

Assessing Compliance with Smoke-Free Laws

Second Edition

A “How-to” Guide for Conducting Compliance Studies



Contents

1	Executive Summary
2	Introduction
3	STEP 1: Clarify the Purpose of Your Study
5	STEP 2: Know the Law
7	STEP 3: Review Previous Compliance Studies and Enforcement Efforts
8	STEP 4: Plan Your Study: Resources, Budget and Timelines
10	STEP 5: Clarify the Scope of Your Study
11	STEP 6: Develop Data Collection Tools and Protocols
16	STEP 7: Choose Locations to Visit (Sampling)
20	STEP 8: Train Data Collectors and Conduct Observations
21	STEP 9: Process Data and Analyze Your Results
23	STEP 10: Disseminate Your Results
25	Appendix A: Sample Study Timeline
26	Appendix B: Sample Data Collection Forms
31	Appendix C: Sample Interview Protocol
32	Appendix D: Sample Data Collection Protocol
33	Appendix E: Sample Budget Template
34	Acknowledgements

Executive Summary

This guide promotes best practice in assessing compliance with smoke-free laws. It will be of interest to a range of audiences interested in this topic, including public health advocates, government officials, and researchers.

It is expected that readers will use the guide to help them practically think through why they might want to do a compliance study (or why not), what knowledge and resources they will need for a study, and how to design the study and effectively disseminate the results.

For those with research training and experience, the guide will provide useful insights into the particular issues involved in researching compliance with smoke-free laws. For those with less experience or training in research, the guide provides detailed guidance to help design a study that effectively and reliably assesses compliance.

Recommendations in the guide are based on experience from other jurisdictions and on best practice when available. However, the approach will need to be adapted to factors specific to each context. Any study should be designed and conducted in consultation with people who are knowledgeable about the jurisdiction and smoke-free law under review, and who have research experience and/or training.

The steps and recommendations for conducting a study are outlined in the guide and include the following:

- Compliance studies should only be conducted with a clear strategic purpose in mind, including clarity on how the results will be used. Compliance studies are most useful in jurisdictions where the law prohibits smoking indoors in all public places and workplaces, with no exceptions.
- Knowledge of the provisions of the law governing exposure to tobacco smoke in your jurisdiction is essential to designing your study. Ideally, the provisions of the law should be clear but, often, there is ambiguity that you will need to understand and address.
- A review of previous compliance studies and enforcement efforts can provide useful context and help you plan your study.
- Organizations conducting studies will need to assess the human and financial resources needed to conduct a study and tailor the study to the resources available. The cost will depend largely on the scope and sample size of the study.
- The scope of the study — geographic parameters and venue types — should be guided by the strategic purpose of the study. A larger scope requires greater resources. The selection of locations within a venue is driven by the purpose of the study, the number of locations in a particular venue type in the area under study, the resources available and the extent to which you want to generalize the study results to the broader population.
- Data collection tools should reflect the provisions of the law in your jurisdiction, focus on questions relevant to your study purpose, and clarify procedures to ensure high-quality data collection. The main indicator for a study should be whether or not smoking is observed in a location.
- To collect high-quality data, you will need to properly train data collectors, test your data collection procedures in a few pilot locations, and provide appropriate supervision of data collectors to ensure that the data collection protocol is being followed.
- Analysis of data can range in complexity, depending on the sample size, types of venues, number of different geographic districts, and number of indicators. Focus your analysis on the main indicator: Observed smoking in the types of venues or geographic locations of most interest.
- Dissemination of results is perhaps the most important part of the process. You need to ensure that the results reach those who can use them. You must consider carefully whom you want to influence, what action you want them to take, and how to present your results in the way that convinces them to act. Recalling the study's purpose will help determine which findings need to be shared with target audiences via carefully crafted key messages.

Introduction

The World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC) and its guidelines establish 100% smoke-free policies in workplaces and public places as the best practice to protect people from exposure to secondhand smoke (Article 8 and guidelines).^{1, 2}

MPOWER, the WHO's technical assistance package of evidence-based policies, also identifies the adoption of 100% smoke-free policies as a critical strategy to reversing the tobacco epidemic.³

Although the enactment of a 100% smoke-free law is necessary to widely protect people from exposure to tobacco smoke, compliance with the law must be high in order for a law to effectively reduce exposure to secondhand smoke.

Well-designed compliance studies can help assess the effectiveness of comprehensive laws and highlight the potential need for improved implementation and enforcement of the law.

In 2011, the Campaign for Tobacco Free Kids, Johns Hopkins Bloomberg School of Public Health, and the International Union Against Tuberculosis and Lung Disease (The Union) published the first edition of *Assessing Compliance with Smoke-Free Laws* to promote best practice for compliance studies.

This second edition builds on the original guide and incorporates the experience of compliance studies conducted by The Union in ten cities in 2012–2014: Bogor, Indonesia; Ahmedabad, Chennai, Delhi, and Mizoram in India; Harbin and Tianjin in China, Makati City (Manila), the Philippines; Bangkok, Thailand; and Nairobi, Kenya. Study protocols and results are available at www.tobaccofreeunion.org.

This guide presents step-by-step information to conduct a study, beginning with the need to clarify why a compliance study might be conducted and an assessment of the requirements of the law and enforcement activity to date. The guide then discusses practical considerations such as timelines, resources, tools, sampling plans, and the actual study implementation. Finally, the guide briefly addresses how to analyze, present and disseminate study results to best meet the strategic reasons for the study.

It is recommended that the steps be followed sequentially, while recognizing that the process will be iterative; adjustments may be required as planning proceeds. For example, you may define the desired goals, budget and scope of the study, but when you begin to work through your sampling plan, you may find that you cannot include all of the types of venues or geographic areas you had planned without exceeding your budget. Similarly, designing your data collection tools will involve double-checking aspects of the law.

While the guide does not detail best practices for developing, implementing and enforcing smoke-free laws, these issues will clearly be of interest if either the law itself or compliance with the law needs to be strengthened. The guide refers interested readers to the excellent resources available to provide more detailed guidance on these issues.

1. WHO Framework Convention on Tobacco Control. Geneva, World Health Organization, 2003. (http://www.who.int/fctc/text_download/en/index.html, accessed 23 January 2013)
2. WHO Framework Convention on Tobacco Control. Conference of the Parties. Guidelines of protection from exposure to tobacco smoke. Article 8 of the WHO FCTC. Geneva, World Health Organization, 2007. (http://www.who.int/fctc/protocol/guidelines/adopted/guidel_2011/en/index.html, accessed 23 January 2013). See <http://www.who.int/tobacco/mpower/en/index.html>

Clarify the Purpose of Your Study

A compliance study aims to measure compliance with the provisions of a particular law at a specific point in time.

If the law you are studying incorporates best practices to reduce exposure to tobacco smoke, then a study showing high compliance with that law should give you a good indication that the law is actually providing the protection intended. In other words, if a law:

- Prohibits smoking in indoor/enclosed workplaces, all indoor/enclosed public places, and (ideally) in outdoor workplaces and public places;
- Requires large, easy-to-read, clear signs to be posted at all entrances, in all restrooms and stairwells, and in all common areas on all floors of an establishment; and
- Prohibits establishments from providing ashtrays and ashbins where smoking is prohibited, then high compliance (90%+) with all of these measures in all types of venues can be considered to be a success from a public health perspective.³

If the law does NOT incorporate best practices to reduce exposure to tobacco smoke, high compliance with the law will not necessarily indicate adequate protection from secondhand smoke. For example, high compliance with a law that permits designated indoor smoking rooms still means that the public will be inadequately protected from secondhand smoke and that, high compliance or not, the law needs to be strengthened.

A compliance study is therefore most useful in jurisdictions where the law prohibits smoking indoors in all public places and workplaces, with no exceptions.

Compliance studies should only be conducted if they serve a strategic purpose. Think about *why* you want to conduct a compliance study, and *how* you intend to use the results. This will help you focus your survey design, determine what data you collect and analyze, and drive how you report and disseminate the results.

The most common purpose of a compliance study is to **provide decision makers with evidence regarding the extent of compliance with the law, and to help inform priorities for implementation and enforcement**. For example, low compliance rates can support calls for active enforcement and/or intensified educational strategies. Results may also indicate types of venues and geographic areas that require more targeted intervention. Periodic compliance studies can also be used to evaluate progress by documenting changes in the rate of compliance over time.

Other common purposes for compliance studies are to:

- **Educate the public and owners of affected venues.** Studies can be used to educate venue owners, policymakers, employees, and/or the general public about the existence of the smoke-free law, the status of compliance, and what they can do to increase compliance (such as training staff to ask clients and visitors to not smoke/put out their cigarettes).

COMPLIANCE VS. ENFORCEMENT

The terms “compliance” and “enforcement” are often used interchangeably. However, it is important to note that while these concepts are related, they are distinct.

Compliance is the degree to which a law (or other legislative instrument) is being obeyed.

Enforcement includes activities undertaken to increase compliance. Enforcement generally refers to the use of inspections and application of sanctions for non-compliance to increase compliance.

Public education about the law and its sanctions is another critical component of efforts to increase compliance with the law.

High compliance can occur with or without enforcement, although some means of enforcement is usually necessary. High compliance, however, does not always mean full protection from secondhand smoke. If there are loopholes or deficiencies in the law, full protection may not be provided.

It is important to understand these distinctions before planning compliance studies.

3. Key indicators of Success: Smoke-Free. Institute for Global Tobacco Control, Johns Hopkins Bloomberg School of Public Health, January 2013. <http://globaltobaccocontrol.org/node/13942>

- **Demonstrate that the law is being complied with.**

A common tobacco industry argument to undermine support for strong smoke-free laws is to claim that the law will be or is being widely disregarded. These claims are often false, or at least exaggerated. A compliance study can show that compliance with the law is high, thus countering industry claims that the law is not working.

- **Provide evidence to show why loopholes or deficiencies in the law must be resolved.**

A compliance study can reveal how loopholes or exemptions in legislation weaken the protection provided by the law. For example, if a law allows designated smoking sections in restaurants, and a study finds that compliance with the law is much lower in restaurants with smoking sections than in restaurants without smoking sections, this information can be used to convince policymakers of the need to eliminate smoking sections to improve overall compliance with the law.

Beyond Compliance Assessments: Developing, Implementing and Enforcing Strong Smoke-free Laws

If the law in your jurisdiction does not prohibit smoking in all workplaces and public places, you will want to consider how to strengthen the law. If you have a comprehensive law but you find that compliance is low, you will want to consider strengthening implementation and enforcement.

Excellent resources are available to guide you in these areas. The summary of resources below is by no means exhaustive, but will provide a good starting point.

Drafting and implementing smoke-free legislation

World Health Organization (WHO) Framework Convention for Tobacco Control and Guidelines for Implementation (Article 8)

http://www.who.int/fctc/text_download/en/
http://www.who.int/fctc/guidelines/adopted/article_8/en/

WHO, Policy Recommendations for Protection from Exposure to Second-Hand Tobacco Smoke, 2007

http://www.who.int/tobacco/resources/publications/wntd/2007/who_protection_exposure_final_25June2007.pdf.

International Legal Consortium, Campaign for Tobacco-Free Kids. Essential Elements of Tobacco Control Legislation series. Smoke-Free Legislation, 2011
<http://www.tobaccocontrolaws.org/files/Essential%20Elements%20of%20Smoke%20free%20Legis%20March%202011.pdf>

WHO, Making Cities Smoke-Free, 2011
http://www.who.int/tobacco/publications/second_hand/making_cities_smoke_free/en/

World Lung Foundation / The Union, Mass Media Resource, 2008
<http://67.199.72.89/mmr/english/360mmrProcess.html>

Enforcing smoke-free legislation

UK Chartered Institute of Environmental Health
http://cieh.org/policy/smokefree_workplaces.html

Global Smokefree Partnership, Smokefree Air Law Enforcement: Lessons from the field.
<http://www.globalsmokefreepartnership.org/smokefree-air-law-enforcement-lessons-from-the-field/>

Evaluating the effectiveness of smoke-free policies

International Agency for Research on Cancer (IARC), Evaluating the effectiveness of smoke-free policies, 2009
<http://apps.who.int/bookorders/anglais/detart1.jsp?codlan=1&codcol=76&codcch=29>

Monitoring of particulate matter and secondhand smoke

Johns Hopkins Bloomberg School of Public Health
www.shsmonitoring.org

Roswell Park Cancer Institute
www.tobaccofreeair.org

Know the Law

In order to know how to measure compliance with the law, you need to understand the provisions of the law governing exposure to tobacco smoke. You should review:

- **The governing legislation.** This may be called a by-law, decree, law, act, regulation, or ordinance. Make sure you have the most up-to-date version, including the most recent amendments.
- **Any regulations or rules** developed under the governing legislation. These normally provide more guidance or clarity on definitions, enforcement mechanisms, penalties and other matters.
- **Any guidance provided to enforcement agencies** that clarifies how enforcement agencies are to interpret the law.

For example, the Cigarettes and Other Tobacco Products Act in India provides very general requirements under the law, but more clarification and more detailed requirements are found in subsequent notifications of rules. Similarly, Makati City has broad requirements in the city's smoke-free ordinance, detailed specifications in rules and regulations for implementation, and an enforcement guide.

You can find these documents through official government publications of laws, regulations and rules, or through international tobacco control legislation databases, for example, www.tobaccocontrolaws.org (Campaign for Tobacco-Free Kids).

If you obtain a copy of legislation from a source other than the government, double check with the appropriate government officials to ensure that the legislation is accurate and current.

Understanding the legislation

Ideally, the legislation should clearly describe or define all of its provisions. The types of details to be familiar with include:

- **Types of venues or locations where smoking or carrying of lighted tobacco products is prohibited indoors.** Examples of venues include restaurants, bars, government buildings, workplaces, schools, and health care facilities.
- **Types of venues or locations where smoking is prohibited outdoors or in partially enclosed areas.** Many jurisdictions prohibit smoking in outdoor stadia, public parks, near windows and entrances, and in other outdoor spaces, as well as in partially enclosed areas such as patios and terraces.
- **Types of tobacco products included.** The law may state that smoking of all tobacco products and carrying of lighted tobacco products is included in the prohibition on smoking in a location. Some laws may further specify the particular products that are covered, such as:
 - Water pipes, whether used to smoke products with or without tobacco.
 - E-cigarettes, whether used with cartridges containing nicotine or not.
 - Bidis, cigarettes, cigars, or any other smoked tobacco product.
- **The terms used in the legislation.** For example, definition of a “workplace” and “public place”; definition of “indoors” or “enclosed,” or “partially enclosed.” These definitions will be particularly important if different types of places are subject to different requirements in the legislation, and will provide critical information to guide the data collection tools.
- **Where, if anywhere, smoking is permitted indoors.** Unfortunately, many laws do NOT prohibit smoking indoors in all locations. Check if smoking is permitted indoors in any type of location. If it is, are conditions specified? For example, do designated smoking areas (whether indoor or outdoor areas) need to be defined by management? Are there any ventilation or other physical requirements for these areas? Are there restrictions on services that can be provided in designated smoking areas, such as food services?
- **When the law comes into force for certain types of venues or settings.** If there are phase-in periods for laws coming into force, you need to know which portions of the law are in effect for which types of venues when you do your study.

- **Signage requirements.** Requirements specifying sign dimensions, format and content, where signs are to be posted within a venue, and who is responsible for ensuring signs are posted.
- **Additional requirements.** Provisions mandating actions that reinforce or support a smoke-free environment, such as a prohibition on ashtrays or ashbins in smoke-free locations.
- **Responsibilities of owners or managers of establishments.** What specific steps a manager or owner of an establishment must take to implement the law, for example, training staff about the law and asking smokers to put out their cigarettes.

More commonly, there will be ambiguities in the law: It may be unclear where exactly smoking is prohibited; important terms such as “enclosed” or “partially enclosed” may not be defined; there may be vague rather than specific requirements (for example, “No-smoking signs must be posted conspicuously on the premises”, rather than “No-smoking signs must contain the universal no smoking symbol, measure at least 20x20 cm, and be posted at every entrance to the building and/or grounds”).

You will need to understand what the ambiguities are in the law, and how you will operationally measure “compliance” where there is ambiguity.

Again, make sure you have reviewed regulations and rules for implementation, where ambiguities are often clarified. As discussed in the next step, you may also want to consult with enforcement agencies to find out how they operationally define aspects of the law. If you still do not find clarity, develop logical operational definitions for your study. For example, you can tell your data collectors that “An enclosed area is any area that is covered/has a roof, and has at least one wall, even if the roof or walls are temporary.”

Review Previous Compliance Studies and Enforcement Efforts

The experience from previous studies of compliance and enforcement efforts can provide helpful models and background information for your planned observations. In particular, they can:

- Provide data to allow you to compare compliance at different points in time (if study methodologies are similar).
- Indicate levels of compliance in different types of venues. Do compliance levels differ by type of venue? This information will help you determine sample sizes for your study (see Step 7, Choose Locations to Visit [Sampling]), the types of venues that might be most important to study, best times of day to visit, and lessons about how to communicate your study results.
- Provide information about how enforcement agencies interpret the law. This is particularly helpful when the law itself is ambiguous.
- Alert you to any challenges encountered during this work and how these challenges were addressed.
- Provide observation tools and methodology that you can use or adapt for your study.

If possible, obtain information about the methodology and the study tools used in previous studies, including the types of venues and/or geographic areas included in the study, how the researchers or enforcement agency chose the venues to visit, and when (season and time of day) the observations were made.

Knowledge of enforcement efforts will also help you interpret your study results and provide recommendations to improve compliance. How often do random inspections take place? Have violators been notified and penalized? Have inspections and sanctions been covered by the media? This information may help explain why compliance levels are what they are, as well as inform how you follow up on the results of your study. Interpreting and disseminating your study results is discussed in more detail in Steps 9 and 10, Analyze Your Results and Disseminate Your Results.

Plan Your Study: Resources, Budget, and Timelines

A compliance study need not be very expensive to undertake, but it will require some funding. The main costs of a study are personnel and transportation; other costs may include computers, printing, office supplies and rental of space to train data collectors.

Personnel

Partnerships between technical groups, such as a local university or research group, and policy or advocacy groups can effectively bring together the various skill sets needed. A local university can be an excellent source of volunteers with technical expertise since students may be able to use volunteer work on a compliance study to fulfill graduation requirements. Faculty members may also be able to help with analysis of results.

In general, you will need to identify the following personnel for your study.

- **Study coordinator, project manager or principal investigator.** Ensures the development of appropriate methodology and tools for the study; ensures that all study tasks occur according to the timeline and to the standards established for the study; ensures the accurate analysis of data.
- **Field supervisor.** Ensures that data collectors are properly trained and have the tools and materials necessary for data collection, provides quality control by regularly checking the data collected, and is the “go to” person for data collectors should they encounter any difficulties when performing observations
- **Data collectors.** The number of data collectors will depend largely on your study’s sample size. You will want enough people to be able to complete the observations within your planned time frame, but few enough to ensure consistency in data collection and to make supervision manageable. Ideally, data collectors should be very familiar with the law and have experience in observational data collection. If they don’t, you will need to plan for more intensive training.

- **Technical Experts.** If the study coordinator and field supervisor do not have the appropriate expertise to design and oversee the study, other technical experts may be needed. Experts might include sampling experts, statisticians, epidemiologists, enforcement officials or policy experts.

Other Resources Needed

- Transportation for data collectors
- Expenses for meals and incidentals, e.g. snacks, lunch, dinner for data collectors
- Printing and office supplies, including supplies for data collectors such as clipboards, pens and bags
- Space for training data collectors; if this needs to be rented the cost needs to be added to the budget.
- Data collection quality control tools such as cameras or GPS devices
- Cell phones

Budget

It is very difficult to give a general estimate of the cost of a study, because the costs will vary immensely by country and jurisdiction. Some of the factors that will have the most impact on the cost of your study are:

- How many locations will be visited. As a very rough estimate, allow for 15–30 minutes per location, including travel between locations. If your study includes interviews, add another 5–10 minutes per location.
- How much travel time is needed to get to the locations. There will likely be less travel time between locations in dense urban areas than in less dense suburban or rural areas.
- The length and complexity of your data collection tools. How many indicators are data collectors looking for? How many parts of each establishment do they need to visit? Are there interviews?
- Whether your data collectors are paid or volunteer their time.

- Whether the study is contracted out to a private agency or to a university or a not-for-profit organization (the latter two will generally charge less).

See Appendix E for a sample budget template to guide you.

Timelines

Good planning includes developing a timeline for compliance study activities that will enable you to understand and adequately prepare for all of the practical steps involved in completing the study and maximizing the use of the results.

In developing your timeline, you will want to consider if there is an ideal time to release the results; for example during legislative discussions concerning policy to address exposure to secondhand smoke or on the one-year anniversary of a smoke-free law's enactment. If so, this date should serve as the end point on your timeline, and all other tasks should be entered into the timeline working backward from this point.

See Appendix A for a sample timeline for various steps of the study.

Clarify the Scope of Your Study

The scope of your study should be driven by the purpose of your study and available resources. Since a larger scope will generally mean that you need more resources, prioritizing the scope is important. Two major factors to consider are geographic parameters and types of venues to be included in the study.

Geographic Parameters

A key factor to consider in designing your study is the policy level (national, state/provincial, city, district, other) that you seek to influence.

If your goal is to potentially convince national lawmakers that more resources are needed for enforcement of a national law, it may be that policymakers will be most responsive to data collected from a national survey.

However, obtaining a truly nationally representative sample can be costly, particularly in a large country. It may well be that policymakers will be sufficiently convinced of the need for more enforcement resources based on a study done in one or a few cities that reflect a good cross section of the country. For example, you could assess compliance in one or two major cities with different cultural, economic or social characteristics.

Even within a city you will need to consider geographic scope. Are there neighborhoods where there are high concentrations of shopping areas, or entertainment venues? Do you want to sample a selection of neighborhoods that represent different cultural types, levels of density, or economic levels within the city?

Another factor to consider is how enforcement activities are funded and implemented. In many places, the allocation of enforcement resources is made at the sub-national level. Therefore, to influence local enforcement decision makers, studies of local jurisdictions may be most appropriate.

Type of Venue

A second key decision regarding scope is the type of venues to assess.

Ideally, of course, you would want to know about compliance in all types of venues covered by the law.

However, observing compliance in an adequately sized sample of all types of venues will increase the costs of your study. Realistically, your time or budget may not allow for this.

Therefore, this guide recommends carefully choosing venues to assess based on the purpose of your study. If you are attempting to inform policy change or influence enforcement in only one type of venue, the compliance study should focus only on that venue. If, for example, you want to study compliance in order to assess and counter industry arguments about implementation in bars and restaurants, you should study only bars and restaurants. If, on the other hand, you want to generate pressure for better enforcement based on suspicions that the law is not being followed, you may want to study those venues where you would expect compliance to be lowest, or those venues for which you think you have the most likelihood of influencing enforcement activities.

The enforcement mechanisms in different types of venues should also be considered. Often, mechanisms or agencies responsible for enforcing smoke-free laws vary by venue. For example, enforcement of smoke-free laws in restaurants may be the responsibility of a different agency than that responsible for enforcing the law in health centers.

Collecting enough data to adequately inform efforts to enforce laws in a particular type of venue requires an adequate sample size for each venue. A study of small numbers of locations representing many types of venues is less likely to provide adequate information to inform enforcement in any single venue than a more focused compliance study with larger numbers of locations for one or two types of venues.

You should also consider your study goals with regard to observing compliance in indoor venues and outdoor venues. The focus of many compliance studies is on indoor venues, but if your law requires some outdoor places to be smoke-free, you may also consider it important to observe some of these places, for example high-profile outdoor venues where numerous people gather in close quarters, such as sports stadia. This will add to the time needed for observations.

Develop Data Collection Tools

You will need to develop standard data collection tools designed to provide you with the information that is most relevant to your study, ensure high quality data collection, and help data collectors understand precisely what they are to do when they enter a location and how they are to record their observations. These tools and procedures need to take into account observations of different types of venues and may need to be tailored for different venues.

The primary tools you will need to develop are:

- Data collection form(s) (sometimes called an observation form or observation checklist).
- A data collection protocol that describes the procedures for data collection.
- Interview questions and protocol (if interviews are to be conducted).

What are valid indicators of compliance?

Main indicator: Observed smoking.

The purpose of smoke-free laws is to reduce or eliminate exposure to tobacco smoke; thus, the main indicator for any study is whether any smoking is observed in non-smoking areas.

Secondary indicators.

Indicators of compliance may vary depending on the provisions of the law you are studying. The following indicators can provide additional information to support your study goals.

- **Observation of designated smoking areas.** If a law prohibits smoking indoors, the presence of a designated smoking room or area indicates non-compliance, even if no one is observed smoking. If the law permits smoking areas, smoking can take place only inside that smoking area and compliance must be assessed based on where smoking is observed.
- **Observation of ashtrays.** The presence of ashtrays where smoking is prohibited suggests non-compliance with the law. Even if the law does not prohibit ashtrays, observing if ashtrays are present can provide an indication of how many locations might be undermining compliance by providing ashtrays. Note that, in the latter case, the presence of ashtrays would not, from an enforcement perspective,

The main indicator for any study is whether any smoking is observed in non-smoking areas.

actually indicate non-compliance. You would need to make this clear when you are reporting your results.

- **Observation of no-smoking signs.** Whether or not the location displays the no-smoking signs required by the law.

Data collectors should be able to **objectively** and **easily** observe these indicators.

Step 9 discusses in more detail how you might use these indicators when analyzing your data and reporting your results.

What may not be valid indicators of compliance?

Cigarette butts. The observation of cigarette butts has limitations as an indicator of compliance; the butts could indicate a smoker being asked by management to extinguish their cigarette, or a smoker putting out their cigarette at the entrance as they come in, which would actually signify compliance with the law.

However, it can be argued that because data collectors only visit each location for a short period of time, the presence of cigarette butts may indicate previous smoking activity and may provide some indication of possible non-compliance.

If you decide to collect data on cigarette butts, keep in mind that, although you may find it useful to report that cigarette butts were commonly found throughout a certain type of venue, it is harder to use this data to definitively say that the law is not being complied with.

Smell of tobacco smoke. Whether or not tobacco smoke odor is detected is a questionable indicator of compliance:

- It is very difficult to know the origin of the tobacco smoke, and therefore difficult to know if smoking was occurring in a place where it is prohibited.
- Smell is subjective, so the results would vary greatly from data collector to data collector.

If you are interested in showing that the harmful components of smoke are drifting from a smoking room or from outdoors to an indoor non-smoking area, for example, there are better and more objective ways than the smell of smoke to measure this. See www.shsmonitoring.org and www.tobaccofreeair.org for other monitoring methods and tools.

Data Collection Form(s)

The data collection form is what data collectors will use to record their observations in each venue. This needs to be tailored to meet your study's goals, and to the legislation in the jurisdiction you are studying.

As you develop your forms, consider the following recommendations:

- **Prioritize questions that contribute to your study goals, and that indicate compliance with the key provisions of the law you are assessing.** It might be interesting to ask a dozen different questions, but which are the critical ones that tell you what you really want to know?
- **Only include items that a data collector can easily observe in usual circumstances.** Some laws permit indoor smoking areas with complex ventilation requirements. If it is virtually impossible for a casual observer without special tools and training to know whether or not an establishment is meeting these requirements, it doesn't make sense to ask a data collector to observe whether or not a location is meeting the requirements.
- **Be cautious about getting bogged down with questions regarding compliance with small details, or regarding compliance with non-best practices.** Some laws may have numerous and detailed requirements for signage, such as the size of the signs, where they must be posted, what text or images need to be included, and what languages the signs need to be in. You might want to know about all of these details, but some may be more important than others. Think about the most important components of the requirements that you want to know about. Similarly, a law that permits designated smoking areas indoors does not incorporate best practice. No matter what specifications the smoking rooms are required to meet, and no matter how high the compliance with these requirements, you already know that the law does not provide adequate protection from exposure to tobacco smoke. So do

you really need to know whether the smoking room has floor to ceiling walls, or whether the door to the room is closed, or whether or not the smoking room is no larger than the permitted size? Possibly, but think about whether these questions are critical to achieving your study goals. In all likelihood, the only question you will need to ask is whether or not a smoking area exists.

There is one important exception to this recommendation. You may want to show that it is impossible, or at least very difficult, to know if an establishment is complying with a provision of the law or not. For example, if a law permits establishments of a certain size to have smoking rooms, you may want to show that it is difficult or at least very time-consuming to judge the size of an establishment and, therefore, to know whether or not a smoking room is legal. This finding could be important to emphasize that this particular provision of the law complicates enforcement, and should be eliminated.

- **Whenever possible, use questions with yes/no answers, and do not ask data collectors to judge what is or is not in compliance with the law.** For example, instead of asking, "Are there signs posted in compliance with the law?" ask, "Is there a no-smoking sign at the main entrance?" You should also deal with only one specific observation in each question. For example, if there are a number of requirements for signs that you want to know about, ask one question for each requirement:

"Is the sign at least 20cm by 20 cm?"

"Does the sign state the penalties for violating the law?"

"Is the sign in (local) language?"

"Does the sign contain the international no-smoking symbol?"

- **Decide how you will measure compliance with ambiguous requirements of the law.** As discussed earlier, most laws will have some ambiguous requirements such as vague requirements for signs and undefined terms. Here is an example of addressing this: If a law requires posting of no-smoking signs at "conspicuous" places in the premises, you can ask data collectors to observe whether there is a sign at the main entrance, which is the most obvious "conspicuous" place. You could also ask data collectors to indicate how many no-smoking signs they observed in the entire premises to provide an indication of how prevalent signs are.

- **Provide easy tools for data collectors.** For example, if you are asking data collectors to observe whether signs are of the required size, provide them with a sign of that size that they can use as a quick comparison. If you are asking them to estimate distance of smoking from an entrance, get them to practice pacing out that distance.
- **Limit the types of data collection forms.** Rather than having a different form for different types of places, try to use a single form. This will simplify data collection, data entry, and data analysis. Usually, you can use skip-question patterns and data analysis tools to ensure that one form captures relevant data for most types of places and requirements. However, in some cases you may need to have multiple data collection forms due to the complexity of the law and different nature of various venue types. For example, you may need a different form for public transport, such as taxis, trains, or buses, as these often have different requirements.
- **Decide if you want to distinguish between compliance in indoor smoke-free areas vs. outdoor smoke-free areas in the same venue.** Consider how you want your data collection tools to address compliance in indoor vs. outdoor areas, and anticipate how you want to use the data. For example, some laws require certain types of venues — often, health centers or hospitals — to be smoke-free on the entire premises, indoors and outdoors. Do you want to capture compliance separately in indoor vs. outdoor locations on the premises? If so, your form and protocol need to separate out these observations. Also consider that even if the law has no requirements for outdoor spaces you may still want to assess smoking in these outdoor areas to inform future strengthening of the law.
- **Multiple buildings as part of a single establishment.** Some locations, such as hospitals, universities and large hotels, may contain many buildings. Your protocol (and data form) needs to define if you consider all buildings in an establishment to be a single sampling location, or if each building is to be considered a separate location. It should also define the maximum number of buildings to visit in a given location. The form in Appendix B assumes that a location with multiple buildings is one sampling location, and provides space to record observations in up to three buildings in the location.
- **Consider types of tobacco products covered in the law, and whether or not you want to observe use of some types of products separately.** For example, do you want to observe use of waterpipes separately from use of cigarettes? Or do you want to observe use of e-cigarettes as a separate indicator from observation of smoking of cigarettes? If so, you will need separate questions on your forms for observation of use of different types of products. You will also need to train your data collectors to observe use of different products. For example, do they know how to distinguish between a cigarette and an e-cigarette?

General components to include on the form

In addition to the items specific to the legislation you are studying, you will want to include the following items in an observation checklist:

- Name of data collector, name of field supervisor, and date
- Time of entry and time of exit from location. This will serve as a quality control measure to ensure that venues were visited in peak hours; it will also help you to estimate how much time it takes to complete an observation in each type of venue.
- Comment space. This will allow data collectors to explain observations if necessary.

Data Collection Protocol

You will need to develop a standard protocol or procedure for collecting data that provides clear information to data collectors about how to proceed with their observations. The protocol should be easy to understand and follow, but also sufficiently detailed to address all circumstances that data collectors are likely to encounter, and to ensure a standardized approach.

The protocol should address:

- **Times of day for data collection.** Generally, observations should be made during peak business hours for the particular type of venue. For example, this might be visiting hours for hospitals, busy shopping hours for shopping malls, meal times for restaurants, and late evening for discotheques. However, in some places, compliance may be lowest when owners believe that they are least likely to be inspected, for example, just before closing time at a bar. Use your best judgment, and make the instruction clear.

- **Where the data collectors are to go within the location and how long they should stay there.** The locations that are visited may consist of one room, many rooms, or entire buildings. The procedures should make clear where data collectors should go once inside a location and how long they should stay there. This will vary based on the type of location, and the protocol needs to clearly describe where the data collector should go for every anticipated type of location.
- **Whether data collectors should photograph the location.** Requiring data collectors to take a photo of every location they visit is a good quality control measure to show that they have actually visited the place. However, this will increase time and costs and may present a security concern in some jurisdictions. Use your best judgment, and make the instruction clear.
- **Where data collectors should record their observations.** Completing the form while inside the venue will likely increase accuracy of data entry, but it could also draw attention to the data collectors and reveal the fact that a compliance observation is in progress. This may not be a concern for your study, but if you intend to inspect similar venues nearby, awareness that observations are occurring may spread and influence activity in other locations, and your inspection results could be affected. If you decide to have data collectors complete the forms after they have left the venue, your protocol should specify that the recording of data should happen immediately after exiting the location and before visiting another location. The protocol could also specify or suggest where this should happen; for example, in a car, across the street, etc.
- **What data collectors should say when they visit locations to collect data.** The protocol should specify if data collectors should tell the manager or staff what they are doing, how much information they should provide, and what to do in case they encounter a hostile venue owner or manager. Almost always, you will want data collectors to conduct covert (discreet) observations, and only state their purpose to staff if they are directly asked.
- **How many data collectors will make observations within a location.** The protocol should specify if data collectors are to work alone or in teams of two. Teams of two may be more secure and yield more accurate observations (two sets of eyes are better than one), but will increase your data collection costs.

- **Policies on safety.** The protocol should instruct data collectors to leave a location if they perceive that it is not safe (fights going on, drug sales, etc.). Where possible, data collectors should also be provided with cell phones in order to call the field supervisor if they are in trouble.
- **How and when data collectors should submit data forms.** Data collectors should be clearly instructed where and when to return the forms.

See Appendix D for a sample data collection protocol.

Interviews

You may decide to supplement the observational data with information that may explain why a venue does or does not comply with the law. You can gather such information through an interview with a staff person at the venue, for example, a restaurant manager.

Interviews are not needed to determine compliance. However, interviews could give you insight into why a law is or is not being complied with. For example, you could learn if an establishment is aware of the law, if it has trained its employees to ask smokers to put out their tobacco products, and what challenges may have been encountered when implementing the smoke-free law.

Interviews also pose challenges and require additional study considerations:

- Additional time is needed for interviews. Plan for at least 5–10 minutes extra per location to do the interview and record the answers. This will add to the time and potential costs of data collection.
- Interviews can generate qualitative data, which generally requires more time to analyze.
- Interviews may require additional ethical considerations and approvals. Because human subjects are involved, including interviews in your study may require additional review and approvals from the investigating organization's Institutional Review Board or other ethical review board.
- Interviews can compromise the anonymity of your data collection. When a data collector asks for an interview, their purpose at the location becomes known. Therefore, an interview should always take place after the observation checklist has been completed.

The same criteria that apply to observational questions also apply to interview questions: Consider what the

answer to a question will tell you; how you will use the information, and if such information is necessary to achieve the purpose of your study.

If you decide to conduct interviews, the following is recommended:

- Assure the potential interviewee that their responses will be anonymous, and reported only in aggregate. This will increase the likelihood that they will be willing to participate in the interview.
- Ensure that data collectors clearly state that participation in an interview is entirely voluntary, and ask for explicit permission from people to be interviewed.
- Use questions with yes/no answers if possible and limit the number of open-ended questions, if asked, to no more than three to five.
- Consider conducting interviews in a subset of the venues visited in order to minimize extra time and cost for data collection.

See Appendix C for a sample interview questionnaire and protocol.

Choose Locations to Visit (Sampling)

The venues to be visited in a smoke-free compliance study should be defined by the scope of the smoke-free law and the specific questions to be addressed by the study. Within each venue type, specific venue locations must be selected for the study. The selection of locations within a venue is driven by the purpose of the study, the number of locations in a particular venue type in the area under study, the resources available and the extent to which you want to generalize the study results to the broader population.

If the purpose of a study is to assess compliance for a specific type of venue and the number of locations for a venue type is small, then all locations should be visited to best assess compliance with the law. For example, if a study is assessing compliance with the smoke-free law in hospitals in a small city, the number of hospitals may be quite small and all could be visited. This guide recommends that if the number of locations for a particular venue type is less than 20, all locations should be visited.

In contrast, if the study is focused on a venue with a large number of locations, a method must be established to choose a sub-set of locations to be visited. The following section provides some key definitions of terms, describes sampling approaches and makes recommendations for choosing samples. This section begins with a brief overview of sampling strategies, followed by guidance on how to choose samples for studies with varying scopes.

Sampling Strategies

In general, there are two types of sampling designs, probability and non-probability sampling.

Random (or probability) sampling in which each sampling unit is chosen randomly from the population under study. Random sampling approaches include both simple or systematic random sampling where each sampling unit has the same chance of being selected, and cluster sampling approaches where observation units are aggregated into larger sampling units called clusters which are then sampled randomly. Within each cluster, every observation unit is sampled or another subsample is chosen. Done well, a random sampling approach allows you to generalize the results of your study to the broader population.

DEFINITIONS

- ▶ **Population:** All members of a group about which you want to learn. An example of a population for a compliance study is all restaurants in a city.
- ▶ **Sample:** A selected portion of the population.
- ▶ **Sampling unit:** The locations, people, etc. that are being sampled. For example, for a compliance study of all restaurants, the sampling unit is a single restaurant.

Convenience (or non-probability) sampling in which sample selection is based on convenience, logistical considerations, or some other reason. For example, it may not be feasible to randomly choose a set of clusters within a very large city. A set of clusters may be chosen based on certain characteristics of the cluster or logistical considerations for where data collectors can reasonably travel. It is important to understand that with a convenience sample, it is not possible to conclude that the results are representative of the entire population of interest, but if done well, the data collected can provide a useful indication of the levels of compliance in the places studied.

Choosing a Sampling Approach

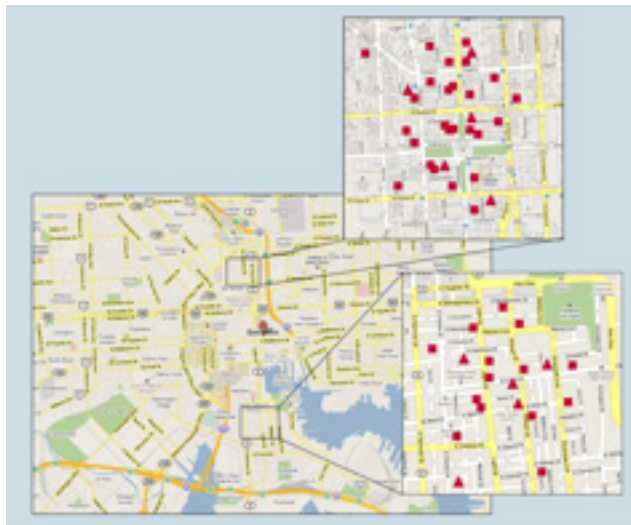
When a list of each location within a venue type is available, it may be feasible to choose a random sample. For example, most cities have lists of schools. If you have determined that you need a sample size of 40 for the population of 120 schools, randomly choose or draw 40 names from the list (simple random sampling). Simple random sampling can also be done by numbering all the schools and using a random number generator, available online or within statistical software packages, to select 40 numbers. You could also put the names of all the schools on a list in alphabetical order, randomly pick a starting point and choose every third school on the list (systematic random sampling).

Choosing either a simple or systematic random sample of some types of venues — in particular hospitality venues such as bars, restaurants, and cafes — is unlikely to be feasible for two main reasons. First, a complete list of all locations for some venue types within a

country or city often times does not exist. Second, monitoring compliance across a large geographic area with numerous hospitality locations, such as in a large city, within a reasonable time frame may be logistically quite challenging.

Thus for assessing compliance rates for hospitality venues within large geographical areas, we recommend a cluster sampling design. The cluster chosen should represent the smallest division within the geographical area (e.g., a city) consisting of multiple streets, business and/or homes. We use the term neighborhood for the cluster and suggest identifying clear boundaries for each neighborhood. It may be helpful to enlist university or government demographers or researchers to help define geographical clusters. Often, clusters have already been defined and used for other purposes for everything from tax collection to public health research.

MAP OF A CITY WITH POSSIBLE NEIGHBORHOODS FOR SELECTION



Neighborhoods may be chosen randomly (more generalizable) or using non-probability-based sampling methods (less generalizable). In large cities, it may be more feasible to choose a convenience or purposeful sample of neighborhoods. The figure below provides possible criteria for selecting neighborhoods for a study.

Neighborhoods that have a high density of restaurants and bars could be a primary focus for any smoke-free compliance study. If a law has just been enacted and compliance monitoring was conducted before the law, you could sample where smoking was observed prior

EXAMPLES OF CRITERIA FOR SELECTING NEIGHBORHOODS FOR MONITORING HOSPITALITY VENUES

- Select neighborhoods with a high density of restaurants and bars
- If compliance is thought to vary by socio-economic level or some other demographic characteristic, select neighborhoods by level or characteristic.
- If data were collected previously, select neighborhoods where smoking was previously observed.

to the law to examine its impact. It may be of interest to assess whether compliance varies according to socioeconomic status or other demographic factors of neighborhoods (e.g. ethnicity). If this is the case, neighborhoods could be selected based on socioeconomic status or other demographic characteristics. Always keep in mind the objectives of your study to help inform your sampling approach.

The number of neighborhoods to be selected is based on a compromise between study objectives and feasibility. If the goal is to provide a good indication of compliance across the city, one should select as many neighborhoods as possible. In most cases, selection of four to six neighborhoods can provide a reasonable snapshot of compliance with a smoke-free law. For large cities, more neighborhoods may be needed to capture important variation across the city.

Accurately assessing one rate of compliance for an entire city is not possible with a non-probability-based cluster sampling approach and results could mask important variation in compliance across the city. However, the data across clusters can be combined to produce an aggregate compliance rate, which is an estimate for the combined neighborhoods. When the aggregate compliance rate is provided, it is important to describe what neighborhoods are included in the study and to clarify that this rate should not be assumed to represent the entire city. Compliance rates for each neighborhood can provide insight on the level of compliance within each neighborhood and serve to identify where targeted enforcement efforts are needed.

Sampling within Clusters

Once the neighborhoods have been selected, try to obtain a map of each cluster; for example, neighborhood with its boundaries depicted. Typically, the boundaries of city neighborhoods are well-defined. However, if they are unclear, boundaries can be defined specifically for the purposes of the project. If a neighborhood is too large to be covered by a team of data collectors, it can be divided into smaller units. The map should cover all of the main roads within the neighborhood boundaries.

Two strategies are described below for choosing a sample of locations to be visited within a neighborhood. The first strategy presumes a list of locations exists or can be obtained while the second can be used when a list does not exist or cannot be easily developed.

A list of locations is available

Under ideal circumstances, a team of data collectors would first list or enumerate all locations within the neighborhood boundaries. This would provide information to determine how to select locations. Lists for certain venues, and in some cities may be available. If all locations within a neighborhood are to be visited, the data collector will stop at each location along the pre-specified route. Otherwise, simple random sampling can be used to select the locations to visit. A sample of locations can be randomly chosen from the list. The locations can then be located on a map, and a route planned to visit locations chosen.

No list exists

When no list of locations exists for a venue type under study, a sample can be chosen by identifying a fixed central point and selecting locations surrounding or radiating from this point.

The central point chosen should be situated in commercial area where you would expect to find a number of hospitality locations within a short distance. Examples of central points in neighborhoods include the main post office, a main intersection, or prominent religious buildings such as a church, temple, or mosque.

After selecting the central point for each neighborhood, determine an operational radius from each point. Normally, this would be city blocks, but it can also be a set distance. The total area covered will be determined by the density of commerce in the area and the sample size needed. In a very dense region, a one-block radius may be sufficient, while in others it may be necessary

to venture out several blocks in order to find a sufficient sampling of hospitality locations.

From each central point the “survey pathway” will be formed as follows:

Step 1. Walk south and survey each hospitality location for the number of blocks in the radius you defined.

Note: Visit both sides of the street.

Step 2. Turn east (left), and survey each hospitality location for the number of blocks in the radius you defined.

Step 3. Turn north (left) and survey each hospitality location for the number of blocks in the radius you defined.

Step 4. Turn west (right) and survey each hospitality location for the number of blocks in the radius you defined.

Step 5. At the next street, turn south (right) and begin with Step 1 again, this time starting at the outer edge of where you completed the first round of surveys.

Continue this pattern until you reach the total number of locations to be surveyed

Number of Locations to Monitor

Within each cluster (e.g. neighborhood), you will need to determine the number of locations to visit. The number of locations will reflect a choice between time and resources, and statistical precision. If the number of locations is manageable then it is best to visit all. In general, this guide recommends that if the number of locations for a venue type is less than 20, you should visit all the locations. However if this not the case, you will need to establish the number of locations to be visited before actual data collection begins in order to choose your final sample through the approaches described above.

Estimating the number of locations to visit is primarily dependent on:

1. The margin of error you want to have around the results of the study, and
2. The estimated compliance level of the locations at the start of the study.

Margin of error indicates how confident you are that your results are accurate within a specified range. If your margin of error (also called the confidence

interval) is 5% and the compliance rate of your sample is 84%, then you can be confident that, if you had sampled the entire relevant population, between 79% and 89% would be compliant (84% +/- 5%). If you want to reduce the margin of error to 3%, so you could be confident that between 81% and 87% (84% +/- 3%) of the sample is compliant, then you will need to increase your sample size.

Your sample size will also depend on the compliance level of the locations. If 99% of your sample is compliant, the chances of error are small, regardless of the sample size. However, if your compliance level is only 55%, the chances of error are much greater and you will need a much larger sample size to achieve the same margin of error compared to locations that are 99% compliant.

Therefore, it is helpful to have an estimated compliance rate for the type of venue(s) you are sampling when determining the sample size necessary. This can be determined from previous compliance or enforcement studies in your area. If you do not have an estimated compliance rate then you should use the “worst-case” compliance percentage (from a statistical perspective) of 50%. This will provide the most conservative estimate of the sample size you should use.

If possible, enlist the support of a sampling expert or statistician. She or he can help you make decisions about how to balance the level of confidence you can have in your results with what you know about the number of locations and the compliance level of these locations. A sample size calculator can be used to calculate the sample size needed based on the above factors (e.g., <http://www.surveysystem.com/sscalc.htm>).

If you are conducting a simple study and do not have access to an expert or to a calculator, the following table provides the recommended sample size by the total number of locations available to sample. For example, if there are more than 175 locations in the area under study, a sample size of 60 is recommended; if the number of locations is less than 20, all locations should be visited. Note that this table provides very general guidelines, and incorporates varying compliance rates between 50%-90% and margins of error between 5%-12%.

SAMPLE SIZE RECOMMENDATIONS FOR EACH CLUSTER

Total number of locations from which to choose	Recommended sample size (at least)*
176+	60
101 – 175	50
51 – 100	40
36 – 50	30
20 – 35	20
<20	All

*Compliance rate (95%-50%) and margin of error (12%-5%)

Train Data Collectors and Conduct Observations

Data collection works best when the people conducting the observations receive training, are able to practice before actual data collection begins, and have adequate supervision.

Training

Make sure your data collectors are trained in every aspect of the data collection protocol so they know what to do and what to look for. A training session should include discussion of the purpose of the study, review of the law, and ample time to review the data collection form and protocol. Training should also include on-site practice conducting observations.

Specifically, training might include these steps:

- **Review the requirements of the law.** Briefly walk through the main points of the legislation/other regulatory documents relevant to your compliance observation. Provide the data collectors with a copy of the regulatory documents. It might be helpful to display the legislation on a projector screen as you discuss it.
- **Review data collection forms.** Make sure that data collectors understand each question, and what they should look for in order to answer each question correctly and record the information accurately. Often, a review of the legislation followed by a review of the observation form will reveal inconsistencies or lack of clarity in the data collection forms. If this happens, correct the form on the spot, and print out revised copies for the data collectors.
- **Review the data collection protocol.** Do data collectors know which parts of an establishment to visit? (e.g. Main lobby, restroom, stairwell, etc.) Is there special guidance for specific types of locations? (e.g. If there is more than one building in the facility, do they visit all buildings?) If they are to interview someone, do they know whom to interview and how to approach them? Clarify anything that needs further explanation.
- **Practice collecting data on-site at a few pre-selected establishments.** Small teams of data collectors (three or four per team) should go out with a trainer and collect data from different types of establishments. Locations can be selected for convenience, for example, a school, shop, restaurant and medical clinic near the training location for one team; a bus

station and shopping mall for another team. This will allow the data collectors to practice using the forms in different types of settings, while the trainers observe and provide guidance as needed.

- **Debrief following pilot data collection.** The data collection teams and trainers should meet after the pilot data collection to discuss their experience, such as challenges faced, and make any additional corrections needed to the data collection forms and protocol.

Plan for at least a day — possibly a day and a half — for the training, pilot data collection, and debriefing.

Data Collection and Quality Control in the Field

Data can be collected by people working alone or in teams of two over a set period of time, usually a week or more, depending on the sample size. There is no strict guidance as to the ideal number of data collectors. Generally, you want to have enough so that you can collect the data in a reasonable time period (a month or less), but not so many that you cannot effectively manage and follow up with each of them.

The field supervisor should know which locations each data collector plans to visit in a given day, and be in contact by phone or email in case questions come up.

For quality control, the field supervisor should visit a random selection of locations themselves in order to double check the work of the data collectors. For example, they could visit 10% of the locations visited by one team each day. Same-day follow up visits will help to check the consistency of results. Observations of signs, ashtrays, and smoking areas should not change in the course of a day. Inconsistent results should be discussed with the data collector.

Data collectors should report back to the field supervisor or project coordinator regularly (at the end of each day for example) and submit completed survey forms. The supervisor should review forms carefully to ensure that they are being filled out properly and provide timely feedback to data collectors about their work.

If a private agency is contracted to do the data collection, the group contracting the work needs to provide oversight to ensure data quality, in addition to any internal quality controls the private agency provides.

Process Data and Analyze Your Results

Data Analysis Options

Analysis of your results can range from the very simple to the very complex, depending on the sample size, types of venues, number of different geographic districts, and number of indicators.

For example, results of a study of observed smoking in only one type of location (e.g. restaurants) with a small sample size (e.g. 40 or fewer locations) can be calculated without any special software. You only need to convert the absolute numbers into percentages: “Smoking was observed in 10 out of 40, or 25%, of restaurants.”

Even results from studies with two or three different types of locations in two or three different geographic areas can be analyzed fairly simply using a spreadsheet program such as Excel. See, for example, guidance at: <http://learningstore.uwex.edu/pdf/G3658-14.pdf>

Larger studies with multiple venue types, geographic districts, and indicators will probably require analysis by qualified researchers using statistical analysis packages, particularly if you want to compare multiple indicators. For example, “Restaurants where smoking was observed were more likely to have ashtrays than restaurants where smoking was not observed”.

Whatever method of analysis is used, the guidelines below apply.

Entering Data and Checking Data Quality

Once data are collected, they should be checked to ensure they are clearly recorded, complete and are consistent across responses.

Typically, data are collected using paper-based forms. Unless the sample size is fairly small, the data will need to be entered into an electronic format such as Excel, SPSS, STATA, or SAS for analysis.

Care must be taken that data are accurately transcribed from paper to electronic format and there are no typing errors. A good practice is to use double data entry to ensure data entry quality. In this process two operators enter the data separately and then the two files are combined and checked for inconsistencies in data entry.

Another good practice, in addition to double data entry, is to use a series of logical checks to make sure the data are valid and appropriate. This can be done during data entry or after data entry. This ensures that data are within allowable ranges, data are consistent from one question to another, and appropriate skip patterns were followed.

Consider creating your survey and entering the data in a survey program such as Epi Info™ (free software <http://www.cdc.gov/epiinfo/>). You can set up your survey so that Epi Info™ checks automatically for errors. For example, if there are eight different geographic zones or clusters sampled in your study, you can design your data entry form to only accept a response between 1-8 for that variable. You can also save data entry time by building automatic skip patterns into the form. For example, skipping all detailed questions about designated smoking areas if no such area is present.

Analyzing and Reporting Your Observational Data

Your data analysis should focus on the results that are most relevant to your study goals. As discussed in Step 6, your priority should be analysis of the main indicator: Observation of smoking.

In addition to an overall result for the entire sample, you should break down the results by the categories of locations that are of most interest in your jurisdiction, for example, by type of venue (e.g. government offices vs. bars vs. restaurants), or by enforcement district or neighborhood.

The second priority is to analyze the data for secondary indicators. These may reveal interesting or unexpected patterns that help you understand the various factors impacting compliance, and that help inform your recommendations for improving compliance and strengthening the law.

Report compliance with each indicator separately, since compliance levels for different indicators have different implications for follow up action.

For example, if your study finds widespread high compliance with signage requirements but smoking is

frequently observed (low compliance with the no-smoking requirements), then more or better signage will be unlikely to solve the problem. Follow up actions that might be appropriate are more frequent inspections, more frequent application of penalties for non-compliance, and more intensive communications to managers regarding their obligations to ensure that there is no smoking at their premises.

Analyzing Interview Data

Interview data are qualitative in nature, and interview data analysis requires time in order to produce results that are informative. Interview data should be analyzed to determine themes from respondents and to identify any key variations in responses to questions about smoke-free compliance issues.

Disseminate Your Results

This last step is perhaps the most important one. A compliance study is meant to gather evidence to inform decisions; it is not an end in itself. There is little point in doing the study if you do not put the results in the hands of those who can use them. You must consider carefully whom you want to influence, what action you want them to take, and how to present your results in the way that convinces them to act.

Compliance study results should be used in ways that correspond to the purpose of the study and that are appropriate in light of the methodology used. In using the results, be sure to define your audience, develop key messages that are tailored to purposes of the study and disseminate in ways designed to reach and influence your target audiences.

If your organization has limited experience in working with the media and government, you should work with experienced advocates and public relations experts to identify target audiences, develop key messages, and plan your dissemination strategy.

Target audiences

Common audiences and dissemination strategies include:

- **Policymakers.** The primary target of dissemination efforts for compliance studies is usually policymakers. Results should be presented to clearly show policymakers how well the law is being complied with and the link between the levels of compliance found and resources needed to improve or maintain compliance with smoke-free laws. Results can be presented in private briefings with legislators and senior government officials and/or released to the media through press conferences or other events.
- **Enforcement agencies.** Private briefings with enforcement agencies may be a good practice in releasing results. This will build trust and may be more likely to result in action from the agencies. If action is not taken, you may decide to then disseminate the results through the media to create greater pressure for action.

- **Owners or managers of the locations visited.** You might choose to present the results of the study to owners or managers of the locations visited in order to provide them with information about overall compliance. The presentation of results might be used to warn them that compliance checks are being conducted and encourage them to comply with the law. Be sure to congratulate those who were found to be in compliance.
- **The public.** Mass media can be used to inform the public about levels of compliance with the law, encourage the public to comply with the law, and call for ongoing or increased enforcement of the law by the government.

Key messages

As you prepare to disseminate the results, go back to your study goals: What did you want the compliance study to achieve? How do the results support those goals? Structure your key messages with these questions in the forefront.

Key messages might include:

- “The law is working.” If you have a strong law, and you found compliance with the law to be high across all venue types, this message should be emphasized.
- “Poor compliance shows a need for better enforcement.” This would be an appropriate message if you want to convince policy makers to fund enforcement efforts.
- If you have information about enforcement activities and your results back the message up, you might be able to say, “Districts with low enforcement budgets have poorer compliance.”
- “Low compliance with the law in bars puts wait staff’s health at risk” is a good message if you want to emphasize unequal protection of health in different occupational groups.

Presentation Formats and Forums

Present your results briefly and succinctly. In most cases, you should prioritize the development of fact sheets and press releases over development of detailed technical reports. Most of your major audiences will not be interested in the methodological details of your study or in results that are only of academic interest, nor are they likely to read a detailed report. At a press conference, for example, you would not want to present more than ten slides or charts.

Think about where, or through which media, you will reach most of your key audiences. A press release or press conference that is covered by the media is a good way to reach many people, but you should not rely on this alone. You should consider meeting with groups of policymakers and individual policymakers, government officials with the power to recommend changes to the law and to enforcement procedures, and organizational allies who can help disseminate the results to different audiences. Tailor your message to each audience depending on the actions that you want them to take.

One audience that will probably be interested in more detailed information about the study is enforcement agencies and officials. They are likely to ask more detailed questions about your methodology, and about how your results can guide them to focus enforcement efforts more effectively.

Appendix A: Sample Study Timeline

The time needed to design and complete a study is highly variable and will depend on many factors, including your sample size, whether or not you have full-time staff, the study team's level of familiarity with the law, and the availability of needed expertise to design the study and analyze results. This table can be adapted to help you plan your study and establish timelines.

STEP <i>(Add tasks under each step as needed)</i>	PERSON(S) RESPONSIBLE	DEADLINE FOR COMPLETION
Clarify Purpose		
Review the Law, Previous Studies and Enforcement Efforts		
Plan Resources, Budget and Timelines		
Clarify Scope		
Develop Data Collection Tools and Protocols		
Choose Locations to Visit (Sampling)		
Train Data Collectors and Conduct Observations		
Analyze Your Results		
Disseminate Results		

Appendix B: Sample Data Collection Form

This sample form can be used as a starting point in developing your own form. You can and should adapt it as needed to reflect the provisions of your law, study goals, and budget.

Two options for the form are provided here:

Option 1: For jurisdictions where smoking is prohibited indoors in all locations

Option 2: For jurisdictions where indoor designated smoking areas (DSAs) are permitted in some types of locations

Notes for adapting the form are provided in red text. Final forms would not include such notes.

OPTION 1: JURISDICTION WHERE SMOKING IS PROHIBITED INDOORS IN ALL LOCATIONS

PART I. LOCATION INFORMATION

1. Name of location / facility		
2. Address		
3. Total number of buildings at location	Include Q3 only if you will be observing multiple buildings within one location (e.g. a university).	
4. Type of location (choose only one)		
01 Health facility	10 Private office building	This list includes most locations you are likely to encounter. If you are only studying two types of locations, e.g. bars and restaurants, you will only need to include those two options.
02 Education facility (primary & secondary)	11 Mall (shopping center)	
03 Education facility (college & university)	12 Bar or night club	
04 Place of worship	13 Karaoke	
05 Fitness center/Sports facility	14 Recreation park	
06 Restaurant	15 Bus terminal, train station, bus shelter	
07 Cafe	16 Industry/Factory	
08 Hotel	17 Public conveyance (bus, mini-bus, taxi)	
09 Government office building	18 Other	
5. Date of visit _____ / _____ / _____		
6. Data collector name / code		
7. Time of entry to location	_____ am / pm	Having data collectors record the time of entry and exit helps you check data quality. During training, remind data collectors to return to this part of the form after the observation to record time of departure.
8. Time of departure	_____ am / pm	
9. Photo taken?	☐ YES ☐ NO	
10. Result of observation	☐ Finished ☐ Not Finished (Go to Q11)	Q10 & Q11 can help you explain missing data, and help determine any challenges in completing observations.
11. If observation not finished, reason why:	☐ Data collector not allowed to enter building/location ☐ Building/location out of business ☐ Other	

Appendix B: Sample Data Collection Form *continued*

PART II. OBSERVATION INFORMATION

Observation Indoors

100	Name or number of building	Include Q100 only if you will be observing multiple buildings within one location. Add an extra column for each additional building being observed.	
101	Is anyone smoking tobacco products <i>indoors</i> ?	☐ YES	☐ NO THIS IS THE MAIN INDICATOR. Tailor Q101 to the smoking products common in your region (e.g. Is anyone smoking cigarettes or bidis?). You may also want to ask separate questions about observation of different products, e.g. cigarettes vs. e-cigarettes, or cigarettes vs. waterpipes.
102	Do you see a designated smoking area <i>indoors</i> ? (Choose "YES" if you see a designated area, even if no one is smoking in it.)	☐ YES	☐ NO Since the law does not permit smoking areas, a "yes" answer indicates non-compliance.
103	Are there any ashtrays or ashbins visible <i>indoors</i> ?	☐ YES	☐ NO If the law PROHIBITS ashtrays in nonsmoking areas then a "yes" answer indicates non-compliance. If the law DOES NOT PROHIBIT ashtrays, then, as discussed in Step 6, the question can still provide insight into how many locations might be undermining compliance by providing ashtrays.
104	Are there one or more no-smoking signs in the venue/location?	☐ YES	☐ NO Tailor Q104 to the requirements of the law. For example "Is there a no-smoking sign at the entrance to the location?"

OPTIONAL: Record any other comments regarding your indoor observation.

Observation Outdoors (inside location boundary)

This part of the form can be used if the law requires outdoor areas to be smoke-free.

105	Is anyone smoking within X meters from building entrances and windows ?	☐ YES	☐ NO Q105 is an example of a question you might ask if the law prohibits smoking within a certain distance from entrances and windows. The question should not be combined with Q101, because you would not know whether smoking is taking place indoors, or outdoors near entrances. This distinction will probably have different implications for follow-up implementation and enforcement actions.
106	Is the location required to be smoke-free outdoors?	☐ YES (Continue to Q107)	☐ NO (Finish observation) Q106 assumes that the law requires certain types of locations to prohibit smoking on the entire grounds of the location. Data collectors should have a list clearly describing which types of places are required to prohibit smoking outdoors. A "yes" means they should proceed with outdoor observation.
107	Is anyone smoking tobacco products anywhere outdoors at the location? (If there are no outdoor grounds at this location, choose "not applicable" and finish observation.)	☐ YES	☐ NO ☐ Not Applicable (Finish observation)
108	Are there one or more no-smoking signs on the grounds of the venue/location?	☐ YES	☐ NO
109	Are there any ashtrays/ashbin/ashcans visible outdoors at the location?	☐ YES	☐ NO

OPTIONAL: Record any other comments regarding your outdoor observation.

Appendix B: Sample Data Collection Form *continued*

OPTION 2: JURISDICTION WHERE INDOOR DESIGNATED SMOKING AREAS ARE PERMITTED IN SOME TYPES OF LOCATIONS

PART I. LOCATION INFORMATION

1. Name of location / facility		
2. Address		
3. Total number of buildings at location	Include Q3 only if you will be observing multiple buildings within one location (e.g. a university).	
4. Type of location (choose only one)		
01 Health facility	10 Private office building	This list includes most locations you are likely to encounter. If you are only studying two types of locations, e.g. bars and restaurants, you will only need to include those two options.
02 Education facility (primary & secondary)	11 Mall (shopping center)	
03 Education facility (college & university)	12 Bar or night club	
04 Place of worship	13 Karaoke	
05 Fitness center/Sports facility	14 Recreation park	
06 Restaurant	15 Bus terminal, train station, bus shelter	
07 Cafe	16 Industry/Factory	
08 Hotel	17 Public conveyance (bus, mini-bus, taxi)	
09 Government office building	18 Other	
5. Date of visit _____ / _____ / _____		
6. Data collector name / code		
7. Time of entry to location	_____ am / pm	Having data collectors record the time of entry and exit helps you check data quality. During training, remind data collectors to return to this part of the form after the observation to record time of departure.
8. Time of departure	_____ am / pm	
9. Photo taken?	☐ YES ☐ NO	
10. Result of observation	☐ Finished ☐ Not Finished (Go to Q11)	
11. If observation not finished, reason why:	☐ Data collector not allowed to enter building/location ☐ Building/location out of business ☐ Other	
Q10 & Q11 can help you explain missing data, and help determine any challenges in completing observations.		

Appendix B: Sample Data Collection Form *continued*

PART II. OBSERVATION INFORMATION

Observation Indoors

100	Name or number of building			Include Q100 only if you will be observing multiple buildings within one location. Add an extra column for each additional building being observed.
101	Is this venue type permitted to have a designated smoking area or room indoors? (If yes, skip to Q106. If no, continue with Q102 through Q105.)	☐ YES	☐ NO	Data collectors should have a list clearly describing which types of venues are permitted to have indoor designated smoking areas.
102	Is anyone smoking tobacco products indoors ?	☐ YES	☐ NO	THIS IS THE MAIN INDICATOR. Tailor Q102 to the smoking products common in your region (e.g. Is anyone smoking cigarettes or bidis?). You may also want to ask separate questions about observation of different products, e.g. cigarettes vs. e-cigarettes, or cigarettes vs. waterpipes.
103	Do you see a designated smoking area indoors ? (Choose "YES" if you see a designated area, even if no one is smoking in it.)	☐ YES	☐ NO	Since the law does not permit smoking areas, a "yes" answer indicates non-compliance.
104	Are there any ashtrays or ashbins visible indoors ?	☐ YES	☐ NO	If the law prohibits ashtrays in nonsmoking areas then a "yes" answer indicates non-compliance. If the law does not prohibit ashtrays, then, as discussed in Step 6, the question can still provide insight into how many locations might be undermining compliance by providing ashtrays.
105	Are there one or more no-smoking signs in the venue/ location ?	☐ YES	☐ NO	Tailor Q105 to the requirements of the law. For example "Is there a no-smoking sign at the entrance to the location?"

Ask Q106 to Q109 only if the venue type is permitted to have a designated smoking room or area. Otherwise, proceed to Q110.

106	Do you see a designated smoking area indoors ? (Choose "YES" if you see a designated area, even if no one is smoking in it.)	☐ YES	☐ NO	Even if a designated smoking area is permitted, this question can indicate how many locations actually have designated smoking areas. The answer to this question is of interest to public health.
107	Is anyone smoking tobacco products indoors, other than in a designated smoking area ?	☐ YES	☐ NO	
108	Are there any ashtrays or ashbins visible indoors, other than in a designated smoking area ?	☐ YES	☐ NO	
109	Are there one or more no-smoking signs in the venue/ location ?	☐ YES	☐ NO	

OPTIONAL: Record any other comments regarding your outdoor observation.

Appendix B: Sample Data Collection Form *continued*

Observation Outdoors (inside location boundary)			This part of the form can be used if the law requires outdoor areas to be smoke-free.
110	Is anyone smoking within X meters from building entrances and windows?	☐ YES ☐ NO	Q110 is an example of a question you might ask if the law prohibits smoking within a certain distance from entrances and windows. The question should not be combined with the questions about observed smoking indoors, because you would not know whether smoking is taking place indoors, or outdoors near entrances. This distinction will probably have different implications for follow-up implementation and enforcement actions.
111	Is the location required to be smoke-free outdoors? (If yes, continue to Q112. If no, finish observation.)	☐ YES (Continue to Q112) ☐ NO (Finish observation)	Q111 assumes that the law requires certain types of locations to prohibit smoking on the entire grounds of the location. Data collectors should have a list clearly describing which types of places are required to prohibit smoking outdoors. A "yes" means they should proceed with outdoor observation.
112	Is anyone smoking tobacco products anywhere outdoors at the location? (If there are no outdoor grounds at this location, choose "not applicable" and finish observation.)	☐ YES ☐ NO ☐ Not Applicable (Finish observation)	
113	Are there one or more no-smoking signs on the grounds of the venue/ location?	☐ YES ☐ NO	
114	Are there any ashtrays/ashbin/ ashcans visible outdoors at the location?	☐ YES ☐ NO	

OPTIONAL: Record any other comments regarding your outdoor observation.

Appendix C: Sample Interview Protocol

If you decide to include interviews as part of your survey, these questions can be added to the data collection form. The interviews should be conducted after the observation has taken place. **As noted in Step 6, interviews are not required for compliance surveys.**

Instructions to Data Collectors

After you have completed the observation checklist, choose the nearest available person working in the venue. Introduce yourself using the script below, get verbal consent from the person to be interviewed and, if the person agrees, proceed with the questions and record the answers. If the person declines to be interviewed, do not ask another person for an interview. Exit the location as soon as you have finished the interview.

INFORMED CONSENT SCRIPT

Good morning/afternoon/evening, my name is _____. I am collecting data for a study being conducted by _____ (name of organization). The purpose of this study is to evaluate compliance with _____ (name of law or regulations).

I am NOT an enforcement officer enforcing the law. I am a researcher checking to see the level of compliance with the law.

This venue has been randomly selected for assessment and your involvement is completely voluntary. I guarantee that your identity will be kept confidential. I will not be asking for your name or any other information about you. This interview will last at most 5 minutes.

If there are inquiries please contact:

[Name of and contact information for study coordinator — leave a card with this contact information.]

If you agree to participate, I will start the interview. Before we start, I need you to indicate that I have read you this consent, and that you understand and freely agree to be interviewed.

1. Respondent title or position	☐ Owner ☐ Manager ☐ Person responsible at the time	☐ Staff person ☐ Other _____
2. To your knowledge, is smoking permitted indoors* in this building? (If DSAs permitted: To your knowledge, is smoking permitted indoors anywhere other than in a DSA?) <i>*Adapt question as needed, depending on how the law defines indoors or enclosed.</i>	☐ Yes	☐ No
3. If you see someone smoking indoors, what action would be taken? (If DSAs permitted: If you see someone smoking indoors other than in a DSA, what action would be taken?) <i>NOTE TO DATA COLLECTOR: Do not prompt answer. Select the option(s) that fits best with the answer given.</i>	☐ I / my manager would ask them to either put out their cigarette or go outside ☐ I / my manager would call the inspection authority ☐ No action would be taken ☐ I don't know/I'm not sure ☐ Other _____	
4. Are you aware that there is a law prohibiting smoking indoors in this type of location? (If DSAs permitted: If you see someone smoking indoors other than in a DSA, what action would be taken?)	☐ Yes	☐ No
5. Are you aware of any challenges in keeping people from smoking where they are not allowed to smoke?	☐ Yes (Go to Q6)	☐ No (Finish interview)
6. What is the most common challenge?		

Appendix D: Sample Data Collection Protocol

1. Data collectors should conduct observations during the hours defined in the table below.
 2. Data collection should be covert, i.e. discreet and not obvious to others. Do your best to observe the location without alerting staff to your purpose. If you are asked directly by staff to state your purpose in the establishment, explain the study to them and give them a copy of the “Study description for managers.” If requested to leave the premises before you are finished your observation, do so immediately and record this fact in the data collection form.
 3. Just before entering the location, note the time of entry on your data collection form.
 4. In each location, visit the parts of the location described in the table below. The observation period for each establishment should last approximately 5–10 minutes for smaller locations, and up to 30–40 minutes for larger locations (e.g. a large shopping center; a hospital with multiple floors or buildings).
 5. If the location has more than one building, visit the largest buildings at the location, up to a maximum of three buildings.
 6. Make your observations discreetly as soon as you enter.
- Visit all required areas of the location listed in the table below, and observe for all of the items included in the data collection form. If you can record your observations on the spot without being noticed, do so. Otherwise, carefully note all of your observations and be ready to record them when you exit the location.
7. As you exit the location, note the time of exit on your data collection form.
 8. Record your observations on the data collection form outside of the location, and before you enter another location.

REMEMBER

If you feel unsafe at any time during data collection, leave the location or area immediately, call the field supervisor, and return to the designated meeting point.

At the end of each day of data collection:

- Call [field supervisor or study coordinator] and tell them which locations you visited.
- Place all data collection forms in the envelope given to you for this day and return the envelope within 24 hours to [field supervisor or study coordinator].

DATA COLLECTION TIMES AND AREAS

Type of Location	Time to Visit	Specific Parts of the Location to Observe
All locations	Refer to guidance for specific locations	If the location has multiple floors, observe one stairwell and one lift, and observe one floor in addition to the main floor.
Educational institutions	During school hours	At least two classrooms; teachers’ common room; office room; students’ common room; one toilet, outside grounds near the main entrance.
Offices (government and private)	Regular office hours	Reception area; common waiting room; at least two offices; employee break room, one toilet; meeting room; at least one back side corridor (if any); cafeteria.
Hospitals	Hospital visiting hours	Reception area; at least one male and one female ward; one office room; one nurses’ room; one doctors’ room; one toilet; one patients’ waiting area; cafeteria, outside grounds near the main entrance.*
Clinics	9am –5pm or evening if open	Reception area; at least one waiting room for patients; one office room; one nurse or doctor’s chamber; one toilet
Train/Bus/Water transport	Rush hour	The entire vehicle
Bars	After work or late evening (busiest hours) or just before closing	All accessible rooms in the bar, including toilets
Restaurants	Lunch or evening meal times	All accessible rooms in the restaurant, including toilets
Shopping malls	1- 8pm (busiest hours)	At least one food court; main entrance area; at least two toilets; information area; at least two to three stores; at least one restaurant.
Stadia	During an event	Entrance area, two stairwells, seating area, at least two toilets.

*Instruction to visit outside grounds assumes that law prohibits smoking on grounds near main entrance.

Appendix E: Sample Budget Template

Costs can be further broken down in separate line items as necessary					
I. PERSONNEL		Quantity	Unit	Unit Cost	Total Cost
1	Study Coordinator/Principal Investigator			xx per month	
2	Field Supervisors			xx per day per person	
3	Technical Expert(s)			xx per day per person	
4	Data Collectors			xx per day per person	
5	Data Entry Personnel			xx per day per person	
Personnel Subtotal					
II. MATERIALS AND SUPPLIES		Quantity	Unit	Unit Cost	Total Cost
1	Printing (questionnaires, protocols, reports)				
2	Supplies for interviewers (e.g. cell phone, bag, notepad, umbrella, pens)				
Materials and Supplies Subtotal					
III. TRANSPORTATION, MEALS, ROOM RENTAL AND PER DIEMS		Quantity	Unit	Unit Cost	Total Cost
1	Transportation for data collectors and field supervisors to training				
2	Lunch, coffee, tea for training				
3	Room rental for training				
4	Per diem for meals and transport during data collection				
5	Coffee, tea, snacks for news conference				
6	Room rental for news conference				
7	Transportation, coffee, tea for other dissemination activities				
Transportation, Meals etc. Subtotal					
TOTAL STUDY COST					

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