language barrier	0	13	1	4	3	21
P-B40.1_Call-back to complete interview with respondent	1	1	0	0	0	2
P-B40.4_Respondent made appointment to complete interview (landline)	1	0	0	0	0	1
P_D10_Out of sample	2	1	0	1	0	4
P-D90_Other reason why respondent is not eligible	0	4	0	1	0	5
Total	1,422	1,721	173	261	397	3,974

Grouped disposition codes by ITC NZL1 respondent sub-groups

GROUPED DISPOSITION CODES	Māori current smokers	Other current smokers 25yrs plus	Other current smokers < 25yrs	Pacific current smokers	Recent quitters	Total
Completed	332	530	40	49	131	1082
Interview scheduled or call-back arranged	2	1	0	0	0	3
Answering machine or rings and no answer	289	201	40	58	51	639
Some contact but not able to reach named respondent	234	218	28	37	61	578
Disconnected or wrong number	302	237	37	51	51	678
Ineligible due to language barrier or other reason	9	25	1	7	5	47
Refused consent, or later withdrew consent	254	509	27	59	98	947
Total	1,422	1,721	173	261	397	3,974

Cumulative percentages for grouped disposition codes by ITC NZL participants sub-groups

GROUPED DISPOSITION CODES	Māori current smokers	Other current smokers 25yrs plus	Other current smokers < 25yrs	Pacific current smokers	Recent quitters	Total
Completed	23%	31%	23%	19%	33%	27%
Interview scheduled or call-back arranged	23%	31%	23%	19%	33%	27%
Answering machine or rings and no answer	44%	43%	46%	41%	46%	43%
Some contact but not able to reach named respondent	60%	55%	62%	55%	61%	58%
Disconnected or wrong number	82%	69%	84%	75%	74%	75%
Ineligible due to language barrier or other reason	82%	70%	84%	77%	75%	76%
Refused consent, or later withdrew consent	100%	100%	100%	100%	100%	100%
Total	100%	100%	100%	100%	100%	100%