

**Supporting Statement Part B:**

**Collection of Information**

**Measuring the Effects of State and Local Radon Policies**

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## **B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS**

### **B.1 Respondent Universe and Sampling Methods**

The Centers for Disease Control and Prevention (CDC) and SciMetrika LLC will focus on study sites, likely counties, that have populations that reflect the proportion of homes located in urban and rural areas in two states (aka “sites”) per radon policy type (required Notification vs. No-notification of radon issues during single family standalone home sales), totaling four sites. Illinois and Minnesota have agreed to participate as the Notification states while Ohio and North Carolina have agreed to participate as the No-notification sites. Selection of the sites also took into consideration the presence or absence of a state or local policy requiring radon professional certification as IL and OH require professional certification while MN and NC do not. An overview of radon policies by state is located in **Appendix 15** and a matrix of policy types by state is presented in **Table B1.1**. This will address the additional aim of this study is to investigate the impact of radon professional certification on radon education, home testing, and mitigation.

These states were offered participation based upon the Environmental Law Institutes review of Radon policies that was last updated in February, 2014 and summarized in Table B1.1.

<sup>1</sup> The Environmental Protection Agency (EPA) and U.S. Department of Housing and Urban Development (HUD) sponsor programs in each of these states and these programs will assist in identifying counties eligible to participate in the study. (Investigators will focus on identifying counties that account for a significant portion of city’s population (i.e., > 33%) identified by the US Census Bureau’s classification of a Metropolitan Statistical Area (MSA). The selected county should have a median home sales price that approximates the median home price of the MSA.) Only one site per state will be selected.

**Table B1.1. Eligible states by category in the study**

	<b>Notification policy</b>	<b>No-notification policy †</b>
<b>Professional certification policy</b>	FL, IA, IL, KS, MT, NE, NJ, RI	CA, CT, DC, IN, KY, MD, OH, PA, UT, VA, WV
<b>No certification policy</b>	DE, MA, ME*, MN, NH	AK, AL, AR, AZ, CO, GA, HI, ID, LA, MI, MO, MS,

		NC, ND, NM, NV, NY, OK, OR, SC, SD, TN, TX, VT, WA, WI, WY
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\* ME has a policy requiring routine radon testing and renter notification for rental property but not for the sale of single-family standalone homes

† States with a general disclosure of environmental hazards that include radon are AK, CA, CO, CT, IL, IN, KY, MD, ME, MI, MS, NC, NE, NJ, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, VA, WA, WI, and Washington DC.

Investigators will work with the State-based radon control programs to select a single county as a study site within the state for both components of the study, totaling four study sites. The selected county should have approximately the same proportion of houses located in rural and urban settings as that state as a whole, in an to attempt mirror the general distribution of such areas within the state.

Once one county within each state is selected, investigators will review publicly-available home sales records to identify potential participants for the homebuyer mailed survey. Specifically, investigators will distribute the survey to 3,000 recent (i.e. within the last 12-months) randomly selected single-family standalone homebuyers from publicly-available records across the four sites (750 per site). Investigators will also work with the state radon program, state or local real estate agent groups, and other contacts to identify real estate agents willing to participate in the study.

Investigators will then contact single-family standalone homeowners who have purchased a home in the last 12 months and real estate agents who focus on single-family standalone home sales to participate in the study. Telephone-based cognitive testing interviews of the homebuyer survey will be conducted with up to 32 recent homebuyers in two of the study sites. Finally, investigators will conduct focus group sessions with 6–8 real estate agents (three focus groups per site for a total of 96 participants in 12 focus groups). All data collection is anticipated to occur within a 24-month period. Although the primary consideration in this study is sample size, a secondary goal of the study is to ensure that each participating site has or lacks policies related to radon notification during home sales as well as radon professional certification.

### **Sample Size and Statistical Power**

Without previous studies of how policies affect radon awareness a combination of approaches was taken to determine an appropriate sample size. Analysis of Behavioral Risk

Factor Surveillance System (BRFSS) data collected from 12 states between 1989 and 1992 (considered to cover a range of times when there was increasing awareness of radon) indicated that, among those who were aware of radon, only 6.8% reported testing for radon in 1989 compared to 14.1% in 1992.<sup>2</sup> Investigators then assumed that states without profession certification or notification represent the 6.8% and states with both represent the 14.1%. Using standard power calculations available in EpiInfo 6 Statcalc (Washington, DC), assuming 80% power and 95% confidence, we determined that we would need to receive 600 responses (300 from each policy type) to determine a significant difference between the two policy types with an odds ratio of 2.25. Furthermore, similar studies of the impact of environmental health policies had mailed out between 691 and 3,059 questionnaires. Return rates on these mailed-survey studies ranged from 31% to 59%, including multiple attempts at follow-up, and returns rates for this survey are expected to be a maximum of 30%.<sup>3-8</sup> As such, to achieve a sample size of at least 600 participants we propose to aim for 900 total respondents in order to have sufficient power to determine a difference, yielding more than the needed sample size for the planned analyses. Knowing this and assuming a 30% response rate, the contractor will then distribute the survey to 3,000 recent (i.e. within the last 12 months) randomly selected single-family standalone homebuyers in one county in each of the four states participating in this study oversample based on our anticipated low response rate in order to achieve our target sample size. Knowing the above, investigators will mail surveys to 750 participants per state with a unique identifier to allow both mail-based return and Web-based response via a Survey Monkey™ software account. To improve response rates, investigators will use a pre-notification post card, Web-based response option, and up to two more attempts at mailed surveys. If a participant completes both an online and a mailed survey, investigators will use the information contained in first response if there are any conflicts.

Finally, investigators will conduct three 6–8 person focus groups with real estate agents at each of the four sites, totaling up to 96 people in 12 focus groups. Individuals will be screened and scheduled for focus groups on a specific date for each site. The National Association of Realtors has reviewed and provided comments on the focus group questions to help ensure the questions and layout are appropriate. To be efficient with investigator and participant time it was determined that 12 focus group sessions (6 for each type of site) would be sufficient to determine prominent themes within each policy type.

## **B.2 Procedures for the Collection of Information**

Investigators aim to obtain information from approximately 3,000 homebuyers (750 homebuyers per state plus 32 cognitive testing interviews) and 96 real estate agents in four states. Information will be collected through telephone interviews (during cognitive testing), returned surveys (homebuyer mailed survey), and recorded focus groups with real estate agents. As such, it will be necessary for investigators to collect and store – as well as ultimately destroy when done using – personally identifiable information. Identifiable information such as names, addresses, telephone numbers, and e-mail addresses that is needed to initially contact and later locate participants for incentive distribution will be stored in separate encrypted files as noted below and destroyed before creating the final dataset to be received and stored by CDC.

### **Homebuyer Survey Cognitive Testing**

Potential participants will be identified from publicly-available tax records and randomly selected to receive a mailed invitation to participate in telephone-based cognitive testing of the homebuyer survey. As part of the cognitive testing invitation, participants will be given a phone number to call to set up a time for a cognitive testing interview with researchers. We anticipate a response rate of 30% so investigators will mail approximately three times as many invitations as expected participants and adjust accordingly. Cognitive testing interviews will be recorded, last approximately thirty minutes, and follow a format suggested by Groves et al. that takes into consideration input by the HHS/NCHS Questionnaire Design Laboratory.<sup>9</sup> Interviews will be reviewed by two independent coders who will then discuss findings associated with each question. Cognitive testing will occur with approximately 24–32 participants split equally into Notification and No-notification sites.

### **Mailed Homebuyer Survey**

Potential participants for the homebuyer survey will be identified through publicly-available tax records. Mailed invitations that include the survey will be sent to 3,000 participants in the four sites (750 per site). Participants will be offered both a mailed response and Web-based response option. Assuming a maximum follow-up rate of 30%, investigators anticipate receiving approximately 900 surveys back. To improve response rates, investigators will use a Web-based response option, and up to two more attempts at mailed surveys. If a participant completes both an online and a mailed survey, investigators will use the information contained in

first response if there are any conflicts. Responses to the survey will be directly entered into a Microsoft Access or Excel (Redmond, WA) database and then imported for storage in a SAS v9.3 (Cary, NC) database or participants will have the option of responding via a SurveyMonkey™ account managed by CDC. This information will be collected from SurveyMonkey™ and downloaded into the SAS database at regular intervals by SciMetrika staff.

The survey will collect data related to demographics and KAP in regard to radon and lead. Investigators consider these topics to be minimally sensitive information. The homebuyer survey can be found in **Appendices 6b and 6c**. This approach will minimize the burden of data collection on individuals and investigators while also ensuring sufficient information to address study questions is obtained.

CDC and its contractor, SciMetrika LLC have extensive experience in data collection and have safeguards in place to maintain the privacy of all collected data. All participants will be informed of the voluntary nature of their involvement. Investigators have received a waiver of informed consent for the mailed homebuyer survey from the CDC IRB due to the minimal sensitivity of the information being obtained. Yet, all study participants will be provided information about informed consent and participants in both the cognitive testing and focus groups will be asked whether they have any questions about the informed consent materials. The informed consent process will also describe privacy safeguards to respondents. The primary data file with respondent's answers will not include names, phone numbers, addresses or other identifying information that could be associated with respondents. All respondents will be assigned a unique study identification number, which will be the only means to distinguish respondents in the primary data file.

Names, addresses, email addresses, or phone numbers associated with respondents will only be used to contact respondents to send pre-paid credit cards to respondents who agree to provide this information. This contact information will be maintained in a separate data file from the primary data file so that respondents' answers cannot be matched to identifying information. Access to identifying information will only be granted to project staff who will be required to use this information to fulfill the study protocol.



All data will be stored on a secure SciMetrika LLC network server which can only be accessed by authorized project staff. No hard copy forms with respondent information will be generated. Files that include identifying information will be password-protected so that only appropriate members of the project team can access these data. All identifying information will be destroyed at the conclusion of the project. In addition, investigators will follow protocols laid out by the National Center for Health Statistics regarding the minimum cell sizes for reporting findings to protect identifying participants due to small subsample sizes.

A pre-notification post card and multiple attempts will be made to contact participants to maximize the response rate for each component. Offering a Web-based response to the mailed homebuyer survey should increase the likelihood of achieving the target response rate.

### **B.3 Methods to Maximize Response Rates and Deal with Nonresponse**

The following procedures will be used to maximize cooperation and to achieve the desired high response rates within the study:

- Participants will be offered a \$30 honorarium for participating in the real estate focus groups and a \$15 honorarium for participating in cognitive testing. (see Supporting Statement A section A.9.2 for more information)
- A pre-notification postcard and multimodal strategies for data collection have been found to increase response rates. Offering a Web-based response to the mailed homebuyer survey should increase the response rate by providing an additional data collection mode.
- Interviewers for telephone-based cognitive testing and real estate agent focus groups have experience with previous qualitative interviews and will be sensitive to any concerns expressed by participants.

### **B.4 Test of Procedures or Methods to Be Undertaken**

While the mailed homebuyer survey does contain some questions previously used in BRFSS surveys, a majority of the questions asked were developed using subject matter expertise from CDC, EPA, HUD, and SciMetrika LLC. Studies on survey validation have indicated that subject matter expert review of questions and cognitive testing are two of the more accurate

methods of ensuring survey questions capture the intended data and this study will utilize both techniques for all data collection instruments. A group of subject matter experts from CDC, EPA, HUD, and SciMetrika LLC have developed, cognitively tested, and revised the homebuyer with internal staff to ensure survey validity. In addition, this survey will undergo iterative cognitive testing with up to 32 recent homebuyers to ensure survey validity. Finally the National Association of Realtors has undertaken a review the focus group questions to ensure the questions will accurately capture the information desired.

### **B.5 Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data**

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