



International Tobacco Control China Survey

Wave 2 (2007-2008) ITC China Technical Report

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Preface

The International Tobacco Control (ITC) Survey is a longitudinal survey of smoking behaviour among adults in China.

This report documents the second wave of the International Tobacco Control Policy Evaluation Survey carried out in China approximately 12 months after the first wave was conducted (end of 2007 to early 2008).

In most parts, the format of this report is similar to the Wave 1 technical report. However, there are a number of changes in certain contents and methods in the second wave.

- a) Respondents from the first wave were recontacted to participate in Wave 2 of the ITC China Survey. It is expected that some respondents will not return for the second survey thus new respondents or replenishment respondents were recruited to fill the quota that has been predetermined.
- b) Information from each city survey, such as response rates.
- c) The report also presents the weight calculations that link Wave 2 back to Wave 1.

1. Introduction

Background

The International Tobacco Control (ITC) Policy Evaluation Project is a prospective cohort survey designed to evaluate national level tobacco control policies. The ITC Project is unique in that it is being administered in 15 different countries: the United States, Canada, Australia, the United Kingdom, Ireland, France, Germany, South Korea, Mexico, Uruguay, China, the Netherlands and New Zealand as well as Thailand and Malaysia. The ITC Project is also likely to expand to Bangladesh, India and Sudan in the next year. The first wave of the ITC China survey was conducted in seven Chinese cities between April and August 2006. The second wave was conducted from October 2007 to January 2008.

Main Objectives

The objectives of the Wave 2, as in Wave 1, of the ITC China Survey are:

a) To examine patterns of smoking behaviour in China.

This study provides very detailed information about smokers' quitting behaviour, consumption patterns, and other important aspects of smoking behaviour.

b) To examine the impact of specific tobacco control policies implemented in China during the next 5 years.

The ITC survey has several sections that are intended to evaluate the impact of specific policies, such as health warning labels on cigarette packs, anti-smoking campaigns, and price/taxation increases. As a result, the survey is able to examine to what extent policies change smoking behaviour and attitudes towards smoking.

c) To continue to compare smoking behaviour and the impact of policies between China and other ITC countries.

The ITC survey is being administered in 13 other countries. Because most of the questions are the same, we will be able to compare patterns of smoking and policies in China and each of the 13 other countries.

Survey Design

The ITC Survey is a longitudinal cohort study. Therefore, the respondents who participated in this survey will be recontacted in the future to answer the follow-up survey. The longitudinal design will allow the research team to track any changes in smoking behaviour and to examine the predictors of smoking behaviour, including the impact of policies introduced during the survey period. The plan at the time of Wave 1 was to recontact the respondents for follow-up surveys in the following 4 years.

The Wave 2 survey was conducted in seven cities in China, namely Beijing, Changsha, Guangzhou, Shanghai, Shenyang, Yinchuan and Zhengzhou. However, the results of 6 cities excluding Zhengzhou are included in this technical report.

The Survey Teams

The survey was conducted by team members from the Central China CDC and the local CDCs in Beijing, Changsha, Guangzhou, Shanghai, Shenyang, Yinchuan and Zhengzhou. The research team is collaborating with an international team of researchers in Australia (The Cancer Council of Victoria), Canada (The University of Waterloo) and the United States (Roswell Park Cancer Institute and The State University of New York).

2. The Sampling Design

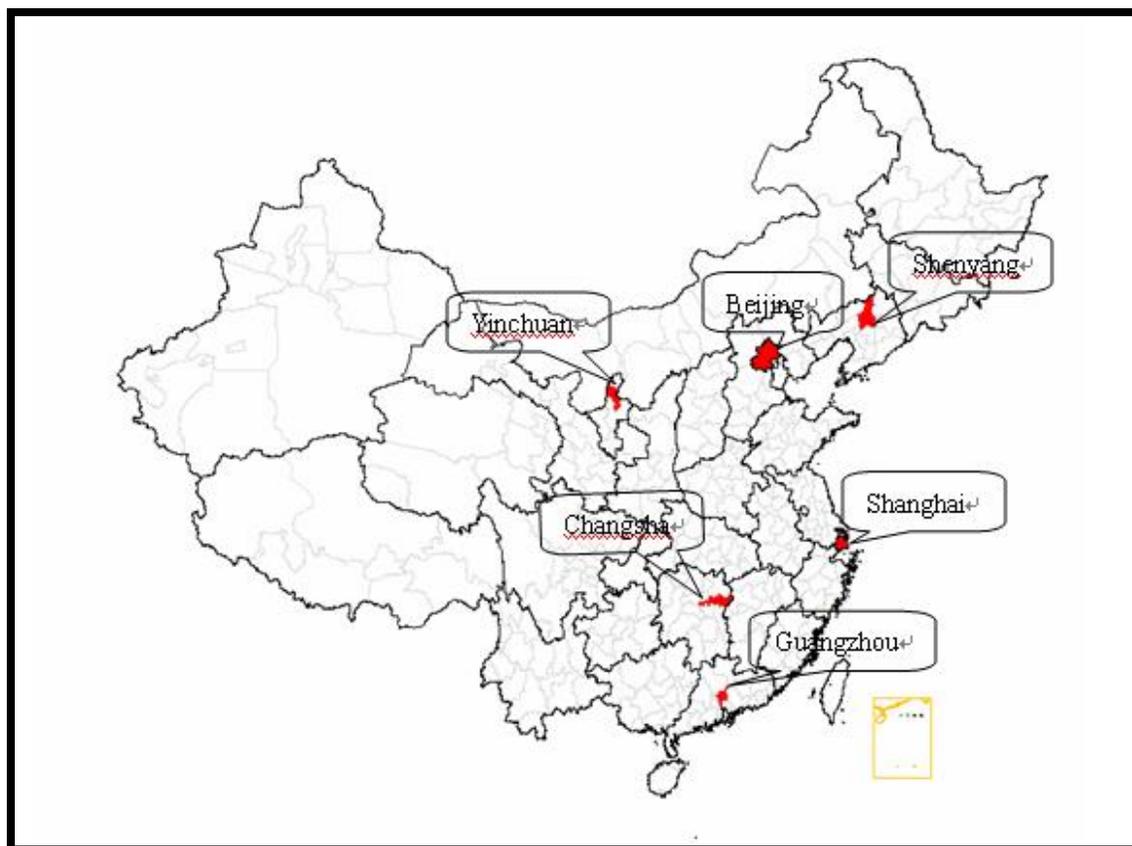
Target Population

Eligible adult respondents in each of the seven cities included adult smokers and non-smokers 18 years of age and older. Individuals in jail and those living in institutions were ineligible for the survey. The survey was originally conducted in the seven capital cities of one autonomous region, two municipalities and four provinces. However, the data quality from Zhengzhou city was found to be poor. It was, therefore decided that the data from this city is not included in the analysis.

City	Autonomous Region/Municipality/Province
Beijing	Beijing Municipality
Changsha	Hunan Province
Guangzhou	Guangdong Province
Shanghai	Shanghai Municipality
Shenyang	Liaoning Province
Yinchuan	Ningxia Hui Autonomous Region
Zhengzhou*	Henan Province

(*not included in data analysis)

ITC SEA Wave 2 Survey Locations in China



Sampling Frame and Sample Selection

The Wave 1 survey used a multistage cluster sampling method to obtain a representative sample of adult smokers and adult nonsmokers who are registered residents in the six cities. In each of the six cities the China team selects 10 Jie Dao or Street Districts, with probability of selection proportional to population size of the Jie Dao. Within each of these Jie Dao, two residential blocks or Ju Wei Hui are selected, again with probability of selection proportional to size. Within each Ju Wei Hui, the addresses of the dwelling units (households) are listed first, and then a sample of 300 addresses are drawn by simple random sampling without replacement. Information on age, gender and smoking status for all adults living in these 300 households is collected. The enumerated 300 households are then randomly ordered, adult smokers and non-smokers are then approached following the randomized order until 40 adult smokers and 10 adult non-smokers are surveyed. Because of low smoking prevalence among women, one female smoker from every selected household is surveyed whenever possible to allow for the examination of gender effects.

Replenishment

A new sample will be required from each city depending on the retention rate from the Wave 1 respondents.

The suggested design on how to select the replenishment sample in each city, assuming that the replenish sample size m has been pre-determined:

1. For each Ju Wei Hui, if there are enough un-sampled respondents from the original enumeration list of 300 households, replenish samples will be taken from that list;
2. If the 300 household list has been exhausted by the wave 1 sample or is not sufficient for replenishment and if the Ju Wei Hui has additional households which were not enumerated by the wave 1 survey, a new list of households will be constructed (on top of the original 300 list) and enumerated, and the replenish sample will be taken from the new list;
3. If the Ju Wei Hui has no room for selecting a replenish sample, the quota of replenish sample for this Ju Wei Hui will be fulfilled by the other sampled Ju Wei Hui within the same Jie Dao;
4. If the both sampled Ju Wei Hui's in the Jie Dao do not have sufficient room for the replenishment, the quota of replenish sample for this Jie Dao will be fulfilled by an adjacent Jie Dao which was included in the initial sample;
5. If a new Ju Wei Hui has to be selected from a new Jie Dao which is not in the initial sample, the new Jie Dao is first divided into half and half in terms of population (depending on the number of Ju Wei Hui's in the Jie Dao). A new Ju Wei Hui is selected from a chosen half of the Jie Dao, with probability proportional to the Ju Wei Hui population size;
6. For the selected new Ju Wei Hui, a list of 300 randomly selected households will be enumerated first, and smokers and non-smokers are selected from the enumerated households using the method from wave 1 sampling design.

The other half of the new Jie Dao might be used for replenishment samples in future waves.

The two major questions remaining are:

- a) What is the anticipated retention rate for wave 2 sampling? and consequently,
- b) What should be the size for the wave 2 replenishments samples for each of the seven cities?

Further Replenishment Sample Selection Stages (when required)

1. Stage 1 sampling: Collecting information about all Jie Dao in the city, including city district name and code, Jie Dao name and code, Jie Dao population and brief description. The data manager fills out the CN-ITC-2007-S-1 Form (see Appendix H) and sends all the files in Excel format to China CDC. The central team selects Jie Dao to be included in the sample and sends back the selection results to each project city.
2. Stage 2 sampling: Collecting information on all Ju Wei Hui in selected Jie Dao, including Ju Wei Hui name and code, total population and brief description. The data manager fills out the CN-ITC-2007-S-2 Form (see Appendix H) and sends all the files in Excel format to China CDC. The central team selects Ju Wei Hui to be included in the sample and sends back the results to each project city.
3. Stage 3 sampling: The Ju Wei Hui staff will collect information on all families in selected Ju Wei Hui, including family address and code. The data manager fills out the CN-ITC-2007-S-3 Form (see Appendix H) and sends all the files in Excel format to China CDC. The central team selects families to be included in the study and sends back the results to each project city.

4. Stage 4 sampling: The Ju Wei Hui staff will collect detailed information on all families included in the selected list of families, including individual's name, code, birth date, regular resident or not, smoker or not. The data manager fills in the CN-ITC-2007-S-4 Form (see Appendix H) and sends all the files in Excel format to China CDC. The central team selects families and individuals to be included in the sample and sends back the results to each project city.

Sample Size

The sample size for Wave 2 is to recontact the respondents who have participated in Wave 1. For the respondents of Wave 1 who were not able to be recontacted, new respondents were selected based on the same multistage cluster sampling method as in Wave 1. The breakdown of smoker and non-smoker respondents is tabled separately below.

Smokers

City	Wave 1	Wave 2			
		Recontact		Replenishment	Total
		Recontact	Quitter		
Beijing	785	672	38	74	746
Shenyang	781	567	18	200	767
Shanghai	784	680	23	87	767
Changsha	800	599	49	147	746
Guangzhou	791	525	37	263	788
Yinchuan	791	608	52	144	752
Total	4732	3651	217	915	4566

Non-smokers

City	Wave 1	Wave 2		
		Recontact	Replenishment	Total
Beijing	219	211	7	218
Shenyang	200	176	22	198
Shanghai	204	187	17	204
Changsha	205	160	25	185
Guangzhou	226	151	60	211
Yinchuan	215	181	24	205
Total	1269	1066	155	1221

The tables below summarize the sample size of the Wave 2 China Survey by gender and city. Please note that one respondent was not included in the tables because the gender was missing and the incorrect survey was administered.

Wave 2 Smokers:

Sex	City												Total	%
	Beijing		Shenyang		Shanghai		Changsha		Guangzhou		Yinchuan			
	N	%	N	%	N	%	N	%	N	%	N	%		
Male	706	94.64	722	94.13	749	97.65	687	92.09	735	93.27	736	97.87	4335	94.94
Female	40	5.36	45	5.87	18	2.35	59	7.91	53	6.73	16	2.13	231	5.06
All	746	100	767	100	767	100	746	100	788	100	752	100	4566	100

Wave 2 Non-smokers:

Sex	City												Total	%
	Beijing		Shenyang		Shanghai		Changsha		Guangzhou		Yinchuan			
	N	%	N	%	N	%	N	%	N	%	N	%		
Male	97	44.50	67	33.84	87	42.65	71	38.38	81	38.39	74	36.10	477	39.07
Female	121	55.50	131	66.16	117	57.35	114	61.62	130	61.61	131	63.90	744	60.93
All	218	100	198	100	204	100	185	100	211	100	205	100	1221	100

Eligible Types of Dwellings

Private Homes

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

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

Private Home AND Business

A private home and business is any dwelling that serves both as a business and the usual place of residence, such as in the case of a business operating out of the home.

Dwellings Not Eligible

Surveys were not conducted in dwellings that are businesses only or with individuals living in institutions, such as hospitals, nursing homes or jails.

Definition of a Household

A household is any persons or group of persons living in a dwelling. It may consist of:

1. one person living alone
2. a family sharing the same dwelling
3. a group of people who are not related but share the same dwelling

To be included on the *Household Enumeration Form* for a particular dwelling, a respondent must have regarded the dwelling as his/her usual place of residence.

Outcome Codes

The household outcome codes of the contact include:

- 01 Not a current dwelling unit: DO NOT RETURN
- 02 No contact made, not sure whether a dwelling unit: MUST RETURN
- 03 No contact made, known to be a dwelling unit: MUST RETURN
- 04 Contact made, cannot answer at this time, but could in the future:
MUST RETURN (and write appointment information in outcome)
- 05 Contact made, no one at all able to answer: DO NOT RETURN
- 06 Contact made, refusal: DO NOT RETURN
- 07 Contact made, Household Information Form completed: DO NOT RETURN

The individual outcome codes of the contact include:

- 11 No contact made: MUST RETURN
- 12 Contact made, the respondent is still living in the HH, no refusal, no appointment made:
MUST RETURN
- 13 Contact made, the respondent is still living in the HH, refusal: DO NOT RETURN
- 14 Contact made, the respondent is still living in the HH, appointment made: DO NOT
RETURN
- 15 The respondent has moved out: DO NOT RETURN

3. Protocols and Quality Control

Collection Method

Data were collected through household surveys. Adult smokers and non-smokers responded to a “face-to-face” survey.

Main Component of the Survey

The ITC Survey protocol consisted of four main steps:

1. Household Enumeration (including demographic information)
2. Participant Selection and Consent
3. Main Questionnaire
4. Exit and Remuneration.

The types of questions that will be asked have been described in the text of the application but the following is a summary of those questions:

- a) Demographic questions (e.g., age, gender, indicators of socio-economic status);
- b) Questions relevant to the policies of interest (policy-relevant, or “proximal” measures) of the kind outlined in the description of each of the main policy areas (e.g., warning labels, “light/mild”, advertising/promotion, price/taxation, smoke-free, cessation)
- c) Moderator variables (e.g., time perspective, collectivist vs. individual orientation);
- d) Other well-established questions assessing smoking behaviour; and
- e) Other important psychosocial predictors of smoking behaviour (e.g., normative beliefs, self-efficacy, intentions to quit) (distal variables).

In short, none of the survey questions will ask respondents to report on behaviors that are illegal. Moreover, none of the questions deal with matters that are overly personal and none of them should be surprising to respondents given that this is a “survey about smoking.” The ITC China Survey is included in the Appendix.

At the end of the survey, the respondent will be thanked for his/her participation and will be asked to provide the name, address, and phone number of one person who will always know where the respondent is, in the event that the respondent has moved in the next year.

The respondent will be reminded that we will be returning in about 1 year for the next wave.

Selection of Household Members

The addresses of all the households for each Ju Wei Hui were provided to the research team in each city. The China CDC randomly selected 300 household from that list of addresses. The Ju Wei Hui members then collected basic information using the household enumeration form on every person over the age of 18 in every one of these 300 households. From this information, the China CDC randomly selected 50 respondents to participate in the survey.

Household Enumeration

At each dwelling, before respondents were selected, information was collected about the household, including a roster of all household members (with age, gender, and (for adults) smoking status). This information could be obtained from any adult member of the household. The ethnicity of the household informant was also coded. Time required to complete the *Household Enumeration Form* is: 2-5 minutes.

Attempts to Enumerate

A maximum of 4 attempts were made to enumerate each household.

Respondent Gift/Enumeration

The interviewer will then indicate that, if the respondent agrees to participate and completes the survey, he/she will receive a thank-you gift. Smokers will receive a small but useful gift (i.e. soaps) which will be equivalent to about 10-20 Yuan. The respondent will be told that he/she would receive the same payment every time he/she participates.

Private Interviews

Adult participants were interviewed alone whenever possible. If another person insisted on being present, the agreement of the respondent was necessary in order to proceed with the interview. Adolescents completed the questionnaire in private.

Proxy Interviews

A proxy interview is an interview conducted with another knowledgeable member of the household on behalf of the selected respondent. Proxy interviews were not allowed in the ITC Survey.

Respondent Not Available

If a respondent was unavailable, an appointment time (hard appointment) was made to interview that respondent.

Fieldwork Team

Specially trained Ju Wei Hui staff will visit the sampled addresses and enumerate each of the 300 households. Upon reaching a household, the Ju Wei Hui staff member will identify him/herself and indicate that the National Centers for Disease Control is conducting a 30-40 minute health survey in the country. He/she will indicate also that this is a research survey and

that it does not in any way involve selling or advertising any products. The respondent will be asked if he/she is willing to answer a few short questions to determine survey eligibility.

The Ju Wei Hui staff member will ask a series of screening questions determining for each adult household member, gender, smoking status, birth date, and residential status. The Ju Wei Hui staff member will thank the respondent and tell the participant that if someone in the household is selected for participation, they will be visited in the next few months by a survey interviewer from the Centers for Disease Control.

Survey administration will be conducted by survey interviewers from the local Centers for Disease Control in each of the cities, who will be trained by the National CDC and the Local CDC.

From a randomly ordered list of enumerated households, the National Chinese CDC staff will then use the next birthday method to select respondents within the households, in sufficient number to reach quotas in each Ju Wei Hui of 40 adult smokers and 10 adult non-smokers. At most one smoker and one non-smoker will be selected in each household.

Interviewers will contact the selected respondents and explain that we are inviting the respondent to participate in the group of 1,000 respondents that have also been randomly selected, and that we would be contacting the respondent every year to complete a survey.

If the respondent agrees to participate, the interviewer will reiterate the confidential nature of their responses and will indicate to respondents that the questions asked will not be of an overly personal nature. The respondent will be given an information letter and asked to sign a consent form.

A total number of 20 Ju Wei Hui in each city were selected to participate in the survey. Each participating city formed a project team, which consisted of the following:

- 1 City Coordinator: Responsible for setting up the local fieldwork team, supervising fieldwork, overseeing the fieldwork plan and reporting to national CDC coordinators for any problems.
- 20 Survey Interviewers: Selected by the city coordinator according to local situations. They formed 10 groups, one male and one female for each group. All the interviewers were to have a college or university degree, be younger than 45 years old, and have indoor interview experience. It was recommended that, if possible, interviewers be chosen from university students majoring in preventive medicine.
- 1 Data Manager: Responsible for collecting the initial demographic information needed for sample selection, collecting finished questionnaires from interviewers along with the MP3 recordings, transferring data to central CDC, etc.
- 1 Quality Controller: Responsible for checking if the fieldwork procedures are strictly followed, the completeness of finished questionnaires and MP3 recordings, and writing quality control reports.

MP3 recording

All adult smoker survey interviews were recorded. Whenever possible, non-smoker interviews were recorded. If the interviewer needs to do a smoker survey and a non-smoker survey in the same household, then only the smoker survey was recorded.

Identifying Eligible Members

There were three or four different categories of eligible respondents in a household

- 1) Adult Male Smokers
- 2) Adult Female Smoker
- 3) Adult Non-smokers

Information and Consent

Once a respondent was selected, the information letter was provided and the consent form was administered.

Language

The English surveys were translated into the Chinese language in order for the face-to-face interview to be conducted in the language.

Training Manual

An English manual on how to enumerate a household and conduct a survey interview were written to train survey interviewers before the survey fieldwork begins. The English language manual was translated into Chinese.

Monitoring and Quality Assurance

To ensure the accuracy and quality of the ITC survey, the fieldwork was monitored in several ways. The China CDC and the research team in the city applied quality control to the Ju Wei Hui data collection. They checked the forms submitted and re-collected the information if the forms were incorrectly filled out.

During the survey interviewing stage, at the end of each day, interviewers were to carry out a self-check on the survey questionnaires they completed. The data manager collected all the completed surveys from all interviewer teams. Each day the data manager also copied all the MP3 recordings into a designated computer and used a unified file name system. Each recording file was named using the same coding on the cover page of the survey in the order of city (4 digits), Jie Dao (4 digits), Ju Wei Hui (4 digits), interviewer (2 digits), individual (2 digits) separated by a hyphen “-“. The total number of digits is 20, e.g. “2101-0085-0001-2418-58-02.wav”. No other characters and symbols are allowed for these recording files. Each Monday the data manager sent all recording files using a CD to the central team through courier service. The central team randomly selected 50% of the MP3 recordings and did the actual checking.

After the survey was completed, all surveys were collected, organized and bound together and send to the central team at China CDC.

4. Disposition Codes and Response Rates

Outcome Codes: Households

- 01 Not a current dwelling unit: DO NOT RETURN
- 02 No contact made, not sure whether a dwelling unit: MUST RETURN
- 03 No contact made, known to be a dwelling unit: MUST RETURN
- 04 Contact made, cannot answer at this time, but could in the future: MUST RETURN (and write appointment information in outcome)
- 05 Contact made, no one at all able to answer: DO NOT RETURN
- 06 Contact made, refusal: DO NOT RETURN
- 07 Contact made, Household Information Form completed: DO NOT RETURN
- 09 All other cases

If a household could not be contacted after four visits, one in weekday, one in weekday evening, one in weekend and one in weekend evening, the household was not contacted further.

Respondent ID

The respondent ID is a combination of the long ID written on page 1 of the survey in the the order of city (4 digits), Jie Dao (4 digits), Ju Wei Hui (4 digits), interviewer (2 digits), individual (2 digits) separated by a hyphen "-". The total number of digits is 20, e.g. "2101-0085-0001-2418-58-02.

Retention Rates

a) Smokers

Retention Rate = (Recontact+Quitter)/Smoker of W1*100%

City	Wave 1	Wave 2				
		Recontact	Replenishment	Total	Quitter	Retention Rate (%)
Beijing	804	693	74	767	38	90.92
Shenyang	801	582	201	783	18	74.91
Shanghai	801	693	87	779	23	89.26
Changsha	803	606	147	753	51	81.82
Guangzhou	804	534	264	798	38	71/14
Yinchuan	802	618	144	762	53	83.67
Total	4815	3726	917	4642	221	81.95

b) Non-Smokers

Retention Rate = Recontact/Non-Smoker of W1*100%

City	Wave 1	Wave 2			
		Recontact	Replenishment	Total	Retention Rate (%)
Beijing	219	212	7	219	96.80
Shenyang	200	177	22	199	88.50
Shanghai	204	187	17	204	91.67
Changsha	205	171	25	196	83.41
Guangzhou	227	152	60	212	66.96
Yinchuan	215	188	24	212	87.44
Total	1270	1087	155	1242	85.59

Reasons for failure to follow-up in some cities

a) Beijing

Reason	N	Percentage (%)
Refusal	26	41.9
Nobody in household	16	25.8
Disease	13	21.0
Cannot be reached during survey period	7	11.3
Total	62	100

b) Changsha

Reason	N	Percentage (%)
Refusal	76	42.0
Nobody in household/Cannot be reached during the survey period/death	105	58.0
Total	181	100

c) Yinchuan

Reason	N	Percentage (%)
Refusal	36	24.0
Moved out	105	70.0
Death	7	4.7
Cannot be reached during survey period	2	1.3
Total	150	100

d) Shanghai

Reason	Smoker		Non-Smoker		Total	
	N	%	N	%	N	%
Refusal	22	25.9	1	5.9	23	22.5
Moved out	45	52.9	11	64.7	56	54.9
Death	4	4.7	3	17.6	7	6.9
Disease	3	3.5	1	5.9	4	3.9
Cannot be reached during survey period	6	7.1	0	0	6	5.9
No response after 4 attempts	5	5.9	1	5.9	6	5.9
Total	85	100	17	17	102	100

Wave 2 Weight Calculation for Smokers and Non-smokers

January 15, 2009

1 Wave 1 weights for smokers

(1) HH level weights

Each surveyed individual has a household level weight $W_1^{[1]}$. This is the number of people in the same household and the same sampling category **represented** by the surveyed individual:

- For adult male smokers, $W_1^{[1]}$ is the number of adult male smokers in the household
- For adult female smokers, $W_1^{[1]}$ is the number of adult female smokers in the household

(2) JWH level weights

Each surveyed individual has a JWH level weight $W_2^{[1]}$. This is the number of people in the same JWH and the same sampling category **represented** by that person:

$$W_2^{[1]} = \frac{N_1}{N_2} \times \frac{M_1}{M_a} \times W_1^{[1]}$$

where N_1 is the total number of HHs in that JWH; N_2 is the number of HHs enumerated (by design we should have $N_2 = 300$ for most JWHs); M_1 is the number of smoking households (SMHH) **among the N_2 enumerated HHs**; and M_a is the number of SMHHs **surveyed** to reach the quota of 40 smokers (by design we should have $M_a \leq 40$ but it is not always the case since the quota 40 has to be adjusted sometimes).

(3) JD level weights

Each surveyed individual has a JD level weight $W_3^{[1]}$. This is the number of people in the same JD and the same sampling category represented by that person:

$$W_3^{[1]} = \frac{P_b}{2P_c} \times W_2^{[1]}$$

where P_b is the **population size of the JD**, and P_c is the **population size of the JWH** from which the individual is surveyed. The factor 2 in the denominator represents the number of JWHs selected within the JD.

(4) City level weights

Each surveyed individual has a city level weight $W_4^{[1]}$ at the city level. This is the number of people in the city and the sampling category represented by that person:

$$W_4^{[1]} = \frac{P_a}{10P_b} \times W_3^{[1]}$$

where P_a is the **population size of the city**, and P_b is the **population size of the JD** from which the individual is surveyed. The factor 10 in the denominator represents the number of JDs selected within the city.

(5) Final wave 1 weights

The final wave 1 weights are denoted as $W^{[1]}$, which are the same as $W_4^{[1]}$.

2 Wave 2 longitudinal weights for smokers

2.1 Data files

For each city, we need the wave 1 weight file which contains city code, JD code, JWH code, HH code, individual code, Gender (G), the four level wave 1 weights $W_1^{[1]}$, $W_2^{[1]}$, $W_3^{[1]}$ and $W_4^{[1]}$ for all individuals who responded at wave 1.

2.2 Weight calculation

To calculate wave 2 longitudinal weights $LW^{[2]}$, which are obtained from the wave 1 weights $W^{[1]}$ adjusted for attrition, we need first to create an indicator variable R such that $R_i = 1$ if the i th individual responded at wave 2 and $R_i = 0$ if the i th individual failed to respond at wave 2.

(1) HH level longitudinal weights

For every successful re-contact at wave 2, the related HH receives a wave 2 HH weight computed as $WH = W_4^{[1]}/W_1^{[1]}$. This is interpreted as the number of HH in the city represented by the sampled HH. This weight is re-scaled so that the total wave 2 HH weight matches the total wave 1 HH weight. Let s_1 denote the set of all respondents at wave 1. The re-scaled weights, denoted by LWH , are computed as follows:

$$LWH_i = WH_i \times \frac{\sum_{j \in s_1} WH_j}{\sum_{j \in s_1} WH_j R_j}.$$

If an HH has two respondents i and j , one male and one female, then we will have two (possibly) different HH weights LWH_i and LWH_j for that same HH. The HH level longitudinal weights satisfy

$$\sum_{i \in s_2} LWH_i = \sum_{j \in s_1} WH_j,$$

where s_2 is the set of all wave 2 re-contacts. We could let $LWH_i = 0$ if $i \in s_1$ but $i \notin s_2$.

(2) Individual level longitudinal weights

Each individual at wave 2 receives an (unadjusted) weights as $WI = LWH \times W_1^{[1]}$. This weight is re-scaled to obtain the individual longitudinal weight LWI . The total longitudinal weights for all wave 2 respondents match the total individual weights of all wave 1 respondents.

The re-scaling is done separately for male smokers and female smokers.

Let's re-code the gender variable as $G_i = 1$ if the i th respondent is male and $G_i = 0$ if the i th respondent is female. For male smoker i who responded to both waves 1 and 2, the re-scaled weight is computed as

$$LWI_i = WI_i \times \frac{\sum_{j \in s_1} WI_j G_j}{\sum_{j \in s_1} WI_j R_j G_j}.$$

Note that $\sum_{j \in s_1} WI_j R_j G_j = \sum_{j \in s_2} WI_j G_j$. For female smoker k who responded to both waves 1 and 2, the re-scaled weight is computed as

$$LWI_k = WI_k \times \frac{\sum_{j \in s_1} WI_j (1 - G_j)}{\sum_{j \in s_1} WI_j R_j (1 - G_j)}.$$

Note that $\sum_{j \in s_1} WI_j R_j (1 - G_j) = \sum_{j \in s_2} WI_j (1 - G_j)$.

(3) Weights for non-respondents

We let $LWI_i = 0$ if $i \in s_1$ but $i \notin s_2$.

(4) Final longitudinal weights

The individual level longitudinal weights LWI_i are the final longitudinal weights.

3 Wave 2 cross-sectional weights for smokers

3.1 Data files

Wave 2 adult smoker survey data consists of two parts: all successful re-contacts from wave 1 respondents and the wave 2 replenishment sample. Wave 2 cross-sectional weights are calculated for the combined data set.

It is preferable that a combined data set is created for each city. This data set may contain, for instance, 700 successful re-contact smokers and 100 newly surveyed smokers at wave 2. An indicator variable should be created to indicate whether a respondent is a re-contact or newly recruited.

3.2 Weights calculation

Wave 2 cross-sectional weights are calculated in the same way as wave 1 weights, which are also cross-sectional. The sampling design for wave 2 is an “induced one” which reflects how the combined sample is taken. Certain approximations are used in the calculation, due to the difficulty in finding the exact inclusion probability from the “induced design”.

The most important aspect in calculating wave 2 cross-sectional weights is that all design variables used in the calculation should be **those used for the induced wave 2 design**.

(1) HH level weights

Each surveyed individual, new or old, has a household level weight $W_1^{[2]}$. This is the number of people in the same household and the same sampling category represented by the surveyed individual:

- For adult male smokers, $W_1^{[2]}$ is the number of adult male smokers in the household
- For adult female smokers, $W_1^{[2]}$ is the number of adult female smokers in the household

(2) JWH level weights

Each surveyed individual, new or old, has a JWH level weight $W_2^{[2]}$. This is the number of people in the same JWH and the same sampling category represented by that person:

$$W_2^{[2]} = \frac{N_1}{N_2} \times \frac{M_1}{M_a} \times W_1^{[2]}$$

where

1. N_1 is the total number of HHs in that JWH;
2. N_2 is the number of HHs enumerated at both waves 1 and 2. For most JWHs, N_2 is 300 from wave 1 plus the newly enumerated ones from wave 2 (if any);
3. M_1 is the number of smoking households (SMHH) among the N_2 enumerated HHs;
4. M_a is the number of SMHHs **surveyed at both waves 1 and 2** (re-contacts and replenishment)

(3) JD level weights

Each surveyed individual, new or old, has a JD level weight $W_3^{[2]}$. This is the number of people in the same JD and the same sampling category represented by that person:

$$W_3^{[2]} = \frac{P_b}{2P_c} \times W_2^{[2]}$$

where P_b is the population size of the JD, and P_c is the population size of the JWH from which the individual is surveyed.

Important Note: If one JWH is lost at wave 2 for a particular JD, and the replacement JWH is not in the same JD, then the factor 2 in front of P_c should be replaced by 1, to reflect the fact that only one JWH is selected in that JD. Similarly, if a JD added another JWH at wave 2, plus two original JWHs selected from wave 1, then the factor 2 should be replaced by 3.

(4) City level weights

Each surveyed individual has a city level weight $W_4^{[2]}$ at the city level. This is the number of people in the city and the sampling category represented by that person:

$$W_4^{[2]} = \frac{P_a}{10P_b} \times W_3^{[2]}$$

where P_a is the population size of the city, and P_b is the population size of the JD from which the individual is surveyed. The factor 10 in the denominator represents the number of JDs selected within the city.

Important Note: If a city added a new JD (Shenyang, for instance) at wave 2, and all the other 10 JDs from wave 1 are also surveyed, then the factor 10 in front of P_b should be replaced by 11; if a city added a new JD but one of the original 10 JDs has been totally lost (i.e. no re-contact from that JD), then the factor is still 10.

(5) Final wave 2 cross-sectional weights

The final wave 2 cross-sectional weights are denoted as $W^{[2]}$, which are the same as $W_4^{[2]}$.

4 Wave 2 longitudinal weights for non-smokers

This section is almost identical to the section on wave 2 longitudinal weights for smokers. The only difference is that male and female non-smokers are considered altogether, while the wave 2 longitudinal weights for smokers are calculated separately for males and females.

4.1 Data files

For each city, we need the wave 1 weight file which contains city code, JD code, JWH code, HH code, individual code, the four level wave 1 weights $W_1^{[1]}$, $W_2^{[1]}$, $W_3^{[1]}$ and $W_4^{[1]}$ for all individuals who responded at wave 1.

4.2 Weight calculation

To calculate wave 2 longitudinal weights $LW^{[2]}$, which are obtained from the wave 1 weights $W^{[1]}$ adjusted for attrition, we need first to create an indicator variable R such that $R_i = 1$ if the i th individual responded at wave 2 and $R_i = 0$ if the i th individual failed to respond at wave 2.

(1) HH level longitudinal weights

For every successful re-contact at wave 2, the related HH receives a wave 2 HH weight computed as $WH = W_4^{[1]}/W_1^{[1]}$. This is interpreted as the number of HH in the city represented by the sampled HH. This weight is re-scaled so that the total wave 2 HH weight matches the total wave 1 HH weight. Let s_1 denote the set of all respondents at wave 1. The re-scaled weights, denoted by LWH , are computed as follows:

$$LWH_i = WH_i \times \frac{\sum_{j \in s_1} WH_j}{\sum_{j \in s_1} WH_j R_j}.$$

The HH level longitudinal weights satisfy

$$\sum_{i \in s_2} LWH_i = \sum_{j \in s_1} WH_j,$$

where s_2 is the set of all wave 2 re-contacts. We could let $LWH_i = 0$ if $i \in s_1$ but $i \notin s_2$.

(2) Individual level longitudinal weights

Each individual at wave 2 receives an (unadjusted) weights as $WI = LWH \times W_1^{[1]}$. This weight is re-scaled to obtain the individual longitudinal weight LWI . The total

longitudinal weights for all wave 2 respondents match the total individual weights of all wave 1 respondents.

(3) Weights for non-respondents

We let $LWI_i = 0$ if $i \in s_1$ but $i \notin s_2$.

(4) Final longitudinal weights

The individual level longitudinal weights LWI_i are the final longitudinal weights.

5 Wave 2 cross-sectional weights for non-smokers

5.1 Data files

Wave 2 non-smoker survey data consists of two parts: all successful re-contacts from wave 1 respondents and the wave 2 replenishment sample. Wave 2 cross-sectional weights are calculated for the combined data set.

It is preferable that a combined data set is created for each city. This data set may contain, for instance, 170 successful re-contact non-smokers and 30 newly surveyed non-smokers at wave 2. An indicator variable should be created to indicate whether a respondent is a re-contact or newly recruited.

5.2 Weights calculation

(1) HH level weights

Each surveyed individual has a household level weight W_1 . This is the number of people in the same household and the same sampling category **represented** by the surveyed individual. For adult non-smokers, W_1 is the total number of adult non-smokers in the household

(2) JWH level weights

Each surveyed individual has a JWH level weight W_2 . This is the number of people in the same JWH and the same sampling category **represented** by that person.

Due to practical constraints, the selection of households from which non-smokers are surveyed were modified at various occasions. Some households were not selected from the list of 300 enumerated households. To simplify the calculation, we will treat the set of households from which non-smokers were surveyed as a **simple random sample** from all households in the JWH with at least one non-smoker in the household. The total

number of such households in the JWH, however, is unknown. We estimate this by αN_1 , where N_1 is the total number of HH in the JWH, α is the estimated percentage of HH with at least one non-smoker. The JWH level weights are then calculated as

$$W_2 = \frac{\alpha N_1}{M_d} \times W_1$$

where M_d is the total number of households surveyed in the JWH for non-smokers. Since each HH can only have one non-smoker to be surveyed, M_d is the same as the number of non-smokers surveyed in the JWH (in many cases M_d would be 10).

(3) JD level weights

Each surveyed individual has a JD level weight W_3 . This is the number of people in the same JD and the same sampling category represented by that person:

$$W_3 = \frac{P_b}{2P_c} \times W_2$$

where P_b is the **population size of the JD**, and P_c is the **population size of the JWH** from which the individual is surveyed. The factor 2 in the denominator represents the number of JWHs selected within the JD.

(4) Final weights

Each surveyed individual has a final weight W_4 at the city level. This is the number of people in the city and the sampling category represented by that person:

$$W_4 = \frac{P_a}{10P_b} \times W_3$$

where P_a is the **population size of the city**, and P_b is the **population size of the JD** from which the individual is surveyed. The factor 10 in the denominator represents the number of JDs selected within the city.

6 Variables used for wave 1 weight calculation

C_1 – City code

C_2 – Jie Dao code

C_3 – Ju Wei Hui code

C_4 – Household code

C_5 – Individual code

- P_a – City population size
- P_b – Jie Dao population size
- P_c – Ju Wei Hui population size
- N_1 – Total number of households in the Ju Wei Hui
- N_2 – Number of households enumerated ($N_2 = 300$ for most cases)
- M_1 – Number of smoking households among the N_2 enumerated households
- M_2 – Number of non-smoking households among the N_2 enumerated HHs ($M_2 = N_2 - M_1$)
- M_a – Number of smoking households surveyed to reach the quota of 40 (or so) smokers
- M_b – Number of smoking households surveyed to reach the quota of 4 (or 3) non-smokers
(In most cases $M_b = 4$ or 3)
- M_c – Number of non-smoking households surveyed to reach the quota of 6 (or 7) non-smokers
(In most cases $M_c = 6$ or 7)
- I_1 – Household classifier: $I_1 = 1$ for smoking households; $I_1 = 0$ for non-smoking households
- I_2 – Smoking status indicator: $I_2 = 1$ for smokers; $I_2 = 0$ for non-smokers
- G – Gender: $G = 1$ for male and $G = 2$ for female (This is Question P1 on the questionnaire)
- L_1 – Number of male adults in the household (This is Question P8A in the questionnaire)
- L_2 – Number of male adult smokers in the household (This is Question P8B in the Questionnaire)
- L_3 – Number of female adults in the household (This is Question P9A in the questionnaire)
- L_4 – Number of female adult smokers in the household (This is Question P9B in the Questionnaire)

Form 6

**Wave 2 FCTC Surveillance/ITC China Survey
Fieldwork supplies list (CN-ITC-2005-S-6)**

City: _____

	Supplies	Quantity	Received Quantity	Good quality or not
Survey Material	Respondent Information Form	20		
	Consent Form	900		
	Adult Smoker Survey	900		
	Adult Non-Smoker Survey	300		
	Training Manual	30		
	Quality Control Manual	10		
	Telephone Double Check EpiData Database	1		
	MP3	12		
Survey Instrument	Name Card	30		
	Battery	800		
	Marker	200		
	Electric Torch	30		
	Shoe Cover	2000		
	Backpack	25		
	Gift	800		

Note: Writing materials will be provided by China CDC, and survey instruments will be purchased by city CDC. City coordinator is in charge of preparing all supplies and sending the form back to China CDC. If supplies are enough and in good condition, mark "√" in the form, otherwise fill out the insufficient quantity and the numbers having poor quality.

City coordinator : _____

Date : yy mm dd

Form 7

Wave 2 FCTC Surveillance/ITC China Survey
Training Location and Equipment list (CN-ITC-2005-S-7)

Supplies		Quantity
Training Location	Size	
	Table and Chair	
	Good for Practicing	
Training Equipments	1.Notebook Computer	
	2.Multi-Media Projector	
	3.Audio Equipment	
Training Material	4.Qestionnaire	
	5.Fieldwork Registration Form (CN-ITC-2007-S-16)	
	6.Respondent Information Form (CN-ITC-2007-S-5)	
	7.Telephone Double-Check Form (EpiData Database)	
	8.MP3	
	9.Training Manual	
	10.Qaulity Control Manual	
	11.Interviewer Registration Form (CN-ITC-2007-S-8)	
	12.Interviewer Attendance Form (CN-ITC-2007-S-9)	
Other	13.Document Envelope	
	14.Marker	

Form 10

Wave 2 FCTC Surveillance/ITC China Survey
Fieldwork Staff Registration Form (CN-ITC-2005-S-10)

City: _____

Project Team	Name	Code	Telephone	Cell Phone	E-mail
Project Manager					
Coordinator					
Data Manager					
Quality Controller					
Interviewer		01			
		02			
		03			
		04			
		05			
		06			
		07			
		08			
		09			
		10			
		11			
		12			
		13			
		14			
		15			
		16			
		17			
		18			
		19			
		20			

Note: This form provides information for monitoring fieldwork, which is filled out by city coordinators. The information in the form is allowed for some changes in terms of actual situation later on. This form should be sent to China CDC before the fieldwork. The codes are only for interviewers, each interviewer has one code, and there are total 20 codes for all interviewers.



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City code
CODE1

--	--	--	--

Street code
CODE2

--	--	--	--

JuWeiHui
Code

--	--	--	--

Household
CODE4

--	--

Individual
CODE5

--	--

Interviewer
CODE0

**Wave 2 FCTC Surveillance/ITC China Survey
Fieldwork Registration Form (CN-ITC-2005-S-16)**

1. Individual Appointment Record

Appointment #		Date of Appointment				Time of Appointment				Outcome					
1	QCA1			yy		mm		dd	QCB1		hh		min	QCC1	
2	QCA2			yy		mm		dd	QCB2		hh		min	QCC2	
3	QCA3			yy		mm		dd	QCB3		hh		min	QCC3	
4	QCA4			yy		mm		dd	QCB4		hh		min	QCC4	

Outcome:
① entering household
② nobody home or answering the door
③ refusal

2. Survey time

Date

QCA5

--	--	--	--

 yy

--	--

 mm

--	--

 dd

time

QCB5

--	--

 hh

--	--

 min

3. Individual survey outcome

	Outcome code	Note
Adult male smoker	QCAMS	
Adult female smoker	QCAFS	
Adult non-smoker	QCANS	

Outcome code
① complete the survey
② partly complete the survey
③ survey can not be conducted
④ refusal

Note: ① Before conducting survey, interviewer should fill out "individual appointment record" "Survey time"; and after survey, interviewer should fill out "individual survey outcome" ② each form for each respondent.

FCTC Surveillance/ITC China Survey—Household Enumeration Form (CN-ITC-2005-S-15)

Jie Dao: < Code2> Ju Wei Hui: < Code3> Household <Code4>

Address: _____ Interviewer: _____

	Date	Time	Outcome
Contact Attempt 1	____/____/____ Year ____/____/____ Day	____/____/____ Hour ____/____ Minute	
Contact Attempt 2	____/____/____ Year ____/____/____ Day	____/____/____ Hour ____/____ Minute	
Contact Attempt 3	____/____/____ Year ____/____/____ Day	____/____/____ Hour ____/____ Minute	
Contact Attempt 4	____/____/____ Year ____/____/____ Day	____/____/____ Hour ____/____ Minute	

Any Child Living in the Household? YES NO

Interviewer Code Code5	Name	Gender	Birthday			Permanent Resident Status (Yes:√ No:×)	Smoke Over 100 Cigarette (Yes:√ No:×)	Current Weekly Smoker (Yes:√ No:×)
			Year	Month	Day			
01								
02								
03								
04								
05								
06								

Outcome Code:

- 01 Not a current dwelling unit: DO NOT RETURN
- 02 No contact made, not sure whether a dwelling unit: MUST RETURN
- 03 No contact made, known to be a dwelling unit: MUST RETURN
- 04 Contact made, cannot answer at this time, but could in the future:
MUST RETURN (and write appointment information in outcome)
- 05 Contact made, no one at all able to answer: DO NOT RETURN
- 06 Contact made, refusal: DO NOT RETURN
- 07 Contact made, Household Information Form completed: DO NOT RETURN



Pictures

Beijing



Shanghai



Shenyang



Yinchuan





Guangzhou



Changsha



References

ITC China Wave 1 Training Manual in English.

ITC China Wave 1 Training Manual in Chinese.