2003-2004 Ohio Family Health Survey

Methodological Report

ORC MACRO℠

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I. Introduction

A. Project Overview

This report describes the survey implementation for the 2003-2004 Ohio Family Health Survey (OFHS). The OFHS obtained detailed data regarding Ohio residents' access to health insurance coverage, general health status, and their perceptions about, and access to, health care. The 2003-2004 OFHS is a follow-up survey to the 1998 OFHS. The Ohio Department of Health (ODH) and the Ohio Department of Job and Family Services (ODJFS) will use the data collected to compare health insurance costs, access to coverage, and how Ohioans' general health needs have changed over the last five years.

Through a competitive application process, the ODH and ODJFS contracted with ORC Macro—a research company located in Burlington, Vermont and New York City, New York—to perform the project's data collection. The OFHS was implemented in October 2003 through July 2004. Data collection was conducted via telephone surveys with a randomly selected adult and, if applicable, on behalf of a randomly selected child, in randomly selected, telephone-equipped Ohio households.

Over the course of the project, ORC Macro conferred regularly with the ODH and the ODJFS. The project began with an initial meeting designed to clarify expectations and discuss both project details and strategies to enhance the study's value. ORC Macro regularly updated the ODH and the ODJFS throughout the project via weekly and monthly field status reports, a contractor assessment of initial interviews and databases, quarterly data collection statements, and informal e-mail/telephone communications.

B. Overview of Survey Content

The 2003-2004 OFHS researched several topics regarding the health of Ohio residents. Topics included Ohio residents':

- Type of health insurance coverage, if any;
- General health status;
- Health care use and needs;
- Perceptions of health care quality; and
- Access to health care.

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The survey consisted of two main sections:

- One for the randomly selected adult in the household; and
- Another for the randomly selected child under the age of 18, if one was presently residing in the household.

II. Survey Design

The following section describes the survey design for the 2003-2004 OFHS, including the population and eligibility requirements, the sample frame, the survey sample, and the sample design.

A. Sample Design and Eligibility Requirements

a. Population

The 2003-2004 OFHS population included the total, non-institutionalized, Ohio adult and child population residing in residential households. This population excluded adults and children:

- In penal, mental, or other institutions;
- Living in other group quarters such as dormitories, barracks, convents, or boarding houses (with 10 or more unrelated residents);
- Contacted at their second residence during a stay of less than 30 days;
- Living in a residence without a telephone;
- Who did not speak English or Spanish well enough to be interviewed; and/or
- With physical or mental impairments that prevented them from completing an interview (as identified by the interviewer or by another member of the household), if a knowledgeable proxy was not available.

b. Sample Frame

The sample frame included Ohio households with telephone numbers assigned since the publication of the current directories, as well as households with deliberately unlisted numbers. According to the 2000 U.S. Census, 97.8% of Ohio households have a telephone.[1]

The sample frame was developed to obtain a set number of interviews by county, cluster, and stratum—as described in detail in the section below. Three types of sample were used to create the sample frame for the survey:

- 1+ block RDD,
- High, medium, and low incidence African American RDD, and
- Asian and Hispanic surname.

The following describes the steps used to generate the sample frame for each sample type.

[1] U.S. Census Bureau, Quick Tables, Ohio, Profile of Selected Housing Characteristics, Accessed June 23, 2004. http://factfinder.census.gov/servlet/QTTable?_bm=n&_lang=en&qr_name=DEC_2000_SF3_U_DP4&ds_name=DEC_2000_SF3_U&geo_id=04000US39

1+ Block RDD Sample Frame

1. An up-to-date list of all current operating telephone exchanges (three-digit prefixes) in Ohio area codes was compiled. These telephone exchanges, when combined with all four-digit numbers from 0000 to 9999, constituted the set of all possible working Ohio telephone numbers, both residential and non-residential. This included telephone numbers assigned since the publication of the current directories, as well as households with deliberately unlisted numbers.

2. This set of all possible telephone numbers was then arranged in ascending order by exchange and suffix, and divided into blocks of 100 numbers each (100-blocks).

3. This set of telephone numbers formed the frame from which telephone numbers were sampled, with the sampled telephone numbers stratified, allocated to replicates of 50, and released into the study.

High, Medium, and Low Incidence African American RDD Sample Frame

The high, medium, and low incidence African American sample frame was used in the six Ohio metropolitan counties that were selected for the African American oversample (Montgomery, Summit, Cuyahoga, Franklin, Lucas, and Hamilton):

1. An up-to-date list of all current operating telephone exchanges (three-digit prefixes) in Ohio area codes was compiled. These telephone exchanges, when combined with all four-digit numbers from 0000 to 9999, constituted the set of all possible working Ohio telephone numbers, both residential and non-residential. This included telephone numbers assigned since the publication of the current directories, as well as households with deliberately unlisted numbers.

2. The key variable in the RDD database, the area-code exchange, has many demographic variables associated with it. One of these is Race/Ethnicity. The database utilized information from the 2000 Census that had been projected forward to determine the incidence of African Americans in each of the area code-exchanges combinations in Ohio. The database was designed such that the density of African Americans was measured in 5% increments. Once the definitions (by percentage) for high/medium/low area code-exchanges were determined, that definition was applied to all the residential area code-exchanges in Ohio. The individual sample was then generated.

Asian and Hispanic Surname Sample Frame

To produce the surname samples used to oversample Asians and Hispanics throughout the state, listed telephone numbers connected to Asian and Hispanic surnames were generated. Two separate databases were used to create these lists. The first database was comprised of all the residential telephone listings in Ohio. For each listing, the person's name and telephone number were indicated. The second database was comprised of all the surnames of the target group(s)—Asians and Hispanics. All the listings in the former database were compared to the surnames from the latter database. Those that matched were placed in a file and a random sample from that file was generated.

County Oversample Frames

To produce the sample frames for the county oversamples, a variety of sources were used. For the counties that had Hispanic oversamples, the Hispanic surname lists were used (as described above in *Asian and Hispanic Surname Sample Frame*) and were deduplicated against the statewide sample draw. The remaining sample for each county was 1+ block RDD, and was pulled in the same manner as described above in *1+ Block RDD Sample Frame*.

c. Survey Sample

From the sample frames, four survey samples were drawn by targeted county, with the following amounts:

• 1+ Block RDD	204,174
• African American RDD	109,654
• Asian Surname	10,579
• Hispanic Surname	5,355

For the county oversamples, sample was drawn by targeted county, with the following amounts:

• Cuyahoga RDD (HH w/children)	33,011
• Cuyahoga Hispanic Surname	3,000
• Hamilton RDD (HH w/children)	1,049
• Lorain RDD (HH w/children)	10,579
• Lorain Hispanic Surname	1,933
• Summit RDD (HH w/children)	13,948

Additionally, 1,049 pieces were loaded for a Hamilton County centered over-sample effort which was planned but never approved.

d. Sample Design

Main Sample

The sampling design was developed to effectively obtain 29,685 interviews among Ohio's general population; 2,311 additional interviews with African Americans; 400 additional interviews with Hispanics; and 680 additional interviews with Asian Americans. These "additional" interviews with minority populations were in addition to minority interviews obtained in the general population portion of the survey.

The oversample for African Americans was selected from the six largest metropolitan counties—Montgomery, Summit, Cuyahoga, Franklin, Lucas, and Hamilton. These counties also had the greatest concentrations of African Americans in the state. The supplement sample was selected so that the total sample would include at least 3,097 interviews with African American adults distributed across all Ohio counties. The oversample in these six counties was designed to generate 2,311 of these completes, with the remaining interviews obtained in the other counties.

The sampling design superimposed another level of oversampling for the African American oversample. Within each county, the oversample was selected within those exchanges that had the greatest densities of African American households. Information on the exchange-level frequencies of African Americans was supplied from the Genesys system and was used in developing a final design, as described above in section *II.A.b: Sample Frame*.

The supplement sample of African American households was developed based on the distribution of African American households across exchanges in each of the selected counties. For this derivation, three African American density strata within each county were constructed to increase the "hit rate" in the high-density stratum. The hit rate is defined as the percent of households that are screened as eligible (have an African American person). This increased the cost-effectiveness of the oversample, as the hit rate exceeded 50% in all but two counties.

The oversample for Asians and Hispanics was drawn at the statewide level rather than at the county level because the number of interviews to be obtained from the lists was not large enough to allow county-level analysis. Even if the number of Asian and Hispanic interviews were increased, there would not be a large enough sample to conduct meaningful analysis at the county, or county-cluster level, except for possibly a few counties. This supplement sample was selected so that the total sample would include at least 690 interviews with Asians and 1,262 interviews with Hispanics distributed across all Ohio counties.

Additional Sample

While the sampling design developed for the main sample (described above) combined a statewide RDD sample with oversamples of minority groups, the sample design for additional interviews grouped counties into clusters. Clusters were created as it was not cost-effective to attain reliable county-level health insurance status estimates of children for all 88 counties in Ohio, since households with children represented about one-third of all households.

The cluster design overcame this problem by grouping counties according to similar demographic characteristics, within the four primary regions (Appalachian, Rural non-Appalachian, Suburban, and Metropolitan). The county groups within each region are in the table below.

Region	Counties
Metropolitan	Allen, Butler, Cuyahoga, Franklin, Hamilton, Lorain, Lucas, Mahoning, Montgomery, Richland, Summit, Stark
Suburban	Auglaize, Clark, Delaware, Fairfield, Fulton, Geauga, Greene, Madison, Medina, Miami, Lake, Licking, Pickaway, Portage, Trumbull, Union, Wood
Rural Non-Appalachian	Ashland, Ashtabula, Champaign, Clinton, Crawford, Darke, Defiance, Erie, Fayette, Hancock, Hardin, Henry, Huron, Knox, Logan, Marion, Mercer, Morrow, Ottawa, Paulding, Preble, Putnam, Sandusky, Seneca, Shelby, Van Wert, Warren, Wayne, Williams, Wyandot
Rural Appalachian	Adams, Athens, Brown, Belmont, Carroll, Clermont, Columbiana, Coschoton, Gallia, Guernsey, Harrison, Highland, Hocking, Holmes, Jackson, Jefferson, Lawrence, Meigs, Monroe, Morgan, Muskingum, Noble, Perry, Pike, Ross, Scioto, Tuscarawas, Vinton, Washington

These county groupings were designed to ensure adequate representation of different types of counties within the original budget for the survey. However, more specific statistical requirements provided by ODJFS and ODH were the basis for the way in which the sample was ultimately stratified and the final sample counts within strata.

The statistical constraints that determined the allocation of sample across counties concerned estimates of health insurance status for various population subgroups based on ethnicity, income, region, and other factors. The sample size for these specific groups had to be such that the sampling error for the estimate of insurance status had to be no greater than +/- 5% at the 95% level of confidence. The table below sets forth the population groups whose estimate of health insurance had to meet this constraint, according to the original project requirements as set forth by ODH:

	Total Population	African American	Hispanic	Asian
Gender	Male Female	Male Female (*)	Male Female (*)	Male Female (*)
Age	0-17 18-34 35-54 55-64 65 and up	0-17 18 and older	0-17 18 and older	0-17 18 and older
Family Income	<=100% FPL (**) 100 to <=150% 150 to <=200% 200 to <=250% 250 to <=300% >300% FPL	<=100% FPL 100 to <=200% 200 to <=300% >300% FPL		
Region	Metropolitan Appalachian Rural Suburban	Each of 6 largest metro counties		

(*) The gender subgroups of interest specified for each minority group are for adults only (ages 18 and older).
(**) FPL stands for Family Poverty Level, the level of income at which a family is considered to be living in poverty, taking into account family size.

The table above shows that the statistical constraint for the estimate of health insurance status applied to both genders within the total population, as well as with the African American, Hispanic and Asian American populations. For health insurance estimates by age groups, the statistical constraint applies to five separate age groups within the total population (including children under the age of 18), but only to two age groups – adults and children – for the three minority populations. For health insurance estimates by family income, there are six population groups based on estimates of families living in poverty that apply to the total population, and four that apply to the African American population. Finally, for estimates of health insurance by region, all four regional groups must meet the statistical constraint for estimates of the health insurance status of the total population, while estimates of the health insurance status of African Americans must meet the constraint within the six largest Metropolitan counties (Cuyahoga, Franklin, Hamilton, Lucas, Montgomery, Summit).

These constraints formed the basis for the original sampling methodology, which involved over-sampling the large Metropolitan counties to achieve the statistical requirements for the African American population, and using the Listed sample frame to achieve the requirements for the Hispanic and Asian populations. All other requirements were to be achieved through an allocation of interviews across the State that guaranteed each county would receive at least fifty interviews.

The African American population was to be further over-sampled through the use of disproportionate stratification of telephone exchanges within the six largest Metropolitan counties. Three strata were created: high, medium, and low-density strata. The density referred to the estimated proportion of African American adults in the areas covered by the telephone exchanges.

With the expansion of project funding and the large increase in sample size, it was clear that the original statistical constraints of the study would be easily met, and the focus of the sampling methodology was changed. ODJFS and ODH set a new statistical constraint for the sampling methodology: that counties, or clusters of similar counties, have sufficient sample size to produce reliable estimates of the health insurance status of children under the age of eighteen, with a sampling error of no more than +/- 5% at the 95% level of confidence. ORC Macro calculated that with approximately 35% of households across the State of Ohio containing at least one child,[2] and taking into account estimates of child health insurance status from the 1998 FHS, a sample size of 800 completed interviews would be necessary in counties, or county clusters.

Creating County Clusters

This new statistical constraint could not apply to all counties individually due to budget constraints, even with the significant increase in project funding and scope. It was decided to allow the largest Metropolitan counties, which were to be over-sampled to increase the representation of African Americans in the sample, to stand alone as individual clusters with at least 800 interviews each. The remaining would be grouped together based on their similarity with respect to a number of demographic characteristics, but within their regional groupings (Metropolitan, Suburban, Rural, and Appalachian). These groups are known as "clusters."

An iterative k-means cluster analysis was used to create the clusters. This analysis used the following demographic variables to group similar counties: percentage of children in poverty; percentage of adults unemployed; and percentage of the total population without health insurance (from the 1998 OFHS). The results were analyzed by staff at ORC Macro, ODJFS, and ODH, with the intent not to create counties that were similar on these three variables, but very dissimilar on variables not factored into the analysis but which may in some way have an impact on health insurance status. For example, some rural Ohio counties have significant Amish populations who do not participate in typical, commercial insurance plans; such counties may seem very similar to other rural counties without Amish populations when looking at only the three clustering variables. The final assessment of the cluster analysis called for the creation of seven Appalachian clusters (with one county, Clermont, alone in its cluster), eight Rural clusters, five Suburban clusters, the six largest Metropolitan counties standing alone, and four clusters among the remaining six Metropolitan counties. The clusters are shown, along with final sample sizes, in Appendix C.

The goal was for each cluster to have at least 800 completed interviews. The six largest Metropolitan counties were to have far more than 800 – at least 1600 each – since they were

[2] U.S. Census Bureau, Census 2000 Summary File 1.

being over-sampled to increase African American representation. The Appalachian clusters were to have 1100 interviews each due to a particular interest in having sufficient data for these counties, and the relatively large number of counties in the clusters (the exception being Clermont county). The remaining six Metropolitan counties were also allotted a somewhat higher sample size, 978.

Within each cluster, the goal was to have the distribution of completed interviews be approximately proportionate to the distribution of the population. In clusters with several counties, this would prove difficult in fielding due to varying non-response and telephone assignment rates. The minimum number of interviews for each county within a cluster remained at 50, as in the original design, to allow small area estimation of insurance rates for all counties.

County Oversamples

After the sample design was finalized, individual counties were provided the opportunity to increase their county's sample size by purchasing additional interviews. Five counties—Holmes, Cuyahoga, Summit, Lorain, and Franklin—elected to do so, and purchased the following additional amounts and types of interviews:

- Holmes—611 interviews.
- Cuyahoga—1,031 interviews, 31 of which could be with adults or adults and children, 750 needed to be with adults and children, and 250 with respondents who identified themselves as Hispanic or Latino.
- Summit—634 interviews, 84 of which could be with adults or adults and children, and 550 needed to be with adults and children.
- Lorain—931 interviews, 241 of which could be with adults or adults and children, 440 needed to be with adults and children, and 250 with respondents who identified themselves as Hispanic or Latino.
- Franklin—1,137 interviews.

For the Hispanic and adults with children subquotas, nonqualified households were not interviewed.

Please see *Appendix* C for a detailed listing of the number of interviews conducted in each county, cluster, and stratum.

B. Questionnaire Design

a. Instrument: Content of Survey/Questionnaire

The 2003-2004 OFHS questionnaire was separated into two parts:

1. Adult
2. Child

Within each, there were separate sections focusing on health insurance coverage, health status, health care utilization, and health care access.

The following is a summary of each questionnaire section.

Questionnaire Section	Contents of Section
Introduction and Screener	Interviewers: ▪ Identify themselves and describe the purpose for the call; ▪ Give general information about the survey; ▪ Randomly select a member of the household age 18 or older; ▪ Determine respondents' ability to answer questions about their health insurance coverage; ▪ Offer some initial background information about the study; and ▪ Establish the selected respondents' insurance status.
Currently Insured (Adult)	Questions included a variety of characteristics about the respondent's health insurance, such as: ▪ Type; ▪ Source; ▪ Cost; ▪ Satisfaction with; ▪ Services offered; ▪ Length of coverage; ▪ Previous coverage; and ▪ Respondents' lack of coverage in the past.
Currently Uninsured (Adult)	Respondents who were currently uninsured were asked about: ▪ The last time they had insurance; ▪ Type and source of their previous health insurance; ▪ Length of time they had been without insurance; and ▪ The reasons they were uninsured.
Health Status, Tobacco Use, and Care-Giving (Adult)	Questions focused on respondents': ▪ General health; ▪ Use of prescription drugs and health care services; ▪ Need for assistance in day-to-day activities, special therapy, and treatment or counseling; ▪ Types of assistance given to other family members; ▪ Whether they had specific diseases such as high blood pressure/hypertension, heart conditions or circulatory problems, and diabetes; and ▪ Use of tobacco products.
Utilization and Quality of Adult Health Care Services (Adult)	Section asked respondents: ▪ When they last visited a doctor; ▪ Saw a dentist; ▪ Number of times spent in a hospital overnight; ▪ How many times they had to go to the emergency room; and ▪ Ratings of the health care they received in these settings.
Access to Care and Unmet Needs (Adult)	Topics covered: ▪ The place respondents' usually went for health care; ▪ Whether they needed professional help coordinating health care and how often help was received; ▪ Whether they needed a specialist within the past 12 months; ▪ Their ability to access dental care; ▪ Whether they experienced difficulty in getting needed prescriptions and other health care due to cost; and ▪ Ease of accessing care compared to three years ago.
Employment	Respondents were asked about: ▪ Their job status, and if they were currently employed. ▪ The industry in which they worked;

Questionnaire Section	Contents of Section
	▪ A description of their work place setting; health insurance offered by their employer; the number of hours they worked; and ▪ The number of persons employed at their current place of business.
Demographics and Family (Adult)	Demographic questions in this section included: ▪ Marital status; ▪ Spouse/partner's employment status; ▪ Education; ▪ Number of persons in the family; ▪ Income; ▪ Number of telephone numbers within the household; and ▪ If there was any lack of telephone service within the past 12 months.
Screening Questions for Eligible Child	The first section of the child questionnaire asked adults about: ▪ The selected child's age; ▪ Their relationship to the child; ▪ Their ability to answer questions about the child's health insurance coverage; and ▪ The selected child's insurance status was established.
Insurance Coverage (Child)	Adults were asked a variety of questions about their child's health insurance coverage, such as: ▪ Type; ▪ Source; ▪ Cost of the insurance; ▪ Their rating of the insurance their child received; ▪ Whether their child needed to see a specialist; ▪ Period of time the child had been covered; and ▪ Any possible lack of coverage in the past.
Currently Uninsured (Child)	Adults of children who were currently uninsured were asked questions about the: ▪ Last time the child had insurance; ▪ Type and source of the previous insurance; ▪ Length of time the child had been without insurance; and ▪ Reasons the child was uninsured.
Health Status (Child)	Questions in this section focused on the child's: ▪ General health; ▪ Their use of prescription drugs and health services; ▪ Their ability to do age-appropriate activities; ▪ Their need for special therapy, treatment, or counseling; and ▪ Whether they had problems with Asthma.
Utilization and Quality of Health Care Services (Child)	This section asked respondents about the child's: ▪ Doctor and dental visits; ▪ If they had stayed overnight in a hospital or visited an emergency room; and ▪ Various ratings about the health care services they received.
Access to Care (Child)	Interviewers asked respondents about: ▪ The place the child usually went to receive health care; ▪ Whether the child needed professional help coordinating health care and how often help was received; ▪ Any needs for a specialist within the past 12 months; and, if applicable, ▪ Whether they had a problem seeing a specialist.
Unmet Health Needs of Family (Child)	This section of the survey asked about: ▪ The child's ability to access dental care or prescription drugs; ▪ Other types of health care; and ▪ The ease of access to care compared with three years ago.
Demographics (Child)	Demographic items included the child's: ▪ Gender; ▪ Race/ethnicity; and

Questionnaire Section	Contents of Section
	▪ The employment status of his or her parents.
Closing Questions	The last set of questions gave a random five percent of respondents interviewed the opportunity to give the ODH and ODJFS any additional comments or suggestions that may have regarding their health insurance and health care.
Interviewer Assessment	After the respondent was no longer on the phone line, the interviewers rated: ▪ The quality of information obtained in the interview; ▪ Reasons for substandard information, if they indicated that to be the case; and ▪ The language the interview was conducted in.

The adult and child questionnaires can be found in *Appendix D.*

b. Development Process

In May of 2003, ORC Macro received a draft version of the questionnaire—based on the survey conducted in 1998—from the ODH and ODJFS. Many of the items in the questionnaire were previously tested and administered in other surveys, and were used in full, or adapted as part of the 2003-2004 OFHS questionnaire. In addition, select items from the following instruments were included in the 2003-2004 OFHS questionnaire:

- National Technical Center, Harvard School of Medicine, Adult Household Survey Core Instrument
- California Health Interview Survey
- 2003 Behavioral Risk Factor Surveillance Survey (BRFSS)
- Pew Charitable Trusts Survey
- State and Local Area Integrated Telephone Survey (SLAITS)
- National Health Interview Survey (NHIS)
- Community Tracking Survey, Center for Studying Health System Change
- Federal Employees Health Benefit Survey
- National Survey of American Families

In order to develop the 2003-2004 OFHS questionnaire, ORC Macro's project team:

1. Reviewed the initial questionnaire item-by-item to assess question construction, order, and structure;

2. Discussed each aspect of survey instrument;

3. Compared the questionnaire and their notes with ORC Macro's library of tested and validated questionnaire items;

4. Compiled a comprehensive assessment of recommended revisions to the 2003-2004 OFHS instrument. This assessment identified problems that the project team believed the instrument posed for data collection and posed strategies for resolving those problems;

5. Prepared the next version of the questionnaire based on project team suggestions and strategies;

6. Conducted cognitive interviews and a pre-test to develop a comprehensive assessment of recommended revisions to review with the ODH and the ODJFS. A detailed description of the cognitive and pre-test interviews is offered below.

c. Modifications

Questionnaire changes made after the initial draft of the questionnaire were submitted prior to conducting the cognitive interviews. Please see Appendix L: Summary of Questionnaire Modifications. The changes can be separated into the following categories.

Coding changes were made to reflect ORC Macro's standard coding procedures and to minimize interviewer burden.

> *Example: Questions with long lists of responses to choose from were changed into open-ended questions. Some codes were changed back to their original assignments during post-processing.*

Minor wording changes were made to make questions clearer and more concise.

> *Example: The question, "What type of health insurance plan covered X just prior to X's current coverage? Was X covered by…" was changed to read "Just prior to X's current health insurance coverage, was X covered by…".*

Interviewer notes were added to remind interviewers of appropriate probes and how to handle special cases.

> *Example: [Interviewer note: If respondent says that he or she is caring for more than one person, say, "Can you answer in terms of the person who needs the most care?"]*

d. Cognitive Interviews

The next phase in the development of the questionnaire involved conducting cognitive interviews. ORC Macro conducted 27 cognitive interviews (22 in English and five in Spanish) via telephone during June and July of 2003 to examine how well respondents understood the questions, and if the questions provided the appropriate data.

The four main objectives of the 2003-2004 OFHS cognitive interviews involved examining:

1. **The respondent-interviewer interaction:** The focus of analysis for the cognitive interviews was to hear the interaction between the interviewer and the respondent. In particular, whether:

    a. the respondent needed to have the question clarified;

    b. the interviewer felt it necessary to repeat a question because the respondent did not seem to understand; or

    c. the respondent provided unexpected or unintended responses that did not answer the question.

2. **How the question read:** Frequently, questionnaires are developed and reviewed by expert committees, without speaking to actual respondents; this might result in inaccurate assumptions regarding how the respondent interprets or understands a question. The focus of analysis for the cognitive interviews was to find the accurate language for addressing the topic of interest—for the given respondent or target population. Listening to how a question reads often reveals awkward constructions, unnecessary verbosity, and redundancy.

3. **The question order:** When questionnaires are developed, the question order may seem logical to the writer, but not so for respondents. Observing respondent reactions to question order can confirm that the questionnaire has been developed logically and yield important information for future revisions.

4. **Time estimate:** The last objective was to estimate the time the questionnaire took to administer under field conditions using the CATI technology.

The following types of sample were used for the cognitive interviews:

- Standard RDD sample drawn from the entire state, using 1+ blocks.
- High incidence African American RDD sample from Ohio where the incidence of African Americans was above 90%.
- Listed sample of Ohio households identified as Spanish-speaking.

1. Instrument

A draft of the questionnaire, in its entirety, was used for the cognitive interviews. In addition, these debriefing questions were added at the end of each section:

- Were there any questions or words in the section we just finished that you found difficult to understand or answer?
- Did you think that the questions made sense in the order that they were asked?

2. Protocol

Calling occurred primarily during evening and weekend hours, and an average of one attempt was made on each record. Respondents were offered a $30 incentive for completing the interview.

The cognitive interviews were tape-recorded, and the data collected was analyzed to ascertain:

- How well respondents understood the questions;
- Whether the questions provided the appropriate data; and
- What changes were needed to improve the data gathered.

3. English and Spanish Data Collection

Cognitive interviews were conducted in English and Spanish to ensure the clarity of the instrument in both languages. Twenty-two interviews were conducted in English and five interviews were conducted in Spanish.

4. Interviewer Training

The ORC Macro project team conducted interviewer training with eight interviewers at the Burlington, Vermont CATI research center. Interviewer training covered the following areas:

1. A brief description and background of the 2003-2004 OFHS.

2. An analysis of cognitive interviewing including its purpose, techniques for conducting cognitive interviews, and how it is set up in the CATI program.

3. A brief question-by-question discussion of the questionnaire.

4. Practice interviews on the CATI questionnaire, administered to project managers.

5. Analysis of Results

ORC Macro employed a behavior coding system to analyze the interaction between interviewer and respondent. Behavior coding relies on cues from the respondent (such as questions about exactly what the questionnaire item was asking, or respondents changing their answers) during the administration of the survey instrument under field conditions. This technique provides an informative complement to analyzing the debriefing questions asked at the end of each section. Frequently, at the point of debriefing, respondents do not remember questions that they needed clarification on, and mention questions as difficult or problematic that appeared to flow effortlessly in the interview. Interviewer debriefing comments sometimes do not indicate problematic areas that someone focusing on the interaction observes. ORC Macro's behavior coding system is very similar to the Cannell/Fowler system described below.

Upon completion of the interviews, each interview was behavior coded by a member of the project management team, using the following system of codes.

Code	Explanation
INTERVIEWER BEHAVIOR CODES	
E Exact wording	Read verbatim
S Slight Change	Read with minor changes that do not alter the meaning of the questions
M Major Change	Read with major changes so that the meaning is altered; interviewer does not complete reading the question as provided—includes response categories if directions indicate they are to be read
P Probing	Insufficient probing/inaccurate probing
RESPONDENT BEHAVIOR CODES	
1. Interruption	Respondent interrupts reading with answer
2. Clarification	Respondent asks for repeat or clarification, makes statement indicating respondent does not understand
3. Adequate Answer	Respondent's answer meets the question's objective
4. Qualified answer	Respondent gives an answer that meets the question's objective, but indicates uncertainty about the accuracy of their response
5. Inadequate Answer	Respondent gives answer that does not meet objective
6. Don't know	Respondent says, "don't know" or provides an equivalent answer
7. Refused	Respondent will not answer the question
8. Not applicable	Respondent insists that answers/ question does not apply

After all of the useable interviews were coded, the results were entered into a database and frequencies were generated for each question. Questions were evaluated based on the frequencies of codes.

6. Modifications Made Based on Cognitive Interviews

Please see Appendix L for a summary of questionnaire modifications. Questionnaire changes made after the cognitive interviews and before the pre-test fell into the following categories:

Coding changes to minimize interviewer burden and ensure proper coding of data. Some codes were changed back to their original assignments during post-processing.

Example: For the income question, some respondents knew their monthly income but struggled to convert it to annual income. The program was changed to allow responses to be given in months.

Interviewer notes were added in response to respondent questions or comments during the cognitive interviews, and to remind interviewers how to handle special cases.

Example: [Interviewer note: Routine activities that parents do for their children are NOT included.]

Minor wording order changes were made to ensure that the respondent heard all of the exceptions to the question.

Example: The text outlining exceptions to the question (NOT including overnight hospital stays, visits to hospital emergency rooms, home visits, or telephone calls) were moved to the beginning of the question, to assure that the respondent could not cut off the interviewer before he or she heard the entire question.

e. Pre-test

After the instrument was revised based upon the cognitive interview assessment, ORC Macro conducted 110 pilot test interviews in late August and early September of 2003. The primary purpose of the 2003-2004 OFHS pilot test was to replicate, to the highest degree possible, the conditions for full-scale survey data collection.

The secondary objective of the pilot test was to more accurately determine the survey length for: an interview with an adult and for a combined adult-child interview.

Tertiary objectives for the pilot test included further checks on the CATI programming, assessment of questionnaire flow, evaluation of respondent understanding, identification of potential fielding issues, and a more refined understanding of interviewer training needs.

1. Instrument

The questionnaire for the pre-test included all of the changes made after the cognitive interviews.

2. Sample and Quotas

Four types of sample were used to conduct the pilot test interviews:

1. Standard RDD sample drawn from Hocking (Appalachian), Hancock (Rural, non-Appalachian), and Greene (Suburban/Small Metropolitan) counties, using 1+ blocks only to obtain interviews with respondents in each geographic area.

2. High-incidence African American RDD sample drawn in Cuyahoga County to increase the number of interviews with African Americans in a county identified as Large Metropolitan.

3. Listed sample of households throughout Ohio identified as having a Hispanic surname to obtain interviews with respondents who identified as being Hispanic.

4. Listed sample of households throughout Ohio identified as having an Asian surname to obtain interviews with respondents who identified as being Asian.

ORC Macro conducted 100 interviews—90 in English and 10 in Spanish. The table below details the number of interviews by language, and ethnicity:

Interview Type	Number Obtained
Asian-American	4
Hispanic-Spanish	10
Hispanic-English	13
Hocking County	12
Hancock County	17
Greene County	22
Cuyahoga County	22
Total	100

3. Protocol

The only methodological difference between the implementation of the pilot test and the full-scale data collection of the 2003-2004 OFHS was that protocols were not followed in terms of the number and timing of telephone attempts.

Instead of bringing each record to a final disposition or a maximum of 15 attempts, records were called upon until the desired amount of completes was obtained. Unlike the protocol of dialing records at different times of the day and week, to minimize bias (such as only calling people available in the evening) and maximize completeness (the effort designed to reach every eligible respondent), the pilot test did not follow any specific day-part protocol.

4. English and Spanish Data Collection

Pilot test interviews were conducted in English and Spanish. One hundred interviews were conducted in English and 10 interviews were conducted in Spanish.

5. Interviewer Training

ORC Macro's project team conducted interviewer training with 10 interviewers at the Burlington, Vermont CATI research center. Please refer to *III.A.k: Interviewer Training* for a description of the topics covered during the training. After completing the formal training, but before commencing "live" calling, all of the interviewers reviewed the questionnaire in the CATI system, familiarizing themselves with the methods of data entry, presentation of materials on each screen, and the content of the questionnaire. Project management staff was present to answer questions.

6. Modifications Made Based on Pre-test Interviews

Please see Appendix L for a summary of questionnaire modifications. Questionnaire changes made after the pre-test were done so within the following categories:

The addition of help screens containing information, such as pronunciations and definitions, designed to assist interviewers with problem-solving during an interview.

Example: B10. "Do any of X's current insurance plans cover /read and rotate A-D one at a time and code response for each/?" For this question, during the pre-test, some respondents had difficulty understanding whether certain vision procedures were emergencies or not. The following help screen was added: "Non-emergency vision services include routine vision exams (to get glasses, for example). Emergency vision services include services for sudden, unplanned visits to evaluate problems such as an eye injury or the onset of sudden, serious vision or eye problems."

Minor wording changes to clarify questions or put respondents at ease.

Example: S1i. The text as written stated "Could I have your name or initials?" Respondents seemed more at ease when they were just asked for their "first name," rather than their "name," as the later could be interpreted as asking for their first and last name. ORC Macro added the word "first."

f. Summary of Interviewer Feedback Regarding Difficulty of Questions

Feedback regarding the questionnaire was received from interviewers both during formal meetings and informally through discussions with supervisors and project management. There were many comments and suggestions regarding the length of the interview, respondent break-offs, and repetition in the survey script.

The interviewers' comments are first identified below by item number, then a description of the interviewers' comment or suggestion is presented, along with ORC Macro's recommended course of action and ODJFS's response.

Item Number	Interviewer Comment	Solution/ Recommendation
Introduction Hello, my name is _____, and I am calling for the Ohio Department of Job and Family Services and the Ohio Department of Health. We are conducting an important survey on health insurance coverage, use of medical services, satisfaction with health care, and problems getting health care. Your telephone number was chosen randomly and all information will be kept strictly confidential. This call may be monitored for quality assurance	The introduction was very long, and many respondents hung up before the interviewers could finish reading the script.	Alternate introductions were scripted.
S17 Which one or more of the following would you say is //your/person in S1's// race?//Are you/Is Person in S1// White, Black or African American, Asian, or Native American, American Indian, Alaskan Native, Native Hawaiian, Pacific Islander, or some other race I have not mentioned ? 01 White 02 Black or African American 03 Asian	Respondents were impatient while listening to all response categories for many items in the questionnaire. Generally, respondents knew how they would answer the question and did not believe it was necessary to hear all of the response categories. This was also a tactic used by respondents to increase the pace of the interview so to shorten the completion time. Interviewers stated this was a problem especially with the race/ethnicity items.	In the refresher trainings, interviewers reviewed the importance of each question's response categories and how to handle interruptions while reading categories.

Item Number	Interviewer Comment	Solution/ Recommendation
04 Native American, American Indian, or Alaskan Native 05 Native Hawaiian or Other Pacific Islander 06 Hispanic, Latino, Spanish 97 OTHER 98 DK 99 REFUSED		
S17b Which of these groups, that is //RECALL S17 ANSWERS// would you say best represents //your/ person in S1's// race? 01 White 02 Black or African American 03 Asian 04 Native American, American Indian, or Alaskan Native 05 Native Hawaiian or Other Pacific Islander 97 OTHER 98 DK 99 REFUSED	Some respondents were offended by the question regarding which race best described them. They believed all races described them equally. The problem was not with respondents eventually answering question, but in being offended by what the question was asking.	When respondents became offended, interviewers were trained to code these responses "don't know" and move to the next question.
D31b, c, e, f, h, I, k, l, and n Is this because of ANY medical, mental health or other health condition? Is this a condition that has lasted or is expected to last for *at least* 12 months? //Do you/does Person in S1// need or use medical care, mental health or other health services on a regular basis? Is this because of ANY medical, mental health or other health condition? Is this a condition that has lasted or is expected to last for *at least* 12 months?	This series of questions was repetitive. If a respondent had only one health problem he or she was referring to, the follow-up questions regarding the type of condition, and expected duration of the condition, were asked of each main survey question in this series. It was only necessary for the respondent to be asked these questions once since they were referring to the same health problem.	These questions were part of a standard set of Special Health Care Needs screening items and could not be changed. Interviewers reviewed how to keep control of the interview as well as the purpose for this line of questioning so they could explain it to respondents; effective refusal conversion methods were also covered.
i90 to the end of child section.	Respondents were frustrated when answering the questions for their child. Respondents felt they were taking the entire survey over again by answering similar questions previously asked in adult section.	Interviewers reviewed effective refusal conversions to avoid mid-survey break-offs during the child section of the survey.
Answering Machine text	The message was misleading to a	In the future, the message text

Item Number	Interviewer Comment	Solution/ Recommendation
Hi, my name is _______. I am calling on behalf of the Ohio Department of Job and Family Services and the Ohio Department of Health. Please call us at ______ at your convenience. Thanks.	portion of respondents. In some cases, respondents called back with the impression that the call was in regards to an existing issue—often of an extremely vital, personal nature—they had with the ODJFS.	should explain more effectively about the study being conducted.

g. Text Substitution for Proxy Interviews

To prevent the problem of proxies answering the questions for themselves rather than for the selected adult or child, additional programming was implemented to allow for text substitution during the questions for the child and during an adult interview conducted by a proxy. During the screener, respondents were asked for the name, nickname, or initials of the selected adult or child. The name was inserted in each subsequent question. Following is an example of the text substitution.

If the selected respondent was interviewed:

"Are you covered by health insurance or some other type of health care plan?"

If the selected respondent, Joe, was not familiar with his insurance coverage and a different member of the household was interviewed on his behalf:

"Is Joe covered by health insurance or some other type of health care plan?"

h. Translation Process

ORC Macro utilized the services of Access International to translate the questionnaire into Spanish. After the final Spanish questionnaire was formatted, a bilingual ODJFS employee and an experienced ORC Macro Spanish-speaking interviewer reviewed the accuracy of the translation. After thorough review, minor changes were made, and the questionnaire was re-translated to bring it to a sixth-grade reading level.

i. Interview Length

The average, overall interview length was 19.0 minutes. Interview lengths by interview type follow:

Interview Type	Average Interview Length
Adult and child interview	22.5
Adult only interview	16.9

III. Data Collection

A. Procedures

a. Use of CATI

ORC Macro used the Computers for Marketing Corporation (CfMC) Computer-Assisted Telephone Interviewing (CATI) package to program and field the 2003-2004 OFHS. CfMC is a powerful CATI software system used by many of the largest survey research centers in the United States. The CfMC questionnaire programming language provided call management and quota controls, inbound calling capabilities, multilingual interviewing capabilities, data back-up and monitoring, and incidence tracking. The software automatically controlled skip and fill logic, as well as range-checking for numeric data.

The programming logic directed the questionnaire's flow and prevented an interviewer from entering data in the wrong field. On any given screen of the questionnaire, the program only accepted a predetermined range or type of response.

b. Implementation Protocol

The 2003-2004 OFHS followed the 2003 CDC's BRFSS calling protocols.

1. Call Scheduling

The majority of interviewing session hours were scheduled for weekday evenings, Saturday days, and Sunday evenings. The target time interviewing period was between 5 p.m. and 9 p.m. respondent time on weekdays, between 10 a.m. and 9 p.m. on Saturday, and between 1 p.m. and 9 p.m. on Sundays. All interviewing occurred between the hours of 9 a.m. and 9 p.m. respondent time on weekdays, 9 a.m. to 9 p.m. on Saturday, and between 10 a.m. and 9 p.m. on Sundays.

ORC Macro also scheduled shifts between 9 a.m. and 5 p.m. weekdays for up to a maximum of 20% of total session hours.

2. Number of Attempts

Interviewers made a minimum of 15 attempts to reach an eligible household and interview an eligible adult for each telephone number in the sample frame. After three unsuccessful attempts, interviewers contacted the operator to determine if the number was non-working. Each call attempt was given a minimum of five rings. The attempts were rotated through weekday day, weekday evening, Saturday day, and Sunday evening shifts to maximize coverage of the residential population.

Persistent "ring-no-answers" were attempted a minimum of four times at different times and days of the week. Each number was called a minimum of 15 times over the data collection period. If a respondent was contacted on the last call, and an interview could not be completed, another attempt was made.

Lines that were busy were called back a minimum of five times at 20-minute intervals. If the line was still busy after the fifth attempt, the number was attempted again on different calling occasions until the record was resolved. If the line was still busy after the third calling occasion, whenever possible, ORC Macro contacted the telephone company to verify whether the number was in service.

3. Callbacks

The CATI system allowed two types of callbacks depending on whether or not the respondent could offer a specific time and date to be contacted again. A system-scheduled callback was assigned to a record that could not be given a specific date and time, and a scheduled callback was for respondents who indicated a definite appointment for recontact.

For a definite appointment, the record waited until the designated time to be released. At this time, the system found the next available station and delivered the record as the next call. The call history screen that accompanied each record informed the interviewer that the call was a definite appointment and described the circumstances of the original contact.

ORC Macro's system also accommodated the restarting of interrupted interviews using a definite callback strategy. If a cooperative respondent had to terminate an interview, but wanted to finish at a later time, it was possible to set a definite callback for that exact time and restart the interview where it left off. If the interviewer who began the survey was available at the prescribed time, the system sent the call back to that station.

ORC Macro's CATI system automatically handled callbacks for "no-answer," "busy," and "answering machine" outcomes. Repeated no-answers were retried at different times of day and days of the week as follows: If a call between 5 p.m. and 6 p.m. resulted in a no-answer, the record was put in the queue to be retried between 8 p.m. and 9 p.m. of the same shift. Then, if the number was not retried during the shift, it was automatically cycled to the next shift according to the logic defined for the calling schedule.

Calls resulting in a busy signal were automatically recycled within the same shift according to a preset schedule. As with no-answers, if a shift closed before an automatically rescheduled busy was attempted, the number was cycled to the next available calling time.

Callbacks to specific respondents were entered into the computer by interviewers and handled automatically by the CATI program. ORC Macro's system accommodated both "casual" and "definite" callbacks. Casual callbacks, where respondents requested that we try to reach them at a generally specified time of day ("I usually get home around six o'clock") were sorted and allotted automatically by the system. They were held out of the sample until the appointed hour, when they were sent to a station with an open slot for that call. They had a higher system priority than returning no-answer and busy records, but lower priority than definite callbacks.

c. Household Selection

The 2003-2004 OFHS used the BRFSS 2003 definition for determining eligible households. BRFSS defines an eligible household as any residential housing unit such as an apartment, a house, or a mobile home. Non-eligible households included: dormitories, hospital rooms, nursing homes, group homes, sororities/fraternities, halfway houses, shelters, prisons or barracks, businesses— or any number that reached a cellular phone, computer or fax line, or pay phone. If the selected respondent did not live in Ohio for at least one month prior to the interview, the household was also considered ineligible.

d. Respondent Selection

After a household was determined to be eligible, then household members were verified as being eligible; eligibility included all related adults (aged 18 years or older), unrelated adults, roomers, and domestic workers who considered the household their home. Household members did not include adult family members who were living elsewhere at the time of the interview.

Unlike the BRFSS, the 2003-2004 OFHS used the "most recent birthday method" to randomly select a respondent for an interview. Interviewers asked, "Now, I would like to identify the adult currently living in your household, 18 or older, who had the most recent birthday. Who would that be?"

Due to the length and complexity of the 2003-2004 OFHS, the "most recent birthday method" was most appropriate in order to effectively select a potential interviewee while minimizing respondent burden. Unfortunately, even when implemented properly by an interviewer, respondent error (either intentional or non-intentional) may affect results. For example, a respondent could potentially confuse the household member with the most recent birthday (to the calling date) with the household member with the *next* upcoming birthday.

A study conducted by members of the Ohio State University and Nielsen Media for presentation to the American Association for Public Opinion Research in 2000 cites interviews with the "incorrect" respondent (i.e., one other than the adult with the last birthday) in approximately 20% of households. This study concluded that errors were more commonly seen in households with numerous members or with lower levels of formal education. While no significant effects were found on key demographic measures in their study (including age and gender), the unmeasured potential effects on this survey should be acknowledged.

e. Proxy Interviews

The 2003-2004 OFHS allowed for the use of proxy interviews. Proxy interviews were conducted with a knowledgeable adult when the selected respondent:

- Was not knowledgeable enough answer questions about his/her health insurance;
- Was cognitively or physically impaired;
- Did not speak English or Spanish well enough to complete the interview; or
- Was not available at the time of the call and a proxy was willing to complete the interview.
- Proxy interviews were also conducted for all child interviews.

A knowledgeable adult was defined as someone 18 years old or older who was able to answer questions about the selected respondent's health insurance. For interviews that were suspended and resumed, the CATI program prompted interviewers to continue the survey only with the person who started the interview.

f. Refusal Conversion

All interviewers calling on the 2003-2004 OFHS were trained to avoid refusals. When respondents refused to participate, ORC Macro's Non-response Conversion Staff (NCS) made at least one more contact, with a few exceptions. The vast majority of initial refusals were handled by the NCS on an individual basis, with customized procedures for each case. Whenever a respondent refused to be interviewed or terminated an interview in progress, the interviewer recorded information as to why the respondent refused or terminated the interview, and entered this information into the CATI system. This information was reviewed by NCS just before calling the telephone number again. During weekly non-response workshops, the NCS compiled these cases and reviewed effective strategies for non-response avoidance and conversion.

While a high response rate was important, the role of the interviewers was not to harass respondents into participating in either the selection process or the interview. Interviewers were trained to inform their supervisor about the following situations:

- If the respondent was verbally abusive, or threatened litigation.
- If the respondent requested to be placed on a "do not call" list.
- The household refused to transfer the call to the selected respondent and stated that they would never allow the call to be passed to the selected respondent.

These numbers were removed from active calling.

g. Spanish Interviewing

ORC Macro conducted the 2003-2004 OFHS in English and Spanish. Of the 39,953 records in the final data file, 423 (1%) were collected in a specialized CATI effort associating Spanish speaking interviewers with records flagged during the primary collection effort as belonging to non-English speaking households. The procedure for conducting interviews in Spanish was straightforward: when a bilingual interviewer reached a Spanish-speaking respondent, the interviewer explained the survey in Spanish and continued directly into the interview without interruption. When a non-Spanish speaking interviewer contacted a Spanish-speaking household, the record was coded for Spanish interviewing, and the system automatically routed the record to a bilingual interviewer for subsequent attempts. Spanish interviewing followed the same protocol as English interviewing, including the quality assurance procedures discussed in *Section III.B: Quality Assurance Procedures*.

h. Methods Used to Increase Response Rates

ORC Macro implemented a variety of methods to maximize response rates for the 2003-2004 OFHS:

- The use of a "short" version of the child questionnaire,
- Allowing proxies to conduct the adult portion of the interview,
- Leaving messages on answering machines and privacy managers,
- Providing verification numbers for ORC Macro and the survey sponsors,
- Employing special refusal conversion efforts,
- Reattempting phone numbers on different days, and at different times of the day, to maximize efforts to reach each household, and

- Conducting interviews in Spanish as well as English.

Each of these is described in detail below.

1. "Short" Version of Child Questionnaire

ORC Macro found that mid-survey terminations were more likely in the child section of the survey due to the length of the survey and the similarity of the child questions to the previously asked adult questions. In an effort to boost response rates and avoid mid-terminate surveys, ORC Macro implemented a shortened child section during which the fundamental questions for the child were asked before the survey was suspended.

The ODH and ODJFS defined the fundamental child questions (following the child's name, nickname, or initials) as the child's age, and whether or not the child had health insurance. If the selected child did have health insurance, the respondent was asked whether or not the child was covered by Medicaid or another government assistance program. If the child did not have health insurance coverage, the respondent was asked if the child had health insurance at any time in the last 12 months, or inquired when the child last had health care coverage.

Partially completed records were called to protocol in an attempt to complete the remainder of child questions. If the remainder of child questions was not obtained and the record had reached 15 attempts, the record was considered a complete. A total of 365 partially completed interviews reached protocol and were considered complete out of the 39,953 final interviews collected.

2. Proxy Interviews

The 2003-2004 OFHS protocol required the random selection of an eligible household member to conduct the interview. At times, the randomly selected respondent was either unable because of an impairment, unavailable, or unwilling to conduct the interview. In order to obtain a high response rate, the 2003-2004 OFHS protocols allowed for proxies to conduct the adult portion of the interview, as long as the adult was knowledgeable about the selected respondent's health insurance. All child interviews were conducted with a knowledgeable proxy. Please refer to section *III.A.e: Proxy Interviews* for more information about the use of proxy interviews.

3. Leaving Messages on Answering Machines

ORC Macro left messages on persistent "answering machine" and "privacy manager" dispositions, informing respondents of the study and scheduling another call attempt for the following day. The message stated that ORC Macro interviewers were calling on behalf of the ODJFS and ODH, and that a callback at their convenience would be appreciated. The call center's toll-free telephone number was left on the answering machine. Messages were left on the fourth and ninth attempts to a household if an answering machine or privacy manager was reached on these attempts. For privacy managers, if a message could not be left, the interviewers were instructed to enter the call center's toll-free telephone number. ORC Macro has learned that this protocol can improve response rates and more quickly resolve dispositions. Dedicated CATI stations were set up to handle incoming respondent calls to complete the interview in response to an answering machine message.

4. Survey Verification Lines

ORC Macro's toll-free lines received respondent calls regarding the legitimacy and validity of the study. ORC Macro staff also made contact information for the ODH available to those respondents who wished to contact the survey sponsors directly.

5. Refusal Conversion Efforts

Refusal conversion for the 2003-2004 OFHS occurred at two points—the initial contact with the household and during any subsequent contacts with the household. Study protocols allowed for the re-attempt of households that had initially refused. Please see section *III.A.f: Refusal Conversion* for more information about the refusal conversion protocols for this survey.

6. Reattempting Numbers

Telephone numbers that did not initially produce a completed interview were contacted on different days, and at different times of the day, to maximize efforts to reach each household. The study protocol allowed calling to be done over many weeks to ensure that respondents on vacation and those rarely at home could be reached. Please see section *III.A.b: Implementation Protocol* for more information about call attempts for this study.

7. Conducting Interviews in Spanish

The 2003-2004 OFHS interviews were conducted in English and Spanish to maximize response rates. Of the 39,953 interviews in the final data file, 423 (1%) were collected in a specialized CATI effort associating Spanish speaking interviewers with households which were flagged as non-English speaking.

i. Determining a Completed Interview

An interview was considered complete when a selected respondent or knowledgeable proxy answered all of the:

- Adult portion of the questionnaire for an adult-only household;
- Adult portion of the questionnaire and all of the child portion in households where there is a child; or
- Adult portion of the questionnaire and the fundamental questions (as identified and agreed to by the ODH, the ODJFS, and ORC Macro) in the child portion of the questionnaire. Records of this nature were only considered a complete if the record was brought to protocol while trying to recontact the respondent to answer the remainder of the questions in the child section of the survey.

j. Recontact Study

A recontact study was administered during April and May of 2004 to gather information missing as a result of questionnaire logic not matching the intended questionnaire skip patterns. Protocols for the recontact study followed that of full-scale data collection in terms of number and timing of attempts. Information for the following variables were gathered during the recontact study:

- J105, J117, J117a-c, K99a, K99b, S10, S11, O142, M136, J96, J105, D31a
- Cuy1, Cuy2, Cuy2a-i, Cuy3, Cuy4, Cuy5, Cuy5a-c

ORC Macro loaded a total of 1,499 records to be recontacted. 593 were later reclassified as non-targeted groups due to inaccurate screening in the CATI questionnaire. This included 291 households from "HH with Children" clusters and 302 records from "Hispanic" clusters. ORC Macro collected missing information for 67% of the 1,499 original records.

k. *Interviewer Training*

1. Initial and Refresher Trainings

Prior to data collection, interviewers underwent extensive training specific to the 2003-2004 OFHS. The training was conducted by ORC Macro's 2003-2004 OFHS project management team and was held over a two-day period. The training—in conjunction with ORC Macro's quality control measures—assured consistent, high quality interviewing throughout data collection.

The quality of data collection depends largely on the performance of the interviewing staff. Interviewers on this study were specifically recruited for health care research. A description of interviewers' qualifications can be found in *Appendix F*.

ORC Macro's training sessions for the 2003-2004 OFHS focused on these important aspects of the survey research process:

1. Introduction to the Survey. ORC Macro's training introduced the interviewers to the purpose and scope of the survey. This part of the training included explanation of the importance of a high response rate, the effect that a high number of refusals has on the study, the importance of confidentiality, who the ODJFS and ODH are, and the purpose of this study. A review of the different types of health insurance were covered, along with an overview of the introduction and selection process, and the use of proxies.

2. Probing Techniques: A discussion on probing techniques was held, which focused on keeping question non-response to a minimum and avoiding respondent refusals. Some probing techniques taught included the clarification of respondent responses, open-end verification, and re-reading of response categories.

3. Uncooperative Respondents: The training also focused on how to handle uncooperative respondents, focusing on respondent refusal conversion. This part of the training introduced interviewers to many of the refusal statements that they might hear from potential respondents.

4. Review of the Questionnaire. The questionnaire was reviewed, done interactively with the Computer Assisted Telephone Interviewing (CATI) program. Many different scenarios, such as respondent reactions, skip pattern scenarios (such as health insurance status and the variations between the adult and child versions of the survey), and dispositioning protocols, were used to give the interviewer a better understanding of the CATI program and the questionnaire.

Additional information about the training can be found in *Appendix* G.

ORC Macro conducted follow-up refresher trainings and posted educational bulletins with frequently asked questions in each call room. These trainings re-emphasized survey protocol, covered strategies for handling refusals, reviewed the procedures for suspended records, and reviewed particular survey items with which the interviewers had difficulty. The refresher trainings reinforced quality control during data collection to assure reliable, valuable data.

B. Quality Assurance Procedures

a. Data Collection Quality Control

1. CATI

To avoid data entry error and response discrepancies, various consistency checks and verification questions were programmed into the survey instrument. For instance, if the number of adults recorded was greater than the number of residents in the household, a script would prompt the interviewer to ask the respondent if there was mistake. Once the problem was rectified, the interviewer could recode the correct number of either residents or adults in the household. A similar consistency check was programmed for the number of children in the household.

Additionally, the CATI script contained range limits that would only permit interviewers to enter a response in a predetermined, allowable range. For example, when recording the number of hours an individual required assistance, allowable responses included:

- HOURS PER DAY [RANGE 1001-1024]
- HOURS PER WEEK [RANGE 2001-2168]
- HOURS PER MONTH [RANGE 3001-3720]

Please refer to *Appendix D* for more examples of CATI verification questions within the survey instrument.

2. Verification Interviews

ORC Macro recontacted 10% of all completed interviews to verify their responses. Each recontacted record was given one of the following statuses: Validated, Questionable, Not Validated. In total,

- Validated high consistency: 81%
- Validated: 2%
- Validated with inconsistencies: 17%

Many of the records coded as *validated with inconsistencies* occurred because a more liberal proxy policy was used during the validation interviews. If the interviewer was unable to get the respondent on the telephone, the verification interview was completed via proxy. Given the literature on the comparison between proxy and self-reported data, it is understandable that there would be some inconsistencies between selected respondent and proxy responses.[3] [4] [5] [6] [7] [8]

[3] Todorov, A. Cognitive procedures for correcting proxy response biases in surveys. Applied Cognitive Psychology. 17: 215-224 (2003) Published online in Wiley InterScience 28 November 2002 (www.interscience.wiley.com) DOI: 10.1002/acp.850

[9] After a review of the records that were validated with inconsistencies, the differences in responses were minimal and did not warrant eliminating the data. In addition, links between the quality of the data and interviewer performance were not found during the validation interviews.

The verification study differed from the full data collection studies in the number of attempts needed per record, the day-part protocol for dialing the records, and the member of the household needed to verify the information. For the verification study, there was an attempt protocol of only five attempts per record and no special quotas. The day-part protocol for the verification study was one day time attempt, two evening attempts, and two weekend attempts. The survey items chosen for verification were not exclusive to the respondent originally selected; therefore, most members of the household were eligible to answer the verification questions.

Similar to the full data collection studies, the verification study had a two-refusal protocol. After the initial refusal, records were transferred to a special refusal study to be called again by a refusal conversion interviewer. If the record received an additional refusal, the record was removed from the sample with a final refusal disposition.

3. Interviewer Monitoring

ORC Macro monitors interviewer performance through supervisors and QA assistants, as well as with formal and informal performance evaluations.

The quality control team for this survey included the survey manager, data collection manager, supervisors, and QA assistants. Monitoring was primarily conducted by ORC Macro's special quality control staff, called QA assistants. QA assistants monitored at least 10% of the interviews by tapping into interviewers' telephone lines and using the CATI system's monitoring module to follow the course of the interview on a computer screen. Interviewers were scored on several measures of interview performance designed to reinforce proper interviewer protocol:

- Knowing the mechanics of CfMC and the 2003-2004 OFHS survey instrument;
- Verbatim response entry;
- Pace of reading the survey;
- Clarity and/or tone of voice while interviewing;

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[4] Ellis, BH, Bannister WM, Cox, JK, Fowler, BM, Shannon, ED, Drachman, D, Adams, RW, Giordano, LA. Utilization of the propensity score method: an exploratory comparison of proxy-completed to self-completed responses in the Medicare Health Outcomes Survey. Health and Quality of Life Outcomes, 2003, 1:47. 2003 Ellis et al;

[5] Bassett SS, Magaziner J, Hebel JR. 1990. Reliability of proxy response on mental health indices for aged, community-dwelling women. Psychology and Aging 5: 127–132

[6] Epstein AM, Hall JA, Tognetti J, Son LH, Conant L. 1989. Using proxies to evaluate quality of life. Medical Care 27(Suppl. 3): 91–98.

[7] Kovar MG, Wright RA. 1973. An experiment with alternate respondent rules in the National Health Interview Survey. Proceedings of the Social Statistics Section, American Statistical Association: Washington, DC; 311–316

[8] Mathiowetz NA, Groves RM. 1985. The effects of respondent rules on health survey reports. American Journal of Public Health 75: 639–644

[9] Mathiowetz NA, Groves RM. 1985. The effects of respondent rules on health survey reports. American Journal of Public Health 75: 639–644

- Probing and/or clarifying responses that are unclear;
- Converting refusals on specific questions (reducing item non-response);
- Remaining neutral while interviewing and not leading respondent;
- Dispositioning calls, leaving messages, and scheduling callbacks;
- Reading scales properly;
- Reading and probing on open-ended questions;
- Reading multiple response lists;
- Reading the introduction and persuading respondents to complete interviews;
- Keeping control of the interview;
- Overall professionalism; and
- Overall dialing habits.

QA staff also assured that interviewers:

- Coded incomplete interviews properly;
- Left useful messages for the next interviewer; and
- Made every attempt to complete an interview on every contact.

Monitoring forms were completed for each observed interview; these forms rate interviewers on up to 16 areas of performance. For each of the areas, interviewers are scored on a scale of one to 10, where "1" is "May require verbal/written warning. Must show immediate improvement!" and "10" is "Perfect! Makes every appropriate and professional effort." The interviewer monitoring form is attached in *Appendix H*.

Of the 2003-2004 OFHS interviews monitored, the average score was 81 out of 100, with a low score of 40 and a high of 98. Interviewers do not receive a perfect score of 10 on each aspect they are rated on if they need to:

- Backtrack and change an item that they coded incorrectly;
- Revise an open-ended response after rereading it to the respondent;
- Edit the response if a respondent changes his or her answer after the interviewer asks a clarification question (i.e., "You said there were two adults in the household"); or
- Change one or both responses if the answer to a follow-up question conflicts with a prior question.

A score on the low end of the range does not mean that the data collected by that interviewer is not valid; an interviewer could obtain a low score because he or she was not effective at refusal conversion, moved through the questions with hesitation, or did not keep an appropriate pace for the survey. ORC Macro's policy is to remove interviewers whose interviewing technique may be detrimental to data quality. No problems of this kind were encountered with interviewers during 2003-2004 OFHS data collection.

Quality Assurance at the Call Center

Our QA staff ensures that data is collected within client guidelines and protocols—and in accordance to ORC Macro's highest standards.

Quality assurance duties include monitoring and evaluating interviewer performance, conducting client monitorings, communicating issues and questions to data collection and project managers, and providing additional training or coaching to interviewers as needed.

In addition to the efforts of our QA staff, floor supervisors routinely rove the call center to observe and evaluate interviewer techniques such as moving through the questionnaire without hesitation, time management, refusal avoidance, and voice clarity. Supervisors provide feedback to interviewers and answer any questions they may have.

Quality Assurance by Project Management

The 2003-2004 OFHS project management team performed routine, bimonthly monitorings in all call centers working on the 2003-2004 OFHS. The team implemented a schedule for specific times and days to monitor the call centers to be able to observe a variety of interviewers during both the day shifts and evening shifts. The project manager was able to give helpful advice to callers, such as not rushing through response categories and using effective refusal statements, to improve survey administration and increase response rates.

Quality Assurance by ODJFS and ODH—Remote Monitoring

ORC Macro's sophisticated remote monitoring system allowed the ODH and ODJFS to monitor actual interviews in progress from its offices. The system is password-protected, which ensures that only the ODH and the ODJFS had access to the interviews. A "dead" line permitted the ODH and the ODJFS to communicate with the project manager or QA during monitoring and allowed the listener to switch among the various interviewers who were conducting surveys.

ORC Macro's state-of-the-art remote monitoring system requires only a touch-tone telephone to effectively monitor the interviews.

Confidentiality of Respondents

ORC Macro understands the importance of confidentiality and requires that all project staff and interviewers, upon hire, sign a confidentiality statement to assure that information collected is kept strictly confidential and is used only for the purposes of the study. A copy of the confidentiality statement can be found in *Appendix K*.

C. Response Rates

A total of 393,216 telephone numbers were attempted during fielding. Interviews took place between October 16, 2003 and August 2, 2004, providing adequate time for multiple attempts on unresolved sample, scheduling of appointments, and completion of interviews. Protocols to maximize response rates included refusal conversion efforts, leaving answering machine messages requesting callbacks, and re-attempting numbers at various times during the week. Supplemental sample was added monthly between January and June to achieve completion deadlines, allow draft data files to better represent the population as a whole, and ensure sample release appropriate to incidence levels.

In order to affirm the representation of the target population in a study, researchers look to response rates as indicators of performance. There is no one agreed upon standard response rate formula since each project lends itself to different measures of performance. Several of these performance measures are discussed below. Specific formulas for the calculations are detailed in *Appendix E*.

All response rates will be affected by the procedure of assigning final status dispositions. The results of each call attempt were assigned a disposition according to guidelines published by The American Association for Public Opinion Research.[10] These final dispositions can be summarized as:

Category			Examples
I	=	Complete interview	Full Interview
P	=	Partial interview	Full adult, partial child information obtained
R	=	Refusal and break-off	Resistance or refusal on household or selected respondent level
NC	=	Non-contacts	Answering machine
O	=	Other	Language barrier, mentally incompetent
UH	=	Unknown if a household	Repeated busy tone, blocking devices
UO	=	Unknown, Other	No screener completed
e	=	Estimated proportion of cases of unknown eligibility that are eligible	(I + P + R + NC + O) / (I + P + R + NC + O + non-working numbers + business numbers + all other numbers which are not eligible for the study)

Traditionally, non-qualified households in oversample situations would be classified as ineligible (similar to businesses). Because of the lower incidence of oversampled groups for the 2003-2004 OFHS, and since a large percentage of household refusals for this study occurred at the household level, response rate percentages appeared extremely low when compared to other portions of the study since there was no consideration of qualification for unscreened refusals.

To permit better comparison, successfully screened oversample records that would have qualified for an RDD survey were classified as short, completed interviews in response rate calculations. For example, if households included in the Asian oversample effort were successfully screened as non-Asian, they would act similarly to full interviews in response rate calculations (although they would not count towards the quota). This change in the classification system induced theoretically consistent incidence and eligibility, thereby allowing general comparisons among individual factors of the study.

a. Crude/Lower-Bound Response Rate

As the name implies, the Lower-bound response rate provides the lowest possible response rate figure. Also known as AAPOR Response Rate #1, it is obtained by dividing the number of completed interviews by the maximum number of potentially qualified households.

For this survey, the Lower-bound response rate was 29.8%.

b. CASRO and AAPOR Response Rates

Some response rates take into account the ability of the interviewing staff to establish contact with potentially eligible households, and to resolve all numbers that do not ring into

[10] The American Association for Public Opinion Research. (2000). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys.* Ann Arbor, Michigan: AAPOR.

potentially eligible households. In cases where resolution is not achieved—that is, telephone numbers cannot be assigned dispositions that definitely reflect eligibility—these response rates generally use an estimate of the rate at which telephone numbers ring into eligible households to classify a fraction of these numbers of unknown disposition as eligible. Compared to the Lower-bound, these response rates increase the response rate calculation by not assuming all unscreened numbers belong to qualifying households. In addition, some "adjusted" response rates assign cases to the denominator where the respondent is eligible but unable to complete the interview due to impairment or language difficulties. One adjusted response rate is defined by Council of American Survey Research Organizations (CASRO) and is equivalent to AAPOR's Response Rate #3. Eligibility requirements were determined in accordance to AAPOR Standard Definitions.

For this study, this calculation produced a response rate of 39.5%.

c. *Upper-Bound /Cooperation Response Rate*

In contrast to the Lower-bound response rate, the Upper-bound response rate provides the most optimistic percentage of generally recognized response rates. The Upper-bound is a measure of staff performance and does not take into account sample quality (e.g. numbers that ring but are never answered), nor household behavior that prevents contact (e.g. privacy manager technology, screening calls using an answering machine, etc.).

Also known as AAPOR's Cooperation Rate #3, the Upper-bound response rate for this study was 55.9%

d. *All Rates—Presented by State, County, Stratum, and Cluster*

1. Weekly Field Status Report

The sample design allowed groupings of theoretically similar populations into strata and clusters. Listings of the above response rates by State, Stratum, Cluster, and County levels follow.

State	Stratum	Cluster	County	Lower-Bound	CASRO and AAPOR #3	Upper-Bound
Ohio				29.8	39.1	55.9
	App			32.7	43.8	58.0
	App	A1		32.2	40.9	54.5
	App	A1	Belmont	32.9	40.3	53.6
	App	A1	Columbiana	32.2	41.0	55.0
	App	A1	Guernsey	32.4	40.6	58.9
	App	A1	Harrison	33.9	51.3	62.3
	App	A1	Jefferson	31.1	39.2	51.5
	App	A2		30.0	43.5	57.9
	App	A2	Carroll	30.4	43.1	59.6
	App	A2	Coschoton	36.1	45.0	58.9
	App	A2	Holmes	27.4	42.7	58.1
	App	A2	Monroe	36.8	46.3	60.7
	App	A2	Noble	31.8	48.1	62.6

State	Stratum	Cluster	County	Lower-Bound	CASRO and AAPOR #3	Upper-Bound
	App	A2	Tuscarawas	32.3	42.0	55.5
	App	A3		35.2	45.3	59.2
	App	A3	Athens	34.1	48.2	65.7
	App	A3	Hocking	29.7	37.5	53.1
	App	A3	Muskingum	33.4	42.0	54.9
	App	A3	Perry	37.3	47.5	57.5
	App	A3	Ross	40.6	50.6	63.0
	App	A3	Washington	36.8	45.3	59.6
	App	A4		34.2	44.2	58.0
	App	A4	Gallia	33.3	41.5	55.9
	App	A4	Jackson	36.0	47.5	62.1
	App	A4	Lawrence	36.9	45.1	57.7
	App	A4	Pike	34.7	47.5	63.5
	App	A4	Scioto	32.5	42.2	56.3
	App	A4	Vinton	31.3	45.5	57.1
	App	A5		34.3	45.8	57.7
	App	A5	Brown	33.8	45.2	57.5
	App	A5	Highland	34.8	46.3	57.9
	App	A6		36.1	48.3	62.4
	App	A6	Adams	32.2	43.1	60.5
	App	A6	Meigs	36.2	48.9	62.4
	App	A6	Morgan	39.0	50.8	63.5
	App	A7	Clermont	29.5	37.1	57.3
	Met			25.9	34.7	51.2
	Met	M0	Hamilton	24.8	32.1	51.4
	Met	M1	Butler	25.2	32.2	50.3
	Met	M2		28.3	38.2	51.3
	Met	M2	Allen	30.2	45.2	56.9
	Met	M2	Lorain	27.7	36.1	49.8
	Met	M3		29.0	36.2	50.3
	Met	M3	Richland	30.3	38.9	51.4
	Met	M3	Stark	28.6	35.4	50.0
	Met	M4	Mahoning	26.1	34.1	47.5
	Met	M5	Montgomery	26.9	35.7	51.8
	Met	M6	Summit	25.2	33.9	50.2
	Met	M7	Cuyahoga	21.5	31.1	47.9
	Met	M8	Franklin	26.8	36.5	54.4
	Met	M9	Lucas	28.1	37.3	53.2
	Rur			31.3	43.4	57.8
	Rur	R1		32.6	45.4	58.0
	Rur	R1	Defiance	31.1	43.6	57.7
	Rur	R1	Henry	31.1	45.7	59.4
	Rur	R1	Paulding	36.2	48.7	58.5

State	Stratum	Cluster	County	Lower-Bound	CASRO and AAPOR #3	Upper-Bound
	Rur	R1	Williams	33.8	44.3	57.1
	Rur	R2		28.5	42.0	59.4
	Rur	R2	Hancock	31.0	43.2	58.6
	Rur	R2	Putnam	34.3	44.8	57.6
	Rur	R2	Shelby	20.0	29.4	57.9
	Rur	R2	Van Wert	33.9	46.5	59.0
	Rur	R2	Wyandot	34.1	51.2	71.0
	Rur	R3		31.8	45.0	60.1
	Rur	R3	Ashland	29.7	44.3	59.9
	Rur	R3	Champaign	37.0	47.1	62.8
	Rur	R3	Hardin	30.5	46.6	57.1
	Rur	R3	Knox	34.2	45.0	61.1
	Rur	R3	Logan	34.8	48.7	60.9
	Rur	R3	Ottawa	26.3	38.7	58.1
	Rur	R4		33.7	45.3	59.5
	Rur	R4	Ashtabula	32.7	44.0	57.1
	Rur	R4	Crawford	38.0	48.0	61.3
	Rur	R4	Marion	31.6	42.4	62.9
	Rur	R4	Morrow	35.6	49.3	58.0
	Rur	R5		33.5	45.8	59.0
	Rur	R5	Darke	35.2	47.7	59.4
	Rur	R5	Mercer	30.5	43.3	59.9
	Rur	R5	Preble	34.7	46.0	57.9
	Rur	R6		33.8	46.3	59.1
	Rur	R6	Huron	34.8	47.6	60.4
	Rur	R6	Sandusky	34.1	44.5	56.3
	Rur	R6	Seneca	32.8	46.8	61.1
	Rur	R7		30.3	42.1	55.9
	Rur	R7	Erie	29.5	39.7	55.6
	Rur	R7	Wayne	31.0	43.3	56.2
	Rur	R8		27.5	35.9	52.7
	Rur	R8	Clinton	25.5	37.8	49.2
	Rur	R8	Fayette	32.2	43.5	60.0
	Rur	R8	Warren	27.4	34.2	52.5
	Sub			30.6	40.6	54.9
	Sub	S1		32.3	42.2	56.7
	Sub	S1	Auglaize	36.9	46.6	58.2
	Sub	S1	Delaware	32.5	41.7	55.1
	Sub	S1	Madison	29.9	38.5	53.4
	Sub	S1	Miami	33.9	44.6	61.8
	Sub	S1	Union	27.7	37.3	50.7
	Sub	S2		31.6	40.4	56.5
	Sub	S2	Fairfield	31.2	39.8	55.6

State	Stratum	Cluster	County	Lower-Bound	CASRO and AAPOR #3	Upper-Bound
	Sub	S2	Greene	28.7	36.9	53.7
	Sub	S2	Licking	34.4	44.5	59.7
	Sub	S2	Pickaway	34.5	42.3	58.3
	Sub	S3		26.8	35.5	51.0
	Sub	S3	Geauga	22.9	32.6	51.7
	Sub	S3	Lake	25.2	32.9	48.4
	Sub	S3	Medina	29.0	37.6	50.1
	Sub	S3	Portage	31.4	40.1	57.4
	Sub	S4		31.1	43.4	57.7
	Sub	S4	Fulton	37.2	50.6	62.4
	Sub	S4	Wood	29.4	41.3	56.1
	Sub	S5		31.4	40.0	53.1
	Sub	S5	Clark	31.4	39.3	54.9
	Sub	S5	Trumbull	31.3	40.2	52.1
	Asian	AS	Statewide	35.0	37.2	57.5
	Hispanic	HS	Statewide	37.8	40.9	63.7
	Child	CC	Cuyahoga	28.7	40.6	61.6
	Hispanic	HC	Cuyahoga	39.0	41.1	60.5
	Child	CL	Lorain	35.6	44.7	60.6
	Hispanic	HL	Lorain	38.7	42.7	60.0
	Child	CS	Summit	33.3	42.0	60.4

e. Calculation of Response Rates

In order to accurately compute response rates, each record's history of attempts were analyzed, with the most significant indicator representing the record's final status. The following table shows major groups of general level outcomes, along with their priority and frequency of occurrence.

Rank	AAPOR Group	Label	Count, Main	Count, Oversample	Count, All Records
1	1.1	Completes (full interviews only)	36284	3669	39953
2	1.2	Partial Complete	4	4	8
3	2.1	Refusals and Break-offs	30599	9271	39870
4	2.2	Non Contact (incl. Answering Machines)	12775	4650	17425
5	4.4	Tech Circumstance (incl. Changed Number, Cellular Phones, Pagers)	81292	9310	90602
6	4.5	Non-Residence (incl. Businesses, Dorms)	23878	7275	31153
7	4.7	No Eligible Respondent (incl. No Adults, Not Qualified for Oversample)[11]	883	11085	11968

[11] 10,540 records in the oversample efforts are listed under AAPOR group 4.7 (No Eligible Respondent), but are similar to completes as explained in the introduction to this chapter.

8	4.2	Fax/Data Line	8193	2046	10239
9	4.3	Non-Working, Disconnected Number	73095	17467	90562
10	3.2	Housing Unit, Unknown if Eligible Respondent (Screener Not Completed)	27537	8701	36238
11	3.9	Unknown Eligibility, Other (incl. Language Barrier, Physical Impairment Preventing Interview)	1885	690	2575
12	3.1	Unknown if Housing Unit (incl. Consistent Busy Signals, Privacy Managers, Call Blocking)	17364	5259	22623

It is commonly recognized that response rates for survey research have been dropping over the past decade. While a response rate of 50% may have seemed unimpressive in 1994, it garners much more respect today. According to the Marketing Research Association, the average cooperation rate obtained across 475 member projects using a 15- to 20-minute questionnaire was only 30%.[12] Even respected government studies on potentially sensitive topics, such as the FDIC's *2001 Household Survey on Deposit Insurance Awareness*, have reported final response rates around 30%.[13] Since these response rates are undeniably a performance measure, there have been many comparisons among studies in an attempt to build a frame of reference in a changing field. These comparisons must be done with care since small changes in methodology can have significant impact on results.

For example, true random samples have a much lower proportion of eligibility compared to list-assisted random samples such as that used for the 2003-2004 OFHS, decreasing the effect of unknown households in some response rate calculations. Also, studies that require in-house respondent selection are particularly susceptible to low response rates because there is no opportunity to speak with more cooperative household members. Refusal rates are often correlated with respondent burden, and at 19 minutes, the 2003-2004 OFHS will have a lower response rate than a seven-minute general topic study of similar methodology. Even subtle differences, such as allowing a record to ring five times before being classified as "No Answer," influence response rates since decreasing the number of rings to three will avoid a significant portion of answering machines (which are classified as "Non-Contacts" instead of "Unknown if Housing Unit").

Even when operational methodologies are identical, there are potential differences in how the results are measured and reported. For example, not all studies will determine call attempts according to AAPOR standards. Specifically in this study, a record consistently reaching an answering machine was classified as a Non-Contact, while other studies could classify this as "No Answer." Likewise, any documentation of resistance will assure the ranking of the record as a Refusal for non-completed interviews in this study. Other studies may not document, or may choose to ignore, the resistance—considering the attempt as a reason to call the household at a later date. These examples are in addition to other factors previously mentioned, such as the selection of response rate calculation and incidence of the targeted population.

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[12] Marketing Research Association. "Rates by Interview Length". Retrieved March 2004 using an input range of 15 to 20 minutes. < http://www.mra-net.org/resources/respondent_cooperation/coop_rates_by_min.cfm>
[13] Darby Miller Steiger, et al. (2001). Household Survey on Deposit Insurance Awareness, April 2001. "Survey Report". Retrieved March 2004. <http://www.fdic.gov/deposit/insurance/initiative/household/>

Multiple studies have measured the effects of low response rates on data. ABC News has referred to the following research to support its assertion that interpreting the reliability of data should focus on high quality questionnaires and strong data analysis rather than response rates alone: [14]

- Scott Keeter et al. *Public Opinion Quarterly.* (Summer 2000). Very few significant differences were found between key opinion questions of two surveys, one resulting in a 36.0% response rate and another resulting in a 60.6% response rate.
- Richard Curtin et al. *Public Opinion Quarterly.* (Winter 2000). Curtin's results "replicate and extend the finding of Keeter et al. that significant serious differences in response rate had only minor effect on cross-sectional analyses."
- Peter Mariolis. *Report to the Statistics Canada Symposium.* (2001). Mariolis, of the Centers for Disease Control and Prevention (CDC), reported that data from a number of behavioral risk surveys with different response rates had results that were substantively the same, lending additional support to the positions of Keeter and Curtin.
- Peter Mariolis. "Response Rates and Data Accuracy." (Presentation to AAPOR, 2002). Mariolis concluded that declining response rates on CDC surveys had "no consistent or strong relationships between response rates and measure of gender, age, or race/ethnicity biases". He also found that two studies regarding cigarette smoking in Nevada produced prevalence rates within 1.5 percentage points of each other despite a 45% difference in response rates.

f. Analysis of Response Bias

While response rates are used as an indicator of the associated data's representation of the target population, representation among different groups may vary within the analysis. For example, while the overall response rate for the non-oversample effort was 38.8%, residents in Metropolitan areas were more difficult to profile than residents of Appalachian regions (response rates of 34.7% and 43.8% respectively). The same inconsistencies occurred within demographic groups, such as race or income level, but could not be measured using traditional response rate calculations since the eligibility of unscreened records was not known, nor was it possible to assign items like non-working numbers to a specific demographic group. Therefore, the percentage balance of demographic categories are often observed and compared to accepted population figures. Not only does this indicate representation, but also suggests the magnitude of bias that may be introduced when weighting figures back to the population.

The following three tables detail expected and observed (without weighting or imputation) percentages of the population classified by key demographic variables by stratum. The coverage of a group is measured by dividing its expected value by its observed value. Cells where the population percentage does not fall within the 95% confidence intervals of the observed percentage are flagged with an asterisk. The calculation for the confidence interval around a proportion is:

$$\pi = P \pm 1.96 \sqrt{P(1-P)/n}$$

[14] Gary Langer. (2003). Public Perspective. "About Response Rates, Some Unresolved Questions". Retrieved March 2004. <http://abcnews.go.com/images/pdf/responserates.pdf>

where P is the observed percentage of the cell and n is the sample size. Measures for the Metropolitan sample will inherently differ from population values for characteristics correlated to race due to the African American oversample effort in that stratum. Also, while each stratum contains clusters of statistically similar populations, disproportionate sampling between counties may account for a limited amount of discrepancy.

Race and Ethnicity

	White				Black				Hispanic			
Stratum	*expected*	*observed*	*coverage*	*difference*	*expected*	*observed*	*coverage*	*difference*	*expected*	*observed*	*coverage*	*difference*
Appalachian	95.5%	93.1%	97%	*	2.0%	1.7%	83%	*	0.6%	2.1%	323%	*
Metropolitan	76.0%	76.3%	100%		18.1%	16.7%	92%	*	2.3%	3.4%	146%	*
Rural	94.4%	93.8%	99%	*	1.9%	1.2%	65%	*	2.0%	3.0%	149%	*
Suburban	93.1%	91.9%	99%	*	3.5%	2.7%	78%	*	1.2%	2.4%	199%	*

Ratio of Income to Poverty Level

	Under 1.0				1.0 to 2.0				Over 2.0			
Stratum	*expected*	*observed*	*coverage*	*difference*	*expected*	*observed*	*coverage*	*difference*	*expected*	*observed*	*coverage*	*difference*
Appalachian	13.6%	17.2%	127%	*	20.7%	21.9%	106%	*	65.7%	51.5%	78%	*
Metropolitan	11.6%	15.1%	130%	*	15.3%	16.9%	110%	*	73.1%	58.4%	80%	*
Rural	7.9%	10.9%	138%	*	16.2%	19.4%	119%	*	75.8%	61.9%	82%	*
Suburban	7.3%	10.9%	149%	*	13.5%	17.5%	130%	*	79.2%	63.1%	80%	*

Gender

	Male				Female			
Stratum	*expected*	*observed*	*coverage*	*difference*	*expected*	*observed*	*coverage*	*Difference*
Appalachian	49.1%	43.2%	88%	*	50.9%	56.8%	112%	*
Metropolitan	48.1%	40.6%	84%	*	51.9%	59.4%	114%	*
Rural	49.4%	43.3%	88%	*	50.6%	56.6%	112%	*
Suburban	49.1%	43.9%	90%	*	50.9%	56.1%	110%	*

Oversample efforts, such as those profiling households with children, will intensify the imbalance of interviews; however, they will also provide a broader (and potentially more diverse) set of information from which to analyze these important subgroups—helping to ensure the reliability of estimates. Weighting will correct the balance of major demographics across the survey, but proper statistical analyses, including those involving variance estimates, should account for weights as they do sample sizes. This is especially true in cells with notably compensative weight values.

Potential sources of non-coverage bias for the oversample and non-oversample efforts include sample design, instrument design, and survey implementation.

<u>Sample Design</u>

Perhaps the most fundament underpinning of any population survey is the design of a random sample that is representative of the population of interest. ORC Macro utilized Genesys software to generate the telephone numbers included in this study, with the sample stratified at the county level (with the exception of ethnic oversamples). Although there are known potential biases that may exclude specific households from the study (e.g., households with no telephones), they are considered within the confines of acceptable error.

Most counties were framed for proportional coverage; therefore, the data collected should represent the population for that county. However, an African American oversample in select metropolitan counties (Montgomery, Summit, Cuyahoga, Franklin, Lucas, and Hamilton) required the generation of records disproportionate to the actual population. Specifically, census tracts with high incidences of African Americans were selected more frequently than those with lower incidences. While the data were weighted to appropriate levels during analysis, the raw numbers may, at first glance, appear to be of concern. Demographics that were correlated to race were affected accordingly, while others, such as gender, maintained better representation at a county level.

Instrument Design

When the fundamental unit of analysis is an individual, the random selection of a respondent within a household is often considered as important as the random selection of the household itself. The "Last-Birthday" method is regarded as a valid, reliable procedure for selection that minimizes respondent burden. Unfortunately, even when an interviewer implements this selection method properly, respondent error (either intentional or non-intentional) might impact the results. A study conducted by members of the Ohio State University and Nielsen Media, presented to the American Association for Public Opinion Research in 2000, cites interviews with the "incorrect" respondent (i.e., one other than the adult with the last birthday) in approximately 20% of households. This study concluded that errors were more commonly seen in households with numerous members or with lower levels of formal education. While no significant effects were found on key demographic measures in their study including age and gender, the unmeasured potential effects on this survey should be acknowledged.[15]

Survey Implementation

In survey research, the most common concerns regarding sources of bias usually focus on questionnaire implementation—the "fielding" phase of the survey project. Sources of error, regarding such tasks as the sample draw or survey design, are usually consistent, or at least controlled, during the fielding of the study. Moreover, their effects can be estimated through further research and analysis. Technology, such as CATI systems and dialing technologies, have standardized many aspects of data collection through the use of proper skip patterns, minimum number of attempts, call scheduling, and accurate dialing. Training programs attempt to standardize interactions between interviewers and respondents; however, the unique nature of each contact limits absolute uniformity.

The project management team for this study strived to minimize these potential sources of bias. Because the sample and instrument designs were assumed to be reasonably robust, the focus was centered on survey implementation. The ways in which bias was minimized occurred through: interviewer training, leaving messages on answering machines, creating a separate study for refusal conversion, the characteristics and performance of interviewers, and initial efforts at refusal conversion, all of which are described in detail below.

Interviewer Training: Interviewers were chosen for this project based on prior experience. Each completed an initial training that included proper CATI use and interviewing techniques. Every interviewer on the project also completed a project-specific training that delved into more advanced issues including specific refusal aversion strategies for the 2003-2004 OFHS.

[15] Paul J. Lavrakas, et al. (2000). "A Further Investigation of the Last-Birthday Respondent Selection Method and Within-Unit Coverage Error", Retrieved March 2004. < http://www.csr.ohio-state.edu/scholarship/lastbirthday.pdf>

Interviewers understood the importance of a dataset that is complete both on a record and on the individual question level.

A quality assurance team monitored and coached the interviewers on their performance during fielding. Each session was scored according to qualities such as rapport with the respondents, clarity of tone, consistency reading script verbatim, and accuracy of data entry. Final scores were reviewed with the interviewer during a coaching session; these sessions provide an opportunity for interviewers to receive advice regarding areas for improvement. If an interviewer's performance in any area was substandard, his or her performance was tracked. No interviewer was allowed to continue on the project if his or her performance was considered of low or moderate, or if improvement was not made.

Project management organized formalized refresher training sessions for all interviewers to ensure that project-related details remained fresh in their minds. The largest refresher training effort was developed around a quiz designed to identify the weakest areas of interviewer knowledge. A similar quiz after the training helped gauge its effectiveness, while helping solidify recently reviewed concepts.

Informal training also occurred, which included the use of bulletin boards in each center. The presentations were based on the Trivial Pursuit game using project related questions and were regularly updated based on current topics of focus. The displays generated much interest in the call center, conveying a sense of importance of the project as well as a desire to be familiar with its details.

Messages on Answering Machines: Interviewers left messages on answering machines requesting a call via a toll-free number upon the fourth and ninth attempts to a record. An ORC Macro programmer developed a utility developed for this which quickly indexed telephone numbers to permit smoother record retrieval and transition when a respondent called to complete an interview.

Creating a Separate Study for Refusal Conversion: If a household repeatedly resisted participation, it was moved to a refusal conversion study. Conversion studies were conducted from different call centers as was the original study, guaranteeing a separate set of interviewers and thinning the effects of any theoretical differences between centers. Most refusal conversions took place in the St. Albans facility, which has specialized in health studies since it opened in 1997. A specialized refusal conversion crew placed final attempts on each record, ensuring our most experienced interviewers contacted the residence.

Interviewer Characteristics and Performance: The ratio of male to female interviews for each interviewer was monitored since it is a consistent measure across populations and potentially affected by the selection procedure. Past performance ratings for interviewers with outlying monitoring values were reviewed and additional monitoring sessions occurred to verify proper survey implementation including acceptable refusal aversion skills. Although some monitoring sessions resulted in coaching opportunities, no glaring weaknesses were found. In many cases, the ratio of completes seemed associated with the ratio of the contacts themselves. In no cases did monitors find interviewers applying the selection procedure incorrectly.

Initial Refusal Conversion Efforts: ORC Macro attempted to convert all records with previous resistance—during this contact, interviewers conveyed the importance of the survey and ensured all respondent concerns had been addressed. ORC Macro's specialized Refusal Conversion Staff, which operates from a call center that specializes in high-response rate government studies and is dedicated to work with difficult-to-complete records, made these calls. Not only does this approach assure that the most challenging records are handled by experts in refusal conversion, it diminishes any potential biases that could be associated by call center.

This stage of the call process was extremely successful, gathering over 7.2% of all completes for this base section of the study. However, while refusal conversion attempts helped increase response rates and better represent difficult-to-reach members of the population, they did not always result in significantly improved coverage across all portions of the population as the table below illustrates.

	Result of Conversions			
Cluster	Population Reference	Initial Attempts	Refusal Conversion	Difference between Init. and Ref.
Gender (Male)	48.5%	41.7%	43.5%	
Race (White)	84.0%	85.3%	83.9%	
Age (18 to 44)	38.7%	46.6%	40.7%	*
Poverty (LT 1.0)	10.6%	14.2%	14.0%	
Poverty (GT 2.0)	73.6%	58.3%	53.8%	*

g. Number of Those Who Used the "Short" Version of the Child Survey

If a respondent was resistant to completing a child's profile, an abbreviated set of questions was utilized to gather critical data. This shortened version of the questionnaire was used by 3.2% of households with children in order to avert refusals.

D. Issues with Survey Implementation

a. CATI Changes After Full-scale Data Collection

ORC Macro conducted a comparison between the actual number of responses to individual questions and the expected number of responses based on the CATI logic. This section of the report presents only those items where inconsistencies between expected and actual responses occurred. The table below lists the question number, describes the problem, documents the number of interviews affected, and describes how ORC Macro rectified each issue.

Question	Problem	# of Affected Interviews	ORC Macro Solution
J105	The skip pattern was missing a reference to J96a and A1A. Therefore, respondents who inappropriately skipped this question were those with children whose coverage was reported as different than the adult's.	19	On November 6, the skip pattern was modified to read, "If code '02', '98', '99' in J96 OR code '02', '98', '99' in J96a OR code '02','98','99' in A1a OR code '01' in i91a."
J117, 117a, b, c	The skip pattern was missing a reference to J96a and B4C.	15	On November 6, the skip pattern was modified to read, "If code '01' in J116 and (J100C = '02', '98', '99' or (J96a ='01' and B4C = '02', '98', or '99'))."
K99a, K99b	The skip patterns referred to K98a, rather	20	On November 6, the skip patterns were

Question	Problem	# of Affected Interviews	ORC Macro Solution
	than K98.		changed to read K98a.
S10, S11	If intro1 = '5' (callbacks), the above items were skipped.	132	The CATI program was fixed on December 8.
H84, H86	If S11 was missing, then H84 was skipped, which resulted in the incorrect income categories appearing in H86.	132	The solution presented above for question numbers S10 and S11 resolved the issue for questions H84 and H86, thus no further action was required.
O142	If O141a = '2', O142 was skipped.	17	The CATI program was fixed on December 8.
M136	If M135 = '01' or '02', M136 was skipped.	74	The CATI program was fixed on December 8.
B21	Respondents were incorrectly asked B21 after saying "no" to B19. All were covered by Medicaid.	23	This appeared to be a CATI error—all with '02' in B19 should have skipped to B25, been autocoded as '01' in B25, and then resumed at B27. Changing CATI to do this would prevent future respondents from unnecessarily and inappropriately being asked B21 and B22. The skip pattern was changed on January 23, 2004. Extra responses were cleaned in post-processing.
J96, J105	Nine respondents who should have been asked J105 were not because the CATI reference at J96 omits a reference to i95a. The CATI note before J96 should read //If (code "01" in A1 OR 01 in A1A) and (code "01" in i95 or code '01' in i95a) and (code "02" in i91a)//. This omission affected children who were initially not reported as insured in i95, but then were reported as insured in the follow-up question i95a. Because of this omission, some respondents were incorrectly and unnecessarily asked the detailed insurance series (J100) instead of J96. This error resulted in the J105 series being skipped because the universe for J105 is dependent on the response to J96 (Note that the CATI fix done for J105 on November 6 did not address this issue).	9	Solution 1: The CATI note before J96 should read //If (code "01" in A1 OR 01 in A1A) And (code "01" in i95 or code '01' in i95a) AND (code "02" in i91a)//. Solution 2: Changed skip pattern on January 23, 2004. All affected respondents were included in the re-contact study. Extra responses were cleaned in post-processing
J104A & N138	Respondents were inappropriately asked a series of questions about their child's use of specialists twice—once beginning at J104A and then again at N138. This was due to the CATI reference at N138 referring to I95 instead of I95a (like the above problem, it involves children who were initially not classified as insured at i95, but later reclassified as insured at i95a).	10	Changed skip pattern on January 23, 2004. Extra responses were cleaned in post-processing.
S10, S11	If intro1 = '5' (callbacks), the above items	132	The CATI program was fixed on

Question	Problem	# of Affected Interviews	ORC Macro Solution
	were skipped.		December 8.
J117b	Respondents who said “no, dk, or refused” in j117 inappropriately skipped j117b.	157	The CATI program was fixed on January 23.
S11	There was a problem with the layout, which truncated s11	134	The CATI program was fixed on January 23.
D31a	If s15=99 (unknown gender) respondents skipped d31a and went directly to d31b. If s15=99, they should get the second version of the text (“Do you currently need or take prescription medicine?”) at d31a.	6	The CATI program was fixed on March 22.
B19	23 respondents were incorrectly asked B21 after saying “no” to B19. All were covered by Medicaid. This was a CATI error— all with ‘02’ in B19 should have skipped to B25, been autocoded as ‘01’ in B25, and then resumed at B27. Changing the CATI prevented future respondents from unnecessarily and inappropriately being asked B21 and B22	23	The CATI program was fixed on January 23.
J105	Nine respondents who should have been asked J105 were not because the CATI reference at J96 omits a reference to i95a. The CATI note before J96 should read //If (code “01” in A1 OR 01 in A1A) and (code “01” in i95 or code ‘01’ in i95a) and (code “02” in i91a)//. This omission affected children who were initially not reported as insured i95, but then reported as insured in the follow-up question i95a. Because of this omission, some respondents were also incorrectly and unnecessarily asked the detailed insurance series (J100) instead of J96. This error resulted in the J105 series being skipped because the universe for J105 is dependent on the response to J96. The affected respondents were added to the recontact study for this series since the CATI fix performed for J105 on November 6th did not address this issue.	9	The CATI program was fixed on January 23
H85 & H86	At the onset of 2004 fieldwork, all calendar year references in the questions were changed from 2002 to 2003. In total, there were four such references to change. In addition, income categories were changed from the 2002 to the 2003 poverty level cutoffs.	n/a	January 1
Oversample records	Records in the over-sample efforts were screened using the standard instrument,	598	These records were removed from the data file during post-processing to allow

Question	Problem	# of Affected Interviews	ORC Macro Solution
	allowing non-targeted records to complete a full interview.		for proper weighting.

b. Recontact Study

To obtain the missing responses identified above, ORC Macro conducted a Recontact Study.

Per the 2003-2004 OFHS dialing protocols, at least 15 attempts were made to each record. At the end of data collection, data from the Recontact Study was merged to the main dataset using SAS.

c. Difficulties Encountered During Data Collection

The following difficulties were encountered during data collection:

- Obtaining missing responses,
- Identifying and correcting incorrect skip patterns,
- Temporarily utilizing the standard screener in over-sample efforts,
- Minimizing non-response bias,
- Minimizing the differences between expected versus actual percentages of respondents by gender, race/ethnicity, age, and income,
- Maximizing response rates, and
- Respondent complaints.

The next section describes each difficulty and how it was addressed.

<u>Obtaining Missing Responses</u>

As described above in section *III.D.a: CATI Changes After Full-scale Data Collection*, there were nine instances where the questionnaire logic did not match the intended questionnaire skip patterns. The skip patterns were corrected in the CATI program for each; however, to provide a complete dataset, ORC Macro administered a Recontact Study for all affected records. As described earlier in this report, nine logic errors were identified, two of which corresponded to ODJFS key data points. If ORC Macro was unable to obtain responses for the key data points, the record did not count toward the final quotas, but was available for analysis.

<u>Identifying and Correcting Incorrect Skip Patterns</u>

There were two CATI program modifications—to correct skip patterns and to reduce respondent burden. ORC Macro revised the CATI questionnaire logic to accurately reflect the survey's intended skip patterns, and the revised program was tested extensively and activated immediately. The second round of CATI program modifications were requested to reduce respondent burden. ORC Macro made three modifications to reduce respondent burden on January 23rd, 2004. These included:

- All with code ‘02’ in B19 should be skipped to B25, autocoded as ‘01’ in B25, and then resumed at B27.
- Adding the reference to I95a in the CATI note before J96 so that it reads //If (code “01” in A1 OR 01 in A1A) And (code “01” in i95 or code ‘01’ in i95a) AND (code “02” in i91a)//. (Note that the CATI fix done for J105 on November 6th did not address this issue).
- Changing the CATI reference at N138 from I95 to I95a so that respondents were not asked the series of specialist questions twice.

<u>Temporarily utilizing the standard screener in over-sample efforts</u>

During a correction of the CATI instrument, over-sample records became associated with the general screener that did not filter out non-targeted households. Additional data records were collected for clusters targeting Hispanic and Asian populations, as well as households with children. Due to methodological and weighting considerations, it was not possible to incorporate these additional records to the final data file. They were reclassified as non-qualified households and their data was removed from the final file during post-processing.

<u>Minimize Non-response Bias</u>

To minimize non-response bias, ORC Macro conducted refresher interviewer trainings for all 2003-2004 OFHS interviewers and call center supervisors. To determine what the refresher training should focus on, call center staff were given a short questionnaire to complete, to assess their general knowledge of the survey, the survey protocols, and how they would react to a variety of situations that might be presented to them by respondents.

To address the issues of non-response bias by gender, race, and income, and to support a low refusal rate, ORC Macro spent a portion of the refresher training on interviewers’ refusal aversion/conversion efforts. The importance of a high response rate was re-emphasized to the data collection staff.

Project-related bulletin boards in the call centers provided an additional avenue to communicate additional training information and material covered in the refresher trainings.

<u>Minimize Expected Versus Actual Differences by Gender, Race/Ethnicity, Age and Income</u>

There were differences between respondent and population demographics (gender, race/ethnicity, age, and income). However, some inequities regarding respondent representation (e.g. gender, age brackets, income levels, ethnicity, etc.) will always occur due to study design, sampling, protocols, etc. For example, the African American oversample in specific Metropolitan counties over-represented high African American population telephone exchanges. This over-representation of African Americans affected the percentages of all other racial/ethnic groups and did not do so consistently across segments, thus resulting in a lower-than-expected incidence of other racial/ethnic groups. In addition, the study was only designed to conduct interviews in English and Spanish; therefore, racial/ethnic minorities who did not speak these languages were excluded from the interviewing process, also resulting in a difference between respondents and the overall population.

Other imbalances, such as income, diminished over time, although they did not disappear altogether, as individuals of different income levels were more or less likely to participate in survey research. [16] The imbalance between genders was consistent throughout fielding and documented in the literature as an effect of the survey protocols. However, the gender difference was slightly more pronounced than what is typically seen in a survey of this nature (the male/female ratio was 42/58, although ratios of 44/56 are more common). For this specific example, ORC Macro observed the gender ratio of completes conducted by each interviewer to ascertain whether the resulting ratio was systematic, or was based on individual performance.

The quality assurance and project management teams paid particular attention to these items (gender, race/ethnicity, age, and income), monitoring refusal aversion efforts and ensuring that interviewers applied the selection procedure correctly across households. Project management staff also reviewed interviewer data to identify systematic problems (ensuring that all interviewers were obtaining similar data).

In addition to standard call center quality assurance measures, ORC Macro project management actively monitored interviewer performance. Interviewers effectively applied selection procedures and refusal conversion measures. Custom reports were created to flag interviewers with completed records consisting of questionable demographic composition suggesting a systematic non-response bias problem with technique.

Maximizing Response Rate

ORC Macro's calling protocols encouraged and promoted survey participation and sample retention. Making it easy for individuals to participate in a survey, particularly by telephone, is critical to achieving high response and cooperation rates.

Here are the steps ORC Macro pursued to ensure valid, reliable data for the 2003-2004 OFHS, which also improved the survey's response rate:

- Tested interviewers to guarantee proper knowledge, appropriately design and develop refresher trainings, and gauge the effectiveness of these trainings.
- Worked intensely with interviewers in individualized training and coaching situations.
- Regularly reviewed interviewer performance including ratios of completion, refusals, and scheduled appointments. Interviewers with unusual male/female completion ratios were also evaluated.
- Excluded interviewers with sub-par performance from participating on the project if the situation was not quickly rectified.
- Created the CATI program so that it allowed interviewers to interrupt and restart interviews at any point during the survey, allowing respondents with busy schedules to complete the survey in more than one call.
- Non-response conversion staff, selected based on experience and performance, called back 100% of initial refusals.

[16] Groves, Robert M., and Mick P. Couper. 1998 *Non-Response in Household Interview Surveys.* New York: John Wiley and Sons.

- Bilingual interviewers re-contacted records initially coded as a language barrier and attempted to convert them to completes.
- Modified the introduction to present respondents with more compelling reasons why they should participate, while interviewers were trained to listen to and address objections raised by respondents.
- Provided a toll-free number that respondents were able to call to verify the legitimacy of the study and/or to complete the survey at their own convenience.
- Messages were also left on answering machines to allow respondents to call back to complete the survey.

Respondent Complaints

Due to the nature of this data's usage, the response rate is a critical concern for this study. This is why ORC Macro re-attempts records in hopes of finding household members amenable to completing a survey.

The protocol was to re-attempt first refusals at different dates and times. When this did not work, a final, third attempt was made after a longer period (minimum two days). This last attempt was made by more experienced interviewers; the tone of this final conversion attempt was much more passive, with probing such as "Did the interviewer answer all your questions?", "Can I help address any concerns that you might have?" and finally "Do you have a moment to complete the study?" This approach was chosen so not to upset respondents who might already have been angered by previous attempts.

In order to minimize the number of respondent complaints, ORC Macro:

- Ensured that interviewers at all levels were trained to code any requests to "take me off of your list" as a firm refusal, not making any remaining calls to those numbers.
- Lengthened the time between calls to each respondent so that more time transpired before an additional contact.
- Conducted refresher trainings, focusing on the first minutes of the telephone call to potential respondents, and techniques that could be used to encourage participation. The additional training also focused on refusals, particularly in persuading individuals to participate in the study who initially refused.

To follow-up on any complaint registered by a respondent, ORC Macro:

- Determined if the refusal protocol was followed correctly and subsequently reviewed the work of the interviewers involved to verify their performance and professionalism (and made sure any performance-related issues were improved upon in future situations).
- QA supervisors reviewed previously monitored sessions and observed current interviewer performance. . They assessed the interviewers' general ability to respond to these types of situations appropriately.
- Supervisors verified that interviewers resolved definite refusals (e.g., "remove me from your sample") correctly. If there were any concerns regarding performance, interviewers either received additional training or were removed from the project, whichever was most appropriate.

d. Dispositions with an Unusually High or Low Percentage

The following table displays AAPOR standard classifications for the outcomes of attempts that provide the most information regarding the standing of each record. Successfully screened non-qualifying records in the oversample clusters are categorized as "complete interviews" to allow better comparison with RDD efforts.

		Standard Screener	Oversample Screeners	All Records Attempted
	Total sample attempted	313,789	79,427	393,216
1.1	Complete interview (+OS screened)	11.6%	17.9%	12.8%
1.2	Partial interview	0.0%	0.0%	0.0%
2.1	Refusals and break-off	9.8%	11.7%	10.1%
2.2	Non-contact	4.1%	5.9%	4.4%
3.1	Unknown if HH	5.5%	6.6%	5.8%
3.2	Housing unit, unknown if eligible	8.8%	11.0%	9.2%
3.9	Other unknown eligibility	0.6%	0.9%	0.7%
4.2	Fax or data lines	2.6%	2.6%	2.6%
4.3	Non-working	23.3%	22.0%	23.0%
4.4	Other technical, incl. tri-tones	25.9%	11.7%	23.0%
4.5	Non-Residence	7.6%	9.2%	7.9%
4.7	No eligible respondent	0.3%	0.7%	0.4%

Likely explanations for the discrepancy between values include:

- The oversample efforts include listed sample while the sample for standard screener clusters contain only random sample.
- Oversample regions consisting of only a subset of the statewide scope displayed for the standard screener.
- The influence of screening on overall response rates (i.e., an interview lasting the length of the screener generally achieves a higher response rate than a full 20 minute questionnaire). Referring to the results of the 1998 OFHS Methodological Report, the final sample status between the 1998 fielding and 2003/2004 standard screener fielding compare as follows.[17]

		1998	2003-2004
	Total sample	56,723	313,789
1	All Completes	28.67%	11.60%
2.1	All Refusals	8.38%	9.80%
2.2	Non Contact, including sample deactivated because of achieved quota	14.48%	4.10%
3	Unknown eligibility	17.13%	14.90%
4	Nonworking, business, etc.	31.34%	59.70%

[17] For this table: Noncontacts include "answering machine" and "callback screener complete"; Unknown eligibility includes records screened because of items such as illness or deafness; as well as consistent busy signals on each attempt to a household.

While the inconsistency between the percentage of sample resulting in completes initially seems extreme, it is due in part to a change in the fielding protocols where sample was not deactivated upon the completion of minimal quotas. The general decline in response rates for telephone surveys, as discussed in subsection C, is also a significant factor in causing this change.

The inconsistency of non-working and business numbers could signify either an irregularity in classifications or a difference in the sampling frame. It is much more likely that it is attributable to additional area codes and exchanges being activated to accommodate the growth of Ohio's telecommunication needs over the past five years. According to Marketing Systems Group, the company that produces the Genesys sampling software system, the hit rate for households in a nationwide 1+ block RDD sample is about 40%, while about 10% of numbers will ring to businesses. This is consistent with the figures observed in the past fielding of the OFHS.

At the end of fielding in 2004, approximately 13.6% of all records received a non-resolved status such as "no answer", "busy", or "unspecified time for callback". Only 0.5% of all records had not met a protocol of resolution or three weekday, seven weeknight, and five weekend attempts. Over 90% of records not meeting protocol had at least 10 of the 15 required attempts.

Approximately 57.3% of sample loaded in the current fielding was discarded as non-working or ringing to a business. The percentage of non-working numbers in targeted ethnic oversampling was significantly below random generated sample because it originated from surname lists whose sources include telephone book listings.

In the clusters using the standard screeners, the response rate was slightly lower than for the sample for the clusters using the modified screener. Much of this difference is attributable to the abbreviated set of questions required for many households, decreasing the interviewers' ability to avert refusals and increasing their ability to obtain answers for all required questions. For the standard screener, completes constituted about 28.8% of records presumed to ring to households, while slightly less (24.3%) were resolved as refusals and break-offs.

E. Limitations of Survey Method

There are several inherent sources of error commonly recognized in telephone-based research.

a. Interviewing in English and Spanish Only

The State of Ohio includes a diverse citizenry, and the study design of the 2003-2004 OFHS took some of this into account, creating oversample efforts for groups including Asians and Hispanics, and conducting interviews in both English and Spanish. However, this excluded participation from non-English, non-Spanish speakers who likely have a distinct set of challenges relating to medical services and insurance coverage. This includes many who speak only an Asian language, and who were intended to be represented in the oversample effort.

b. Protocol

There is also a practical limitation regarding the limited number of attempts made to contact each respondent. A CATI system was utilized to ensure a proper number of attempts distributed across an acceptable amount of time at varied times during the day and week. Unresolved records averaged over 12 attempts at the end of fielding, with approximately two thirds of active records receiving at least three weekday, seven weeknight, and five weekend attempts. Numbers were rarely re-attempted by the CATI system more than once during a 24-hour period. Despite this dialing protocol, cases undoubtedly existed where actual attempts did not correspond with respondent availability for screening. Since completed interviews required five attempts on average, we anticipate this percentage of records is nominal, but should be acknowledged.

c. Using a Telephone-Only Methodology

As discussed in prior sections of this Methodology Report, declining response rates for telephone-based projects have been of concern over the past decade. Much of the decrease has been attributed to the public's aversion to increasing telemarketing, although the creation of the National Do Not Call Registry is expected to diminish its effects. However, technologies that function as automated gatekeepers, such as answering machines and call managing services offered by telephone companies, make it easier for respondents to avoid research calls passively, not giving interviewers a chance for conversion. While weighting data minimizes many distortions, the adoption of technologies tend to be correlated to demographics, introducing some level of inaccuracy to the final data of most projects.

The adoption of a multi-mode collection protocol (e.g., adding a mail or Internet component, or adding a mailing to promote call-in interviews) should be considered for future iterations of the survey. These added modes will help represent portions of the population which would not be represented through telephone efforts alone. These recommendations are more fully detailed in *Chapter V*.

d. Inability to Reach Respondents Without a Telephone or a Land-line

Like most large-scale studies, people residing in group-quarters such as prisons, hospitals, and dormitories were excluded from this study. This introduces a level of bias because corresponding demographic traits are not always consistent with population figures. For example, nursing homes are not used by all age groups proportionally, and the racial composition of the incarcerated population does not match that of the overall population.

While it is assumed that most households have telephones, approximately 3% of households do not. The demographic profile across this segment reveals that roughly 5% of householders under the age of 35 do not have telephone service, compared to approximately one quarter of that percentage for the 65+ age group (fn: Census 2000). In theory, proper weighting factors should restore much of the balance of representation.

Issues regarding mobile telephone use have fostered lively debate among survey researchers. Up until the past several years, mobile technologies were in limited use, as these were costly for users, and there were problems with geographic assignment. However, increased affordability and the portability of numbers have made many households rely more on this form of communication, some going as far as eliminating their traditional land-lines. While the sampling frame for the 2003-2004 OFHS did not include designated mobile telephone exchanges (the traditionally accepted methodology), the decision created a barrier in reaching a certain segment of the population, likely of a non-random demographic composition.

Inclusion of these exchanges should be considered in future iterations of the survey, as more work is done to determine the effects of excluding this expanding population.

e. *Sample Design*

Respondents were selected randomly from each household, not because of their level of knowledge about their heath needs and insurance coverage. Weaknesses are introduced to the data by documenting the inaccuracies of the respondent's responses.

Respondents also influenced the accuracy of the data based on the level of consideration, seriousness, and accuracy to which they answered the questions. Interviewers were trained to guide the respondent as much as possible, prompting for thorough answers that addressed the posed questions. Although this helped support the quality of the data, ultimately the respondent is the one who controls how accurate his or her responses are.

f. *Instrument Design*

Also included in respondent-based inaccuracies are those that involve the selection procedure. "The Last Birthday Method" was used to select a random member of the household. While it is commonly cited as a simple and minimally intrusive selection procedure, its disadvantages potentially include misinterpretation of instruction and a lack of familiarity with other household members' birth dates. While it has been cited that 20% of selections using this method are inaccurate,[18] the distribution of respondents seems similar to four other selection procedures, including Kish and Troldahl-Carter.[19] Again, while weighting compensated for many of these issues, its potential impact on error should be noted.

Although great care was placed on cognitive testing of the instrument, there were still some identifiable weaknesses in the questionnaire. Some questions did not consistently elicit the desired information from the respondents, such as the question "What kind of business or industry do you primarily work in?". Each issue will need to be addressed individually, and solutions such as providing pre-coded lists for interviewers with follow-ups for specification, would need to be created.

g. *Nonresponse Bias*

In addition to bias related to coverage, gaps were created in the data file when a respondent did not know, or refused to answer, any specific question during a survey. While an effort was made to minimize this non-response, refusal categories were required for each question on this survey because it was conducted in accordance with the Privacy Act of 1974. There were several programming errors that resulted in missing values for specific questions. Recontact efforts allowed most errors to be corrected; however, not all were—including a limited number of demographic responses.

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[18] Paul J. Lavrakas, et al. (2000). "A Further Investigation of the Last-Birthday Respondent Selection Method and Within-Unit Coverage Error", Retrieved March 2004. < http://www.csr.ohio-state.edu/scholarship/lastbirthday.pdf>

[19] John M. Kennedy (1993). "A Comparison of Telephone Survey Respondent Selection Procedures", Retrieved June 2004. < http://www.indiana.edu/~csr/aapor93.html>

h. *Response Bias*

In sampling situations, any deviation from population figures signifies some level of bias in the data. Robust methodologies, such as the ones used for the 2003-2004 OFHS, will usually reduce these inaccuracies to statistically acceptable levels. Actions such as weighting data eliminate the appearance of bias in some variables, but do not generally guarantee improved accuracy for remaining data points. This is why levels of error incorporating design effects must be considered during analysis before conclusions are formed.

Likewise, it is also important to consider the issue of item non-response while analyzing the 2003-2004 OFHS data. Questions related to subject matter that many respondents may not be familiar with may create disproportionate non-response across groups. For example, the ability to answer some specific health insurance questions may be correlated to age or income level—i.e., an eligible respondent under 21 years of age still on parental insurance may not be aware of the costs of premiums. This could alter the demographics of those represented, allowing for incorrect conclusions regarding the general population.

Despite these potential sources for error, following the designated research methodologies has assured that the data collected is comparable to the previous wave of the survey, and results reflect population characteristics given calculated statistical margins of error.

IV. Analysis

A. Dataset

To collect the data, ORC Macro used programs written in CfMC Survent software, which is a computer-aided interviewing software package. Data collected during interviewing was stored in a CfMC compressed column binary file with the extension .tr. The file that managed telephone numbers for telephone interviewing had an extension .fon., which stored telephone numbers, all sample data (master identification number, ZIP code, address, etc.), telephone parameters (zone, times available to call, etc.), and results of each call (attempt number, disposition, callback time, etc.).

The final dataset submitted was created in SAS and saved as a SAS Transport File.

B. Data Processing Procedures and Quality Assurance

a. *Converting the Data*

The SAS procedures for post-processing performed the following tasks in order to convert the data for analysis:

- Imported the raw interview data from ASCII into a SAS dataset.
- Imported the ASCII phone file into a SAS dataset.
- Recoded both unresolved and resolved CATI dispositions into a final set of dispositions, so that a final CASRO value could be determined and final disposition frequencies generated.

- Created a special text file to facilitate recoding open-ended data; this procedure automatically uppercased and left-justified all open-ends, and sorted them according to the name of the question; this file was manually edited by the team of coders, who inserted a numeric code on any record that required recoding.
- Merged any necessary phone file information onto the interview data.
- Merged the recoded open-end values and cleaned open-end text for a report showing all open-ended text and recodes.
- Performed final cleaning and/or recoding of data values.
- Outputted final ASCII deliverable file.
- Read ASCII deliverable back into SAS to run frequency checks.
- Produced SAS deliverable dataset; this procedure kept only the final variables in the dataset, dropping any intermediate variables. Variables were then renamed and labeled according to specifications.
- Generated final frequency checks from the SAS deliverable.

b. Cleaning the Data

1. Inconsistent Responses

Some inconsistencies in the data could not be rectified with the CATI program during the interview. The following describes these inconsistencies, along with the corrective action steps taken for each.

- **Inconsistencies due to incorrect open-end recoding:** There were a few occurrences where the open-ended response did not match the question (i.e., Why was it a problem seeing a specialist—"It was not a problem to see a specialist." The initial question asking whether it was a problem should have been answered, "Not a problem.") These were resolved and fixed in the open-end recoding programs.
- **Inconsistencies due to respondents providing contradictory responses:** In certain cases, consistency checks were not included because the respondent burden required to fix the response would jeopardize the completion of the interview as the interviewer would be required to back-track through many screens. For example, if a respondent stated that there were more adults in the family than in the household, the CATI script was programmed to verify this information. If the respondent stated that their response was correct, the inconsistency remained. These inconsistencies remained in the final dataset
- **Inconsistencies introduced during post-processing:** Occasionally, respondents provided contradictory responses, and the steps to correct the inconsistency yielded further complications. For example, if a respondent mentioned that he or she was insured through a current job, he or she was automatically coded as being employed. The next question asked the same respondent to indicate place or employment. Some respondents answered that they did not work or that they had lost their job. This inconsistency remained.

2. Outliers—Out-of-range Responses

The CATI program developed for the 2003-2004 OFHS was designed to minimize inconsistent responses throughout the questionnaire, and range checks were set to appropriate limits on responses. For example, if a question asked "How many days in the last month did you drink alcohol?" the answer should fall between zero and 31. Some range checks were "hard" in the sense that the computer would not allow an out-of-range response to be entered; some were "soft" and required that the interviewer verify the response before entering it. Consistency checks verify that responses matched one another across questions. For instance, a respondent may have said in response to one question that her or she has two children living in the household. Later on in the survey, that respondent was asked how many of the children were covered by health insurance—if the respondent answered "three," a consistency check prompted the interviewer to reconcile the responses between the two questions.

3. Missing Values

After working with ODH to identify candidate variables for imputation at the household and individual levels, ORC Macro conducted data imputation—rather than accept high levels of non-response resulting from "don't know" or "refused" responses, or from questions not asked. Please see section *IV.C: Imputation Method* for more information about imputation.

Responses for questions that were not asked, due to a skip pattern or a terminated interview, were asked in a recontact study. At least 15 attempts were made to each record, following 2003-2004 OFHS dialing protocols. At the end of data collection, data from the recontact study was merged to the main dataset using SAS. Responses not obtained via the recontact study that were also not key variables appear as a "." in the dataset.

Both "don't know" and "refused" were consistently coded throughout the questionnaire as 98 and 99, or 998 and 999.

c. Coding Open-ended Responses

Questions in a survey research instrument may be presented to the respondent with differing degrees of structure depending on data usage and error checking requirements. A close-ended question provides a list of possible answers from which the respondent may choose. An open-ended question requires the respondent to answer in his or her own words.

An example of a close-ended question is "Which spreadsheet program are you most familiar with?"—with "Excel," "Quattro Pro," and "Lotus 1-2-3" given as choices. However, the question could easily be transformed into an open-ended version by not reading the aforementioned choices.

The benefits of posing questions in an open-ended format without pre-coded lists are more easily seen when observing actual questions from the 2003-2004 OHFS. Some of these questions include:

- What are the reasons you were uninsured during the past 12 months?
- What is the main reason you do not have a usual source of care?
- What is the main reason you usually go to the emergency room instead of a doctor's office or clinic?

By asking these questions in an open-ended manner, the respondent's knowledge of a subject can be ascertained without the influence of interviewer prompts; moreover, answers otherwise missed can be recorded.

This section describes the procedures followed by ORC Macro staff to collect accurate data, monitor data quality, code responses, and ensure the quality of coding—as related to open-ended questions.

Interviewer Training

Each new interviewer and supervisor was trained in the proper techniques for collecting verbatim data. Issues such as clarifying answers that are unclear and probing for more information are covered, emphasizing the use of neutral questions that do not influence respondents' answers. Interviewers were instructed to type in responses verbatim, but were permitted to omit restatements of the question and nonessential words such as "a," "an," and "the". Commonly recognized abbreviations were also acceptable, although discouraged if there was time to type full words. Quizzes were conducted at the end of training to ensure that concepts were understood and able to be applied.

Monitoring the Quality of Data Collection

Open-ended questions were routinely monitored to assure data quality. QA staff observed interviewing and documentation techniques as interviewers were conducting surveys. Weaknesses were addressed with interviewers immediately, with specific details of what deficiency occurred and how situations should be addressed in the future. Project management staff also frequently reviewed responses. Any potential problems or suggestions were conveyed to the manager of the data collection center.

Assessment of Manual Coding

The following describes the procedures followed by ORC Macro staff to code the open-ended responses, including the quality control procedures taken to ensure the validity and reliability of the coding.

Procedures Used to Code Open-Ended Responses

ORC Macro developed a program that has been used in many of its CATI surveys to code, back-code, or recode open-ended responses. The program, called fixopen, was written in the Perl scripting language. A related SAS program, called fixopen.sas, generated a file of the open-ended responses and then retrieved the edited open-ended responses for final data processing.

The steps involved in the coding, back-coding, or recoding of open-ended responses is as follows:

1. A codebook was created that summarized the description and response codes for each call variable, the variable that calls for the respondent to give an open-ended response, followed by the resulting open-ended variable, the variable that contains the open-ended response. For example, for question B20A "Why //do you/does person in S1// no longer have this coverage?", the call variable becomes PB20A as follows, and the open-ended variable becomes B20A.

   PB20A Why no longer covered by Medicaid
   01 Earn too much money now to qualify
   02 Obtained other coverage

03 No longer receive welfare/cash assistance/ADC/TANF
04 No longer disabled or qualified as disabled
05 No longer qualified, but not sure why
06 Do not need it any more
07 Do not want to go through application process again
97 OTHER (SPECIFY)
98 DK
99 REFUSED

B20A Why no longer covered by Medicaid-Verbal

2. The fixopen program read the codebook and created a keyword file, which included summary data on each call and open-ended variable, the text of each response code, and a list of keywords obtained by parsing of the response code label. For example, for PB20A above, the keyword file would contain the following summary data on the call and open-ended variable:

   B20A PB20A 1 (97) WHY NO LONGER COVERED BY MEDICAID-VERBAL.
   Then, it would include the text of each response code:

   01 EARN TOO MUCH MONEY NOW TO QUALIFY
   02 OBTAINED OTHER COVERAGE
   03 NO LONGER RECEIVE WELFARE/CASH ASSISTANCE/ADC/TANF
   04 NO LONGER DISABLED OR QUALIFIED AS DISABLED
   05 NO LONGER QUALIFIED, BUT NOT SURE WHY
   06 DO NOT NEED IT ANY MORE
   07 DO NOT WANT TO GO THROUGH APPLICATION PROCESS AGAIN
   98 DK
   99 REFUSED

   Keywords would follow the text for each response category. Below is an example of the keywords for the first category.

   EARN, TOO, MUCH, MONEY, NOW, QUALIFY

3. Fixopen examined the open-ended file by scanning each open-ended response for matches to any of the respective response code keywords. The matching process used three methods:

   a. Exact match;

   b. Matches obtained by addition, deletion, or substitution of one character; and

   c. Matches obtained using the soundex system, which creates a code based on the sound of a word. For example, the soundex codes for SPECIALIZED and SPECIALIST are the same, and therefore, would result in a match.

4. If one or more matches were found, the open-ended response, and all matching response codes, were presented to the user, who either:

   a. Selected the most appropriate coding;

b. Flagged the data for more detailed handling; or

c. Made no change, thus leaving it as a multi-matched response (this would occur when an open-ended response matches with more than one defined response category, and the question allows for multiple responses).

5. The call variable may also have been asked after the respondent answered "no" to a range of related categorical questions, and the open-ended response indicated that they should actually have responded "yes" to one or more of those questions. Fixopen may be configured to include additional response codes related to such questions. If a match was found and the decision was made to recode the open-ended to one of the precursor questions, fixopen created SAS coding in a separate file to reset the call variable, erased the open-ended response, and set the precursor question to "yes". For example, in the following questions, if the respondent said "no" to D37A-F, then said "yes" to D37G and "help with bathing" was recorded in D37G1, fixopen could be programmed to: code D37A to 01; code D37G to 02; and delete the response in D37G1.

D37. //Do you /Does Person in S1// currently need any of the following types of assistance BECAUSE OF THAT/THOSE HEALTH PROBLEM(S) you just told me about?

A. Assistance with personal care, such as bathing, dressing, toileting, or feeding?
B. Domestic assistance, such as shopping, laundry, housekeeping, cooking, or transportation?
C. Help with household maintenance, such as painting or yard work?
D. Social or emotional support, such as companionship, recreation, and socialization?
E. Coordinating health care, such as making appointments for doctor's visits or therapies?
F. Assistance managing financial affairs, such as managing //your/person in S1's// checkbook or legal affairs?
G. Other kinds of assistance that I have NOT mentioned?

01	*YES*
02	*NO*
98	*DK*
99	*REFUSED*

D37G1 //If D37G=01 ask, else continue//

What other kind of assistance //do you/does person in S1// currently need, BECAUSE OF THE HEALTH PROBLEM(S) that you told me about?

01	*/TEXT RANGE=270/*___________________________________
98	*DK*
99	*REFUSED*

6. If the open-ended response indicated that more comprehensive recoding was required (such as recoding of more than one precursor question, recoding of

variables preceding and/or following the call variable, etc.), the data was flagged for further review by the coding team or project manager.

7. After the coding was completed, an edited open-ended file was created, to be subsequently read back in by fixopen.sas, and then merged with the final dataset.

An advantage to the above approach is that it determined what changes had been made to any call or open-ended variable—by comparing the raw and edited open-ended files and examining the SAS code files generated by fixopen.

<u>Quality Assurance for Coding Classifications</u>

The manual coding of open-ended survey responses carries a variety of quality assurance steps to ensure the validity and reliability of data. The 2003-2004 OFHS project manager verified the first 100 assigned codes from each coder. This verification effectively predicted the overall performance of each individual coder and determined what additional training might be required. Random samples of coded responses were then drawn to measure intercoder reliability.

d. Quality Review

ORC Macro had several programs to check the consistency of data. SAS programs were utilized for data checking and cleaning because the programs contained a history of steps that were performed. In addition, frequencies were checked for a correct count.

e. Data Formatting

Formatting data involved labeling each variable. Upon producing each deliverable dataset, only the final variables in the dataset were kept.

C. Imputation Method

ORC Macro developed different strategies for imputing critical variables at the household and individual levels. Generally, “hot-deck” imputation methods were used for the OFHS. Hot-deck methods estimate the missing value of an item using the values of the same item from other similar record(s) in the same file. One advantage of this method is that related items can be imputed as groups to preserve internal consistency and statistical relationships between items to the greatest extent possible. Hot-deck, as opposed to model-based methods, preserve the distribution of non-missing responses in the imputed items thus avoiding the problem of artificially lowered variances. Hot-deck methods are widely used in a variety of reputable federally sponsored surveys, and were used in the 1998 OFHS.

The key to hot-deck imputation is the strategy used to link “donor” records with the records containing items to be imputed. Donor records are the set of records with non-missing values for the item being imputed that are used to impute, or “donate” a non-missing value to a record with a missing value for that item. These strategies can be thought of as defining imputation classes that are formed by grouping donor records. Donor records are grouped on items thought to be related to the item being imputed. Imputation classes for income, for example, may include demographic, geographic and occupation items. For demographic items, classes are developed that take into account the structure of relationships within the household. Once an imputation class is defined, a record is selected randomly to donate values from within the class for each record in that class with a missing item.

For the OFHS, the variables considered for imputation were grouped into two general classes: person-level demographics, such as age, race, gender, and education; and household-level measures, such as income. ORC Macro based the selected variables and imputation methods on an examination of the missing rates for these items in the context of their impact on weighting, analysis, and the feasibility of imputation given available information and time. The sections below describe the methods used to impute the following variables.

Person level demographics:

- Age
- Race/Ethnicity
- Level of Education

Household level variables:

- Number of adults and children in the household

Income

- Number of telephone lines
- Telephone service history

a. Person-level Demographics

Person-level demographics that were imputed were age, race/ethnicity, and educational status. These items are critical to the construction of survey weights (as is gender, but it is very unlikely to have missing data). The imputation process was designed to yield values for these items that would be consistent with the rest of the demographic items on the person's record, as well as with the same items for a child for households including a child interview.

Similar hot-deck imputation methods were used for the following demographic variables:

- Age (6 categories),
- Education (7 categories),
- Race (4 categories), and
- Ethnicity (2 categories).

With the random hot-deck procedures, records were sorted at random within clusters (defined earlier in terms of county groupings and the list supplements). As described earlier, a donor was identified for each record within each imputation cell (cluster).

b. Household-level Variables

Two categories of household-level variables were identified for imputation: 1) variables needed for weighting, and 2) variables of analytic interest. The former category includes:

- the number of adults in the household, needed for the computation of adult-level sampling weights (based on the probabilities of selection for adults)
- the number of children in the household, needed for the computation of child-level sampling weights (based on the probabilities of selection for children)
- the number of telephone lines, needed for the computation of household-level sampling weights (based on the probabilities of selection for households)
- telephone service interruptions over the past 12 months, needed fore the computation of weight adjustments for under-coverage

The latter category of variables of key analytic interest includes income variables. Several key estimates are defined in terms of income; for example, estimates related to health insurance by level of income.

Imputation was performed first for the demographic variables used in weighting: age, education, and race/ethnicity. (Separately, imputation was also conducted for other variables used in the weighting: number of adults and children in the household, and number of telephone lines.) As described below, these demographic variables were also used to impute income at a subsequent stage of imputation. These demographic variables were imputed with hot-deck methods using county clusters as imputation cells.

c. Imputation of number of adults and number of children

The empirical distributions were also used for the number of adults, S11, and number of children, S13, to impute the values missing for these two variables, and hence also for the derived family size variable (H84). The imputation method ensured that the proportions of records with missing data on children (S13) that were assigned 0, 1 or 2+ children followed the similar proportions observed for the records with available data. Similarly, the proportions for number of adults, S11, imputed 1, 2 or 3, followed the empirical proportions observed for the non-missing data. Additional imputation cells were not created for these variables as there was a small number of records with missing data (e.g., 164 records).

d. Income Imputation

There are several family income variables including:

- H85, actual incomes expressed as yearly or monthly incomes and standardized to yearly total income
- H86, income categories organized separately by family size (H84),
- H87, percentage in specified poverty levels (or brackets), calculated as a function of H86.

A stepwise imputation strategy was developed that first imputes H84 as a function of (imputed) number of adults and number of children, S11 and S13, respectively, as described earlier.

The next step was the imputation of H85, annual family income, using multivariate regression models that are stratified by region; i.e., involving four separate regression models for the four regions plus two separate regression models for the Hispanic and Asian supplement samples. The methodology used for the variable H87 is described more in depth later in this section.

Income was imputed with regression models that capitalize both on the continuous nature of this variable and on the wealth of potentially useful predictors. Based on preliminary bivariate analyses, the predictors included geography, age, education, race/ethnicity and an indicator for households with children headed by a single female. Because the relationship of income with age is not linear with lower incomes at younger and older age groups on the average, we included a quadratic term for age in the models.

Separate regression models were also fit in each of the four regions—Appalachian, Rural, Suburban and Metro—and also for the two ethnic supplements (Asian and Hispanic supplement samples). For the latter supplements, race/ethnicity was not included among the independent variables in the model.

To help assess the impact of imputation of income, a simulation study of its effects was performed by comparing the imputed values for random sub-samples of those records that had non-missing values for income. The investigation results showed that the imputation methods generated income values that were in the same or in the next income category for 2/3 of the imputed values.

The final step was the imputation of H86 (and H87) in a manner that made these values consistent with H85 as reported. Therefore, the initial step in imputing H86 consisted of assigning the category corresponding to the continuous income, H85, where reported.

The imputation of H86 then utilized hot-deck methods to assign income categories for those records that were missing both H85 and H86. This subset was organized by levels of H84 (family size), i.e., divided into eight cells defined by H84 levels. The imputation method for the categorical income, H86, ensured that the imputed variable has a distribution in each cell similar to those values reported in the cell. To apply random hot-deck methods within each cell, the records were sorted by race/ethnicity and region subgroups, and then at random within each subgroup.

e. Evaluation of Hot Deck Imputation Method Used for Income Imputation in the OFHS

The concept for the evaluation was based on a measurement of imputed values against actual values for a random subset of records with income present. For each record, the imputed income, Yhat(j) for record "j", with the actual income, Y(j) are compared. Two random half-samples were prepared, one for imputation and one for validation. For hot deck (HD) methods, it is necessary to generate a relatively small random sub-sample (within strata) to be used for validation.

A data set without records with imputed values for the income variable, H86 (or Y) was prepared. That is, a preliminary step created a working data set, W, by deleting those records that were missing the H86 value. The following steps were performed with repeated replication 100 times (i.e., for 100 random sub-samples).

Step 1 Select a random sub-sample of 20% of the records (in W) that have a non-missing value for H86 (categorical income, key variable) in each stratum. This sub-sample will be the validation subset, set V (say).

Step 2 For the data set V, perform the HD imputation method as used in income imputation for H86 (variable Y). This step will generate an imputed value, Yhat(j), for each record-j in the sub-sample.

Step 3 Compare Yhat(j) with the actual value Y(j)=H86(j). Compute the difference D(j) =Yhat(j) – Y(j) for each record-j, and then

- the sum of the absolute values of D(j), S say
- the number of times D(j) is non-zero, N say

At the end of the 100 replications (sub-samples), summary measures of the discrepancy between Y and Yhat, including the averages of S and N (over all 100 subsamples) were computed, resulting in two-thirds of imputations providing actual results.

D. Weighting Method

a. Sampling Weights

Sampling weights were computed for each selected telephone number as the reciprocal of its probability of selection. For stratum-i within county area-j (that is, county or cluster of counties), the weight is N(i,j)/n(i,j). Here, N(i,j) is the number of telephone numbers in the exchange density stratum, and n(i,j) is the sample size allocated to the stratum.

To compute household-level sampling weights, these initial weights needed to be adjusted in two ways. The first adjustment accounts for households with multiple phone lines that are assigned greater probabilities of selection. (The adjustment factor was truncated at 3 to minimize unequal weighting effects.) The second adjustment accounts for coverage of households that have intermittent telephone service. This adjustment is based on data collected on the length of time each participating household may have had service disconnected in the past 12 months.

Adult-level weights are then computed from household-level weights by adjusting for the random selection of adults within households. Similarly, child-level weights are computed by accounting for the selection of one child in households with more than one eligible child. (These adjustment factors were truncated at 4 to minimize unequal weighting effects.) As described in the next sections, these weights were all adjusted for non-response.

b. Adjustments for Undercoverage

The weight adjustments also account for the portion of the household population without telephone service at the time of the survey. These adjustments are based on the subset of respondents who report intermittent or interrupted service in the previous 12 months. The adjustments will reduce potential biases to the extent that this sub-population tends to have characteristics that are similar to the non-telephone sub-population. Specifically, the adjustment factor for each such household is a function of the number of months they have had interrupted service. (The adjustment factor was truncated at 3 to minimize unequal weighting effects.) The set of households eligible for the adjustment was restricted to those having interruptions of at least 7 days for economic reasons. The sum of the adjusted weights matched the estimated total of telephone households in the state.

c. Combining weights for Hispanic and Asian samples

List samples were used for two targeted minority groups, Asians and Hispanics, to supplement the samples obtained via RDD. For these two groups, separate weights were first computed for the RDD and list sample components; then, the weights were combined within post-strata.

The premise of combining the two data sets is that the two sample components are independent samples representing the same population. From a variance minimization perspective (e.g., Pedlow and O'Muircheartaigh, 2002; Iachan et al, 2003)[20†], a combined weight may be computed as a linear combination of the two separate weights. The combined weight was computed separately within each post-stratum (i) as follows for each record-j:

WT(j, i) = a(i)*WTL(j) if unit-j is in the list sample

= {(1-a(i)}*WTD(j) if unit-j is in the RDD sample

The post-stratum cell-specific coefficients, a(i), are proportional to the effective sample size, n'(i) = n(i)/DEFF(i), for each sample component.

20

Pedlow, S. and O'Muircheartaigh (2002). Combining Samples vs. Cumulating Cases: A Comparison of Two Weighting Strategies in NLSY97. Presented at the Joint Statistical Meetings, August 2002.
Iachan, R., Robb, W. and Saavedra, P. (2003). Combining samples for school surveys: the HBSC example. Presented at the Joint Statistical Meetings in San Francisco, August 2003.

The design effects, DEFF(i) for each post-stratum (i), were computed separately for each sample component as 1+CV**2 where CV is the coefficient of variation of the weights.

d. Post-Stratification Adjustments

Post-stratification adjustments are designed to make the sum of the adjusted weights within each post-stratum cell match population totals that are known for each such cell. Post-stratification factors include race, age, gender, and geography. For the 2003-2004 OFHS survey, such adjustments were made separately for the adult and child-level weights.

For both adult- and child-level weights, Census county totals for various demographic variables were aggregated to compute cluster and regional totals. Both adult-level weight adjustments and child-level weight adjustments were separately made in each of the four major racial/ethnic groupings—Asians, Hispanics, Blacks and Whites and Others.

For adult-level weights, post-stratum cells were then defined by race/ethnicity, gender, education and geography, with the use of clusters for Whites and Others, and regions for the other racial groups.[21] In addition, for two groups, Blacks and Whites and Others, the larger samples allowed finer post-stratum cells that were further broken down by education.

More specifically, four education categories were used for adults of age 25 and older in the Blacks and Whites and Others racial groups. These categories were consistent with the Census education categories for which totals are available for post-stratification. Unlike the other age groups, the age group 18-25 was not broken down by education and gender. For the other ages (25+), in summary, post-strata were then defined as follows:

- For Whites and Others, by cluster, gender and education
- For Blacks, by region and education

Population control totals used in post-stratification were obtained from the U.S. Bureau of the Census data sources. Updated, synthetic estimators were computed based on the 2000 Census data for each county combined with county population totals available for 2003. Specifically, for each cross-class or category (i,j) and each county-k, we computed cell proportions P(i,j;k) using the each cross-class (i,j) (category) from the 2000 Census data. Then, the county 2003 population total N(k) for county-k was used to to estimate the new (2003) cell total as: N(k)*P(i,j;k)

For child-level weight adjustments, post-strata were based on race/ethnicity and region.

e. Trimming

Both sets of adjusted weights, adult- and child-level weights, were trimmed to avoid the undue influence of a few extremely large survey weights. These extreme weights would not only affect point estimates but also lead to increased variances for survey estimates. To preserve adjusted weighted population estimates, trimming cells coincided with post-strata, i.e., trimming was performed independently within each post-stratum. No trimming was necessary for the

[21] Regions were defined using the re-classified County of residence data actually reported by the respondent rather than the initial county associated with the sampling.

Hispanic and Asian samples. Final weights are denoted WTFINAL for adults and WTF_CHILD for children.

E. Sampling Error

a. *Designed Precision*

///

b. *Resulting Precision*

///

F. Data Usage

a. *Assessment Data Quality*

2003-2004 OFHS data quality can be examined based on a variety of aspects, including the questionnaire's quality, the sample plan's design and implementation, response and cooperation rates, feedback from the 2003-2004 OFHS interviewers, results of quality assurance interviewer monitoring, and verification interviews. Based upon a review of these aspects, the 2003-2004 OFHS data should provide a statistically accurate description of actual characteristics of the Ohio general population.

The following section provides an individual assessment of data quality based on the aspects listed above.

1. Questionnaire

The data gathered from the instrument is of high quality—as indicated by the following;

- The questionnaire went through rigorous testing, both in the 1998 and 2003-2004 survey iterations to identify and revise invalid and/or unreliable items;
- Many of the items in the questionnaire were obtained through other questionnaires that are known to have already tested for their validity and reliability;
- Throughout data collection, over 10% of interviews were monitored by QA and project management staff, as well as by the ODH and ODJFS; any minor problems found were identified and resolved; and
- A validity study was conducted which found that 81% of successful contacts were validated with high consistency, 2% were validated, and 17% were validated with inconsistencies. After a review of the records that were validated with inconsistencies, the differences in responses were minimal and did not warrant eliminating the data. In addition, links between the quality of the data and interviewer performance were not found during the validation interviews.

2. Sample Design and Implementation

///will complete once weighting completed. Include use of clusters in analysis. For example:

The original sample design was intended to provide reasonable data estimates for clusters of similar counties. Sample sizes for individual counties will allow for reasonable independent evaluation in some cases. If county cells have insufficient data to provide accurate estimates directly from the response data, then the cluster level may be utilized to profile a larger, similar population at a reduced variance level.

Correcting weights for a clustered sample design does not inherently produce a data file balanced to county populations but is well suited for many analyses across larger groups. Future sample designs must consider the level of data use at the state, region, and county levels in order to determine whether it is appropriate for needs.

Stratifying over-sample exchanges by anticipated African American incidence increased the accuracy of estimates for the population more efficiently than a more traditional random digit dial approach, yet added a layer of complexity to the weighting process.

3. Response and Cooperation Rates

As described in detail in section *III.C: Response Rates* response and cooperation rates for the 2003-2004 OFHS were 39.5% and 55.9% respectively. As previously documented, rates such as these are commonly seen in recent large scale projects and have been accepted for providing statistically reliable results when obtained using proper collection methodologies.

4. Interviewer Feedback

Interviewers had a variety of suggestions for modifications to the survey, ranging from shortening the introduction to rewording some of the questionnaire items. The following is a summary of their suggestions:

- **Introduction:** shortening the introduction so to stress the importance of the survey without being repetitive. This may reduce the number of refusals and hang-ups, as respondents did not want to listen to the entire introductory section. Interviewers also found that some modification to the introductory text could minimize confusion respondents had as to the purpose of the survey.
- **Item modification:** simplifying some of the questions, such as those asking about health insurance identification and health assistance. This may enable respondents to more quickly and effectively answer the question as well as reduce the number of inapplicable open-ended responses. Interviewers also suggest modification to the questions with scales, as respondents had trouble understanding how to respond.

5. Summary Results of Interviewer Monitoring

As noted in section *III.B: Quality Assurance Procedures, Data Collection Quality Control, Interviewer Monitoring*, the average monitoring score was 81 out of 100, with a low of 41 and a high of 98. As previously discussed, an average score of 81 does not mean that the data were 81% valid, as interviewers rarely receive a perfect score of 10 on each aspect they are rated on. In comparison to similar studies ORC Macro has conducted, average monitoring scores range from 79 to 89, which further allows one to assume that the data are valid.

6. Summary Results of Verification Interviews

In addition to the other quality control efforts ORC Macro undertook for the 2003-2004 OFHS, 10% of all respondents who completed an interview were recontacted to verify their response. Of the records where a contact was made 81% were validated with a high consistency between responses, 2% were validated, and 17% were validated with some inconsistencies. One would not expect that 100% of the data would be validated with a high level of consistency for a variety of reasons, such as some questions ask about judgments which may change depending on when the interview was conducted, how much time occurred between the initial and verification interviews, as well as that some records were verified with a proxy due to a more liberal proxy policy undertaken for the verification interviews, and it is widely documented in the literature that differences occur between proxy and self-reported data.[22] [23] [24] [25] [26] [27] [28]

b. *Instructions for Using Weights*

For the purposes of design-based (variance) estimation, the data file includes the following design variables:

- WTFINAL, WTF_CHILD, adjusted survey weights for adult-level and child-level estimates and analyses.
- STRATUM, a stratum indicator for generating design-based variance estimators. This variables documents 90 levels and is an amalgam of the counties where separate independent samples were selected with equal probabilities, and the list supplements selected for the Asian and Hispanic target ethnic groups.

Sampling variances for the weighted estimates that account for the complex sample design can be computed with statistical software such as SUDAAN, STATA or SAS Proc SurveyMeans.

An example SUDAAN statement would necessitate a Nest statement where STRATUM is specified, and a Design statement with a "WR" specification for a with-replacement sampling design (approximation). An example follows for a health insurance variable that is tabulated by region.

```
Proc Descript Data="data_wgt.ssd" Filetype=sas Design=WR;
        Weight      WTFINAL;
```

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[22] Todorov, A. Cognitive procedures for correcting proxy response biases in surveys. Applied Cognitive Psychology. 17: 215-224 (2003) Published online in Wiley InterScience 28 November 2002 (www.interscience.wiley.com) DOI: 10.1002/acp.850

[23] Ellis, BH, Bannister WM, Cox, JK, Fowler, BM, Shannon, ED, Drachman, D, Adams, RW, Giordano, LA. Utilization of the propensity score method: an exploratory comparison of proxy-completed to self-completed responses in the Medicare Health Outcomes Survey. Health and Quality of Life Outcomes, 2003, 1:47. 2003 Ellis et al;

[24] Bassett SS, Magaziner J, Hebel JR. 1990. Reliability of proxy response on mental health indices for aged, community-dwelling women. Psychology and Aging 5: 127–132

[25] Epstein AM, Hall JA, Tognetti J, Son LH, Conant L. 1989. Using proxies to evaluate quality of life. Medical Care 27(Suppl. 3): 91–98.

[26] Kovar MG, Wright RA. 1973. An experiment with alternate respondent rules in the National Health Interview Survey. Proceedings of the Social Statistics Section, American Statistical Association: Washington, DC; 311–316

[27] Mathiowetz NA, Groves RM. 1985. The effects of respondent rules on health survey reports. American Journal of Public Health 75: 639–644

[28] Mathiowetz NA, Groves RM. 1985. The effects of respondent rules on health survey reports. American Journal of Public Health 75: 639–644

Nest STRATUM;
Var INSUR_A;
Tables REGION;
Subgroup REGION;
Levels 4;
CatLevel 1;
Title "OFHS, Percent of adults insured by region";
Print Percent SEPercent;

c. Limitations and Cautions When Using the Data

The 2003-2004 OFHS carries with it the following limitations and cautions reading use of the data.

- The data was collected via telephone only, and it was conducted via land-lines only (cellular-phone only households were excluded). A telephone-only approach precluded the ability to:
  - Collect information from consumers of the sampled population without valid telephone numbers.
  - Maximize the number of attempts to reach non-respondents; a mail and telephone survey method increases the number of attempts.
  - Reach respondents in a manner that is most suitable for themselves; for example, respondents with limited speaking abilities may be more likely to conduct the survey via mail because they will not be required to talk to an interviewer.
  - Minimize bias that may result from only one mode of data collection; a study conducted in 1998 with the SF-36 questionnaire found that younger adults were more likely to refuse to participate when the study was administered via mail, while older adults were more likely to refuse telephone interviews.[29]
- Interviews were only conducted with households that could speak English or Spanish well enough to be interviewed. Thus, non-English and non-Spanish speaking households were excluded from the survey. As identified by the final dispositions, less than 1% of households contacted were unable to complete the survey because of a language barrier situation. A disproportionate amount of records belonged to the sample targeting Asian households.
- Sample targeting Asian and Hispanic households originated from surname filters on listed phone number rosters. While adding to the practical ability to over-sample these populations and providing a more complete insight of such households, these lists are not random. Therefore the validity of the data is ultimately associated with the coverage of sampling company's master list.

[29] Perkins JJ, Sanson-Fisher RW. (1998) An examination of self- and telephone-administered modes of administration for the Australian SF-36. *Journal of Clinical Epidemiology*, 51(11); 969-73.

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- The literature indicates that the use of proxies can introduce bias to the survey results. A number of studies have shown consistent differences between self and proxy report.[30] [31] [32] [33] [34] [35] [36] The research has shown that proxies have difficulty measuring another person's behaviors and/or disabilities because they have a different perception of the behavior or disability when it is not their own. The availability of the information also can be an issue when utilizing proxies as they may not have the direct knowledge to accurately respond about another person's behavior or opinions. However, the use of proxies, and the bias it introduces, may lessen the bias introduced had no information been collected at all regarding these respondents and their households—non-response bias.[37]
- The inability to verify the information collected—and the reliance on self-reported insurance status and health behaviors—is another limitation of the study. While interviewer monitoring and the validation study verified the information as recorded by the interviewers, this survey's protocols did not allow for the verification of respondent's insurance status—by obtaining a copy of their insurance card. Research has shown that differences occur when comparing claims data and medical records to self-reported information provided in a telephone survey.[38]

The above limitations as they relate to the ability to use the 2003-2004 OFHS data, are standard to any RDD telephone survey in that:

- The data can only be generalized to the population surveyed (i.e., the information cannot be generalized to households without telephones).
- Comparisons made to other data sources for Ohio must be done so with the understanding that differences in the data could result from differences in the how the survey was designed and conducted—not necessarily due to actual differences in the population of interest.

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[30] Todorov, A. Cognitive procedures for correcting proxy response biases in surveys. Applied Cognitive Psychology. 17: 215-224 (2003) Published online in Wiley InterScience 28 November 2002 (www.interscience.wiley.com) DOI: 10.1002/acp.850

[31] Ellis, BH, Bannister WM, Cox, JK, Fowler, BM, Shannon, ED, Drachman, D, Adams, RW, Giordano, LA. Utilization of the propensity score method: an exploratory comparison of proxy-completed to self-completed responses in the Medicare Health Outcomes Survey. Health and Quality of Life Outcomes, 2003, 1:47. 2003 Ellis et al;

[32] Bassett SS, Magaziner J, Hebel JR. 1990. Reliability of proxy response on mental health indices for aged, community-dwelling women. Psychology and Aging 5: 127–132

[33] Epstein AM, Hall JA, Tognetti J, Son LH, Conant L. 1989. Using proxies to evaluate quality of life. Medical Care 27(Suppl. 3): 91–98.

[34] Kovar MG, Wright RA. 1973. An experiment with alternate respondent rules in the National Health Interview Survey. Proceedings of the Social Statistics Section, American Statistical Association: Washington, DC; 311–316

[35] Mathiowetz NA, Groves RM. 1985. The effects of respondent rules on health survey reports. American Journal of Public Health 75: 639–644

[36] Mathiowetz NA, Groves RM. 1985. The effects of respondent rules on health survey reports. American Journal of Public Health 75: 639–644

[37] Hendershot, G.E. The effects of survey nonresponse and proxy response on measures of employment for persons with disabilities. Hendershot, version 6, January 24, 2003.

[38] Fowles JB, Rosheim, ZK, Fowler, EJ, Craft C, Arrichiello, L. The validity of self-reported diabetes quality of care measures. International Journal for Quality in Health Care 11:407-412 (1999).

G. Summary Statistics

a. Demographic Summary of All Completed Interviews

The following presents a demographic summary of the 2003-2004 OFHS for the entire study overall, as well as by stratum, cluster, and predicted county, and for each of the oversamples (Asian, Hispanic, and County-level demographic targeted sample). The summary statistics presented below include: age, gender, race, and income as a percent of poverty. Reports were generated using imputed values in order to provide a better description of population coverage.

Age by Sample County
(Percentages in parentheses)

Strata	Cluster	County	ALL COMPLETES	18-24	25-34	35-44	45-64	65+
			39953	3542 (8.9)	7289 (18.2)	8581 (21.5)	14173 (35.5)	6368 (15.9)
Appalachian			8155	709 (8.7)	1361 (16.7)	1652 (20.3)	2975 (36.5)	1458 (17.9)
Appalachian	A1		1094	82 (7.5)	154 (14.1)	209 (19.1)	440 (40.2)	209 (19.1)
Appalachian	A1	Belmont	241	11 (4.6)	28 (11.6)	50 (20.7)	101 (41.9)	51 (21.2)
Appalachian	A1	Columbiana	396	33 (8.3)	61 (15.4)	79 (19.9)	153 (38.6)	70 (17.7)
Appalachian	A1	Guernsey	145	11 (7.6)	28 (19.3)	16 (11.0)	68 (46.9)	22 (15.2)
Appalachian	A1	Harrison	43	4 (9.3)	6 (14.0)	7 (16.3)	20 (46.5)	6 (14.0)
Appalachian	A1	Jefferson	269	23 (8.6)	31 (11.5)	57 (21.2)	98 (36.4)	60 (22.3)
Appalachian	A2		1846	166 (9.0)	293 (15.9)	378 (20.5)	684 (37.1)	325 (17.6)
Appalachian	A2	Carroll	127	3 (2.4)	18 (14.2)	27 (21.3)	60 (47.2)	19 (15.0)
Appalachian	A2	Coshocton	159	16 (10.1)	27 (17.0)	34 (21.4)	59 (37.1)	23 (14.5)
Appalachian	A2	Holmes	921	92 (10.0)	151 (16.4)	190 (20.6)	329 (35.7)	159 (17.3)
Appalachian	A2	Monroe	88	4 (4.5)	12 (13.6)	19 (21.6)	38 (43.2)	15 (17.0)
Appalachian	A2	Noble	67	7 (10.4)	10 (14.9)	14 (20.9)	20 (29.9)	16 (23.9)
Appalachian	A2	Tuscarawas	484	44 (9.1)	75 (15.5)	94 (19.4)	178 (36.8)	93 (19.2)
Appalachian	A3		1052	90 (8.6)	185 (17.6)	222 (21.1)	374 (35.6)	181 (17.2)
Appalachian	A3	Athens	222	27 (12.2)	41 (18.5)	33 (14.9)	84 (37.8)	37 (16.7)
Appalachian	A3	Hocking	85	4 (4.7)	16 (18.8)	20 (23.5)	28 (32.9)	17 (20.0)
Appalachian	A3	Muskingum	294	23 (7.8)	50 (17.0)	74 (25.2)	105 (35.7)	42 (14.3)
Appalachian	A3	Perry	88	10 (11.4)	14 (15.9)	23 (26.1)	22 (25.0)	19 (21.6)
Appalachian	A3	Ross	204	15 (7.4)	42 (20.6)	44 (21.6)	68 (33.3)	35 (17.2)
Appalachian	A3	Washington	159	11 (6.9)	22 (13.8)	28 (17.6)	67 (42.1)	31 (19.5)
Appalachian	A4		1162	100 (8.6)	221 (19.0)	232 (20.0)	400 (34.4)	209 (18.0)
Appalachian	A4	Gallia	147	19 (12.9)	19 (12.9)	29 (19.7)	56 (38.1)	24 (16.3)
Appalachian	A4	Jackson	151	5 (3.3)	31 (20.5)	33 (21.9)	47 (31.1)	35 (23.2)
Appalachian	A4	Lawrence	291	31 (10.7)	51 (17.5)	61 (21.0)	104 (35.7)	44 (15.1)
Appalachian	A4	Pike	108	12 (11.1)	16 (14.8)	24 (22.2)	34 (31.5)	22 (20.4)
Appalachian	A4	Scioto	405	27 (6.7)	92 (22.7)	76 (18.8)	134 (33.1)	76 (18.8)
Appalachian	A4	Vinton	60	6 (10.0)	12 (20.0)	9 (15.0)	25 (41.7)	8 (13.3)
Appalachian	A5		1194	120 (10.1)	217 (18.2)	256 (21.4)	414 (34.7)	187 (15.7)
Appalachian	A5	Brown	558	51 (9.1)	113 (20.3)	131 (23.5)	189 (33.9)	74 (13.3)
Appalachian	A5	Highland	636	69 (10.8)	104 (16.4)	125 (19.7)	225 (35.4)	113 (17.8)
Appalachian	A6		1005	77 (7.7)	142 (14.1)	192 (19.1)	370 (36.8)	224 (22.3)
Appalachian	A6	Adams	236	19 (8.1)	40 (16.9)	38 (16.1)	83 (35.2)	56 (23.7)
Appalachian	A6	Meigs	389	31 (8.0)	53 (13.6)	65 (16.7)	149 (38.3)	91 (23.4)
Appalachian	A6	Morgan	380	27 (7.1)	49 (12.9)	89 (23.4)	138 (36.3)	77 (20.3)
Appalachian	A7	Clermont	802	74 (9.2)	149 (18.6)	163 (20.3)	293 (36.5)	123 (15.3)
Metro			16849	1514 (9.0)	3093 (18.4)	3417 (20.3)	6050 (35.9)	2775 (16.5)
Metro	M0	Hamilton	1598	157 (9.8)	310 (19.4)	298 (18.6)	569 (35.6)	264 (16.5)
Metro	M1	Butler	1090	99 (9.1)	211 (19.4)	240 (22.0)	367 (33.7)	173 (15.9)
Metro	M2		1236	107 (8.7)	218 (17.6)	265 (21.4)	435 (35.2)	211 (17.1)
Metro	M2	Allen	294	25 (8.5)	53 (18.0)	57 (19.4)	101 (34.4)	58 (19.7)
Metro	M2	Lorain	942	82 (8.7)	165 (17.5)	208 (22.1)	334 (35.5)	153 (16.2)
Metro	M3		1032	75 (7.3)	184 (17.8)	206 (20.0)	378 (36.6)	189 (18.3)
Metro	M3	Richland	243	16 (6.6)	38 (15.6)	46 (18.9)	99 (40.7)	44 (18.1)
Metro	M3	Stark	789	59 (7.5)	146 (18.5)	160 (20.3)	279 (35.4)	145 (18.4)
Metro	M4	Mahoning	1026	80 (7.8)	153 (14.9)	187 (18.2)	390 (38.0)	216 (21.1)

Metro	M5	Montgomery	1665	150 (9.0)	292 (17.5)	344 (20.7)	595 (35.7)	284 (17.1)
Metro	M6	Summit	2160	187 (8.7)	388 (18.0)	446 (20.6)	759 (35.1)	380 (17.6)
Metro	M7	Cuyahoga	1989	165 (8.3)	341 (17.1)	396 (19.9)	723 (36.3)	364 (18.3)
Metro	M8	Franklin	3119	307 (9.8)	632 (20.3)	674 (21.6)	1114 (35.7)	392 (12.6)
Metro	M9	Lucas	1934	187 (9.7)	364 (18.8)	361 (18.7)	720 (37.2)	302 (15.6)
Rural			7115	567 (8.0)	1147 (16.1)	1495 (21.0)	2641 (37.1)	1265 (17.8)
Rural	R1		890	85 (9.6)	128 (14.4)	188 (21.1)	341 (38.3)	148 (16.6)
Rural	R1	Defiance	259	32 (12.4)	35 (13.5)	47 (18.1)	105 (40.5)	40 (15.4)
Rural	R1	Henry	212	18 (8.5)	36 (17.0)	41 (19.3)	81 (38.2)	36 (17.0)
Rural	R1	Paulding	141	12 (8.5)	16 (11.3)	29 (20.6)	60 (42.6)	24 (17.0)
Rural	R1	Williams	278	23 (8.3)	41 (14.7)	71 (25.5)	95 (34.2)	48 (17.3)
Rural	R2		815	64 (7.9)	151 (18.5)	171 (21.0)	307 (37.7)	122 (15.0)
Rural	R2	Hancock	275	19 (6.9)	53 (19.3)	58 (21.1)	104 (37.8)	41 (14.9)
Rural	R2	Putnam	140	9 (6.4)	26 (18.6)	28 (20.0)	53 (37.9)	24 (17.1)
Rural	R2	Shelby	191	19 (9.9)	37 (19.4)	46 (24.1)	66 (34.6)	23 (12.0)
Rural	R2	Van wert	121	11 (9.1)	23 (19.0)	20 (16.5)	52 (43.0)	15 (12.4)
Rural	R2	Wyandot	88	6 (6.8)	12 (13.6)	19 (21.6)	32 (36.4)	19 (21.6)
Rural	R3		850	74 (8.7)	145 (17.1)	165 (19.4)	291 (34.2)	175 (20.6)
Rural	R3	Ashland	157	16 (10.2)	30 (19.1)	30 (19.1)	44 (28.0)	37 (23.6)
Rural	R3	Champaign	120	12 (10.0)	18 (15.0)	23 (19.2)	40 (33.3)	27 (22.5)
Rural	R3	Hardin	96	8 (8.3)	16 (16.7)	15 (15.6)	31 (32.3)	26 (27.1)
Rural	R3	Knox	182	20 (11.0)	29 (15.9)	37 (20.3)	65 (35.7)	31 (17.0)
Rural	R3	Logan	159	11 (6.9)	29 (18.2)	36 (22.6)	51 (32.1)	32 (20.1)
Rural	R3	Ottawa	136	7 (5.1)	23 (16.9)	24 (17.6)	60 (44.1)	22 (16.2)
Rural	R4		835	64 (7.7)	128 (15.3)	162 (19.4)	306 (36.6)	175 (21.0)
Rural	R4	Ashtabula	338	31 (9.2)	47 (13.9)	66 (19.5)	132 (39.1)	62 (18.3)
Rural	R4	Crawford	166	8 (4.8)	23 (13.9)	34 (20.5)	64 (38.6)	37 (22.3)
Rural	R4	Marion	219	18 (8.2)	31 (14.2)	44 (20.1)	68 (31.1)	58 (26.5)
Rural	R4	Morrow	112	7 (6.3)	27 (24.1)	18 (16.1)	42 (37.5)	18 (16.1)
Rural	R5		917	65 (7.1)	159 (17.3)	185 (20.2)	343 (37.4)	165 (18.0)
Rural	R5	Darke	341	22 (6.5)	63 (18.5)	81 (23.8)	121 (35.5)	54 (15.8)
Rural	R5	Mercer	272	21 (7.7)	49 (18.0)	52 (19.1)	96 (35.3)	54 (19.9)
Rural	R5	Preble	304	22 (7.2)	47 (15.5)	52 (17.1)	126 (41.4)	57 (18.8)
Rural	R6		951	77 (8.1)	156 (16.4)	189 (19.9)	371 (39.0)	158 (16.6)
Rural	R6	Huron	308	23 (7.5)	57 (18.5)	58 (18.8)	129 (41.9)	41 (13.3)
Rural	R6	Sandusky	324	33 (10.2)	48 (14.8)	75 (23.1)	110 (34.0)	58 (17.9)
Rural	R6	Seneca	319	21 (6.6)	51 (16.0)	56 (17.6)	132 (41.4)	59 (18.5)
Rural	R7		919	71 (7.7)	140 (15.2)	184 (20.0)	353 (38.4)	171 (18.6)
Rural	R7	Erie	395	35 (8.9)	58 (14.7)	74 (18.7)	156 (39.5)	72 (18.2)
Rural	R7	Wayne	524	36 (6.9)	82 (15.6)	110 (21.0)	197 (37.6)	99 (18.9)
Rural	R8		938	67 (7.1)	140 (14.9)	251 (26.8)	329 (35.1)	151 (16.1)
Rural	R8	Clinton	148	12 (8.1)	23 (15.5)	31 (20.9)	58 (39.2)	24 (16.2)
Rural	R8	Fayette	102	9 (8.8)	15 (14.7)	29 (28.4)	36 (35.3)	13 (12.7)
Rural	R8	Warren	688	46 (6.7)	102 (14.8)	191 (27.8)	235 (34.2)	114 (16.6)
Suburban			4165	338 (8.1)	693 (16.6)	881 (21.2)	1532 (36.8)	721 (17.3)
Suburban	S1		763	62 (8.1)	126 (16.5)	171 (22.4)	285 (37.4)	119 (15.6)
Suburban	S1	Auglaize	106	8 (7.5)	17 (16.0)	17 (16.0)	44 (41.5)	20 (18.9)
Suburban	S1	Delaware	201	14 (7.0)	39 (19.4)	49 (24.4)	75 (37.3)	24 (11.9)
Suburban	S1	Madison	86	7 (8.1)	12 (14.0)	17 (19.8)	32 (37.2)	18 (20.9)
Suburban	S1	Miami	259	28 (10.8)	38 (14.7)	53 (20.5)	101 (39.0)	39 (15.1)
Suburban	S1	Union	111	5 (4.5)	20 (18.0)	35 (31.5)	33 (29.7)	18 (16.2)
Suburban	S2		796	58 (7.3)	124 (15.6)	175 (22.0)	308 (38.7)	131 (16.5)
Suburban	S2	Fairfield	202	13 (6.4)	32 (15.8)	50 (24.8)	77 (38.1)	30 (14.9)
Suburban	S2	Greene	253	18 (7.1)	34 (13.4)	49 (19.4)	112 (44.3)	40 (15.8)
Suburban	S2	Licking	246	19 (7.7)	43 (17.5)	56 (22.8)	86 (35.0)	42 (17.1)
Suburban	S2	Pickaway	95	8 (8.4)	15 (15.8)	20 (21.1)	33 (34.7)	19 (20.0)
Suburban	S3		774	56 (7.2)	132 (17.1)	170 (22.0)	280 (36.2)	136 (17.6)
Suburban	S3	Geauga	109	9 (8.3)	14 (12.8)	30 (27.5)	38 (34.9)	18 (16.5)
Suburban	S3	Lake	298	27 (9.1)	48 (16.1)	57 (19.1)	97 (32.6)	69 (23.2)
Suburban	S3	Medina	205	8 (3.9)	33 (16.1)	46 (22.4)	86 (42.0)	32 (15.6)
Suburban	S3	Portage	162	12 (7.4)	37 (22.8)	37 (22.8)	59 (36.4)	17 (10.5)
Suburban	S4		947	88 (9.3)	168 (17.7)	214 (22.6)	334 (35.3)	143 (15.1)
Suburban	S4	Fulton	251	23 (9.2)	43 (17.1)	60 (23.9)	91 (36.3)	34 (13.5)
Suburban	S4	Wood	696	65 (9.3)	125 (18.0)	154 (22.1)	243 (34.9)	109 (15.7)
Suburban	S5		885	74 (8.4)	143 (16.2)	151 (17.1)	325 (36.7)	192 (21.7)
Suburban	S5	Clark	329	31 (9.4)	55 (16.7)	61 (18.5)	122 (37.1)	60 (18.2)
Suburban	S5	Trumbull	556	43 (7.7)	88 (15.8)	90 (16.2)	203 (36.5)	132 (23.7)
Child			1985	193 (9.7)	535 (27.0)	719 (36.2)	511 (25.7)	27 (1.4)

Child	Cuyahoga	Cuyahoga	993	94 (9.5)	268 (27.0)	362 (36.5)	257 (25.9)	12 (1.2)
Child	Lorain		444	47 (10.6)	124 (27.9)	159 (35.8)	107 (24.1)	7 (1.6)
Child	Lorain	Erie	12	2 (16.7)	3 (25.0)	4 (33.3)	3 (25.0)	0 (0.0)
Child	Lorain	Lorain	432	45 (10.4)	121 (28.0)	155 (35.9)	104 (24.1)	7 (1.6)
Child	Summit	Summit	548	52 (9.5)	143 (26.1)	198 (36.1)	147 (26.8)	8 (1.5)
Hispanic			1269	186 (14.7)	316 (24.9)	284 (22.4)	377 (29.7)	106 (8.4)
Hispanic	Cuyahoga	Cuyahoga	321	33 (10.3)	90 (28.0)	83 (25.9)	102 (31.8)	13 (4.0)
Hispanic	Lorain	Lorain	245	38 (15.5)	57 (23.3)	50 (20.4)	73 (29.8)	27 (11.0)
Hispanic	Statewide		703	115 (16.4)	169 (24.0)	151 (21.5)	202 (28.7)	66 (9.4)
Hispanic	Statewide	Allen	9	2 (22.2)	1 (11.1)	1 (11.1)	4 (44.4)	1 (11.1)
Hispanic	Statewide	Ashland	2	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)
Hispanic	Statewide	Ashtabula	7	3 (42.9)	0 (0.0)	2 (28.6)	2 (28.6)	0 (0.0)
Hispanic	Statewide	Athens	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Hispanic	Statewide	Auglaize	3	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Brown	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Butler	16	4 (25.0)	4 (25.0)	4 (25.0)	4 (25.0)	0 (0.0)
Hispanic	Statewide	Carroll	1	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Champaign	1	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Hispanic	Statewide	Clark	9	4 (44.4)	3 (33.3)	1 (11.1)	1 (11.1)	0 (0.0)
Hispanic	Statewide	Clermont	5	1 (20.0)	1 (20.0)	1 (20.0)	2 (40.0)	0 (0.0)
Hispanic	Statewide	Clinton	2	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Columbiana	3	1 (33.3)	0 (0.0)	0 (0.0)	1 (33.3)	1 (33.3)
Hispanic	Statewide	Coshocton	1	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Crawford	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Hispanic	Statewide	Cuyahoga	19	2 (10.5)	0 (0.0)	3 (15.8)	9 (47.4)	5 (26.3)
Hispanic	Statewide	Darke	2	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)
Hispanic	Statewide	Defiance	20	3 (15.0)	4 (20.0)	4 (20.0)	7 (35.0)	2 (10.0)
Hispanic	Statewide	Delaware	2	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Erie	8	1 (12.5)	3 (37.5)	3 (37.5)	1 (12.5)	0 (0.0)
Hispanic	Statewide	Fairfield	2	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Fayette	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Franklin	126	23 (18.3)	44 (34.9)	31 (24.6)	24 (19.0)	4 (3.2)
Hispanic	Statewide	Fulton	14	3 (21.4)	1 (7.1)	4 (28.6)	6 (42.9)	0 (0.0)
Hispanic	Statewide	Geauga	3	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Greene	6	2 (33.3)	1 (16.7)	1 (16.7)	1 (16.7)	1 (16.7)
Hispanic	Statewide	Guernsey	1	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Hispanic	Statewide	Hamilton	50	7 (14.0)	15 (30.0)	11 (22.0)	9 (18.0)	8 (16.0)
Hispanic	Statewide	Hancock	12	1 (8.3)	3 (25.0)	2 (16.7)	4 (33.3)	2 (16.7)
Hispanic	Statewide	Henry	5	0 (0.0)	0 (0.0)	0 (0.0)	4 (80.0)	1 (20.0)
Hispanic	Statewide	Huron	9	3 (33.3)	1 (11.1)	3 (33.3)	2 (22.2)	0 (0.0)
Hispanic	Statewide	Jefferson	2	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Lake	18	4 (22.2)	7 (38.9)	3 (16.7)	4 (22.2)	0 (0.0)
Hispanic	Statewide	Licking	4	0 (0.0)	1 (25.0)	2 (50.0)	1 (25.0)	0 (0.0)
Hispanic	Statewide	Logan	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Lorain	10	1 (10.0)	3 (30.0)	0 (0.0)	4 (40.0)	2 (20.0)
Hispanic	Statewide	Lucas	74	13 (17.6)	19 (25.7)	14 (18.9)	21 (28.4)	7 (9.5)
Hispanic	Statewide	Mahoning	26	4 (15.4)	6 (23.1)	4 (15.4)	11 (42.3)	1 (3.8)
Hispanic	Statewide	Marion	4	0 (0.0)	1 (25.0)	0 (0.0)	3 (75.0)	0 (0.0)
Hispanic	Statewide	Medina	8	2 (25.0)	0 (0.0)	1 (12.5)	4 (50.0)	1 (12.5)
Hispanic	Statewide	Mercer	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Miami	3	0 (0.0)	1 (33.3)	1 (33.3)	1 (33.3)	0 (0.0)
Hispanic	Statewide	Montgomery	29	4 (13.8)	11 (37.9)	6 (20.7)	5 (17.2)	3 (10.3)
Hispanic	Statewide	Muskingum	2	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)
Hispanic	Statewide	Ottawa	12	2 (16.7)	2 (16.7)	2 (16.7)	2 (16.7)	4 (33.3)
Hispanic	Statewide	Paulding	3	0 (0.0)	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)
Hispanic	Statewide	Pickaway	2	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)
Hispanic	Statewide	Portage	8	1 (12.5)	1 (12.5)	4 (50.0)	1 (12.5)	1 (12.5)
Hispanic	Statewide	Putnam	13	2 (15.4)	3 (23.1)	4 (30.8)	2 (15.4)	2 (15.4)
Hispanic	Statewide	Richland	3	0 (0.0)	2 (66.7)	0 (0.0)	1 (33.3)	0 (0.0)
Hispanic	Statewide	Ross	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Sandusky	33	2 (6.1)	5 (15.2)	6 (18.2)	15 (45.5)	5 (15.2)
Hispanic	Statewide	Seneca	14	1 (7.1)	2 (14.3)	2 (14.3)	6 (42.9)	3 (21.4)
Hispanic	Statewide	Shelby	1	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Hispanic	Statewide	Stark	14	1 (7.1)	4 (28.6)	3 (21.4)	5 (35.7)	1 (7.1)
Hispanic	Statewide	Summit	18	3 (16.7)	4 (22.2)	6 (33.3)	4 (22.2)	1 (5.6)
Hispanic	Statewide	Trumbull	4	1 (25.0)	0 (0.0)	1 (25.0)	2 (50.0)	0 (0.0)
Hispanic	Statewide	Tuscarawas	4	2 (50.0)	0 (0.0)	2 (50.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Van wert	4	0 (0.0)	1 (25.0)	1 (25.0)	2 (50.0)	0 (0.0)

Hispanic	Statewide	Warren	8	1 (12.5)	3 (37.5)	2 (25.0)	2 (25.0)	0 (0.0)
Hispanic	Statewide	Washington	1	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Wayne	5	1 (20.0)	2 (40.0)	0 (0.0)	1 (20.0)	1 (20.0)
Hispanic	Statewide	Williams	6	1 (16.7)	1 (16.7)	1 (16.7)	2 (33.3)	1 (16.7)
Hispanic	Statewide	Wood	22	2 (9.1)	0 (0.0)	3 (13.6)	13 (59.1)	4 (18.2)
Hispanic	Statewide	Wyandot	3	0 (0.0)	2 (66.7)	0 (0.0)	0 (0.0)	1 (33.3)
Asian	Statewide		415	35 (8.4)	144 (34.7)	133 (32.0)	87 (21.0)	16 (3.9)
Asian	Statewide	Allen	2	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)
Asian	Statewide	Athens	7	0 (0.0)	6 (85.7)	1 (14.3)	0 (0.0)	0 (0.0)
Asian	Statewide	Brown	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Butler	12	1 (8.3)	1 (8.3)	5 (41.7)	4 (33.3)	1 (8.3)
Asian	Statewide	Clermont	5	1 (20.0)	1 (20.0)	1 (20.0)	2 (40.0)	0 (0.0)
Asian	Statewide	Cuyahoga	80	7 (8.8)	27 (33.8)	24 (30.0)	16 (20.0)	6 (7.5)
Asian	Statewide	Delaware	9	1 (11.1)	2 (22.2)	5 (55.6)	1 (11.1)	0 (0.0)
Asian	Statewide	Fairfield	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Fayette	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Asian	Statewide	Franklin	117	12 (10.3)	48 (41.0)	37 (31.6)	20 (17.1)	0 (0.0)
Asian	Statewide	Greene	6	1 (16.7)	1 (16.7)	2 (33.3)	1 (16.7)	1 (16.7)
Asian	Statewide	Guernsey	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Hamilton	45	1 (2.2)	20 (44.4)	12 (26.7)	11 (24.4)	1 (2.2)
Asian	Statewide	Hancock	5	0 (0.0)	2 (40.0)	2 (40.0)	1 (20.0)	0 (0.0)
Asian	Statewide	Henry	1	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Asian	Statewide	Lake	3	0 (0.0)	1 (33.3)	1 (33.3)	0 (0.0)	1 (33.3)
Asian	Statewide	Licking	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Lorain	1	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Lucas	11	0 (0.0)	3 (27.3)	4 (36.4)	2 (18.2)	2 (18.2)
Asian	Statewide	Madison	2	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)
Asian	Statewide	Mahoning	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Marion	2	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)
Asian	Statewide	Miami	3	0 (0.0)	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)
Asian	Statewide	Montgomery	23	4 (17.4)	4 (17.4)	7 (30.4)	8 (34.8)	0 (0.0)
Asian	Statewide	Portage	5	0 (0.0)	2 (40.0)	2 (40.0)	1 (20.0)	0 (0.0)
Asian	Statewide	Putnam	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Ross	2	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)
Asian	Statewide	Shelby	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Stark	3	0 (0.0)	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)
Asian	Statewide	Summit	29	3 (10.3)	9 (31.0)	11 (37.9)	6 (20.7)	0 (0.0)
Asian	Statewide	Trumbull	2	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)
Asian	Statewide	Union	1	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Asian	Statewide	Warren	22	0 (0.0)	6 (27.3)	12 (54.5)	4 (18.2)	0 (0.0)
Asian	Statewide	Wayne	1	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Wood	8	1 (12.5)	5 (62.5)	0 (0.0)	2 (25.0)	0 (0.0)

Gender by Sampled County

(Percentages in parentheses)

Strata	Cluster	County	ALL COMPLETES	MALE	FEMALE
			39953	16864 (42.2)	23089 (57.8)
Appalachian			8155	3533 (43.3)	4622 (56.7)
Appalachian	A1		1094	460 (42.0)	634 (58.0)
Appalachian	A1	Belmont	241	103 (42.7)	138 (57.3)
Appalachian	A1	Columbiana	396	171 (43.2)	225 (56.8)
Appalachian	A1	Guernsey	145	61 (42.1)	84 (57.9)
Appalachian	A1	Harrison	43	16 (37.2)	27 (62.8)
Appalachian	A1	Jefferson	269	109 (40.5)	160 (59.5)
Appalachian	A2		1846	802 (43.4)	1044 (56.6)
Appalachian	A2	Carroll	127	53 (41.7)	74 (58.3)
Appalachian	A2	Coshocton	159	69 (43.4)	90 (56.6)
Appalachian	A2	Holmes	921	420 (45.6)	501 (54.4)
Appalachian	A2	Monroe	88	40 (45.5)	48 (54.5)
Appalachian	A2	Noble	67	28 (41.8)	39 (58.2)
Appalachian	A2	Tuscarawas	484	192 (39.7)	292 (60.3)
Appalachian	A3		1052	450 (42.8)	602 (57.2)
Appalachian	A3	Athens	222	112 (50.5)	110 (49.5)
Appalachian	A3	Hocking	85	32 (37.6)	53 (62.4)
Appalachian	A3	Muskingum	294	119 (40.5)	175 (59.5)
Appalachian	A3	Perry	88	37 (42.0)	51 (58.0)
Appalachian	A3	Ross	204	72 (35.3)	132 (64.7)
Appalachian	A3	Washington	159	78 (49.1)	81 (50.9)
Appalachian	A4		1162	507 (43.6)	655 (56.4)
Appalachian	A4	Gallia	147	67 (45.6)	80 (54.4)
Appalachian	A4	Jackson	151	66 (43.7)	85 (56.3)
Appalachian	A4	Lawrence	291	127 (43.6)	164 (56.4)
Appalachian	A4	Pike	108	46 (42.6)	62 (57.4)
Appalachian	A4	Scioto	405	182 (44.9)	223 (55.1)
Appalachian	A4	Vinton	60	19 (31.7)	41 (68.3)
Appalachian	A5		1194	527 (44.1)	667 (55.9)
Appalachian	A5	Brown	558	247 (44.3)	311 (55.7)
Appalachian	A5	Highland	636	280 (44.0)	356 (56.0)
Appalachian	A6		1005	433 (43.1)	572 (56.9)
Appalachian	A6	Adams	236	89 (37.7)	147 (62.3)
Appalachian	A6	Meigs	389	174 (44.7)	215 (55.3)
Appalachian	A6	Morgan	380	170 (44.7)	210 (55.3)
Appalachian	A7	Clermont	802	354 (44.1)	448 (55.9)
Metro			16849	6845 (40.6)	10004 (59.4)
Metro	M0	Hamilton	1598	651 (40.7)	947 (59.3)
Metro	M1	Butler	1090	474 (43.5)	616 (56.5)
Metro	M2		1236	499 (40.4)	737 (59.6)
Metro	M2	Allen	294	103 (35.0)	191 (65.0)
Metro	M2	Lorain	942	396 (42.0)	546 (58.0)
Metro	M3		1032	444 (43.0)	588 (57.0)
Metro	M3	Richland	243	96 (39.5)	147 (60.5)
Metro	M3	Stark	789	348 (44.1)	441 (55.9)
Metro	M4	Mahoning	1026	403 (39.3)	623 (60.7)
Metro	M5	Montgomery	1665	677 (40.7)	988 (59.3)
Metro	M6	Summit	2160	870 (40.3)	1290 (59.7)
Metro	M7	Cuyahoga	1989	754 (37.9)	1235 (62.1)
Metro	M8	Franklin	3119	1275 (40.9)	1844 (59.1)
Metro	M9	Lucas	1934	798 (41.3)	1136 (58.7)
Rural			7115	3079 (43.3)	4036 (56.7)
Rural	R1		890	398 (44.7)	492 (55.3)
Rural	R1	Defiance	259	117 (45.2)	142 (54.8)
Rural	R1	Henry	212	89 (42.0)	123 (58.0)
Rural	R1	Paulding	141	66 (46.8)	75 (53.2)
Rural	R1	Williams	278	126 (45.3)	152 (54.7)
Rural	R2		815	364 (44.7)	451 (55.3)
Rural	R2	Hancock	275	118 (42.9)	157 (57.1)

Rural	R2	Putnam	140	68 (48.6)	72 (51.4)
Rural	R2	Shelby	191	82 (42.9)	109 (57.1)
Rural	R2	Van wert	121	59 (48.8)	62 (51.2)
Rural	R2	Wyandot	88	37 (42.0)	51 (58.0)
Rural	R3		850	331 (38.9)	519 (61.1)
Rural	R3	Ashland	157	60 (38.2)	97 (61.8)
Rural	R3	Champaign	120	51 (42.5)	69 (57.5)
Rural	R3	Hardin	96	38 (39.6)	58 (60.4)
Rural	R3	Knox	182	65 (35.7)	117 (64.3)
Rural	R3	Logan	159	58 (36.5)	101 (63.5)
Rural	R3	Ottawa	136	59 (43.4)	77 (56.6)
Rural	R4		835	352 (42.2)	483 (57.8)
Rural	R4	Ashtabula	338	135 (39.9)	203 (60.1)
Rural	R4	Crawford	166	72 (43.4)	94 (56.6)
Rural	R4	Marion	219	88 (40.2)	131 (59.8)
Rural	R4	Morrow	112	57 (50.9)	55 (49.1)
Rural	R5		917	393 (42.9)	524 (57.1)
Rural	R5	Darke	341	149 (43.7)	192 (56.3)
Rural	R5	Mercer	272	115 (42.3)	157 (57.7)
Rural	R5	Preble	304	129 (42.4)	175 (57.6)
Rural	R6		951	411 (43.2)	540 (56.8)
Rural	R6	Huron	308	136 (44.2)	172 (55.8)
Rural	R6	Sandusky	324	133 (41.0)	191 (59.0)
Rural	R6	Seneca	319	142 (44.5)	177 (55.5)
Rural	R7		919	425 (46.2)	494 (53.8)
Rural	R7	Erie	395	173 (43.8)	222 (56.2)
Rural	R7	Wayne	524	252 (48.1)	272 (51.9)
Rural	R8		938	405 (43.2)	533 (56.8)
Rural	R8	Clinton	148	69 (46.6)	79 (53.4)
Rural	R8	Fayette	102	36 (35.3)	66 (64.7)
Rural	R8	Warren	688	300 (43.6)	388 (56.4)
Suburban			4165	1820 (43.7)	2345 (56.3)
Suburban	S1		763	334 (43.8)	429 (56.2)
Suburban	S1	Auglaize	106	45 (42.5)	61 (57.5)
Suburban	S1	Delaware	201	73 (36.3)	128 (63.7)
Suburban	S1	Madison	86	38 (44.2)	48 (55.8)
Suburban	S1	Miami	259	122 (47.1)	137 (52.9)
Suburban	S1	Union	111	56 (50.5)	55 (49.5)
Suburban	S2		796	339 (42.6)	457 (57.4)
Suburban	S2	Fairfield	202	78 (38.6)	124 (61.4)
Suburban	S2	Greene	253	120 (47.4)	133 (52.6)
Suburban	S2	Licking	246	103 (41.9)	143 (58.1)
Suburban	S2	Pickaway	95	38 (40.0)	57 (60.0)
Suburban	S3		774	344 (44.4)	430 (55.6)
Suburban	S3	Geauga	109	39 (35.8)	70 (64.2)
Suburban	S3	Lake	298	129 (43.3)	169 (56.7)
Suburban	S3	Medina	205	106 (51.7)	99 (48.3)
Suburban	S3	Portage	162	70 (43.2)	92 (56.8)
Suburban	S4		947	432 (45.6)	515 (54.4)
Suburban	S4	Fulton	251	109 (43.4)	142 (56.6)
Suburban	S4	Wood	696	323 (46.4)	373 (53.6)
Suburban	S5		885	371 (41.9)	514 (58.1)
Suburban	S5	Clark	329	129 (39.2)	200 (60.8)
Suburban	S5	Trumbull	556	242 (43.5)	314 (56.5)
Child			1985	701 (35.3)	1284 (64.7)
Child	Cuyahoga	Cuyahoga	993	331 (33.3)	662 (66.7)
Child	Lorain		444	172 (38.7)	272 (61.3)
Child	Lorain	Erie	12	7 (58.3)	5 (41.7)
Child	Lorain	Lorain	432	165 (38.2)	267 (61.8)
Child	Summit	Summit	548	198 (36.1)	350 (63.9)
Hispanic			1269	669 (52.7)	600 (47.3)
Hispanic	Cuyahoga	Cuyahoga	321	151 (47.0)	170 (53.0)
Hispanic	Lorain	Lorain	245	126 (51.4)	119 (48.6)
Hispanic	Statewide		703	392 (55.8)	311 (44.2)
Hispanic	Statewide	Allen	9	7 (77.8)	2 (22.2)
Hispanic	Statewide	Ashland	2	1 (50.0)	1 (50.0)
Hispanic	Statewide	Ashtabula	7	4 (57.1)	3 (42.9)
Hispanic	Statewide	Athens	1	0 (0.0)	1 (100.0)

Hispanic	Statewide	Auglaize	3	1 (33.3)	2 (66.7)
Hispanic	Statewide	Brown	1	0 (0.0)	1 (100.0)
Hispanic	Statewide	Butler	16	9 (56.3)	7 (43.8)
Hispanic	Statewide	Carroll	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Champaign	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Clark	9	5 (55.6)	4 (44.4)
Hispanic	Statewide	Clermont	5	5 (100.0)	0 (0.0)
Hispanic	Statewide	Clinton	2	2 (100.0)	0 (0.0)
Hispanic	Statewide	Columbiana	3	2 (66.7)	1 (33.3)
Hispanic	Statewide	Coshocton	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Crawford	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Cuyahoga	19	12 (63.2)	7 (36.8)
Hispanic	Statewide	Darke	2	2 (100.0)	0 (0.0)
Hispanic	Statewide	Defiance	20	6 (30.0)	14 (70.0)
Hispanic	Statewide	Delaware	2	2 (100.0)	0 (0.0)
Hispanic	Statewide	Erie	8	5 (62.5)	3 (37.5)
Hispanic	Statewide	Fairfield	2	2 (100.0)	0 (0.0)
Hispanic	Statewide	Fayette	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Franklin	126	64 (50.8)	62 (49.2)
Hispanic	Statewide	Fulton	14	10 (71.4)	4 (28.6)
Hispanic	Statewide	Geauga	3	2 (66.7)	1 (33.3)
Hispanic	Statewide	Greene	6	3 (50.0)	3 (50.0)
Hispanic	Statewide	Guernsey	1	0 (0.0)	1 (100.0)
Hispanic	Statewide	Hamilton	50	36 (72.0)	14 (28.0)
Hispanic	Statewide	Hancock	12	9 (75.0)	3 (25.0)
Hispanic	Statewide	Henry	5	2 (40.0)	3 (60.0)
Hispanic	Statewide	Huron	9	5 (55.6)	4 (44.4)
Hispanic	Statewide	Jefferson	2	1 (50.0)	1 (50.0)
Hispanic	Statewide	Lake	18	11 (61.1)	7 (38.9)
Hispanic	Statewide	Licking	4	3 (75.0)	1 (25.0)
Hispanic	Statewide	Logan	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Lorain	10	4 (40.0)	6 (60.0)
Hispanic	Statewide	Lucas	74	37 (50.0)	37 (50.0)
Hispanic	Statewide	Mahoning	26	16 (61.5)	10 (38.5)
Hispanic	Statewide	Marion	4	3 (75.0)	1 (25.0)
Hispanic	Statewide	Medina	8	5 (62.5)	3 (37.5)
Hispanic	Statewide	Mercer	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Miami	3	2 (66.7)	1 (33.3)
Hispanic	Statewide	Montgomery	29	14 (48.3)	15 (51.7)
Hispanic	Statewide	Muskingum	2	1 (50.0)	1 (50.0)
Hispanic	Statewide	Ottawa	12	6 (50.0)	6 (50.0)
Hispanic	Statewide	Paulding	3	1 (33.3)	2 (66.7)
Hispanic	Statewide	Pickaway	2	1 (50.0)	1 (50.0)
Hispanic	Statewide	Portage	8	6 (75.0)	2 (25.0)
Hispanic	Statewide	Putnam	13	3 (23.1)	10 (76.9)
Hispanic	Statewide	Richland	3	2 (66.7)	1 (33.3)
Hispanic	Statewide	Ross	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Sandusky	33	13 (39.4)	20 (60.6)
Hispanic	Statewide	Seneca	14	8 (57.1)	6 (42.9)
Hispanic	Statewide	Shelby	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Stark	14	9 (64.3)	5 (35.7)
Hispanic	Statewide	Summit	18	10 (55.6)	8 (44.4)
Hispanic	Statewide	Trumbull	4	0 (0.0)	4 (100.0)
Hispanic	Statewide	Tuscarawas	4	3 (75.0)	1 (25.0)
Hispanic	Statewide	Van wert	4	3 (75.0)	1 (25.0)
Hispanic	Statewide	Warren	8	6 (75.0)	2 (25.0)
Hispanic	Statewide	Washington	1	1 (100.0)	0 (0.0)
Hispanic	Statewide	Wayne	5	4 (80.0)	1 (20.0)
Hispanic	Statewide	Williams	6	4 (66.7)	2 (33.3)
Hispanic	Statewide	Wood	22	8 (36.4)	14 (63.6)
Hispanic	Statewide	Wyandot	3	2 (66.7)	1 (33.3)
Asian	Statewide		415	217 (52.3)	198 (47.7)
Asian	Statewide	Allen	2	2 (100.0)	0 (0.0)
Asian	Statewide	Athens	7	3 (42.9)	4 (57.1)
Asian	Statewide	Brown	1	1 (100.0)	0 (0.0)
Asian	Statewide	Butler	12	7 (58.3)	5 (41.7)
Asian	Statewide	Clermont	5	5 (100.0)	0 (0.0)
Asian	Statewide	Cuyahoga	80	40 (50.0)	40 (50.0)
Asian	Statewide	Delaware	9	4 (44.4)	5 (55.6)
Asian	Statewide	Fairfield	1	1 (100.0)	0 (0.0)

Asian	Statewide	Fayette	1	1 (100.0)	0 (0.0)
Asian	Statewide	Franklin	117	56 (47.9)	61 (52.1)
Asian	Statewide	Greene	6	3 (50.0)	3 (50.0)
Asian	Statewide	Guernsey	1	0 (0.0)	1 (100.0)
Asian	Statewide	Hamilton	45	22 (48.9)	23 (51.1)
Asian	Statewide	Hancock	5	3 (60.0)	2 (40.0)
Asian	Statewide	Henry	1	1 (100.0)	0 (0.0)
Asian	Statewide	Lake	3	3 (100.0)	0 (0.0)
Asian	Statewide	Licking	1	0 (0.0)	1 (100.0)
Asian	Statewide	Lorain	1	1 (100.0)	0 (0.0)
Asian	Statewide	Lucas	11	9 (81.8)	2 (18.2)
Asian	Statewide	Madison	2	2 (100.0)	0 (0.0)
Asian	Statewide	Mahoning	1	1 (100.0)	0 (0.0)
Asian	Statewide	Marion	2	0 (0.0)	2 (100.0)
Asian	Statewide	Miami	3	0 (0.0)	3 (100.0)
Asian	Statewide	Montgomery	23	14 (60.9)	9 (39.1)
Asian	Statewide	Portage	5	2 (40.0)	3 (60.0)
Asian	Statewide	Putnam	1	1 (100.0)	0 (0.0)
Asian	Statewide	Ross	2	1 (50.0)	1 (50.0)
Asian	Statewide	Shelby	1	0 (0.0)	1 (100.0)
Asian	Statewide	Stark	3	0 (0.0)	3 (100.0)
Asian	Statewide	Summit	29	14 (48.3)	15 (51.7)
Asian	Statewide	Trumbull	2	1 (50.0)	1 (50.0)
Asian	Statewide	Union	1	1 (100.0)	0 (0.0)
Asian	Statewide	Warren	22	14 (63.6)	8 (36.4)
Asian	Statewide	Wayne	1	0 (0.0)	1 (100.0)
Asian	Statewide	Wood	8	4 (50.0)	4 (50.0)

Income Relative to Poverty by Sampled County

(Percentages in parentheses)

Strata	Cluster	County	ALL COMPLETES	<63%	63-100%	101-150%	151-200%	201-250%	251-300%	301%+
			39953	3022 (7.6)	3441 (8.6)	4068 (10.2)	4147 (10.4)	3807 (9.5)	3331 (8.3)	18137 (45.4)
Appalachian			8155	624 (7.7)	914 (11.2)	1044 (12.8)	1009 (12.4)	853 (10.5)	726 (8.9)	2985 (36.6)
Appalachian	A1		1094	84 (7.7)	125 (11.4)	129 (11.8)	149 (13.6)	110 (10.1)	109 (10.0)	388 (35.5)
Appalachian	A1	Belmont	241	17 (7.1)	27 (11.2)	30 (12.4)	39 (16.2)	25 (10.4)	23 (9.5)	80 (33.2)
Appalachian	A1	Columbiana	396	36 (9.1)	41 (10.4)	47 (11.9)	56 (14.1)	33 (8.3)	42 (10.6)	141 (35.6)
Appalachian	A1	Guernsey	145	7 (4.8)	11 (7.6)	19 (13.1)	21 (14.5)	14 (9.7)	12 (8.3)	61 (42.1)
Appalachian	A1	Harrison	43	0 (0.0)	7 (16.3)	3 (7.0)	9 (20.9)	8 (18.6)	4 (9.3)	12 (27.9)
Appalachian	A1	Jefferson	269	24 (8.9)	39 (14.5)	30 (11.2)	24 (8.9)	30 (11.2)	28 (10.4)	94 (34.9)
Appalachian	A2		1846	118 (6.4)	155 (8.4)	234 (12.7)	250 (13.5)	216 (11.7)	203 (11.0)	670 (36.3)
Appalachian	A2	Carroll	127	6 (4.7)	16 (12.6)	20 (15.7)	16 (12.6)	16 (12.6)	15 (11.8)	38 (29.9)
Appalachian	A2	Coshocton	159	21 (13.2)	14 (8.8)	16 (10.1)	26 (16.4)	11 (6.9)	19 (11.9)	52 (32.7)
Appalachian	A2	Holmes	921	43 (4.7)	72 (7.8)	123 (13.4)	120 (13.0)	115 (12.5)	99 (10.7)	349 (37.9)
Appalachian	A2	Monroe	88	7 (8.0)	15 (17.0)	7 (8.0)	12 (13.6)	7 (8.0)	10 (11.4)	30 (34.1)
Appalachian	A2	Noble	67	6 (9.0)	6 (9.0)	8 (11.9)	9 (13.4)	9 (13.4)	6 (9.0)	23 (34.3)
Appalachian	A2	Tuscarawas	484	35 (7.2)	32 (6.6)	60 (12.4)	67 (13.8)	58 (12.0)	54 (11.2)	178 (36.8)
Appalachian	A3		1052	85 (8.1)	129 (12.3)	117 (11.1)	120 (11.4)	113 (10.7)	80 (7.6)	408 (38.8)
Appalachian	A3	Athens	222	22 (9.9)	24 (10.8)	23 (10.4)	22 (9.9)	23 (10.4)	11 (5.0)	97 (43.7)
Appalachian	A3	Hocking	85	6 (7.1)	11 (12.9)	7 (8.2)	13 (15.3)	8 (9.4)	3 (3.5)	37 (43.5)
Appalachian	A3	Muskingum	294	19 (6.5)	43 (14.6)	31 (10.5)	30 (10.2)	34 (11.6)	31 (10.5)	106 (36.1)
Appalachian	A3	Perry	88	9 (10.2)	12 (13.6)	14 (15.9)	13 (14.8)	10 (11.4)	5 (5.7)	25 (28.4)
Appalachian	A3	Ross	204	22 (10.8)	26 (12.7)	23 (11.3)	20 (9.8)	18 (8.8)	12 (5.9)	83 (40.7)
Appalachian	A3	Washington	159	7 (4.4)	13 (8.2)	19 (11.9)	22 (13.8)	20 (12.6)	18 (11.3)	60 (37.7)
Appalachian	A4		1162	125 (10.8)	179 (15.4)	183 (15.7)	128 (11.0)	102 (8.8)	67 (5.8)	378 (32.5)
Appalachian	A4	Gallia	147	16 (10.9)	25 (17.0)	27 (18.4)	9 (6.1)	12 (8.2)	7 (4.8)	51 (34.7)
Appalachian	A4	Jackson	151	11 (7.3)	26 (17.2)	20 (13.2)	14 (9.3)	15 (9.9)	14 (9.3)	51 (33.8)
Appalachian	A4	Lawrence	291	30 (10.3)	43 (14.8)	43 (14.8)	31 (10.7)	28 (9.6)	21 (7.2)	95 (32.6)
Appalachian	A4	Pike	108	15 (13.9)	9 (8.3)	12 (11.1)	17 (15.7)	11 (10.2)	5 (4.6)	39 (36.1)
Appalachian	A4	Scioto	405	45 (11.1)	67 (16.5)	75 (18.5)	42 (10.4)	32 (7.9)	19 (4.7)	125 (30.9)
Appalachian	A4	Vinton	60	8 (13.3)	9 (15.0)	6 (10.0)	15 (25.0)	4 (6.7)	1 (1.7)	17 (28.3)
Appalachian	A5		1194	89 (7.5)	144 (12.1)	138 (11.6)	151 (12.6)	141 (11.8)	101 (8.5)	430 (36.0)
Appalachian	A5	Brown	558	42 (7.5)	72 (12.9)	55 (9.9)	67 (12.0)	56 (10.0)	50 (9.0)	216 (38.7)
Appalachian	A5	Highland	636	47 (7.4)	72 (11.3)	83 (13.1)	84 (13.2)	85 (13.4)	51 (8.0)	214 (33.6)
Appalachian	A6		1005	91 (9.1)	125 (12.4)	165 (16.4)	130 (12.9)	106 (10.5)	90 (9.0)	298 (29.7)
Appalachian	A6	Adams	236	32 (13.6)	24 (10.2)	40 (16.9)	27 (11.4)	22 (9.3)	16 (6.8)	75 (31.8)
Appalachian	A6	Meigs	389	40 (10.3)	55 (14.1)	70 (18.0)	53 (13.6)	38 (9.8)	29 (7.5)	104 (26.7)
Appalachian	A6	Morgan	380	19 (5.0)	46 (12.1)	55 (14.5)	50 (13.2)	46 (12.1)	45 (11.8)	119 (31.3)
Appalachian	A7	Clermont	802	32 (4.0)	57 (7.1)	78 (9.7)	81 (10.1)	65 (8.1)	76 (9.5)	413 (51.5)
Metro			16849	1410 (8.4)	1433 (8.5)	1619 (9.6)	1535 (9.1)	1430 (8.5)	1366 (8.1)	8056 (47.8)
Metro	M0	Hamilton	1598	131 (8.2)	135 (8.4)	127 (7.9)	120 (7.5)	147 (9.2)	138 (8.6)	800 (50.1)

Metro	M1	Butler	1090	57 (5.2)	66 (6.1)	87 (8.0)	107 (9.8)	110 (10.1)	78 (7.2)	585 (53.7)
Metro	M2		1236	84 (6.8)	84 (6.8)	131 (10.6)	110 (8.9)	113 (9.1)	109 (8.8)	605 (48.9)
Metro	M2	Allen	294	25 (8.5)	27 (9.2)	38 (12.9)	31 (10.5)	28 (9.5)	29 (9.9)	116 (39.5)
Metro	M2	Lorain	942	59 (6.3)	57 (6.1)	93 (9.9)	79 (8.4)	85 (9.0)	80 (8.5)	489 (51.9)
Metro	M3		1032	84 (8.1)	73 (7.1)	117 (11.3)	101 (9.8)	99 (9.6)	98 (9.5)	460 (44.6)
Metro	M3	Richland	243	18 (7.4)	15 (6.2)	24 (9.9)	23 (9.5)	18 (7.4)	20 (8.2)	125 (51.4)
Metro	M3	Stark	789	66 (8.4)	58 (7.4)	93 (11.8)	78 (9.9)	81 (10.3)	78 (9.9)	335 (42.5)
Metro	M4	Mahoning	1026	97 (9.5)	103 (10.0)	116 (11.3)	106 (10.3)	103 (10.0)	95 (9.3)	406 (39.6)
Metro	M5	Montgomery	1665	134 (8.0)	137 (8.2)	179 (10.8)	152 (9.1)	156 (9.4)	131 (7.9)	776 (46.6)
Metro	M6	Summit	2160	209 (9.7)	200 (9.3)	219 (10.1)	229 (10.6)	175 (8.1)	177 (8.2)	951 (44.0)
Metro	M7	Cuyahoga	1989	198 (10.0)	186 (9.4)	198 (10.0)	169 (8.5)	184 (9.3)	137 (6.9)	917 (46.1)
Metro	M8	Franklin	3119	231 (7.4)	247 (7.9)	251 (8.0)	268 (8.6)	202 (6.5)	243 (7.8)	1677 (53.8)
Metro	M9	Lucas	1934	185 (9.6)	202 (10.4)	194 (10.0)	173 (8.9)	141 (7.3)	160 (8.3)	879 (45.4)
Rural			7115	378 (5.3)	459 (6.5)	676 (9.5)	812 (11.4)	822 (11.6)	633 (8.9)	3335 (46.9)
Rural	R1		890	34 (3.8)	48 (5.4)	81 (9.1)	89 (10.0)	114 (12.8)	99 (11.1)	425 (47.8)
Rural	R1	Defiance	259	7 (2.7)	12 (4.6)	22 (8.5)	26 (10.0)	26 (10.0)	22 (8.5)	144 (55.6)
Rural	R1	Henry	212	4 (1.9)	15 (7.1)	20 (9.4)	27 (12.7)	28 (13.2)	24 (11.3)	94 (44.3)
Rural	R1	Paulding	141	9 (6.4)	6 (4.3)	15 (10.6)	11 (7.8)	13 (9.2)	11 (7.8)	76 (53.9)
Rural	R1	Williams	278	14 (5.0)	15 (5.4)	24 (8.6)	25 (9.0)	47 (16.9)	42 (15.1)	111 (39.9)
Rural	R2		815	41 (5.0)	45 (5.5)	67 (8.2)	104 (12.8)	89 (10.9)	58 (7.1)	411 (50.4)
Rural	R2	Hancock	275	11 (4.0)	17 (6.2)	17 (6.2)	31 (11.3)	20 (7.3)	17 (6.2)	162 (58.9)
Rural	R2	Putnam	140	5 (3.6)	10 (7.1)	14 (10.0)	13 (9.3)	16 (11.4)	9 (6.4)	73 (52.1)
Rural	R2	Shelby	191	14 (7.3)	9 (4.7)	16 (8.4)	29 (15.2)	25 (13.1)	7 (3.7)	91 (47.6)
Rural	R2	Van wert	121	5 (4.1)	5 (4.1)	12 (9.9)	18 (14.9)	14 (11.6)	18 (14.9)	49 (40.5)
Rural	R2	Wyandot	88	6 (6.8)	4 (4.5)	8 (9.1)	13 (14.8)	14 (15.9)	7 (8.0)	36 (40.9)
Rural	R3		850	57 (6.7)	51 (6.0)	105 (12.4)	114 (13.4)	69 (8.1)	87 (10.2)	367 (43.2)
Rural	R3	Ashland	157	11 (7.0)	8 (5.1)	22 (14.0)	24 (15.3)	12 (7.6)	15 (9.6)	65 (41.4)
Rural	R3	Champaign	120	13 (10.8)	7 (5.8)	11 (9.2)	18 (15.0)	7 (5.8)	15 (12.5)	49 (40.8)
Rural	R3	Hardin	96	4 (4.2)	7 (7.3)	12 (12.5)	12 (12.5)	9 (9.4)	7 (7.3)	45 (46.9)
Rural	R3	Knox	182	18 (9.9)	18 (9.9)	23 (12.6)	21 (11.5)	15 (8.2)	11 (6.0)	76 (41.8)
Rural	R3	Logan	159	9 (5.7)	6 (3.8)	19 (11.9)	16 (10.1)	18 (11.3)	22 (13.8)	69 (43.4)
Rural	R3	Ottawa	136	2 (1.5)	5 (3.7)	18 (13.2)	23 (16.9)	8 (5.9)	17 (12.5)	63 (46.3)
Rural	R4		835	60 (7.2)	85 (10.2)	78 (9.3)	124 (14.9)	108 (12.9)	81 (9.7)	299 (35.8)
Rural	R4	Ashtabula	338	29 (8.6)	39 (11.5)	30 (8.9)	48 (14.2)	43 (12.7)	31 (9.2)	118 (34.9)
Rural	R4	Crawford	166	10 (6.0)	11 (6.6)	24 (14.5)	23 (13.9)	18 (10.8)	14 (8.4)	66 (39.8)
Rural	R4	Marion	219	18 (8.2)	22 (10.0)	19 (8.7)	35 (16.0)	28 (12.8)	18 (8.2)	79 (36.1)
Rural	R4	Morrow	112	3 (2.7)	13 (11.6)	5 (4.5)	18 (16.1)	19 (17.0)	18 (16.1)	36 (32.1)
Rural	R5		917	37 (4.0)	72 (7.9)	106 (11.6)	84 (9.2)	134 (14.6)	80 (8.7)	404 (44.1)
Rural	R5	Darke	341	11 (3.2)	24 (7.0)	36 (10.6)	35 (10.3)	56 (16.4)	36 (10.6)	143 (41.9)
Rural	R5	Mercer	272	11 (4.0)	19 (7.0)	30 (11.0)	26 (9.6)	35 (12.9)	22 (8.1)	129 (47.4)
Rural	R5	Preble	304	15 (4.9)	29 (9.5)	40 (13.2)	23 (7.6)	43 (14.1)	22 (7.2)	132 (43.4)
Rural	R6		951	51 (5.4)	52 (5.5)	85 (8.9)	130 (13.7)	121 (12.7)	81 (8.5)	431 (45.3)
Rural	R6	Huron	308	20 (6.5)	14 (4.5)	32 (10.4)	36 (11.7)	33 (10.7)	26 (8.4)	147 (47.7)
Rural	R6	Sandusky	324	13 (4.0)	17 (5.2)	18 (5.6)	53 (16.4)	49 (15.1)	26 (8.0)	148 (45.7)
Rural	R6	Seneca	319	18 (5.6)	21 (6.6)	35 (11.0)	41 (12.9)	39 (12.2)	29 (9.1)	136 (42.6)
Rural	R7		919	45 (4.9)	71 (7.7)	91 (9.9)	100 (10.9)	99 (10.8)	66 (7.2)	447 (48.6)
Rural	R7	Erie	395	22 (5.6)	29 (7.3)	35 (8.9)	42 (10.6)	39 (9.9)	28 (7.1)	200 (50.6)
Rural	R7	Wayne	524	23 (4.4)	42 (8.0)	56 (10.7)	58 (11.1)	60 (11.5)	38 (7.3)	247 (47.1)
Rural	R8		938	53 (5.7)	35 (3.7)	63 (6.7)	67 (7.1)	88 (9.4)	81 (8.6)	551 (58.7)

Rural	R8	Clinton	148	15 (10.1)	5 (3.4)	12 (8.1)	19 (12.8)	16 (10.8)	15 (10.1)	66 (44.6)
Rural	R8	Fayette	102	12 (11.8)	8 (7.8)	13 (12.7)	8 (7.8)	13 (12.7)	11 (10.8)	37 (36.3)
Rural	R8	Warren	688	26 (3.8)	22 (3.2)	38 (5.5)	40 (5.8)	59 (8.6)	55 (8.0)	448 (65.1)
Suburban			4165	220 (5.3)	268 (6.4)	379 (9.1)	444 (10.7)	377 (9.1)	349 (8.4)	2128 (51.1)
Suburban	S1		763	43 (5.6)	34 (4.5)	76 (10.0)	70 (9.2)	59 (7.7)	68 (8.9)	413 (54.1)
Suburban	S1	Auglaize	106	5 (4.7)	2 (1.9)	13 (12.3)	13 (12.3)	11 (10.4)	7 (6.6)	55 (51.9)
Suburban	S1	Delaware	201	9 (4.5)	12 (6.0)	12 (6.0)	11 (5.5)	13 (6.5)	17 (8.5)	127 (63.2)
Suburban	S1	Madison	86	7 (8.1)	4 (4.7)	7 (8.1)	8 (9.3)	8 (9.3)	8 (9.3)	44 (51.2)
Suburban	S1	Miami	259	16 (6.2)	12 (4.6)	34 (13.1)	28 (10.8)	19 (7.3)	28 (10.8)	122 (47.1)
Suburban	S1	Union	111	6 (5.4)	4 (3.6)	10 (9.0)	10 (9.0)	8 (7.2)	8 (7.2)	65 (58.6)
Suburban	S2		796	42 (5.3)	55 (6.9)	72 (9.0)	63 (7.9)	71 (8.9)	66 (8.3)	427 (53.6)
Suburban	S2	Fairfield	202	5 (2.5)	16 (7.9)	20 (9.9)	16 (7.9)	25 (12.4)	9 (4.5)	111 (55.0)
Suburban	S2	Greene	253	17 (6.7)	14 (5.5)	12 (4.7)	13 (5.1)	18 (7.1)	29 (11.5)	150 (59.3)
Suburban	S2	Licking	246	12 (4.9)	17 (6.9)	29 (11.8)	26 (10.6)	23 (9.3)	19 (7.7)	120 (48.8)
Suburban	S2	Pickaway	95	8 (8.4)	8 (8.4)	11 (11.6)	8 (8.4)	5 (5.3)	9 (9.5)	46 (48.4)
Suburban	S3		774	27 (3.5)	46 (5.9)	56 (7.2)	85 (11.0)	71 (9.2)	69 (8.9)	420 (54.3)
Suburban	S3	Geauga	109	4 (3.7)	4 (3.7)	6 (5.5)	12 (11.0)	5 (4.6)	10 (9.2)	68 (62.4)
Suburban	S3	Lake	298	10 (3.4)	14 (4.7)	22 (7.4)	37 (12.4)	34 (11.4)	29 (9.7)	152 (51.0)
Suburban	S3	Medina	205	4 (2.0)	11 (5.4)	12 (5.9)	18 (8.8)	20 (9.8)	13 (6.3)	127 (62.0)
Suburban	S3	Portage	162	9 (5.6)	17 (10.5)	16 (9.9)	18 (11.1)	12 (7.4)	17 (10.5)	73 (45.1)
Suburban	S4		947	43 (4.5)	48 (5.1)	77 (8.1)	110 (11.6)	88 (9.3)	87 (9.2)	494 (52.2)
Suburban	S4	Fulton	251	12 (4.8)	12 (4.8)	16 (6.4)	28 (11.2)	35 (13.9)	19 (7.6)	129 (51.4)
Suburban	S4	Wood	696	31 (4.5)	36 (5.2)	61 (8.8)	82 (11.8)	53 (7.6)	68 (9.8)	365 (52.4)
Suburban	S5		885	65 (7.3)	85 (9.6)	98 (11.1)	116 (13.1)	88 (9.9)	59 (6.7)	374 (42.3)
Suburban	S5	Clark	329	23 (7.0)	33 (10.0)	33 (10.0)	36 (10.9)	30 (9.1)	25 (7.6)	149 (45.3)
Suburban	S5	Trumbull	556	42 (7.6)	52 (9.4)	65 (11.7)	80 (14.4)	58 (10.4)	34 (6.1)	225 (40.5)
Child			1985	191 (9.6)	191 (9.6)	170 (8.6)	178 (9.0)	183 (9.2)	159 (8.0)	913 (46.0)
Child	Cuyahoga	Cuyahoga	993	105 (10.6)	93 (9.4)	86 (8.7)	81 (8.2)	95 (9.6)	85 (8.6)	448 (45.1)
Child	Lorain		444	37 (8.3)	47 (10.6)	39 (8.8)	44 (9.9)	30 (6.8)	41 (9.2)	206 (46.4)
Child	Lorain	Erie	12	2 (16.7)	0 (0.0)	1 (8.3)	2 (16.7)	0 (0.0)	2 (16.7)	5 (41.7)
Child	Lorain	Lorain	432	35 (8.1)	47 (10.9)	38 (8.8)	42 (9.7)	30 (6.9)	39 (9.0)	201 (46.5)
Child	Summit	Summit	548	49 (8.9)	51 (9.3)	45 (8.2)	53 (9.7)	58 (10.6)	33 (6.0)	259 (47.3)
Hispanic			1269	161 (12.7)	149 (11.7)	155 (12.2)	139 (11.0)	113 (8.9)	80 (6.3)	472 (37.2)
Hispanic	Cuyahoga	Cuyahoga	321	47 (14.6)	53 (16.5)	41 (12.8)	31 (9.7)	32 (10.0)	19 (5.9)	98 (30.5)
Hispanic	Lorain	Lorain	245	31 (12.7)	23 (9.4)	31 (12.7)	31 (12.7)	25 (10.2)	17 (6.9)	87 (35.5)
Hispanic	Statewide		703	83 (11.8)	73 (10.4)	83 (11.8)	77 (11.0)	56 (8.0)	44 (6.3)	287 (40.8)
Hispanic	Statewide	Allen	9	1 (11.1)	0 (0.0)	2 (22.2)	0 (0.0)	0 (0.0)	1 (11.1)	5 (55.6)
Hispanic	Statewide	Ashland	2	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)
Hispanic	Statewide	Ashtabula	7	1 (14.3)	1 (14.3)	3 (42.9)	1 (14.3)	1 (14.3)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Athens	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Hispanic	Statewide	Auglaize	3	0 (0.0)	1 (33.3)	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	1 (33.3)
Hispanic	Statewide	Brown	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Butler	16	3 (18.8)	3 (18.8)	0 (0.0)	4 (25.0)	0 (0.0)	0 (0.0)	6 (37.5)
Hispanic	Statewide	Carroll	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)

Hispanic	Statewide	Champaign	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Hispanic	Statewide	Clark	9	1 (11.1)	1 (11.1)	3 (33.3)	1 (11.1)	2 (22.2)	0 (0.0)	1 (11.1)
Hispanic	Statewide	Clermont	5	1 (20.0)	1 (20.0)	1 (20.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (40.0)
Hispanic	Statewide	Clinton	2	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Columbiana	3	1 (33.3)	1 (33.3)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Coshocton	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Crawford	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Hispanic	Statewide	Cuyahoga	19	1 (5.3)	3 (15.8)	1 (5.3)	1 (5.3)	1 (5.3)	1 (5.3)	11 (57.9)
Hispanic	Statewide	Darke	2	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Defiance	20	1 (5.0)	4 (20.0)	2 (10.0)	3 (15.0)	2 (10.0)	0 (0.0)	8 (40.0)
Hispanic	Statewide	Delaware	2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)
Hispanic	Statewide	Erie	8	0 (0.0)	0 (0.0)	1 (12.5)	0 (0.0)	1 (12.5)	0 (0.0)	6 (75.0)
Hispanic	Statewide	Fairfield	2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)
Hispanic	Statewide	Fayette	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Franklin	126	25 (19.8)	18 (14.3)	14 (11.1)	13 (10.3)	8 (6.3)	5 (4.0)	43 (34.1)
Hispanic	Statewide	Fulton	14	1 (7.1)	2 (14.3)	3 (21.4)	2 (14.3)	1 (7.1)	1 (7.1)	4 (28.6)
Hispanic	Statewide	Geauga	3	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (33.3)	0 (0.0)	2 (66.7)
Hispanic	Statewide	Greene	6	0 (0.0)	0 (0.0)	1 (16.7)	2 (33.3)	1 (16.7)	0 (0.0)	2 (33.3)
Hispanic	Statewide	Guernsey	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Hamilton	50	2 (4.0)	5 (10.0)	6 (12.0)	4 (8.0)	4 (8.0)	3 (6.0)	26 (52.0)
Hispanic	Statewide	Hancock	12	2 (16.7)	1 (8.3)	2 (16.7)	2 (16.7)	1 (8.3)	1 (8.3)	3 (25.0)
Hispanic	Statewide	Henry	5	0 (0.0)	0 (0.0)	1 (20.0)	1 (20.0)	0 (0.0)	0 (0.0)	3 (60.0)
Hispanic	Statewide	Huron	9	2 (22.2)	1 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)	1 (11.1)	5 (55.6)
Hispanic	Statewide	Jefferson	2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)
Hispanic	Statewide	Lake	18	3 (16.7)	7 (38.9)	2 (11.1)	1 (5.6)	0 (0.0)	0 (0.0)	5 (27.8)
Hispanic	Statewide	Licking	4	0 (0.0)	1 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	2 (50.0)
Hispanic	Statewide	Logan	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Hispanic	Statewide	Lorain	10	0 (0.0)	0 (0.0)	2 (20.0)	0 (0.0)	1 (10.0)	1 (10.0)	6 (60.0)
Hispanic	Statewide	Lucas	74	12 (16.2)	4 (5.4)	12 (16.2)	8 (10.8)	6 (8.1)	5 (6.8)	27 (36.5)
Hispanic	Statewide	Mahoning	26	3 (11.5)	4 (15.4)	2 (7.7)	3 (11.5)	3 (11.5)	3 (11.5)	8 (30.8)
Hispanic	Statewide	Marion	4	0 (0.0)	1 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (75.0)
Hispanic	Statewide	Medina	8	1 (12.5)	0 (0.0)	0 (0.0)	1 (12.5)	0 (0.0)	1 (12.5)	5 (62.5)
Hispanic	Statewide	Mercer	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Miami	3	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (66.7)
Hispanic	Statewide	Montgomery	29	5 (17.2)	0 (0.0)	2 (6.9)	3 (10.3)	1 (3.4)	3 (10.3)	15 (51.7)
Hispanic	Statewide	Muskingum	2	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Ottawa	12	0 (0.0)	1 (8.3)	0 (0.0)	4 (33.3)	2 (16.7)	3 (25.0)	2 (16.7)
Hispanic	Statewide	Paulding	3	0 (0.0)	0 (0.0)	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	2 (66.7)
Hispanic	Statewide	Pickaway	2	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Portage	8	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (25.0)	1 (12.5)	5 (62.5)
Hispanic	Statewide	Putnam	13	1 (7.7)	3 (23.1)	3 (23.1)	3 (23.1)	1 (7.7)	0 (0.0)	2 (15.4)
Hispanic	Statewide	Richland	3	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	1 (33.3)	0 (0.0)	1 (33.3)
Hispanic	Statewide	Ross	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Hispanic	Statewide	Sandusky	33	2 (6.1)	3 (9.1)	5 (15.2)	5 (15.2)	3 (9.1)	0 (0.0)	15 (45.5)
Hispanic	Statewide	Seneca	14	1 (7.1)	0 (0.0)	1 (7.1)	3 (21.4)	0 (0.0)	1 (7.1)	8 (57.1)

Hispanic	Statewide	Shelby	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Stark	14	1 (7.1)	2 (14.3)	2 (14.3)	2 (14.3)	1 (7.1)	2 (14.3)	4 (28.6)
Hispanic	Statewide	Summit	18	3 (16.7)	1 (5.6)	2 (11.1)	2 (11.1)	0 (0.0)	3 (16.7)	7 (38.9)
Hispanic	Statewide	Trumbull	4	1 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)	2 (50.0)
Hispanic	Statewide	Tuscarawas	4	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)	1 (25.0)	0 (0.0)	2 (50.0)
Hispanic	Statewide	Van wert	4	0 (0.0)	0 (0.0)	0 (0.0)	2 (50.0)	0 (0.0)	1 (25.0)	1 (25.0)
Hispanic	Statewide	Warren	8	1 (12.5)	0 (0.0)	1 (12.5)	0 (0.0)	0 (0.0)	1 (12.5)	5 (62.5)
Hispanic	Statewide	Washington	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Hispanic	Statewide	Wayne	5	0 (0.0)	1 (20.0)	1 (20.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (60.0)
Hispanic	Statewide	Williams	6	2 (33.3)	0 (0.0)	1 (16.7)	0 (0.0)	2 (33.3)	0 (0.0)	1 (16.7)
Hispanic	Statewide	Wood	22	1 (4.5)	0 (0.0)	2 (9.1)	2 (9.1)	1 (4.5)	3 (13.6)	13 (59.1)
Hispanic	Statewide	Wyandot	3	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (33.3)	1 (33.3)
Asian	Statewide		415	38 (9.2)	27 (6.5)	25 (6.0)	30 (7.2)	29 (7.0)	18 (4.3)	248 (59.8)
Asian	Statewide	Allen	2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)
Asian	Statewide	Athens	7	5 (71.4)	1 (14.3)	0 (0.0)	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Brown	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Asian	Statewide	Butler	12	1 (8.3)	1 (8.3)	0 (0.0)	1 (8.3)	0 (0.0)	1 (8.3)	8 (66.7)
Asian	Statewide	Clermont	5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (20.0)	0 (0.0)	4 (80.0)
Asian	Statewide	Cuyahoga	80	10 (12.5)	7 (8.8)	5 (6.3)	3 (3.8)	4 (5.0)	3 (3.8)	48 (60.0)
Asian	Statewide	Delaware	9	1 (11.1)	1 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)	1 (11.1)	6 (66.7)
Asian	Statewide	Fairfield	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Asian	Statewide	Fayette	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Asian	Statewide	Franklin	117	9 (7.7)	5 (4.3)	4 (3.4)	14 (12.0)	11 (9.4)	4 (3.4)	70 (59.8)
Asian	Statewide	Greene	6	1 (16.7)	1 (16.7)	0 (0.0)	1 (16.7)	0 (0.0)	1 (16.7)	2 (33.3)
Asian	Statewide	Guernsey	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Hamilton	45	1 (2.2)	4 (8.9)	2 (4.4)	4 (8.9)	4 (8.9)	2 (4.4)	28 (62.2)
Asian	Statewide	Hancock	5	0 (0.0)	0 (0.0)	0 (0.0)	2 (40.0)	0 (0.0)	0 (0.0)	3 (60.0)
Asian	Statewide	Henry	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Asian	Statewide	Lake	3	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (33.3)	2 (66.7)
Asian	Statewide	Licking	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Lorain	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Asian	Statewide	Lucas	11	0 (0.0)	1 (9.1)	1 (9.1)	0 (0.0)	0 (0.0)	1 (9.1)	8 (72.7)
Asian	Statewide	Madison	2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)
Asian	Statewide	Mahoning	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Asian	Statewide	Marion	2	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)
Asian	Statewide	Miami	3	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (33.3)	2 (66.7)
Asian	Statewide	Montgomery	23	3 (13.0)	0 (0.0)	2 (8.7)	1 (4.3)	5 (21.7)	0 (0.0)	12 (52.2)
Asian	Statewide	Portage	5	1 (20.0)	1 (20.0)	1 (20.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (40.0)
Asian	Statewide	Putnam	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)

Asian	Statewide	Ross	2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)
Asian	Statewide	Shelby	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Asian	Statewide	Stark	3	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (100.0)
Asian	Statewide	Summit	29	3 (10.3)	1 (3.4)	5 (17.2)	2 (6.9)	3 (10.3)	2 (6.9)	13 (44.8)
Asian	Statewide	Trumbull	2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)
Asian	Statewide	Union	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Asian	Statewide	Warren	22	2 (9.1)	1 (4.5)	1 (4.5)	0 (0.0)	0 (0.0)	0 (0.0)	18 (81.8)
Asian	Statewide	Wayne	1	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Wood	8	0 (0.0)	2 (25.0)	3 (37.5)	0 (0.0)	0 (0.0)	0 (0.0)	3 (37.5)

Race/Ethnicity by Sampled County

(Percentages in parentheses)

Strata	Cluster	County	ALL COMPLETES	HISP	AA	ASIAN	WHITE	OTHER
			39953	2427 (6.1)	3583 (9.0)	665 (1.7)	32880 (82.3)	398 (1.0)
Appalachian			8155	158 (1.9)	107 (1.3)	15 (0.2)	7769 (95.3)	106 (1.3)
Appalachian	A1		1094	18 (1.6)	28 (2.6)	2 (0.2)	1035 (94.6)	11 (1.0)
Appalachian	A1	Belmont	241	5 (2.1)	4 (1.7)	0 (0.0)	228 (94.6)	4 (1.7)
Appalachian	A1	Columbiana	396	5 (1.3)	7 (1.8)	1 (0.3)	380 (96.0)	3 (0.8)
Appalachian	A1	Guernsey	145	4 (2.8)	2 (1.4)	0 (0.0)	138 (95.2)	1 (0.7)
Appalachian	A1	Harrison	43	2 (4.7)	1 (2.3)	0 (0.0)	40 (93.0)	0 (0.0)
Appalachian	A1	Jefferson	269	2 (0.7)	14 (5.2)	1 (0.4)	249 (92.6)	3 (1.1)
Appalachian	A2		1846	39 (2.1)	7 (0.4)	4 (0.2)	1780 (96.4)	16 (0.9)
Appalachian	A2	Carroll	127	3 (2.4)	1 (0.8)	0 (0.0)	123 (96.9)	0 (0.0)
Appalachian	A2	Coshocton	159	4 (2.5)	3 (1.9)	0 (0.0)	151 (95.0)	1 (0.6)
Appalachian	A2	Holmes	921	14 (1.5)	0 (0.0)	1 (0.1)	898 (97.5)	8 (0.9)
Appalachian	A2	Monroe	88	2 (2.3)	0 (0.0)	0 (0.0)	85 (96.6)	1 (1.1)
Appalachian	A2	Noble	67	1 (1.5)	1 (1.5)	1 (1.5)	63 (94.0)	1 (1.5)
Appalachian	A2	Tuscarawas	484	15 (3.1)	2 (0.4)	2 (0.4)	460 (95.0)	5 (1.0)
Appalachian	A3		1052	18 (1.7)	19 (1.8)	2 (0.2)	1002 (95.2)	11 (1.0)
Appalachian	A3	Athens	222	5 (2.3)	3 (1.4)	1 (0.5)	210 (94.6)	3 (1.4)
Appalachian	A3	Hocking	85	0 (0.0)	1 (1.2)	0 (0.0)	83 (97.6)	1 (1.2)
Appalachian	A3	Muskingum	294	7 (2.4)	9 (3.1)	1 (0.3)	276 (93.9)	1 (0.3)
Appalachian	A3	Perry	88	3 (3.4)	0 (0.0)	0 (0.0)	81 (92.0)	4 (4.5)
Appalachian	A3	Ross	204	2 (1.0)	5 (2.5)	0 (0.0)	196 (96.1)	1 (0.5)
Appalachian	A3	Washington	159	1 (0.6)	1 (0.6)	0 (0.0)	156 (98.1)	1 (0.6)
Appalachian	A4		1162	21 (1.8)	14 (1.2)	2 (0.2)	1103 (94.9)	22 (1.9)
Appalachian	A4	Gallia	147	3 (2.0)	3 (2.0)	0 (0.0)	141 (95.9)	0 (0.0)
Appalachian	A4	Jackson	151	2 (1.3)	0 (0.0)	0 (0.0)	149 (98.7)	0 (0.0)
Appalachian	A4	Lawrence	291	3 (1.0)	4 (1.4)	1 (0.3)	279 (95.9)	4 (1.4)
Appalachian	A4	Pike	108	3 (2.8)	0 (0.0)	0 (0.0)	100 (92.6)	5 (4.6)
Appalachian	A4	Scioto	405	9 (2.2)	7 (1.7)	1 (0.2)	375 (92.6)	13 (3.2)
Appalachian	A4	Vinton	60	1 (1.7)	0 (0.0)	0 (0.0)	59 (98.3)	0 (0.0)
Appalachian	A5		1194	34 (2.8)	19 (1.6)	3 (0.3)	1114 (93.3)	24 (2.0)
Appalachian	A5	Brown	558	18 (3.2)	7 (1.3)	0 (0.0)	520 (93.2)	13 (2.3)
Appalachian	A5	Highland	636	16 (2.5)	12 (1.9)	3 (0.5)	594 (93.4)	11 (1.7)
Appalachian	A6		1005	17 (1.7)	11 (1.1)	1 (0.1)	960 (95.5)	16 (1.6)
Appalachian	A6	Adams	236	6 (2.5)	0 (0.0)	0 (0.0)	225 (95.3)	5 (2.1)
Appalachian	A6	Meigs	389	7 (1.8)	3 (0.8)	1 (0.3)	374 (96.1)	4 (1.0)
Appalachian	A6	Morgan	380	4 (1.1)	8 (2.1)	0 (0.0)	361 (95.0)	7 (1.8)
Appalachian	A7	Clermont	802	11 (1.4)	9 (1.1)	1 (0.1)	775 (96.6)	6 (0.7)
Metro			16849	600 (3.6)	2895 (17.2)	174 (1.0)	13004 (77.2)	176 (1.0)
Metro	M0	Hamilton	1598	40 (2.5)	364 (22.8)	17 (1.1)	1164 (72.8)	13 (0.8)
Metro	M1	Butler	1090	29 (2.7)	46 (4.2)	12 (1.1)	992 (91.0)	11 (1.0)

Metro	M2		1236	70 (5.7)	81 (6.6)	6 (0.5)	1065 (86.2)	14 (1.1)
Metro	M2	Allen	294	7 (2.4)	25 (8.5)	0 (0.0)	260 (88.4)	2 (0.7)
Metro	M2	Lorain	942	63 (6.7)	56 (5.9)	6 (0.6)	805 (85.5)	12 (1.3)
Metro	M3		1032	21 (2.0)	57 (5.5)	2 (0.2)	946 (91.7)	6 (0.6)
Metro	M3	Richland	243	7 (2.9)	14 (5.8)	1 (0.4)	220 (90.5)	1 (0.4)
Metro	M3	Stark	789	14 (1.8)	43 (5.4)	1 (0.1)	726 (92.0)	5 (0.6)
Metro	M4	Mahoning	1026	51 (5.0)	130 (12.7)	3 (0.3)	832 (81.1)	10 (1.0)
Metro	M5	Montgomery	1665	50 (3.0)	386 (23.2)	11 (0.7)	1205 (72.4)	13 (0.8)
Metro	M6	Summit	2160	43 (2.0)	353 (16.3)	16 (0.7)	1711 (79.2)	37 (1.7)
Metro	M7	Cuyahoga	1989	84 (4.2)	570 (28.7)	33 (1.7)	1292 (65.0)	10 (0.5)
Metro	M8	Franklin	3119	117 (3.8)	582 (18.7)	67 (2.1)	2305 (73.9)	48 (1.5)
Metro	M9	Lucas	1934	95 (4.9)	326 (16.9)	7 (0.4)	1492 (77.1)	14 (0.7)
Rural			7115	211 (3.0)	86 (1.2)	21 (0.3)	6732 (94.6)	65 (0.9)
Rural	R1		890	35 (3.9)	7 (0.8)	2 (0.2)	839 (94.3)	7 (0.8)
Rural	R1	Defiance	259	14 (5.4)	4 (1.5)	0 (0.0)	239 (92.3)	2 (0.8)
Rural	R1	Henry	212	8 (3.8)	1 (0.5)	0 (0.0)	202 (95.3)	1 (0.5)
Rural	R1	Paulding	141	5 (3.5)	2 (1.4)	1 (0.7)	131 (92.9)	2 (1.4)
Rural	R1	Williams	278	8 (2.9)	0 (0.0)	1 (0.4)	267 (96.0)	2 (0.7)
Rural	R2		815	28 (3.4)	2 (0.2)	2 (0.2)	774 (95.0)	9 (1.1)
Rural	R2	Hancock	275	10 (3.6)	0 (0.0)	1 (0.4)	261 (94.9)	3 (1.1)
Rural	R2	Putnam	140	7 (5.0)	0 (0.0)	1 (0.7)	131 (93.6)	1 (0.7)
Rural	R2	Shelby	191	5 (2.6)	2 (1.0)	0 (0.0)	181 (94.8)	3 (1.6)
Rural	R2	Van wert	121	1 (0.8)	0 (0.0)	0 (0.0)	118 (97.5)	2 (1.7)
Rural	R2	Wyandot	88	5 (5.7)	0 (0.0)	0 (0.0)	83 (94.3)	0 (0.0)
Rural	R3		850	23 (2.7)	6 (0.7)	1 (0.1)	814 (95.8)	6 (0.7)
Rural	R3	Ashland	157	3 (1.9)	0 (0.0)	0 (0.0)	153 (97.5)	1 (0.6)
Rural	R3	Champaign	120	1 (0.8)	2 (1.7)	0 (0.0)	114 (95.0)	3 (2.5)
Rural	R3	Hardin	96	3 (3.1)	1 (1.0)	0 (0.0)	92 (95.8)	0 (0.0)
Rural	R3	Knox	182	5 (2.7)	1 (0.5)	0 (0.0)	176 (96.7)	0 (0.0)
Rural	R3	Logan	159	3 (1.9)	1 (0.6)	0 (0.0)	153 (96.2)	2 (1.3)
Rural	R3	Ottawa	136	8 (5.9)	1 (0.7)	1 (0.7)	126 (92.6)	0 (0.0)
Rural	R4		835	21 (2.5)	16 (1.9)	1 (0.1)	789 (94.5)	8 (1.0)
Rural	R4	Ashtabula	338	10 (3.0)	6 (1.8)	0 (0.0)	319 (94.4)	3 (0.9)
Rural	R4	Crawford	166	3 (1.8)	1 (0.6)	0 (0.0)	162 (97.6)	0 (0.0)
Rural	R4	Marion	219	7 (3.2)	8 (3.7)	1 (0.5)	200 (91.3)	3 (1.4)
Rural	R4	Morrow	112	1 (0.9)	1 (0.9)	0 (0.0)	108 (96.4)	2 (1.8)
Rural	R5		917	25 (2.7)	1 (0.1)	1 (0.1)	879 (95.9)	11 (1.2)
Rural	R5	Darke	341	10 (2.9)	1 (0.3)	0 (0.0)	325 (95.3)	5 (1.5)
Rural	R5	Mercer	272	10 (3.7)	0 (0.0)	0 (0.0)	260 (95.6)	2 (0.7)
Rural	R5	Preble	304	5 (1.6)	0 (0.0)	1 (0.3)	294 (96.7)	4 (1.3)
Rural	R6		951	29 (3.0)	12 (1.3)	0 (0.0)	901 (94.7)	9 (0.9)
Rural	R6	Huron	308	9 (2.9)	0 (0.0)	0 (0.0)	294 (95.5)	5 (1.6)
Rural	R6	Sandusky	324	14 (4.3)	5 (1.5)	0 (0.0)	303 (93.5)	2 (0.6)
Rural	R6	Seneca	319	6 (1.9)	7 (2.2)	0 (0.0)	304 (95.3)	2 (0.6)
Rural	R7		919	30 (3.3)	29 (3.2)	5 (0.5)	846 (92.1)	9 (1.0)
Rural	R7	Erie	395	15 (3.8)	20 (5.1)	2 (0.5)	355 (89.9)	3 (0.8)
Rural	R7	Wayne	524	15 (2.9)	9 (1.7)	3 (0.6)	491 (93.7)	6 (1.1)
Rural	R8		938	20 (2.1)	13 (1.4)	9 (1.0)	890 (94.9)	6 (0.6)
Rural	R8	Clinton	148	5 (3.4)	4 (2.7)	0 (0.0)	137 (92.6)	2 (1.4)

Rural	R8	Fayette	102	1 (1.0)	1 (1.0)	0 (0.0)	99 (97.1)	1 (1.0)
Rural	R8	Warren	688	14 (2.0)	8 (1.2)	9 (1.3)	654 (95.1)	3 (0.4)
Suburban			4165	97 (2.3)	114 (2.7)	28 (0.7)	3888 (93.3)	38 (0.9)
Suburban	S1		763	13 (1.7)	13 (1.7)	4 (0.5)	730 (95.7)	3 (0.4)
Suburban	S1	Auglaize	106	2 (1.9)	0 (0.0)	0 (0.0)	104 (98.1)	0 (0.0)
Suburban	S1	Delaware	201	4 (2.0)	8 (4.0)	2 (1.0)	186 (92.5)	1 (0.5)
Suburban	S1	Madison	86	2 (2.3)	1 (1.2)	0 (0.0)	83 (96.5)	0 (0.0)
Suburban	S1	Miami	259	4 (1.5)	4 (1.5)	0 (0.0)	249 (96.1)	2 (0.8)
Suburban	S1	Union	111	1 (0.9)	0 (0.0)	2 (1.8)	108 (97.3)	0 (0.0)
Suburban	S2		796	13 (1.6)	21 (2.6)	5 (0.6)	749 (94.1)	8 (1.0)
Suburban	S2	Fairfield	202	0 (0.0)	6 (3.0)	0 (0.0)	194 (96.0)	2 (1.0)
Suburban	S2	Greene	253	6 (2.4)	12 (4.7)	4 (1.6)	227 (89.7)	4 (1.6)
Suburban	S2	Licking	246	5 (2.0)	2 (0.8)	1 (0.4)	237 (96.3)	1 (0.4)
Suburban	S2	Pickaway	95	2 (2.1)	1 (1.1)	0 (0.0)	91 (95.8)	1 (1.1)
Suburban	S3		774	20 (2.6)	13 (1.7)	7 (0.9)	728 (94.1)	6 (0.8)
Suburban	S3	Geauga	109	2 (1.8)	1 (0.9)	0 (0.0)	106 (97.2)	0 (0.0)
Suburban	S3	Lake	298	13 (4.4)	5 (1.7)	3 (1.0)	275 (92.3)	2 (0.7)
Suburban	S3	Medina	205	4 (2.0)	1 (0.5)	0 (0.0)	197 (96.1)	3 (1.5)
Suburban	S3	Portage	162	1 (0.6)	6 (3.7)	4 (2.5)	150 (92.6)	1 (0.6)
Suburban	S4		947	30 (3.2)	11 (1.2)	10 (1.1)	885 (93.5)	11 (1.2)
Suburban	S4	Fulton	251	8 (3.2)	1 (0.4)	0 (0.0)	238 (94.8)	4 (1.6)
Suburban	S4	Wood	696	22 (3.2)	10 (1.4)	10 (1.4)	647 (93.0)	7 (1.0)
Suburban	S5		885	21 (2.4)	56 (6.3)	2 (0.2)	796 (89.9)	10 (1.1)
Suburban	S5	Clark	329	7 (2.1)	24 (7.3)	2 (0.6)	294 (89.4)	2 (0.6)
Suburban	S5	Trumbull	556	14 (2.5)	32 (5.8)	0 (0.0)	502 (90.3)	8 (1.4)
Child			1985	82 (4.1)	381 (19.2)	22 (1.1)	1487 (74.9)	13 (0.7)
Child	Cuyahoga	Cuyahoga	993	38 (3.8)	276 (27.8)	14 (1.4)	661 (66.6)	4 (0.4)
Child	Lorain		444	32 (7.2)	29 (6.5)	1 (0.2)	379 (85.4)	3 (0.7)
Child	Lorain	Erie	12	0 (0.0)	0 (0.0)	0 (0.0)	12 (100.0)	0 (0.0)
Child	Lorain	Lorain	432	32 (7.4)	29 (6.7)	1 (0.2)	367 (85.0)	3 (0.7)
Child	Summit	Summit	548	12 (2.2)	76 (13.9)	7 (1.3)	447 (81.6)	6 (1.1)
Hispanic			1269	1269 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Cuyahoga	Cuyahoga	321	321 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Lorain	Lorain	245	245 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide		703	703 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Allen	9	9 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Ashland	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Ashtabula	7	7 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Athens	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Auglaize	3	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Brown	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Butler	16	16 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Carroll	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Champaign	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Clark	9	9 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Clermont	5	5 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Clinton	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Hispanic	Statewide	Columbiana	3	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Coshocton	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Crawford	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Cuyahoga	19	19 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Darke	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Defiance	20	20 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Delaware	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Erie	8	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Fairfield	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Fayette	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Franklin	126	126 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Fulton	14	14 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Geauga	3	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Greene	6	6 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Guernsey	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Hamilton	50	50 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Hancock	12	12 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Henry	5	5 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Huron	9	9 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Jefferson	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Lake	18	18 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Licking	4	4 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Logan	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Lorain	10	10 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Lucas	74	74 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Mahoning	26	26 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Marion	4	4 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Medina	8	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Mercer	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Miami	3	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Montgomery	29	29 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Muskingum	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Ottawa	12	12 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Paulding	3	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Pickaway	2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Portage	8	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Putnam	13	13 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Richland	3	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Ross	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Sandusky	33	33 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Seneca	14	14 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Shelby	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Stark	14	14 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Summit	18	18 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Trumbull	4	4 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Tuscarawas	4	4 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Van wert	4	4 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Warren	8	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Washington	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Wayne	5	5 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Hispanic	Statewide	Williams	6	6 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Wood	22	22 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	Statewide	Wyandot	3	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Asian	Statewide		415	10 (2.4)	0 (0.0)	405 (97.6)	0 (0.0)	0 (0.0)
Asian	Statewide	Allen	2	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Athens	7	1 (14.3)	0 (0.0)	6 (85.7)	0 (0.0)	0 (0.0)
Asian	Statewide	Brown	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Butler	12	0 (0.0)	0 (0.0)	12 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Clermont	5	0 (0.0)	0 (0.0)	5 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Cuyahoga	80	1 (1.3)	0 (0.0)	79 (98.8)	0 (0.0)	0 (0.0)
Asian	Statewide	Delaware	9	0 (0.0)	0 (0.0)	9 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Fairfield	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Fayette	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Franklin	117	4 (3.4)	0 (0.0)	113 (96.6)	0 (0.0)	0 (0.0)
Asian	Statewide	Greene	6	0 (0.0)	0 (0.0)	6 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Guernsey	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Hamilton	45	0 (0.0)	0 (0.0)	45 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Hancock	5	0 (0.0)	0 (0.0)	5 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Henry	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Lake	3	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)	0 (0.0)
Asian	Statewide	Licking	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Lorain	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Lucas	11	0 (0.0)	0 (0.0)	11 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Madison	2	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Mahoning	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Marion	2	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Miami	3	0 (0.0)	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Montgomery	23	0 (0.0)	0 (0.0)	23 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Portage	5	1 (20.0)	0 (0.0)	4 (80.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Putnam	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Ross	2	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Shelby	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Stark	3	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)	0 (0.0)
Asian	Statewide	Summit	29	1 (3.4)	0 (0.0)	28 (96.6)	0 (0.0)	0 (0.0)
Asian	Statewide	Trumbull	2	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Union	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Warren	22	0 (0.0)	0 (0.0)	22 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Wayne	1	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)
Asian	Statewide	Wood	8	0 (0.0)	0 (0.0)	8 (100.0)	0 (0.0)	0 (0.0)

H. Survey Dispositions

The following presents the final dispositions for the entire study overall, as well as by stratum, cluster, and county.

- 110: Complete
- 120: Partial complete
- 210: Eligible respondent, no interview—refusal
- 220: Eligible respondent, no interview—non-contacted household
- 310: Known household—unknown eligibility
- 320: Eligible household—unknown eligibility of respondent
- 390: Miscellaneous (unscreened selected respondent due to physical or mental impairment)
- 420: Dedicated fax/data/modem line
- 430: Non-working number
- 440: Various technical circumstances—including wrong number, number changed, non-residential, cellular, and phone booth
- 450: Non-residence
- 470: Eligible household, no eligible respondent

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a. Overall – Standard Screener

disposition

Frequency / Percent	110	120	210	220	310	320	390	420	430	440	450	470	Total
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

b. Stratum – Standard Screener

stratum disposition

stratum / Frequency / Percent / Row Pct / Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
Appalachian	8155	1	5904	2211	2904	5490	260	1346	13820	25215	3243	134	68683
	2.60	0.00	1.88	0.70	0.93	1.75	0.08	0.43	4.40	8.04	1.03	0.04	21.89
	11.87	0.00	8.60	3.22	4.23	7.99	0.38	1.96	20.12	36.71	4.72	0.20	
	22.47	25.00	19.30	17.31	16.73	19.94	13.79	16.43	18.91	31.02	13.58	15.18	
Metropolitan	16850	1	16087	7344	9406	14303	1168	4648	41396	19384	14525	478	145590
	5.37	0.00	5.13	2.34	3.00	4.56	0.37	1.48	13.19	6.18	4.63	0.15	46.40
	11.57	0.00	11.05	5.04	6.46	9.82	0.80	3.19	28.43	13.31	9.98	0.33	
	46.44	25.00	52.58	57.49	54.18	51.94	61.96	56.73	56.63	23.84	60.83	54.13	
Rural	7115	0	5193	1956	3304	4906	258	1316	11406	25724	3660	177	65015
	2.27	0.00	1.65	0.62	1.05	1.56	0.08	0.42	3.63	8.20	1.17	0.06	20.72
	10.94	0.00	7.99	3.01	5.08	7.55	0.40	2.02	17.54	39.57	5.63	0.27	
	19.61	0.00	16.97	15.31	19.03	17.82	13.69	16.06	15.60	31.64	15.33	20.05	
Suburban	4165	2	3414	1264	1746	2838	199	883	6473	10969	2450	94	34497
	1.33	0.00	1.09	0.40	0.56	0.90	0.06	0.28	2.06	3.50	0.78	0.03	10.99
	12.07	0.01	9.90	3.66	5.06	8.23	0.58	2.56	18.76	31.80	7.10	0.27	
	11.48	50.00	11.16	9.89	10.06	10.31	10.56	10.78	8.86	13.49	10.26	10.65	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

c. Cluster – Standard Screener

CLUSTER disposition

Frequency / Percent / Row Pct / Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
A1	1094	0	913	283	367	713	30	162	2391	1288	408	19	7668
	0.35	0.00	0.29	0.09	0.12	0.23	0.01	0.05	0.76	0.41	0.13	0.01	2.44
	14.27	0.00	11.91	3.69	4.79	9.30	0.39	2.11	31.18	16.80	5.32	0.25	
	3.02	0.00	2.98	2.22	2.11	2.59	1.59	1.98	3.27	1.58	1.71	2.15	
A2	1846	0	1345	581	860	1489	41	392	3020	10779	986	36	21375
	0.59	0.00	0.43	0.19	0.27	0.47	0.01	0.12	0.96	3.44	0.31	0.01	6.81
	8.64	0.00	6.29	2.72	4.02	6.97	0.19	1.83	14.13	50.43	4.61	0.17	
	5.09	0.00	4.40	4.55	4.95	5.41	2.18	4.78	4.13	13.26	4.13	4.08	
A3	1052	0	726	225	376	581	27	168	2080	1475	448	18	7176
	0.34	0.00	0.23	0.07	0.12	0.19	0.01	0.05	0.66	0.47	0.14	0.01	2.29
	14.66	0.00	10.12	3.14	5.24	8.10	0.38	2.34	28.99	20.55	6.24	0.25	
	2.90	0.00	2.37	1.76	2.17	2.11	1.43	2.05	2.85	1.81	1.88	2.04	
A4	1162	0	842	267	394	686	48	174	1615	2671	428	22	8309
	0.37	0.00	0.27	0.09	0.13	0.22	0.02	0.06	0.51	0.85	0.14	0.01	2.65
	13.98	0.00	10.13	3.21	4.74	8.26	0.58	2.09	19.44	32.15	5.15	0.26	
	3.20	0.00	2.75	2.09	2.27	2.49	2.55	2.12	2.21	3.29	1.79	2.49	
A5	1194	0	875	266	365	738	40	168	1970	4879	382	14	10891
	0.38	0.00	0.28	0.08	0.12	0.24	0.01	0.05	0.63	1.55	0.12	0.00	3.47
	10.96	0.00	8.03	2.44	3.35	6.78	0.37	1.54	18.09	44.80	3.51	0.13	
	3.29	0.00	2.86	2.08	2.10	2.68	2.12	2.05	2.70	6.00	1.60	1.59	
A6	1005	0	606	227	344	568	34	112	2181	2800	225	12	8114
	0.32	0.00	0.19	0.07	0.11	0.18	0.01	0.04	0.70	0.89	0.07	0.00	2.59
	12.39	0.00	7.47	2.80	4.24	7.00	0.42	1.38	26.88	34.51	2.77	0.15	
	2.77	0.00	1.98	1.78	1.98	2.06	1.80	1.37	2.98	3.44	0.94	1.36	
A7	802	1	597	362	198	715	40	170	563	1323	366	13	5150
	0.26	0.00	0.19	0.12	0.06	0.23	0.01	0.05	0.18	0.42	0.12	0.00	1.64
	15.57	0.02	11.59	7.03	3.84	13.88	0.78	3.30	10.93	25.69	7.11	0.25	
	2.21	25.00	1.95	2.83	1.14	2.60	2.12	2.07	0.77	1.63	1.53	1.47	
M0	1599	0	1508	929	635	1632	131	405	1250	3285	1194	52	12620
	0.51	0.00	0.48	0.30	0.20	0.52	0.04	0.13	0.40	1.05	0.38	0.02	4.02
	12.67	0.00	11.95	7.36	5.03	12.93	1.04	3.21	9.90	26.03	9.46	0.41	
	4.41	0.00	4.93	7.27	3.66	5.93	6.95	4.94	1.71	4.04	5.00	5.89	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

Cluster – Continued

CLUSTER disposition

Frequency / Percent / Row Pct / Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
M1	1090	0	1078	596	358	1123	73	243	1099	2044	762	35	8501
	0.35	0.00	0.34	0.19	0.11	0.36	0.02	0.08	0.35	0.65	0.24	0.01	2.71
	12.82	0.00	12.68	7.01	4.21	13.21	0.86	2.86	12.93	24.04	8.96	0.41	
	3.00	0.00	3.52	4.67	2.06	4.08	3.87	2.97	1.50	2.51	3.19	3.96	
M2	1236	0	1172	387	690	825	61	251	2677	3346	840	29	11514
	0.39	0.00	0.37	0.12	0.22	0.26	0.02	0.08	0.85	1.07	0.27	0.01	3.67
	10.73	0.00	10.18	3.36	5.99	7.17	0.53	2.18	23.25	29.06	7.30	0.25	
	3.41	0.00	3.83	3.03	3.97	3.00	3.24	3.06	3.66	4.12	3.52	3.28	
M3	1032	0	1020	334	393	742	41	236	1637	1036	726	16	7213
	0.33	0.00	0.33	0.11	0.13	0.24	0.01	0.08	0.52	0.33	0.23	0.01	2.30
	14.31	0.00	14.14	4.63	5.45	10.29	0.57	3.27	22.70	14.36	10.07	0.22	
	2.84	0.00	3.33	2.61	2.26	2.69	2.18	2.88	2.24	1.27	3.04	1.81	
M4	1026	0	1134	362	488	866	58	264	2727	1046	750	25	8746
	0.33	0.00	0.36	0.12	0.16	0.28	0.02	0.08	0.87	0.33	0.24	0.01	2.79
	11.73	0.00	12.97	4.14	5.58	9.90	0.66	3.02	31.18	11.96	8.58	0.29	
	2.83	0.00	3.71	2.83	2.81	3.14	3.08	3.22	3.73	1.29	3.14	2.83	
M5	1665	0	1549	677	852	1339	101	439	4430	1334	1376	58	13820
	0.53	0.00	0.49	0.22	0.27	0.43	0.03	0.14	1.41	0.43	0.44	0.02	4.40
	12.05	0.00	11.21	4.90	6.16	9.69	0.73	3.18	32.05	9.65	9.96	0.42	
	4.59	0.00	5.06	5.30	4.91	4.86	5.36	5.36	6.06	1.64	5.76	6.57	
M6	2160	0	2144	920	1413	1785	151	662	5238	1915	2121	48	18557
	0.69	0.00	0.68	0.29	0.45	0.57	0.05	0.21	1.67	0.61	0.68	0.02	5.91
	11.64	0.00	11.55	4.96	7.61	9.62	0.81	3.57	28.23	10.32	11.43	0.26	
	5.95	0.00	7.01	7.20	8.14	6.48	8.01	8.08	7.17	2.36	8.88	5.44	
M7	1989	0	2166	1097	1729	2106	166	730	8360	1753	2349	69	22514
	0.63	0.00	0.69	0.35	0.55	0.67	0.05	0.23	2.66	0.56	0.75	0.02	7.17
	8.83	0.00	9.62	4.87	7.68	9.35	0.74	3.24	37.13	7.79	10.43	0.31	
	5.48	0.00	7.08	8.59	9.96	7.65	8.81	8.91	11.44	2.16	9.84	7.81	
M8	3119	1	2615	1314	1875	2475	252	946	8729	1890	2859	94	26169
	0.99	0.00	0.83	0.42	0.60	0.79	0.08	0.30	2.78	0.60	0.91	0.03	8.34
	11.92	0.00	9.99	5.02	7.16	9.46	0.96	3.61	33.36	7.22	10.93	0.36	
	8.60	25.00	8.55	10.29	10.80	8.99	13.37	11.55	11.94	2.32	11.97	10.65	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

Cluster – Continued

CLUSTER disposition

CLUSTER	Statistic	110	120	210	220	310	320	390	420	430	440	450	470	Total
M9	Frequency	1934	0	1701	728	973	1410	134	472	5249	1735	1548	52	15936
	Percent	0.62	0.00	0.54	0.23	0.31	0.45	0.04	0.15	1.67	0.55	0.49	0.02	5.08
	Row Pct	12.14	0.00	10.67	4.57	6.11	8.85	0.84	2.96	32.94	10.89	9.71	0.33	
	Col Pct	5.33	0.00	5.56	5.70	5.60	5.12	7.11	5.76	7.18	2.13	6.48	5.89	
R1	Frequency	890	0	644	217	356	592	27	139	1149	4616	459	12	9101
	Percent	0.28	0.00	0.21	0.07	0.11	0.19	0.01	0.04	0.37	1.47	0.15	0.00	2.90
	Row Pct	9.78	0.00	7.08	2.38	3.91	6.50	0.30	1.53	12.62	50.72	5.04	0.13	
	Col Pct	2.45	0.00	2.10	1.70	2.05	2.15	1.43	1.70	1.57	5.68	1.92	1.36	
R2	Frequency	815	0	556	203	747	518	24	160	1431	1899	470	17	6840
	Percent	0.26	0.00	0.18	0.06	0.24	0.17	0.01	0.05	0.46	0.61	0.15	0.01	2.18
	Row Pct	11.92	0.00	8.13	2.97	10.92	7.57	0.35	2.34	20.92	27.76	6.87	0.25	
	Col Pct	2.25	0.00	1.82	1.59	4.30	1.88	1.27	1.95	1.96	2.34	1.97	1.93	
R3	Frequency	850	0	564	253	445	535	28	137	1462	3867	419	27	8587
	Percent	0.27	0.00	0.18	0.08	0.14	0.17	0.01	0.04	0.47	1.23	0.13	0.01	2.74
	Row Pct	9.90	0.00	6.57	2.95	5.18	6.23	0.33	1.60	17.03	45.03	4.88	0.31	
	Col Pct	2.34	0.00	1.84	1.98	2.56	1.94	1.49	1.67	2.00	4.76	1.75	3.06	
R4	Frequency	835	0	569	227	292	527	31	130	2020	2379	384	28	7422
	Percent	0.27	0.00	0.18	0.07	0.09	0.17	0.01	0.04	0.64	0.76	0.12	0.01	2.37
	Row Pct	11.25	0.00	7.67	3.06	3.93	7.10	0.42	1.75	27.22	32.05	5.17	0.38	
	Col Pct	2.30	0.00	1.86	1.78	1.68	1.91	1.64	1.59	2.76	2.93	1.61	3.17	
R5	Frequency	917	0	636	236	274	646	28	128	1272	4412	394	21	8964
	Percent	0.29	0.00	0.20	0.08	0.09	0.21	0.01	0.04	0.41	1.41	0.13	0.01	2.86
	Row Pct	10.23	0.00	7.10	2.63	3.06	7.21	0.31	1.43	14.19	49.22	4.40	0.23	
	Col Pct	2.53	0.00	2.08	1.85	1.58	2.35	1.49	1.56	1.74	5.43	1.65	2.38	
R6	Frequency	951	0	657	187	388	591	36	143	1449	3140	451	23	8016
	Percent	0.30	0.00	0.21	0.06	0.12	0.19	0.01	0.05	0.46	1.00	0.14	0.01	2.55
	Row Pct	11.86	0.00	8.20	2.33	4.84	7.37	0.45	1.78	18.08	39.17	5.63	0.29	
	Col Pct	2.62	0.00	2.15	1.46	2.24	2.15	1.91	1.75	1.98	3.86	1.89	2.60	
R7	Frequency	919	0	724	272	409	678	28	198	1438	3875	524	23	9088
	Percent	0.29	0.00	0.23	0.09	0.13	0.22	0.01	0.06	0.46	1.23	0.17	0.01	2.90
	Row Pct	10.11	0.00	7.97	2.99	4.50	7.46	0.31	2.18	15.82	42.64	5.77	0.25	
	Col Pct	2.53	0.00	2.37	2.13	2.36	2.46	1.49	2.42	1.97	4.77	2.19	2.60	
Total		36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
		11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

Cluster – Continued

CLUSTER disposition

Frequency Percent Row Pct Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
R8	938	0	843	361	393	819	56	281	1185	1536	559	26	6997
	0.30	0.00	0.27	0.12	0.13	0.26	0.02	0.09	0.38	0.49	0.18	0.01	2.23
	13.41	0.00	12.05	5.16	5.62	11.71	0.80	4.02	16.94	21.95	7.99	0.37	
	2.59	0.00	2.76	2.83	2.26	2.97	2.97	3.43	1.62	1.89	2.34	2.94	
S1	763	0	583	203	290	490	30	198	859	1814	431	14	5675
	0.24	0.00	0.19	0.06	0.09	0.16	0.01	0.06	0.27	0.58	0.14	0.00	1.81
	13.44	0.00	10.27	3.58	5.11	8.63	0.53	3.49	15.14	31.96	7.59	0.25	
	2.10	0.00	1.91	1.59	1.67	1.78	1.59	2.42	1.18	2.23	1.81	1.59	
S2	796	0	613	231	297	541	41	151	1049	1068	458	18	5263
	0.25	0.00	0.20	0.07	0.09	0.17	0.01	0.05	0.33	0.34	0.15	0.01	1.68
	15.12	0.00	11.65	4.39	5.64	10.28	0.78	2.87	19.93	20.29	8.70	0.34	
	2.19	0.00	2.00	1.81	1.71	1.96	2.18	1.84	1.44	1.31	1.92	2.04	
S3	774	0	744	252	470	601	43	195	1331	931	524	24	5889
	0.25	0.00	0.24	0.08	0.15	0.19	0.01	0.06	0.42	0.30	0.17	0.01	1.88
	13.14	0.00	12.63	4.28	7.98	10.21	0.73	3.31	22.60	15.81	8.90	0.41	
	2.13	0.00	2.43	1.97	2.71	2.18	2.28	2.38	1.82	1.15	2.19	2.72	
S4	947	0	695	324	405	635	39	212	1626	5422	610	25	10940
	0.30	0.00	0.22	0.10	0.13	0.20	0.01	0.07	0.52	1.73	0.19	0.01	3.49
	8.66	0.00	6.35	2.96	3.70	5.80	0.36	1.94	14.86	49.56	5.58	0.23	
	2.61	0.00	2.27	2.54	2.33	2.31	2.07	2.59	2.22	6.67	2.55	2.83	
S5	885	2	779	254	284	571	46	127	1608	1734	427	13	6730
	0.28	0.00	0.25	0.08	0.09	0.18	0.01	0.04	0.51	0.55	0.14	0.00	2.14
	13.15	0.03	11.58	3.77	4.22	8.48	0.68	1.89	23.89	25.77	6.34	0.19	
	2.44	50.00	2.55	1.99	1.64	2.07	2.44	1.55	2.20	2.13	1.79	1.47	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

d. County – Standard Screener

COUNTY disposition

Frequency Percent Row Pct Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
Adams	236	0	154	68	110	155	11	36	276	575	70	1	1692
	0.08	0.00	0.05	0.02	0.04	0.05	0.00	0.01	0.09	0.18	0.02	0.00	0.54
	13.95	0.00	9.10	4.02	6.50	9.16	0.65	2.13	16.31	33.98	4.14	0.06	
	0.65	0.00	0.50	0.53	0.63	0.56	0.58	0.44	0.38	0.71	0.29	0.11	
Allen	294	0	223	65	229	151	12	62	1012	1478	180	3	3709
	0.09	0.00	0.07	0.02	0.07	0.05	0.00	0.02	0.32	0.47	0.06	0.00	1.18
	7.93	0.00	6.01	1.75	6.17	4.07	0.32	1.67	27.28	39.85	4.85	0.08	
	0.81	0.00	0.73	0.51	1.32	0.55	0.64	0.76	1.38	1.82	0.75	0.34	
Ashland	157	0	105	42	120	98	7	29	253	667	105	2	1585
	0.05	0.00	0.03	0.01	0.04	0.03	0.00	0.01	0.08	0.21	0.03	0.00	0.51
	9.91	0.00	6.62	2.65	7.57	6.18	0.44	1.83	15.96	42.08	6.62	0.13	
	0.43	0.00	0.34	0.33	0.69	0.36	0.37	0.35	0.35	0.82	0.44	0.23	
Ashtabula	338	0	254	84	108	238	13	48	1094	645	177	16	3015
	0.11	0.00	0.08	0.03	0.03	0.08	0.00	0.02	0.35	0.21	0.06	0.01	0.96
	11.21	0.00	8.42	2.79	3.58	7.89	0.43	1.59	36.29	21.39	5.87	0.53	
	0.93	0.00	0.83	0.66	0.62	0.86	0.69	0.59	1.50	0.79	0.74	1.81	
Athens	222	0	116	63	122	124	4	33	292	835	105	6	1922
	0.07	0.00	0.04	0.02	0.04	0.04	0.00	0.01	0.09	0.27	0.03	0.00	0.61
	11.55	0.00	6.04	3.28	6.35	6.45	0.21	1.72	15.19	43.44	5.46	0.31	
	0.61	0.00	0.38	0.49	0.70	0.45	0.21	0.40	0.40	1.03	0.44	0.68	
Auglaize	106	0	76	22	30	52	1	23	194	244	51	0	799
	0.03	0.00	0.02	0.01	0.01	0.02	0.00	0.01	0.06	0.08	0.02	0.00	0.25
	13.27	0.00	9.51	2.75	3.75	6.51	0.13	2.88	24.28	30.54	6.38	0.00	
	0.29	0.00	0.25	0.17	0.17	0.19	0.05	0.28	0.27	0.30	0.21	0.00	
Belmont	241	0	209	55	67	155	5	40	510	89	91	6	1468
	0.08	0.00	0.07	0.02	0.02	0.05	0.00	0.01	0.16	0.03	0.03	0.00	0.47
	16.42	0.00	14.24	3.75	4.56	10.56	0.34	2.72	34.74	6.06	6.20	0.41	
	0.66	0.00	0.68	0.43	0.39	0.56	0.27	0.49	0.70	0.11	0.38	0.68	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency / Percent / Row Pct / Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
Brown	558	0	413	140	143	383	16	81	874	2598	184	4	5394
	0.18	0.00	0.13	0.04	0.05	0.12	0.01	0.03	0.28	0.83	0.06	0.00	1.72
	10.34	0.00	7.66	2.60	2.65	7.10	0.30	1.50	16.20	48.16	3.41	0.07	
	1.54	0.00	1.35	1.10	0.82	1.39	0.85	0.99	1.20	3.20	0.77	0.45	
Butler	1090	0	1078	596	358	1123	73	243	1099	2044	762	35	8501
	0.35	0.00	0.34	0.19	0.11	0.36	0.02	0.08	0.35	0.65	0.24	0.01	2.71
	12.82	0.00	12.68	7.01	4.21	13.21	0.86	2.86	12.93	24.04	8.96	0.41	
	3.00	0.00	3.52	4.67	2.06	4.08	3.87	2.97	1.50	2.51	3.19	3.96	
Carroll	127	0	86	56	59	87	3	16	304	931	45	3	1717
	0.04	0.00	0.03	0.02	0.02	0.03	0.00	0.01	0.10	0.30	0.01	0.00	0.55
	7.40	0.00	5.01	3.26	3.44	5.07	0.17	0.93	17.71	54.22	2.62	0.17	
	0.35	0.00	0.28	0.44	0.34	0.32	0.16	0.20	0.42	1.15	0.19	0.34	
Champaign	120	0	71	28	54	48	3	17	145	222	38	1	747
	0.04	0.00	0.02	0.01	0.02	0.02	0.00	0.01	0.05	0.07	0.01	0.00	0.24
	16.06	0.00	9.50	3.75	7.23	6.43	0.40	2.28	19.41	29.72	5.09	0.13	
	0.33	0.00	0.23	0.22	0.31	0.17	0.16	0.21	0.20	0.27	0.16	0.11	
Clark	329	1	269	101	113	216	18	46	605	219	166	8	2091
	0.10	0.00	0.09	0.03	0.04	0.07	0.01	0.01	0.19	0.07	0.05	0.00	0.67
	15.73	0.05	12.86	4.83	5.40	10.33	0.86	2.20	28.93	10.47	7.94	0.38	
	0.91	25.00	0.88	0.79	0.65	0.78	0.95	0.56	0.83	0.27	0.70	0.91	
Clermont	802	1	597	362	198	715	40	170	563	1323	366	13	5150
	0.26	0.00	0.19	0.12	0.06	0.23	0.01	0.05	0.18	0.42	0.12	0.00	1.64
	15.57	0.02	11.59	7.03	3.84	13.88	0.78	3.30	10.93	25.69	7.11	0.25	
	2.21	25.00	1.95	2.83	1.14	2.60	2.12	2.07	0.77	1.63	1.53	1.47	
Clinton	148	0	153	35	117	122	6	40	243	775	77	2	1718
	0.05	0.00	0.05	0.01	0.04	0.04	0.00	0.01	0.08	0.25	0.02	0.00	0.55
	8.61	0.00	8.91	2.04	6.81	7.10	0.35	2.33	14.14	45.11	4.48	0.12	
	0.41	0.00	0.50	0.27	0.67	0.44	0.32	0.49	0.33	0.95	0.32	0.23	
Columbiana	396	0	324	104	119	277	8	67	828	487	143	5	2758
	0.13	0.00	0.10	0.03	0.04	0.09	0.00	0.02	0.26	0.16	0.05	0.00	0.88
	14.36	0.00	11.75	3.77	4.31	10.04	0.29	2.43	30.02	17.66	5.18	0.18	
	1.09	0.00	1.06	0.81	0.69	1.01	0.42	0.82	1.13	0.60	0.60	0.57	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency / Percent / Row Pct / Col Pct

COUNTY	110	120	210	220	310	320	390	420	430	440	450	470	Total
Coshocton	159	0	111	29	47	86	8	19	197	209	52	0	917
	0.05	0.00	0.04	0.01	0.01	0.03	0.00	0.01	0.06	0.07	0.02	0.00	0.29
	17.34	0.00	12.10	3.16	5.13	9.38	0.87	2.07	21.48	22.79	5.67	0.00	
	0.44	0.00	0.36	0.23	0.27	0.31	0.42	0.23	0.27	0.26	0.22	0.00	
Crawford	166	0	105	35	49	77	5	26	156	455	66	5	1145
	0.05	0.00	0.03	0.01	0.02	0.02	0.00	0.01	0.05	0.15	0.02	0.00	0.36
	14.50	0.00	9.17	3.06	4.28	6.72	0.44	2.27	13.62	39.74	5.76	0.44	
	0.46	0.00	0.34	0.27	0.28	0.28	0.27	0.32	0.21	0.56	0.28	0.57	
Cuyahoga	1989	0	2166	1097	1729	2106	166	730	8360	1753	2349	69	22514
	0.63	0.00	0.69	0.35	0.55	0.67	0.05	0.23	2.66	0.56	0.75	0.02	7.17
	8.83	0.00	9.62	4.87	7.68	9.35	0.74	3.24	37.13	7.79	10.43	0.31	
	5.48	0.00	7.08	8.59	9.96	7.65	8.81	8.91	11.44	2.16	9.84	7.81	
Darke	341	0	233	79	92	216	9	54	486	1948	163	6	3627
	0.11	0.00	0.07	0.03	0.03	0.07	0.00	0.02	0.15	0.62	0.05	0.00	1.16
	9.40	0.00	6.42	2.18	2.54	5.96	0.25	1.49	13.40	53.71	4.49	0.17	
	0.94	0.00	0.76	0.62	0.53	0.78	0.48	0.66	0.66	2.40	0.68	0.68	
Defiance	259	0	190	57	157	165	5	51	281	883	146	3	2197
	0.08	0.00	0.06	0.02	0.05	0.05	0.00	0.02	0.09	0.28	0.05	0.00	0.70
	11.79	0.00	8.65	2.59	7.15	7.51	0.23	2.32	12.79	40.19	6.65	0.14	
	0.71	0.00	0.62	0.45	0.90	0.60	0.27	0.62	0.38	1.09	0.61	0.34	
Delaware	201	0	164	59	84	103	8	60	137	659	131	5	1611
	0.06	0.00	0.05	0.02	0.03	0.03	0.00	0.02	0.04	0.21	0.04	0.00	0.51
	12.48	0.00	10.18	3.66	5.21	6.39	0.50	3.72	8.50	40.91	8.13	0.31	
	0.55	0.00	0.54	0.46	0.48	0.37	0.42	0.73	0.19	0.81	0.55	0.57	
Erie	395	0	315	115	211	293	11	90	658	655	254	9	3006
	0.13	0.00	0.10	0.04	0.07	0.09	0.00	0.03	0.21	0.21	0.08	0.00	0.96
	13.14	0.00	10.48	3.83	7.02	9.75	0.37	2.99	21.89	21.79	8.45	0.30	
	1.09	0.00	1.03	0.90	1.22	1.06	0.58	1.10	0.90	0.81	1.06	1.02	
Fairfield	202	0	161	66	71	132	16	50	293	311	118	0	1420
	0.06	0.00	0.05	0.02	0.02	0.04	0.01	0.02	0.09	0.10	0.04	0.00	0.45
	14.23	0.00	11.34	4.65	5.00	9.30	1.13	3.52	20.63	21.90	8.31	0.00	
	0.56	0.00	0.53	0.52	0.41	0.48	0.85	0.61	0.40	0.38	0.49	0.00	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency / Percent / Row Pct / Col Pct

COUNTY	110	120	210	220	310	320	390	420	430	440	450	470	Total
Fayette	102	0	68	28	44	73	2	18	309	83	36	1	764
	0.03	0.00	0.02	0.01	0.01	0.02	0.00	0.01	0.10	0.03	0.01	0.00	0.24
	13.35	0.00	8.90	3.66	5.76	9.55	0.26	2.36	40.45	10.86	4.71	0.13	
	0.28	0.00	0.22	0.22	0.25	0.27	0.11	0.22	0.42	0.10	0.15	0.11	
Franklin	3119	1	2615	1314	1875	2475	252	946	8729	1890	2859	94	26169
	0.99	0.00	0.83	0.42	0.60	0.79	0.08	0.30	2.78	0.60	0.91	0.03	8.34
	11.92	0.00	9.99	5.02	7.16	9.46	0.96	3.61	33.36	7.22	10.93	0.36	
	8.60	25.00	8.55	10.29	10.80	8.99	13.37	11.55	11.94	2.32	11.97	10.65	
Fulton	251	0	151	55	68	142	8	43	254	1653	132	5	2762
	0.08	0.00	0.05	0.02	0.02	0.05	0.00	0.01	0.08	0.53	0.04	0.00	0.88
	9.09	0.00	5.47	1.99	2.46	5.14	0.29	1.56	9.20	59.85	4.78	0.18	
	0.69	0.00	0.49	0.43	0.39	0.52	0.42	0.52	0.35	2.03	0.55	0.57	
Gallia	147	0	116	42	54	77	5	31	357	68	83	3	983
	0.05	0.00	0.04	0.01	0.02	0.02	0.00	0.01	0.11	0.02	0.03	0.00	0.31
	14.95	0.00	11.80	4.27	5.49	7.83	0.51	3.15	36.32	6.92	8.44	0.31	
	0.41	0.00	0.38	0.33	0.31	0.28	0.27	0.38	0.49	0.08	0.35	0.34	
Geauga	109	0	102	31	150	81	3	44	153	94	80	1	848
	0.03	0.00	0.03	0.01	0.05	0.03	0.00	0.01	0.05	0.03	0.03	0.00	0.27
	12.85	0.00	12.03	3.66	17.69	9.55	0.35	5.19	18.04	11.08	9.43	0.12	
	0.30	0.00	0.33	0.24	0.86	0.29	0.16	0.54	0.21	0.12	0.34	0.11	
Greene	253	0	218	93	113	192	12	49	563	87	204	13	1797
	0.08	0.00	0.07	0.03	0.04	0.06	0.00	0.02	0.18	0.03	0.07	0.00	0.57
	14.08	0.00	12.13	5.18	6.29	10.68	0.67	2.73	31.33	4.84	11.35	0.72	
	0.70	0.00	0.71	0.73	0.65	0.70	0.64	0.60	0.77	0.11	0.85	1.47	
Guernsey	145	0	101	49	75	75	2	22	136	218	46	3	872
	0.05	0.00	0.03	0.02	0.02	0.02	0.00	0.01	0.04	0.07	0.01	0.00	0.28
	16.63	0.00	11.58	5.62	8.60	8.60	0.23	2.52	15.60	25.00	5.28	0.34	
	0.40	0.00	0.33	0.38	0.43	0.27	0.11	0.27	0.19	0.27	0.19	0.34	
Hamilton	1599	0	1508	929	635	1632	131	405	1250	3285	1194	52	12620
	0.51	0.00	0.48	0.30	0.20	0.52	0.04	0.13	0.40	1.05	0.38	0.02	4.02
	12.67	0.00	11.95	7.36	5.03	12.93	1.04	3.21	9.90	26.03	9.46	0.41	
	4.41	0.00	4.93	7.27	3.66	5.93	6.95	4.94	1.71	4.04	5.00	5.89	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency / Percent / Row Pct / Col Pct

COUNTY	110	120	210	220	310	320	390	420	430	440	450	470	Total
Hancock	275	0	194	83	152	177	6	77	543	828	199	6	2540
	0.09	0.00	0.06	0.03	0.05	0.06	0.00	0.02	0.17	0.26	0.06	0.00	0.81
	10.83	0.00	7.64	3.27	5.98	6.97	0.24	3.03	21.38	32.60	7.83	0.24	
	0.76	0.00	0.63	0.65	0.88	0.64	0.32	0.94	0.74	1.02	0.83	0.68	
Hardin	96	0	72	13	53	74	7	10	230	490	47	4	1096
	0.03	0.00	0.02	0.00	0.02	0.02	0.00	0.00	0.07	0.16	0.01	0.00	0.35
	8.76	0.00	6.57	1.19	4.84	6.75	0.64	0.91	20.99	44.71	4.29	0.36	
	0.26	0.00	0.24	0.10	0.31	0.27	0.37	0.12	0.31	0.60	0.20	0.45	
Harrison	43	0	26	8	14	33	3	4	162	320	7	1	621
	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.05	0.10	0.00	0.00	0.20
	6.92	0.00	4.19	1.29	2.25	5.31	0.48	0.64	26.09	51.53	1.13	0.16	
	0.12	0.00	0.08	0.06	0.08	0.12	0.16	0.05	0.22	0.39	0.03	0.11	
Henry	212	0	145	70	87	158	9	34	406	1996	111	4	3232
	0.07	0.00	0.05	0.02	0.03	0.05	0.00	0.01	0.13	0.64	0.04	0.00	1.03
	6.56	0.00	4.49	2.17	2.69	4.89	0.28	1.05	12.56	61.76	3.43	0.12	
	0.58	0.00	0.47	0.55	0.50	0.57	0.48	0.41	0.56	2.46	0.46	0.45	
Highland	636	0	462	126	222	355	24	87	1096	2281	198	10	5497
	0.20	0.00	0.15	0.04	0.07	0.11	0.01	0.03	0.35	0.73	0.06	0.00	1.75
	11.57	0.00	8.40	2.29	4.04	6.46	0.44	1.58	19.94	41.50	3.60	0.18	
	1.75	0.00	1.51	0.99	1.28	1.29	1.27	1.06	1.50	2.81	0.83	1.13	
Hocking	85	0	75	32	33	61	0	15	90	191	36	1	619
	0.03	0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.03	0.06	0.01	0.00	0.20
	13.73	0.00	12.12	5.17	5.33	9.85	0.00	2.42	14.54	30.86	5.82	0.16	
	0.23	0.00	0.25	0.25	0.19	0.22	0.00	0.18	0.12	0.23	0.15	0.11	
Holmes	921	0	663	352	496	909	15	274	1611	7971	614	22	13848
	0.29	0.00	0.21	0.11	0.16	0.29	0.00	0.09	0.51	2.54	0.20	0.01	4.41
	6.65	0.00	4.79	2.54	3.58	6.56	0.11	1.98	11.63	57.56	4.43	0.16	
	2.54	0.00	2.17	2.76	2.86	3.30	0.80	3.34	2.20	9.81	2.57	2.49	
Huron	308	0	202	69	102	192	12	36	351	1511	116	6	2905
	0.10	0.00	0.06	0.02	0.03	0.06	0.00	0.01	0.11	0.48	0.04	0.00	0.93
	10.60	0.00	6.95	2.38	3.51	6.61	0.41	1.24	12.08	52.01	3.99	0.21	
	0.85	0.00	0.66	0.54	0.59	0.70	0.64	0.44	0.48	1.86	0.49	0.68	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency / Percent / Row Pct / Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
Jackson	151	0	92	31	65	77	3	16	110	453	45	4	1047
	0.05	0.00	0.03	0.01	0.02	0.02	0.00	0.01	0.04	0.14	0.01	0.00	0.33
	14.42	0.00	8.79	2.96	6.21	7.35	0.29	1.53	10.51	43.27	4.30	0.38	
	0.42	0.00	0.30	0.24	0.37	0.28	0.16	0.20	0.15	0.56	0.19	0.45	
Jefferson	269	0	253	67	92	173	12	29	755	174	121	4	1949
	0.09	0.00	0.08	0.02	0.03	0.06	0.00	0.01	0.24	0.06	0.04	0.00	0.62
	13.80	0.00	12.98	3.44	4.72	8.88	0.62	1.49	38.74	8.93	6.21	0.21	
	0.74	0.00	0.83	0.52	0.53	0.63	0.64	0.35	1.03	0.21	0.51	0.45	
Knox	182	0	116	57	59	114	4	33	180	592	106	4	1447
	0.06	0.00	0.04	0.02	0.02	0.04	0.00	0.01	0.06	0.19	0.03	0.00	0.46
	12.58	0.00	8.02	3.94	4.08	7.88	0.28	2.28	12.44	40.91	7.33	0.28	
	0.50	0.00	0.38	0.45	0.34	0.41	0.21	0.40	0.25	0.73	0.44	0.45	
Lake	298	0	318	122	162	263	21	79	723	178	246	13	2423
	0.09	0.00	0.10	0.04	0.05	0.08	0.01	0.03	0.23	0.06	0.08	0.00	0.77
	12.30	0.00	13.12	5.04	6.69	10.85	0.87	3.26	29.84	7.35	10.15	0.54	
	0.82	0.00	1.04	0.95	0.93	0.96	1.11	0.96	0.99	0.22	1.03	1.47	
Lawrence	291	0	213	42	66	163	14	37	362	297	80	6	1571
	0.09	0.00	0.07	0.01	0.02	0.05	0.00	0.01	0.12	0.09	0.03	0.00	0.50
	18.52	0.00	13.56	2.67	4.20	10.38	0.89	2.36	23.04	18.91	5.09	0.38	
	0.80	0.00	0.70	0.33	0.38	0.59	0.74	0.45	0.50	0.37	0.34	0.68	
Licking	246	0	166	43	85	166	9	35	110	503	104	5	1472
	0.08	0.00	0.05	0.01	0.03	0.05	0.00	0.01	0.04	0.16	0.03	0.00	0.47
	16.71	0.00	11.28	2.92	5.77	11.28	0.61	2.38	7.47	34.17	7.07	0.34	
	0.68	0.00	0.54	0.34	0.49	0.60	0.48	0.43	0.15	0.62	0.44	0.57	
Logan	159	0	102	41	48	105	2	22	400	1128	62	2	2071
	0.05	0.00	0.03	0.01	0.02	0.03	0.00	0.01	0.13	0.36	0.02	0.00	0.66
	7.68	0.00	4.93	1.98	2.32	5.07	0.10	1.06	19.31	54.47	2.99	0.10	
	0.44	0.00	0.33	0.32	0.28	0.38	0.11	0.27	0.55	1.39	0.26	0.23	
Lorain	942	0	949	322	461	674	49	189	1665	1868	660	26	7805
	0.30	0.00	0.30	0.10	0.15	0.21	0.02	0.06	0.53	0.60	0.21	0.01	2.49
	12.07	0.00	12.16	4.13	5.91	8.64	0.63	2.42	21.33	23.93	8.46	0.33	
	2.60	0.00	3.10	2.52	2.66	2.45	2.60	2.31	2.28	2.30	2.76	2.94	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency / Percent / Row Pct / Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
Lucas	1934	0	1701	728	973	1410	134	472	5249	1735	1548	52	15936
	0.62	0.00	0.54	0.23	0.31	0.45	0.04	0.15	1.67	0.55	0.49	0.02	5.08
	12.14	0.00	10.67	4.57	6.11	8.85	0.84	2.96	32.94	10.89	9.71	0.33	
	5.33	0.00	5.56	5.70	5.60	5.12	7.11	5.76	7.18	2.13	6.48	5.89	
Madison	86	0	75	26	36	61	4	25	171	97	43	0	624
	0.03	0.00	0.02	0.01	0.01	0.02	0.00	0.01	0.05	0.03	0.01	0.00	0.20
	13.78	0.00	12.02	4.17	5.77	9.78	0.64	4.01	27.40	15.54	6.89	0.00	
	0.24	0.00	0.25	0.20	0.21	0.22	0.21	0.31	0.23	0.12	0.18	0.00	
Mahoning	1026	0	1134	362	488	866	58	264	2727	1046	750	25	8746
	0.33	0.00	0.36	0.12	0.16	0.28	0.02	0.08	0.87	0.33	0.24	0.01	2.79
	11.73	0.00	12.97	4.14	5.58	9.90	0.66	3.02	31.18	11.96	8.58	0.29	
	2.83	0.00	3.71	2.83	2.81	3.14	3.08	3.22	3.73	1.29	3.14	2.83	
Marion	219	0	129	88	105	143	10	39	216	586	108	4	1647
	0.07	0.00	0.04	0.03	0.03	0.05	0.00	0.01	0.07	0.19	0.03	0.00	0.52
	13.30	0.00	7.83	5.34	6.38	8.68	0.61	2.37	13.11	35.58	6.56	0.24	
	0.60	0.00	0.42	0.69	0.60	0.52	0.53	0.48	0.30	0.72	0.45	0.45	
Medina	205	0	204	54	86	146	13	39	200	553	116	6	1622
	0.07	0.00	0.07	0.02	0.03	0.05	0.00	0.01	0.06	0.18	0.04	0.00	0.52
	12.64	0.00	12.58	3.33	5.30	9.00	0.80	2.40	12.33	34.09	7.15	0.37	
	0.56	0.00	0.67	0.42	0.50	0.53	0.69	0.48	0.27	0.68	0.49	0.68	
Meigs	389	0	234	96	106	235	16	41	866	1668	73	5	3729
	0.12	0.00	0.07	0.03	0.03	0.07	0.01	0.01	0.28	0.53	0.02	0.00	1.19
	10.43	0.00	6.28	2.57	2.84	6.30	0.43	1.10	23.22	44.73	1.96	0.13	
	1.07	0.00	0.76	0.75	0.61	0.85	0.85	0.50	1.18	2.05	0.31	0.57	
Mercer	272	0	182	87	121	221	8	28	412	1058	145	6	2540
	0.09	0.00	0.06	0.03	0.04	0.07	0.00	0.01	0.13	0.34	0.05	0.00	0.81
	10.71	0.00	7.17	3.43	4.76	8.70	0.31	1.10	16.22	41.65	5.71	0.24	
	0.75	0.00	0.59	0.68	0.70	0.80	0.42	0.34	0.56	1.30	0.61	0.68	
Miami	259	0	160	63	84	186	12	55	239	465	138	7	1668
	0.08	0.00	0.05	0.02	0.03	0.06	0.00	0.02	0.08	0.15	0.04	0.00	0.53
	15.53	0.00	9.59	3.78	5.04	11.15	0.72	3.30	14.33	27.88	8.27	0.42	
	0.71	0.00	0.52	0.49	0.48	0.68	0.64	0.67	0.33	0.57	0.58	0.79	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency Percent Row Pct Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
Monroe	88	0	57	15	33	42	4	11	195	32	21	1	499
	0.03	0.00	0.02	0.00	0.01	0.01	0.00	0.00	0.06	0.01	0.01	0.00	0.16
	17.64	0.00	11.42	3.01	6.61	8.42	0.80	2.20	39.08	6.41	4.21	0.20	
	0.24	0.00	0.19	0.12	0.19	0.15	0.21	0.13	0.27	0.04	0.09	0.11	
Montgomery	1665	0	1549	677	852	1339	101	439	4430	1334	1376	58	13820
	0.53	0.00	0.49	0.22	0.27	0.43	0.03	0.14	1.41	0.43	0.44	0.02	4.40
	12.05	0.00	11.21	4.90	6.16	9.69	0.73	3.18	32.05	9.65	9.96	0.42	
	4.59	0.00	5.06	5.30	4.91	4.86	5.36	5.36	6.06	1.64	5.76	6.57	
Morgan	380	0	218	63	128	178	7	35	1039	557	82	6	2693
	0.12	0.00	0.07	0.02	0.04	0.06	0.00	0.01	0.33	0.18	0.03	0.00	0.86
	14.11	0.00	8.10	2.34	4.75	6.61	0.26	1.30	38.58	20.68	3.04	0.22	
	1.05	0.00	0.71	0.49	0.74	0.65	0.37	0.43	1.42	0.69	0.34	0.68	
Morrow	112	0	81	20	30	69	3	17	554	693	33	3	1615
	0.04	0.00	0.03	0.01	0.01	0.02	0.00	0.01	0.18	0.22	0.01	0.00	0.51
	6.93	0.00	5.02	1.24	1.86	4.27	0.19	1.05	34.30	42.91	2.04	0.19	
	0.31	0.00	0.26	0.16	0.17	0.25	0.16	0.21	0.76	0.85	0.14	0.34	
Muskingum	294	0	242	61	109	166	8	52	638	211	135	6	1922
	0.09	0.00	0.08	0.02	0.03	0.05	0.00	0.02	0.20	0.07	0.04	0.00	0.61
	15.30	0.00	12.59	3.17	5.67	8.64	0.42	2.71	33.19	10.98	7.02	0.31	
	0.81	0.00	0.79	0.48	0.63	0.60	0.42	0.63	0.87	0.26	0.57	0.68	
Noble	67	0	40	19	36	48	1	6	114	543	20	1	895
	0.02	0.00	0.01	0.01	0.01	0.02	0.00	0.00	0.04	0.17	0.01	0.00	0.29
	7.49	0.00	4.47	2.12	4.02	5.36	0.11	0.67	12.74	60.67	2.23	0.11	
	0.18	0.00	0.13	0.15	0.21	0.17	0.05	0.07	0.16	0.67	0.08	0.11	
Ottawa	136	0	98	72	111	96	5	26	254	768	61	14	1641
	0.04	0.00	0.03	0.02	0.04	0.03	0.00	0.01	0.08	0.24	0.02	0.00	0.52
	8.29	0.00	5.97	4.39	6.76	5.85	0.30	1.58	15.48	46.80	3.72	0.85	
	0.37	0.00	0.32	0.56	0.64	0.35	0.27	0.32	0.35	0.94	0.26	1.59	
Paulding	141	0	100	20	35	90	3	15	260	571	48	4	1287
	0.04	0.00	0.03	0.01	0.01	0.03	0.00	0.00	0.08	0.18	0.02	0.00	0.41
	10.96	0.00	7.77	1.55	2.72	6.99	0.23	1.17	20.20	44.37	3.73	0.31	
	0.39	0.00	0.33	0.16	0.20	0.33	0.16	0.18	0.36	0.70	0.20	0.45	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency / Percent / Row Pct / Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
Perry	88	0	65	11	23	45	4	11	317	33	23	4	624
	0.03	0.00	0.02	0.00	0.01	0.01	0.00	0.00	0.10	0.01	0.01	0.00	0.20
	14.10	0.00	10.42	1.76	3.69	7.21	0.64	1.76	50.80	5.29	3.69	0.64	
	0.24	0.00	0.21	0.09	0.13	0.16	0.21	0.13	0.43	0.04	0.10	0.45	
Pickaway	95	0	68	29	28	51	4	17	83	167	32	0	574
	0.03	0.00	0.02	0.01	0.01	0.02	0.00	0.01	0.03	0.05	0.01	0.00	0.18
	16.55	0.00	11.85	5.05	4.88	8.89	0.70	2.96	14.46	29.09	5.57	0.00	
	0.26	0.00	0.22	0.23	0.16	0.19	0.21	0.21	0.11	0.21	0.13	0.00	
Pike	108	0	62	31	33	73	4	19	191	386	40	1	948
	0.03	0.00	0.02	0.01	0.01	0.02	0.00	0.01	0.06	0.12	0.01	0.00	0.30
	11.39	0.00	6.54	3.27	3.48	7.70	0.42	2.00	20.15	40.72	4.22	0.11	
	0.30	0.00	0.20	0.24	0.19	0.27	0.21	0.23	0.26	0.47	0.17	0.11	
Portage	162	0	120	45	72	111	6	33	255	106	82	4	996
	0.05	0.00	0.04	0.01	0.02	0.04	0.00	0.01	0.08	0.03	0.03	0.00	0.32
	16.27	0.00	12.05	4.52	7.23	11.14	0.60	3.31	25.60	10.64	8.23	0.40	
	0.45	0.00	0.39	0.35	0.41	0.40	0.32	0.40	0.35	0.13	0.34	0.45	
Preble	304	0	221	70	61	209	11	46	374	1406	86	9	2797
	0.10	0.00	0.07	0.02	0.02	0.07	0.00	0.01	0.12	0.45	0.03	0.00	0.89
	10.87	0.00	7.90	2.50	2.18	7.47	0.39	1.64	13.37	50.27	3.07	0.32	
	0.84	0.00	0.72	0.55	0.35	0.76	0.58	0.56	0.51	1.73	0.36	1.02	
Putnam	140	0	103	24	40	98	3	21	301	175	58	6	969
	0.04	0.00	0.03	0.01	0.01	0.03	0.00	0.01	0.10	0.06	0.02	0.00	0.31
	14.45	0.00	10.63	2.48	4.13	10.11	0.31	2.17	31.06	18.06	5.99	0.62	
	0.39	0.00	0.34	0.19	0.23	0.36	0.16	0.26	0.41	0.22	0.24	0.68	
Richland	243	0	230	54	107	163	5	54	176	562	152	4	1750
	0.08	0.00	0.07	0.02	0.03	0.05	0.00	0.02	0.06	0.18	0.05	0.00	0.56
	13.89	0.00	13.14	3.09	6.11	9.31	0.29	3.09	10.06	32.11	8.69	0.23	
	0.67	0.00	0.75	0.42	0.62	0.59	0.27	0.66	0.24	0.69	0.64	0.45	
Ross	204	0	120	32	46	91	9	30	520	119	77	0	1248
	0.07	0.00	0.04	0.01	0.01	0.03	0.00	0.01	0.17	0.04	0.02	0.00	0.40
	16.35	0.00	9.62	2.56	3.69	7.29	0.72	2.40	41.67	9.54	6.17	0.00	
	0.56	0.00	0.39	0.25	0.26	0.33	0.48	0.37	0.71	0.15	0.32	0.00	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency / Percent / Row Pct / Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
Sandusky	324	0	252	56	101	205	13	54	422	783	186	7	2403
	0.10	0.00	0.08	0.02	0.03	0.07	0.00	0.02	0.13	0.25	0.06	0.00	0.77
	13.48	0.00	10.49	2.33	4.20	8.53	0.54	2.25	17.56	32.58	7.74	0.29	
	0.89	0.00	0.82	0.44	0.58	0.74	0.69	0.66	0.58	0.96	0.78	0.79	
Scioto	405	0	314	107	152	248	21	65	485	1046	162	7	3012
	0.13	0.00	0.10	0.03	0.05	0.08	0.01	0.02	0.15	0.33	0.05	0.00	0.96
	13.45	0.00	10.42	3.55	5.05	8.23	0.70	2.16	16.10	34.73	5.38	0.23	
	1.12	0.00	1.03	0.84	0.88	0.90	1.11	0.79	0.66	1.29	0.68	0.79	
Seneca	319	0	203	62	185	194	11	53	676	846	149	10	2708
	0.10	0.00	0.06	0.02	0.06	0.06	0.00	0.02	0.22	0.27	0.05	0.00	0.86
	11.78	0.00	7.50	2.29	6.83	7.16	0.41	1.96	24.96	31.24	5.50	0.37	
	0.88	0.00	0.66	0.49	1.07	0.70	0.58	0.65	0.92	1.04	0.62	1.13	
Shelby	191	0	139	44	450	118	11	33	166	90	119	3	1364
	0.06	0.00	0.04	0.01	0.14	0.04	0.00	0.01	0.05	0.03	0.04	0.00	0.43
	14.00	0.00	10.19	3.23	32.99	8.65	0.81	2.42	12.17	6.60	8.72	0.22	
	0.53	0.00	0.45	0.34	2.59	0.43	0.58	0.40	0.23	0.11	0.50	0.34	
Stark	789	0	790	280	286	579	36	182	1461	474	574	12	5463
	0.25	0.00	0.25	0.09	0.09	0.18	0.01	0.06	0.47	0.15	0.18	0.00	1.74
	14.44	0.00	14.46	5.13	5.24	10.60	0.66	3.33	26.74	8.68	10.51	0.22	
	2.17	0.00	2.58	2.19	1.65	2.10	1.91	2.22	2.00	0.58	2.40	1.36	
Summit	2160	0	2144	920	1413	1785	151	662	5238	1915	2121	48	18557
	0.69	0.00	0.68	0.29	0.45	0.57	0.05	0.21	1.67	0.61	0.68	0.02	5.91
	11.64	0.00	11.55	4.96	7.61	9.62	0.81	3.57	28.23	10.32	11.43	0.26	
	5.95	0.00	7.01	7.20	8.14	6.48	8.01	8.08	7.17	2.36	8.88	5.44	
Trumbull	556	1	510	153	171	355	28	81	1003	1515	261	5	4639
	0.18	0.00	0.16	0.05	0.05	0.11	0.01	0.03	0.32	0.48	0.08	0.00	1.48
	11.99	0.02	10.99	3.30	3.69	7.65	0.60	1.75	21.62	32.66	5.63	0.11	
	1.53	25.00	1.67	1.20	0.99	1.29	1.49	0.99	1.37	1.86	1.09	0.57	
Tuscarawas	484	0	388	110	189	317	10	66	599	1093	234	9	3499
	0.15	0.00	0.12	0.04	0.06	0.10	0.00	0.02	0.19	0.35	0.07	0.00	1.12
	13.83	0.00	11.09	3.14	5.40	9.06	0.29	1.89	17.12	31.24	6.69	0.26	
	1.33	0.00	1.27	0.86	1.09	1.15	0.53	0.81	0.82	1.34	0.98	1.02	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency
Percent
Row Pct
Col Pct

COUNTY	110	120	210	220	310	320	390	420	430	440	450	470	Total
Union	111	0	108	33	56	88	5	35	118	349	68	2	973
	0.04	0.00	0.03	0.01	0.02	0.03	0.00	0.01	0.04	0.11	0.02	0.00	0.31
	11.41	0.00	11.10	3.39	5.76	9.04	0.51	3.60	12.13	35.87	6.99	0.21	
	0.31	0.00	0.35	0.26	0.32	0.32	0.27	0.43	0.16	0.43	0.28	0.23	
Van wert	121	0	84	26	47	78	1	19	176	526	45	1	1124
	0.04	0.00	0.03	0.01	0.01	0.02	0.00	0.01	0.06	0.17	0.01	0.00	0.36
	10.77	0.00	7.47	2.31	4.18	6.94	0.09	1.69	15.66	46.80	4.00	0.09	
	0.33	0.00	0.27	0.20	0.27	0.28	0.05	0.23	0.24	0.65	0.19	0.11	
Vinton	60	0	45	14	24	48	1	6	110	421	18	1	748
	0.02	0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.04	0.13	0.01	0.00	0.24
	8.02	0.00	6.02	1.87	3.21	6.42	0.13	0.80	14.71	56.28	2.41	0.13	
	0.17	0.00	0.15	0.11	0.14	0.17	0.05	0.07	0.15	0.52	0.08	0.11	
Warren	688	0	622	298	232	624	48	223	633	678	446	23	4515
	0.22	0.00	0.20	0.09	0.07	0.20	0.02	0.07	0.20	0.22	0.14	0.01	1.44
	15.24	0.00	13.78	6.60	5.14	13.82	1.06	4.94	14.02	15.02	9.88	0.51	
	1.90	0.00	2.03	2.33	1.34	2.27	2.55	2.72	0.87	0.83	1.87	2.60	
Washington	159	0	108	26	43	94	2	27	223	86	72	1	841
	0.05	0.00	0.03	0.01	0.01	0.03	0.00	0.01	0.07	0.03	0.02	0.00	0.27
	18.91	0.00	12.84	3.09	5.11	11.18	0.24	3.21	26.52	10.23	8.56	0.12	
	0.44	0.00	0.35	0.20	0.25	0.34	0.11	0.33	0.31	0.11	0.30	0.11	
Wayne	524	0	409	157	198	385	17	108	780	3220	270	14	6082
	0.17	0.00	0.13	0.05	0.06	0.12	0.01	0.03	0.25	1.03	0.09	0.00	1.94
	8.62	0.00	6.72	2.58	3.26	6.33	0.28	1.78	12.82	52.94	4.44	0.23	
	1.44	0.00	1.34	1.23	1.14	1.40	0.90	1.32	1.07	3.96	1.13	1.59	
Williams	278	0	209	70	77	179	10	39	202	1166	154	1	2385
	0.09	0.00	0.07	0.02	0.02	0.06	0.00	0.01	0.06	0.37	0.05	0.00	0.76
	11.66	0.00	8.76	2.94	3.23	7.51	0.42	1.64	8.47	48.89	6.46	0.04	
	0.77	0.00	0.68	0.55	0.44	0.65	0.53	0.48	0.28	1.43	0.64	0.11	
Wood	696	0	544	269	337	493	31	169	1372	3769	478	20	8178
	0.22	0.00	0.17	0.09	0.11	0.16	0.01	0.05	0.44	1.20	0.15	0.01	2.61
	8.51	0.00	6.65	3.29	4.12	6.03	0.38	2.07	16.78	46.09	5.84	0.24	
	1.92	0.00	1.78	2.11	1.94	1.79	1.64	2.06	1.88	4.64	2.00	2.27	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

County – Continued

COUNTY disposition

Frequency / Percent / Row Pct / Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	Total
Wyandot	88	0	36	26	58	47	3	10	245	280	49	1	843
	0.03	0.00	0.01	0.01	0.02	0.01	0.00	0.00	0.08	0.09	0.02	0.00	0.27
	10.44	0.00	4.27	3.08	6.88	5.58	0.36	1.19	29.06	33.21	5.81	0.12	
	0.24	0.00	0.12	0.20	0.33	0.17	0.16	0.12	0.34	0.34	0.21	0.11	
Total	36285	4	30598	12775	17360	27537	1885	8193	73095	81292	23878	883	313785
	11.56	0.00	9.75	4.07	5.53	8.78	0.60	2.61	23.29	25.91	7.61	0.28	100.00

e. Oversamples[39]

Oversample   disposition

Frequency Percent Row Pct Col Pct	110	120	210	220	310	320	390	420	430	440	450	470	480	Total
Statewide	3038	0	2249	874	572	1815	138	83	20	826	628	80	0	10323
Asian	3.84	0.00	2.84	1.10	0.72	2.29	0.17	0.10	0.03	1.04	0.79	0.10	0.00	13.04
Long Cpls	29.43	0.00	21.79	8.47	5.54	17.58	1.34	0.80	0.19	8.00	6.08	0.77	0.00	
415	21.38	0.00	24.26	18.80	10.88	20.86	20.00	4.06	0.11	8.87	8.63	27.68	0.00	
Statewide	1657	1	943	423	187	1080	90	40	76	540	273	42	0	5352
Hispanic	2.09	0.00	1.19	0.53	0.24	1.36	0.11	0.05	0.10	0.68	0.34	0.05	0.00	6.76
Long Cpls	30.96	0.02	17.62	7.90	3.49	20.18	1.68	0.75	1.42	10.09	5.10	0.78	0.00	
703	11.66	25.00	10.17	9.10	3.56	12.41	13.04	1.96	0.44	5.80	3.75	14.53	0.00	
Cuyahoga	3979	0	2485	1618	2626	2927	224	1073	12205	2189	3608	74	0	33008
Child	5.03	0.00	3.14	2.04	3.32	3.70	0.28	1.36	15.42	2.76	4.56	0.09	0.00	41.69
Long Cpls	12.05	0.00	7.53	4.90	7.96	8.87	0.68	3.25	36.98	6.63	10.93	0.22	0.00	
993	28.00	0.00	26.80	34.80	49.93	33.64	32.46	52.44	69.87	23.51	49.59	25.61	0.00	
Cuyahoga	982	0	642	246	95	481	75	16	1	280	159	23	0	3000
Hispanic	1.24	0.00	0.81	0.31	0.12	0.61	0.09	0.02	0.00	0.35	0.20	0.03	0.00	3.79
Long Cpls	32.73	0.00	21.40	8.20	3.17	16.03	2.50	0.53	0.03	9.33	5.30	0.77	0.00	
321	6.91	0.00	6.92	5.29	1.81	5.53	10.87	0.78	0.01	3.01	2.19	7.96	0.00	
Hamilton	102	0	40	152	108	102	12	29	114	321	69	0	0	1049
Child	0.13	0.00	0.05	0.19	0.14	0.13	0.02	0.04	0.14	0.41	0.09	0.00	0.00	1.32
cell	9.72	0.00	3.81	14.49	10.30	9.72	1.14	2.76	10.87	30.60	6.58	0.00	0.00	
discarded	0.72	0.00	0.43	3.27	2.05	1.17	1.74	1.42	0.65	3.45	0.95	0.00	0.00	
Lorain	1672	2	1087	456	649	790	45	328	1497	3139	873	32	2	10572
Child	2.11	0.00	1.37	0.58	0.82	1.00	0.06	0.41	1.89	3.96	1.10	0.04	0.00	13.35
Long Cpls	15.82	0.02	10.28	4.31	6.14	7.47	0.43	3.10	14.16	29.69	8.26	0.30	0.02	
444	11.77	50.00	11.72	9.81	12.34	9.08	6.52	16.03	8.57	33.72	12.00	11.07	66.67	

[39] In this report, successfully screened non-targeted households (i.e., non-Asian, non-Hispanic, or Adult only, depending on cluster) are classified under category 110 as “short completes”. Data file completes are noted in the cell listing cluster.

Lorain Hispanic *Long Cpls* *245*	536 0.68 27.73 3.77	0 0.00 0.00 0.00	358 0.45 18.52 3.86	117 0.15 6.05 2.52	65 0.08 3.36 1.24	282 0.36 14.59 3.24	28 0.04 1.45 4.06	15 0.02 0.78 0.73	1 0.00 0.05 0.01	419 0.53 21.68 4.50	105 0.13 5.43 1.44	7 0.01 0.36 2.42	0 0.00 0.00 0.00	1933 2.44
Summit Child *Long Cpls* *548*	2243 2.83 16.09 15.79	1 0.00 0.01 25.00	1467 1.85 10.53 15.82	764 0.96 5.48 16.43	957 1.21 6.87 18.20	1224 1.55 8.78 14.07	78 0.10 0.56 11.30	462 0.58 3.31 22.58	3553 4.49 25.49 20.34	1596 2.02 11.45 17.14	1560 1.97 11.19 21.44	31 0.04 0.22 10.73	1 0.00 0.01 33.33	13937 17.60
Total	14209 17.95	4 0.01	9271 11.71	4650 5.87	5259 6.64	8701 10.99	690 0.87	2046 2.58	17467 22.06	9310 11.76	7275 9.19	289 0.37	3 0.00	79174 100.00

V. Technical Findings and Future Recommendations

A. Recommendations for Future Data Collection Efforts

ORC Macro developed recommendations for future data collection efforts. These include modifications to interviewer training, the questionnaire, and the coding of open-ended responses. The following describes each recommendation for future iterations of the OFHS.

a. Interviewer Training

ORC Macro recommends three changes to the training of OFHS interviewers:

1. A training more focused on information specific to the survey, with less time spent on general interviewer techniques.

2. A shorter training period—held over one day rather than two.

3. The creation of two training manuals—one for general reference with all survey information included, and a second to serve as a quick-reference guide.

First, it is recommend that for future iterations of the survey, the interviewer training focus on how conducting *this project* is different from other studies interviewers may have conducted. Many of the topics covered on the first day—such as calling protocols, dispositions, and refusals—involved skills and knowledge applicable to any study; these topics are covered in initial and refresher trainings and do not need to be repeated during project-specific OFHS training.

In addition, ORC Macro recommends that more time be spent on the specifics of the OFHS survey. Based on discussions with the interviewers, ORC Macro recommends these OFHS-specific topics:

- Refusal conversion—tactics that can be used specifically for the OFHS and how they differ from other surveys interviewers conduct.
- Survey introduction—how to better explain the purpose of the survey so respondents do not think that we are selling them health insurance.
- Proxy interviews—better understanding of when it is allowable for a proxy to conduct the interview for a selected respondent.
- Health insurance—better understanding of the different types of health insurance.

Second, ORC Macro recommends the interviewer training be held in one day, not two, as all pertinent information can be covered in one day of training. For the 2003-2004 OFHS, the first day of interviewer training covered:

- Survey introduction,
- Different types of health insurance,
- Calling protocols,
- Dispositions,

- Refusals,
- Introduction and selection process,
- Use of proxies, and
- The adult portion of the questionnaire.

The second day consisted of:

- Review of interviewing techniques,
- The child portion of the questionnaire, and
- Practice interviews.

Many of the topics covered on the first day are general in nature and do not need to be included in the study-specific training. Thus, this entire day of training can be eliminated without compromising interviewer performance on the study.

Third, ORC Macro recommends that two manuals be created for the OFHS. The first should include all information for the project and should be used as a reference guide. The second should contain information regarding how OFHS is different from other surveys the vendor conducts; this quick, easy-to-use reference guide would be kept at each interviewing station.

b. Questionnaire

As the 2003-2004 OFHS instrument went through rigorous testing prior to full-scale implementation via cognitive interviewing and a pilot test, the following recommendations were developed after a thorough review of data and feedback gathered from interviewers. Some of the open-ended questions should become closed-ended as they were more likely to generate unintended responses—in most cases, interviewers had difficulty redirecting respondents to the correct response, and it may not always be desirable to have interviewers redirect the respondents. As this was such a large study, many interviewers were trained to work on the survey. While rigorous quality control procedures were in place, the more interviewers there are on a study, the more difficult it becomes to administer a study that requires the interviewers to direct open-ended questions. In addition, by allowing interviewers more control over the interview (directing open-ended responses rather than solely recording closed-ended ones), the validity and reliability of the data comes into question as no matter how well the interviewers are trained, there is some subjectivity involved in when a respondent is redirected. Therefore, a closed-ended question may better assist interviewers, as well as control the validity and reliability of the data collected.

- D38C, D44C, and L128C: Respondents were asked the number of hours of assistance they need for four different tasks. If they were unable to state a set number of hours, the “other” response was an open-end. It is recommended that this item become a closed-ended question with responses such as “six hours a year, or one and a half months a year…” as typical open-end responses included:
- “None”—they answered the original question with the notion that they needed assistance, but when they were asked how much assistance they received, they stated that they had not received any.
- “Need it but not available”
- “As needed”
- “Once every six months”—this response did not fit into the hour increment of the initial question.

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By closing this question, the CATI can be programmed to require interviewers to correct previous answers now understood to be misstated, as well as allow interviewers to better obtain the type of responses the survey was written to obtain.

Some open-ended items posed difficulties for respondents and interviewers; however, changing them to be closed-ended is not applicable. In the following instances, ORC Macro recommends additional interviewer training and additional notes programmed into the CATI script to assist interviewers with the respondents' inapplicable open-ended responses:

- S17a and P150 asked respondents how they would best describe their race. Open-ended responses included multiple races, which would then cause the CATI program to inappropriately skip the question that asked respondents which of these races best described their race. Additional problems with the open-ended responses related to answers such as "Indian"–where the interviewer should have probed to determine if the respondent was American Indian or Native American, or if the respondent was Asian (as anyone living in India lives on the continent of Asia and is technically Asian). Two interviewer notes–relating to each of the above–could better assist interviewers with these types of responses.
- B4F and J100F asked respondents if they or their child was covered by a state-sponsored or public health insurance program that was not already mentioned. For those who said they were, they were then asked the name of the program (B4F1 and J100F1). As very few of the open-ended responses in B4F1 and J100F1 were Medicaid-related plans, it is recommeneded that these items be removed as they did not collect the information that they were intended to, and the information can also be obtained in B4G and J100G that ask in general about any other plan they may be covered by that was not already mentioned.
- B8B inquired how often they paid their health insurance premiums. Some of the difficulties with this question appeared to be from respondents who confused co-payments with premiums. Some of the invalid open-ended responses included "every time I visit a doctor," "seasonal," and "it depends." These responses do not answer the question, as the information it was written to obtain was a period of time such as three times a month. A note reminding interviewers to record a period of time should eliminate these responses. To reduce the confusion regarding co-payments and premiums, the training should include a more detailed explanation of the differences, and an interviewer note should be included to assist interviewers in helping respondents differentiate between co-payments and premiums.
- B9D and J104D asked respondents to state why they had a problem seeing a specialist. Inapplicable open-ended responses included "heart problems" and "major surgery." This question could be rewritten to explicitly ask for the reason they had a problem, rather than asking "why did you have a problem?"
- B28 and J123 were included in the survey to obtain information about the specific reasons the respondent was uninsured during the past 12 months. Several open-ended responses included "Did not have insurance," and it was necessary for the interviewer to probe for the reason insurance was not pursued. Not having insurance was not a reason for not having insurance, and an interviewer note could be included to reiterate this.
- D37G1 and L127G1asked respondents "What other kind of assistance //do you/does person in S1// currently need, BECAUSE OF THE HEALTH PROBLEM(S) that you told me about?" Open-ended responses focused on the health problem, rather than the assistance they needed. It is recommended that the question be rewritten to emphasize the types of assistance, rather than their health problems.

- E62b, E63B and E64A and M134B, M135B and M136A asked respondents to explain why they did not rate their health care between a 0 and a 4. Frequent invalid open-ended responses included "haven't been" or "didn't have any." Notes should be written into the CATI program to remind interviewers to probe for more information that is necessary to determine why this response contributed to a low rating. In addition, as very few respondents were asked these items, it is recommended that the threshold be changed from 4 to 5 or 6.
- F67C and N137C inquired as to the main reason the respondent did not have a usual source of care. "I just don't go" was a common inapplicable open-ended response. Interviewer probes to find out why the respondent does not go should be included in the CATI script so the interviewer can adequately discern the intended response.
- F68D, O141A, and O141B–"What was the health care that you needed but did NOT get?" received open-ended responses that addressed why they did not receive the care (i.e., "cost"), not the health care they did not receive; this also caused problems with follow-up questions where the open-ended response provided was inserted into the question. Again, a simple interviewer note could clarify this. In addition, there were many open-ended responses that mentioned unreceived dental care; the intent of the item was to exclude dental care since it had been asked about previously in F68 and O139a. It is recommended that a note be included that prompts interviewers to remind respondents to exclude dental care if included in their initial response. Finally, given that many of the open-ended responses were similar in nature, it is recommended that this item be closed and response categories designed from the open-ended responses received in the current survey.
- F68E, O142A, and O143A were follow-up questions asking for the main reason they did not get the care they needed from their responses in F68D, O141A, and O141B. As a majority of responses related to "cost" or "insurance," it is recommended that this item become closed with an "other, specify" option.
- G71B required respondents to describe the place they worked; this elicited inapplicable open-ended responses such as "retired" and "not working." A solution to this error would be to include a note reminding interviewers that these were invalid responses, and if the respondent is indeed not working, the interviewer should back up to the question that asked about employment status.
- G72B confirms with eligible respondents as to whether they are currently eligible to participate in their employer or union health plan. As respondents made comments stating that they were still in a waiting period or otherwise ineligible, it is recommended that the word "currently" be emphasized in the question, as well as the inclusion of an interviewer note stating that if the respondent states they are in a waiting period then they are currently not eligible to participate.
- G72C was written to determine why the respondent was not participating in an employer or union health insurance plan. Open-ended responses such as "am participating" should alert interviewers to back up to the question that asked the respondent whether or not he or she was participating in these types of insurance plans. An interviewer note explaining applicable responses should be included in the CATI script.
- G72D inquired "Are you ineligible because you have not worked long enough, because you do not work enough hours, because you are on call, because of medical problems, or for some other reason." "Unemployed" and "fired" were invalid open-ended responses, as the question was asked of those working but who were ineligible for health insurance. A note reminding interviewers of the inapplicable responses should be included.
- F67A and N137a and required respondents to state the kind of place they received health care at–such as a clinic or health center, doctor's office or HMO, or hospital emergency room. An inadequate open-ended response for this item included "hospital", and a note should be

programmed into the CATI script for interviewers to probe for the type of hospital–emergency, outpatient, or military.

- Q157 was asked to a randomly selected 5% of respondents about whether there was anything we did not ask about that the respondent believed was important for the ODJFS and ODH to know about. Many of the open-ended responses related to complaints about the health care system, and therefore, it is recommended that this item be reworded to obtain intended responses.

c. *Coding*

For the 2003-2004 OFHS, efforts were made to develop a coding manual that modeled that used in the 1998 survey. However, this effort resulted in an overlap of response categories, and inconsistent response categories between items–for example:

F68D, o141b, o141c

- Chiropractic was coded inconsistently in 1998, sometimes under specialist and sometimes under "other."
- Mammogram and Colonoscopy were listed as "A Doctor Visit, Checkup, or Exam," "Other Medical Treatment (Tests/Surgery/Other Procedures/Therapies)" and, most recently, "Appointment or Referral to a Specialist."
- Many responses in the 1998 OFHS that pertained to a specific ailment or body part without associating the specific health care or action required but did not receive, included: aches, blood pressure, arthritis, asthma, flu, sickness, bladder, knee, ankle or wrist problems (without specifically mentioning a specialist or test or the kind of health care needed). These were not coded consistently.

G73b1

There were difficulties with question that asked about the *kind of business or industry //do you/does person in S1// primarily work in*. The main sources of the problems with this question included:

- Respondents and interviewers had diffculty distinguishing industry from occupation.
- Respondents and interviewers had difficulty understanding the level of detail required in the response. This in turn resulted in inappropriate and vague responses that were difficult or impossible to code into the desired categories.
- An outdated industrial classifaction system (the 1987 Standard Industrial Classification [SIC] System) that was hard to fit with recorded responses.

For this item, it is recommended that additional interviewer training on this item be conducted that focuses on the differences between occupation and industry, as well as the level of detail required for coding. In addition, it is recommended that the North American Industry Classification System (NAICS) be used, rather than the SIC, which is also now used by the Current Population Survey.

Therefore, ORC Macro recommends that for future iterations of data collection, the coding manual be created based on the current instrument, regardless of the coding done in the prior surveys—this will eliminate the overlap and inconsistencies that occurred during the current survey.

d. Changes in Sample Design and Implementation

ORC Macro believes a limitation of the sample design, and thus a recommended change for future iterations of the survey, would be to oversample households with children, since this is a high priority area for ODJFS and the ODH. Oversampling could be done by giving higher probabilities of selection to households with children, or utilizing a targeted list-assisted sample frame – these are telephone numbers in which at least one child of the desired age is thought to reside in the household. While this list is not 100% accurate (our experience has shown it to be around 60% accurate), the incidence of these lists is many times higher than attempting to locate households with children through a list-assisted RDD sampling frame.

e. Protocol

ORC Macro recommends that a prenotification letter to all listed telephone numbers be sent, and that a letter be sent to all respondents who initially refuse to conduct the study to encourage their participation. ORC Macro believes that this effort will increase response rates.

In addition, alternative data collection modes to supplement that done via telephone should be explored. While the 2003-2004 survey instrument is too complex to complete via mail, perhaps a shortened, simpler version could be developed to ask key questions. This could then be mailed to non-respondents (those with a listed telephone number for whom an address could be obtained) to complete. While the entire survey could not be completed via mail, at least some information could be obtained. In addition, for those who refuse to conduct the survey via phone, this option could be made available, and perhaps households may be more willing to complete the survey via mail.

The Internet is the other alternative mode of data collection that could be utilized in addition to the telephone, however, it has been our experience that unless we are able to send a notification to conduct the survey via the Internet, the completion rates of Internet versions of surveys are low. And for respondents who refuse to conduct the survey via the telephone, we would not expect them to be willing to give us their e-mail address to send a link to complete the survey via the Internet.