

**The  
Washtenaw County  
Behavioral Risk Factor Survey,  
2005:**

**Methodological Report**

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## **Acknowledgments**

Projects of this magnitude are only possible through the cooperative efforts of many individuals. This most certainly includes the nearly 2,000 residents of Washtenaw County who gave up some of their time and a degree of their privacy for the larger goal of helping assess the current state of health, access to care, and disease prevention in the county. It also includes Harry McGee at the Michigan Department of Community Health who made it possible for individual counties to piggy-back county-level supplemental samples onto the Michigan BRFS and Ann Rafferty at MDCH who oversees the Michigan BRFS and numerous staff members of the Behavioral Risk Factor Surveillance System at CDC who provided technical guidance on the study's design, implementation, and data processing. It also includes Ms. Jody Dougherty and the nearly seventy telephone interviewer Ms. Dougherty hired, trained, and managed in order to collect the survey data represented in this report. It includes Debra Rusz who manages the BRFS implementation and sample administration within OSR and the project management team assisting her in 2005: Paul Burton, Christina Bott and Lerena Cunningham. I gratefully acknowledge the assistance of all these individuals in making this study and its report possible.

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# **The Washtenaw County Behavioral Risk Factor Survey, 2005: Methodological Report**

## **OVERVIEW**

Using a telephone survey surveillance methodology, this project collected prevalence data on risk factors and conditions associated with many of the leading causes of morbidity and mortality. The resulting data have been and will be used to assess progress at improving health in Washtenaw County, identify segments of the population that are at greater risk, and guiding resource allocation and programming decision-making within the public health community to optimize effectiveness toward improving health. This is particularly important considering the human and economic costs of morbidity and premature death. Comparisons of the results of this survey to those for the state as a whole (where available) will be useful in assessing the relative status of Washtenaw County residents to others throughout the state. And, comparing the results of this survey to those of similar surveys of this county's residents in the past and in the future will enable county health officials to evaluate whether changes have occurred in the health, behaviors and access to care in the intervening years.

The data for this project were collected by the Office for Survey Research (OSR), a division of the Institute for Public Policy and Social Research (IPPSR) at Michigan State University in East Lansing, Michigan. OSR conducted the survey under contracts with the Washtenaw County Health Department and with the Michigan Department of Community Health (MDCH). In mid-2001, OSR and MDCH agreed to offer the opportunity for individual counties interested in collecting county-level Behavioral Risk Factor Survey (BRFS) data to purchase over-samplings of their counties within the otherwise cross-sectional state BRFS. Under this arrangement, OSR agreed to absorb much of the management costs associated with the over-sampling and to limit the costs to counties to the incremental costs of the additional samples. MDCH agreed to supplement the samples purchased by the counties with the state's BRFS data from respondents in those counties that were otherwise collected as a part of the statewide survey. In practice, this means that counties taking advantage of the arrangement would be able to get the survey conducted at a discounted price and larger samples than they actually would have to pay for. Washtenaw County elected to take advantage of this opportunity in 2005.

In subsequent sections of this report, we will detail the survey design and administration plans and procedures implemented by the Office for Survey Research to achieve this goal. This document will describe the survey's design, development, sample, implementation, quality control procedures, and many of the technical aspects of the data processing to produce the final statewide and Washtenaw County BRFS data. Much of the methodological description in this document will focus on the statewide survey generally while still describing the particular unique features of the Washtenaw County BRFS interview, sampling design, and outcomes.

## THE SURVEY DESIGN

### The BRF Survey

The 2005 Michigan Behavioral Risk Factor Survey (MBRFS) is a participating member of the Behavioral Risk Factor Surveillance System (BRFSS) designed and coordinated by the U.S. Centers for Disease Control and Prevention (CDC). BRFSS is an annual telephone survey in each of the states intended to monitor the health and health risk behaviors of the nation's adults with respect to national health objectives. As a result, CDC has developed a standardized core interview to which each state may add some questions of particular interest to the state. CDC has developed a rigorous set of minimum standards regarding the sample design, respondent selection, informed consent, call scheduling, monitoring, and verification procedures that must be followed, although state's are at liberty to raise the standards further if they wish.

**The Sample.** MBRFS was designed to be a representative cross-sectional telephone survey of English-speaking, non-institutionalized adults in Michigan. These individuals were found using random digit dial sampling procedures to ensure that all residents had a chance to be included in the study. Across the whole of 2005, 12,136 randomly selected individuals 18 years of age or older were interviewed for the MBRFS. Initially, MBRFS was planned to complete roughly 4,500 interviews, but was subsequently increased to over 12,000. Since the population of the Washtenaw County makes up only 3.2% of the total population of the state, roughly 360 of the 12,000 interviews to be completed in the 2005 MBRFS would be expected to be with residents of Washtenaw County. The county health department wanted a total sample size of 2,000 interviews completed within the county so requested a survey of 1,640 county residents to supplement those from the MBRFS cross-sectional sample. However, the total number of interviews completed for MBRFS was actually 12,136, resulting in 425 interviews in MBRFS with Washtenaw County residents (3.5% of the total). Furthermore, OSR completed more than the 1,640 interviews requested (actually 1,663) and combined them with the additional 425 interviews from the MBRFS completed with Washtenaw County respondents for a total of 2,088.

The overall sampling design for this survey was a disproportionate stratified, list-assisted random-digit dial sample. The sampling plan was specified by CDC following a modification of the strategy developed by Casady and Lepkowski (1993). For the original Casady and Lepkowski strategy, telephone numbers were divided into the blocks or banks of 100 based on area code, prefix and first two digits of the suffix for all possible active combinations in Michigan of type 00, 50, 51, 52, and 54 from the Bellcore tapes. These 100-banks were checked against phone directories (hence, "list-assisted"). All banks in which there were no (0) listed numbers were assigned to one stratum and all banks in which there was at least 1 listed number were assigned to the other stratum (i.e., 0-listed and 1+ listed banks). Previous experience with the productivity of the less dense stratum has indicated that almost no interviews are produced from phone numbers in the 0-listed banks of numbers. The stratum of 0 blocks was excluded from sampling (i.e., the frame was truncated). All phone numbers in the 1+ banks were subsequently divided into two strata, those for which there is a residential directory listing (listed numbers) and those for which there is no listing (1+ not listed). For 2005, BRFSS sampled listed numbers at a rate approximately 1.5 times that of the not-listed numbers.

OSR obtained samples for MBRFS from Genesys as a part of a contract between CDC and Genesys for BRFSS and it obtained the supplemental sample for the Washtenaw County BRFS from Survey Sampling, Inc., using the same general design specifications. However, Washtenaw

County health officials had also requested that OSR over-sample African Americans, Asian Americans and residents of the western area of the county.

To accomplish this, county health officials identified the specific zip code areas that corresponded to areas of higher concentrations of African Americans and Asian Americans and those representing the western region of the county. Additionally, OSR staff examined the population distribution by race for each census tract and calculated the percentage of population that is African American and the percentage Asian American in each tract. Then tracts were sorted by percent African American or percent Asian American. All tracts in which at least 20% of the tract's population was African American in Washtenaw County, those where Asian Americans made up at least 20%, and those tracts that comprised the western region were then identified.

The tracts with high proportions of African Americans were then grouped together as one stratum for sampling purposes (labeled Stratum A). The tracts with high proportions of Asian American were grouped together to form a second stratum (labeled Stratum B). And the set of tracts representing the western region were grouped together to form a third stratum (labeled Stratum C). All remaining tracts in the county formed the fourth stratum (labeled Stratum D). In the twenty-seven tracts forming stratum A for Washtenaw County, African Americans made up 33.7% of all residents and the African Americans in these tracts comprised 67.0% of all African Americans in the county. African Americans made up only 5.4% of the population of the remaining tracts. Similarly, Asian Americans represented 29.7% of the residents of Stratum B and also accounted for 28.2% of all Asian Americans in the county while Asian Americans represented only 4.8% of all other tracts outside Stratum B.

The tracts forming Stratum C (western region) account for only 8.5% of the county's total population, but, as in the case of African Americans and Asian Americans, these residents would need to be over-sampled for the sample sizes of respondents in the region to be sufficiently large to obtain relatively stable prevalence estimates for this segment of the county population.

Thus, in Stratum A, roughly 33% of the population was expected to be African American and, in Stratum B, roughly 30% of the population was expected to be Asian American, increasing the likelihood that a random digit dial sample drawn from phone numbers in these tracts would find African Americans and Asian Americans. However, neither telephone area codes or exchanges have boundaries that are coterminus with census tract boundaries. Therefore, to take advantage of the concentrated geographic clustering of these relatively rare populations in a cost effective manner, an alternative to more conventional RDD methods was desirable.

In trying to devise a cost effective method for using RDD techniques to locate women in the U.S. who had been born in Poland, Pathak and Hembroff (2001)<sup>1</sup> developed a methodology that involves utilizing directory listed numbers with addresses within targeted geographic boundaries to narrow the pool of RDD numbers that could be assigned to households within small geographic areas. OSR staff proposed and the study team approved the use of this approach for this study.

Once the tracts were identified that were to be aggregated to form Stratum A, B, C and D, OSR worked with Survey Sampling, Inc.(SSI) to develop the sampling frames from which actual samples of phone numbers would be selected. As noted above, the current BRFS sampling plan divides telephone numbers into the blocks or banks of 100, checks the blocks against phone directories (hence, "list-assisted"), eliminates all banks in which there are no (0) listed numbers,

and then sorts all remaining numbers into two strata, phone numbers listed as household numbers in phone directories and those that have no such listing.

At OSR's request, SSI identified in its databases all phone numbers listed in telephone directories all those with addresses that fall within any of the Stratum A tracts, the Stratum B Tracts, the Stratum C tracts, and the Stratum D tracts. These were then set aside to form strata of listed numbers within each Stratum (i.e., Stratum A-listed, Stratum B-listed, etc.). OSR then directed SSI to identify all banks of 100 numbers in which there was at least one listed number that fell within the targeted tracts. From these, OSR directed SSI to exclude all listed numbers (all those already set aside for the listed strata, and all listed numbers with addresses outside the county). What remained then is the set of all non-listed phone numbers in the banks associated with the county tracts. This set of numbers thus formed a fifth stratum of phone numbers within the county (Stratum E-nonlisted).

OSR over-sampled each Stratum A, B, and C to produce the over-samples of African Americans, Asian Americans, and residents of the western region of the county.

To keep the calling as efficient as possible, both Genesys and Survey Sampling checked the selected sample of phone numbers for each stratum against their data base of business listings and government offices, and known non-working phone numbers. When identified, Genesys and Survey Sampling coded each phone number accordingly. As recommended by CDC, those phone numbers pre-screened by Genesys or Survey Sampling as business or non-working numbers were not called by OSR.

Sample files were delivered to OSR by Genesys or Survey Sampling. The files contained a variety of information, some of which needed to be retained in addition to the telephone number. Additionally, a case identification number had to be assigned to each telephone number and the file had to be written into a format appropriate for importing into the CATI program for the study. Therefore, OSR staff had to read the sample files received from Genesys and Survey Sampling, create variables needed, and then write the files out into a predetermine layout.

OSR arranged for Genesys and Survey Sampling to cross-check the RDD sample of phone numbers against residential directory listings and to provide OSR with the names and addresses associated with the phone numbers in each replicate. OSR mailed advance notice letters to the address listed roughly one week prior to releasing the replicate for calling.

**Within Household Respondent Selection.** The within household selection procedure OSR used for selecting respondents was a modified versions of the Trolldahl-Carter procedure. This procedure asks the adult household informant how many adults (individuals 18 years of age or older) there are living in the household, and, then, how many of these are men. A random number-based algorithm then determined whether the person selected would be the "oldest male," the "youngest male," the "oldest female," the "youngest female," etc. In its published form, the Trolldahl-Carter technique actually never chooses the middle aged males or females when there are three or more of either in the household. That is, as published, not all adults in the household would have a chance of selection. OSR modified this procedure so that all adult household members would in fact have a chance of being selected.

For generating statewide estimates, the unequal rates of selection of households between the strata (i.e., the listed numbers, and the not listed numbers in 1+ blocks, as well as among geographic strata of listed numbers) have to be adjusted for via post-stratification weighting. The number of numbers drawn and the number of numbers that were on the sampling frame for each stratum at the time of sampling is recorded on the data files, along with the probability of

selection used for constructing caseweights. The unequal probabilities of selection of respondents across households varying in the numbers of adult residents also must be adjusted for in the construction of final caseweights for analyses.

### **The Interview Instrument.**

**Content.** The MBRFS interview instrument consisted of two major components, the core set of questions specified by CDC and a second set of question added by MDCH for the Michigan survey. Additionally, if counties elected to purchase over-samplings of their counties, MDCH offered the opportunities to counties to replace some state-added questions with county-specific questions or to include some additional questions if they wished. Washtenaw County elected to drop some of the state-added questions in favor of other BRFSS questions otherwise not being included in the 2005 MBRFS interview and a number of other questions of particular interest to Washtenaw County. Since these county-requested questions were not in the Michigan BRFSS interview, the numbers of respondents to the unique county-added items will be somewhat less than for the other survey questions.

The final interview instrument can be described briefly as being divided into forty sections as follows:

- Section 1: Health Status
- Section 2: Healthy Days
- Section 3: Health Care Access
- Section 4: Exercise
- Section 5: Diabetes
- Section 6: Hypertension Awareness
- Section 7: Cholesterol Awareness
- Section 8: Cardiovascular Disease Prevalence
- Section 9: Asthma
- Section 10: Immunization
- Section 11: Tobacco Use
- Section 12: Alcohol Consumption
- Section 13: Demographics, including height and weight
- Section 14: Veteran Status
- Section 15: Disability
- Section 16: Arthritis Burden
- Section 17: Fruits and Vegetables
- Section 18: Physical Activity
- Section 19: HIV/AIDS
- Section 20: Emotional Support and Life Satisfaction

**\*\* Washtenaw-Added Questions**

- Section 21: Selection of and Demographics of a Child Resident of the Household
- Section 22: Childhood Asthma Prevalence
- Section 23: Child Weight Status and Physical Activity
- Section 24: Social Service Needs
- Section 25: Mental Health

- Section 26: Access to Care
- Section 27: Firearms
- Section 28: Disease Screening, Folic Acid
- Section 29: Substance Abuse
- Section 30: Physical Activity/Walkability
- Section 31: Food Consumption and Weight
- Section 32: Intimate Partner Violence
- Section 33: Sexual Health

**Preparation of The CATI Interview Instruments.** OSR collected the telephone interviews for both surveys using its computer assisted telephone interviewing (CATI) facilities in East Lansing, Michigan. The particular CATI system OSR used was CASES 4.3.7 developed by the University of California at Berkeley and the U.S. Department of Agriculture.

To administer an interview via CATI, the entire interview script along with the introductory scripts and coversheet must be programmed. The MBRFS interview as programmed in CASES was contained in 16 separate files, some of which were embedded in OSR's usual front-end portions of the CATI program. The table below identifies the various component parts of the MBRFS and Washtenaw County interview and OSR's CATI program files which contain them.

**Table 1. MBRFS Household Interview Components and Their CATI Program File Locations**

Module	CATI Program Module(s)
<i>Household and Eligibility Screening</i>	<i>auto0.q, auto1.q, auto2.q, auto3.q</i>
<i>MBRFS-2005 Informed Consent and the Entire Interview</i>	<i>CDC2005.q, Wash2005.q</i>
<i>CATI re-entry on callback</i>	<i>auto4.q</i>
<i>CATI callback calendars</i>	<i>auto5.q</i>
<i>CATI supervisor module</i>	<i>auto6.q</i>
<i>CATI end interview frontend</i>	<i>auto7.q</i>
<i>CATI case control, scheduling and CODE, FNL assignments (case disposition coding)</i>	<i>auto8.q, auto9.q</i>
<i>Supplemental Interviewer Instructions and Coding Categories</i>	<i>Referenc.q</i>
<i>Electronic help screens for Interviewers &amp; Supervisors</i>	<i>Autohelp.q</i>
<i>Supervisor access to reassign next question</i>	<i>Oopsloq.q</i>
<i>Script for message to leave on answering machines</i>	<i>MAD.q</i>

**Interviewers and Interviewing.** The OSR telephone interviewer training package was developed using "General Interviewing Techniques: A Self-Instructional Workbook for Telephone and Personal Interviewer Training," authored by P.J. Guenzel, T.R. Berckmans, and C.F. Cannell (1983) of the Survey Research Center, Institute for Social Research, University of Michigan.

**Study-Specific Training.** Most of the interviewers who worked on this project were experienced interviewers. For the study-specific training on this project, the interviewers were provided the study background, question objectives, and sample management of this particular

project. OSR prepared a study-specific "Survey Instruction Manual" for each. The study-specific training manuals included an explanation of the surveys and their purposes, descriptions and explanations of the respondent selection procedures to be implemented, paper copies of the question-by-question objectives, lists of appropriate responses to most frequently asked questions, and paper copies of the CATI interview instruments for each interviewer. These were reviewed during the study specific training, uncommon terms or phrases were clarified, definitions were provided, and special probes identified.

**Interviewing Schedule.** Data collection for the MBRFS occurred on a quarterly basis throughout the year, while the supplemental Washtenaw County BRFS occurred largely during the fourth quarter of 2005. For MBRFS, the interviewing for each quarter was spread across all three months of the quarter. Some allowance for holidays and other significant events was taken into account as to the actual dates of the field period for each quarter. For the Washtenaw County BRFS, interviewing began in mid-October and concluded in mid-February, 2006.

For this project, the calling period during each day was set from 8:30 A.M. until 9:30 P.M. Monday through Thursday, 8:30 A.M. until 7 P.M. on Friday, 10 A.M. until 6 P.M. on Saturday, and 12 noon until 9:30 P.M. on Sunday. OSR attempted to schedule interviewers so that approximately 40% of the calling took place during the weekdays daytime and 60% during the weekday evenings and on the weekends. At various points throughout the year, the actual distribution of calls across time blocks was checked to determine if this schedule was being achieved.

**Call Attempts.** OSR's CATI system includes an "autoscheduling" component to the software. This portion of the system continually reads through fields of the data records for all cases in which callback appointment dates and times are stored. Then on a fixed schedule, usually every quarter hour, the autoscheduler re-writes a set of calling queues -- one of which represents cases with hard appointments scheduled in the next time interval, another of cases with soft appointments in the next time interval, another of cases that were busy or "no answers" when called at their last appointment time, another of appointments that may have been missed, another of cases that have had no contact and have not been called at the limit for the number of call attempts for the next time block, etc. The autoscheduler automatically delivers cases to the next available interviewer at the time of an appointment. OSR implemented the autoscheduler for the MBRFS-2005 and Washtenaw County BRFS surveys.

OSR interviewers allow a telephone number dialed to ring a minimum of 5 times. OSR made a minimum of 15 call attempts to contact sample members if necessary. Call attempts were spread across time blocks of the day and days of the week, at least three of which took place on weekends. If contact was made within the first 15 call attempts, interviewers tried to confirm that they had reached the intended phone number and that it was an eligible household at the beginning of the contact. Once the household was enumerated and a respondent selected, OSR interviews made up to 15 additional call attempts to contact the respondent to complete the interview unless the respondent or informant for the respondent refused.

After a case had been called 15 times, it was reviewed by supervisors or project managers. If there had been no contact with the phone subscriber or if the contact had been insufficient to establish eligibility or to select a respondent and if the case had been called across all appropriate time blocks, it was finalized out according to BRFS guidelines. If supervisory review indicated that calls had not been attempted during some of the time blocks, then the number was returned

for up to three additional attempt. If no contact was made by the 18th attempt, the number was retired and a final disposition code assigned appropriately. If the case had resulted in the selection of a respondent and had not been refused, it was returned to calling for up to 15 additional attempts beyond when contact was made that resulted in the selection of a respondent.

Numbers dialed which resulted in a “temporarily not in-service” or “circuit busy” were to be called 15 times before a final disposition code could be assigned. Numbers that resulted in a “fast busy” were to be called a minimum of 6 times with at least three of these being “fast busy” outcomes and the rest being either a “busy” or a ring-no answer.

**Refusals.** In the case of refusals, the project manager or a project manager assistant reviewed cases on a continual basis to evaluate interviewer notes and assess the probabilities of successful conversion attempts. Interviewers were instructed to enter call notes to indicate what the apparent concerns or reasons for refusal were on the part of the informant or respondents to guide subsequent conversion efforts. OSR attempted conversions with all except those where the initial refusal from the respondent or informant appeared to be absolute. All refusals (except hard refusals) were called 15 times unless there is a second refusal before reaching the 15<sup>th</sup> call.

**Supervision And Monitoring.** Because of the extensive amount of monitoring and verification required to meet project specifications, OSR maintained an interviewer to supervisor ratio for this project of 8:1. OSR assigned at least two supervisors to each evening and weekend calling period and at least one supervisor to each daytime shift.

A supervisor’s workstation is located directly adjacent to interviewers’ workstations to facilitate monitoring, workflow, and assistance. The Survey Operations Manager’s office adjoins the interviewing room. Both are equipped with an unobtrusive telephone monitoring system and an electronic monitoring system which enables the manager or supervisor to monitor the interviewer’s interviewing method, adherence to protocol, and data entry during interviews.

For this study, a shift supervisor or a senior interviewer was assigned to monitor interviewers on a regular basis and provide feedback to the interviewers on their job performance. Monitoring focused on the overall conduct of the interview, correctness of question delivery, pace, naturalness, interviewer feedback and reinforcements to respondents, quality and quantity of probing, and accuracy of recording answers. The monitoring supervisor completed a monitoring evaluation form containing a set of standardized observations of the interviewer’s performance. Feedback sessions were conducted for each interviewer following monitoring.

## **DATA AND PROCESSING**

OSR built a CATI coding instrument which paralleled the interview instrument, but in which all coding categories for each question – including any that had been newly constructed – were contained. Every interview was then processed through the coding instrument and all open-ended and “other: specify” responses were then coded.

When executed on an interview, the coding instrument advances from question to question following the path dictated by the last entered response given by the respondent to each item. Once the coding instrument has been followed to the end and all items coded, a separate program is executed by the project manager which re-writes the data file for each case, saving all last entered responses on the final execution path through the interview instrument and blanking out

any now extraneous codes that do not lie on the execution path<sup>2</sup>. This then constitutes the certified data set for each completed interview. Only completed interviews can be cleaned and certified in this manner.

Once all Washtenaw County BRFs interviews were completed, coded, and certified, and all non-interview cases were reviewed and assigned final disposition codes, the data files for all cases were output for additional processing. The total data set could not be finalized until the interviews for the 2005 MBRFS were also completed, processed, cleaned, and the Washtenaw County cases extracted and merged into the Washtenaw County BRFs.

## RESULTS

Over the course of the four quarters of 2005, OSR interviewers completed a total of 425 interviews with Washtenaw County residents for the Michigan Behavioral Risk Factor Survey and 1,663 interviews in the Washtenaw County BRFs for a combined total of 2,088. The typical completed interview lasted approximately 22.5 minutes (standard deviation = 5.1; median = 22). Completed interviews in the Washtenaw BRFs required an average of 5.6 call attempts in order to produce the completed interview. A total of 6,600 randomly selected telephone numbers were used in the process of finding households and conducting the interviews in the Washtenaw BRFs. Interviewers made a total of 53,490 call attempts to these phone numbers in order to determine the appropriate final disposition for each number or to conduct the interview, an average of 8.10 call attempts per phone number.

The Washtenaw BRFs was conducted from October 17, 2005 through February 16, 2006. The MBRFS was conducted from January 25, 2005 and concluded January 16, 2006.

The list of disposition categories and the numbers of phone numbers that were assigned each of the final dispositions is presented in the table below, along with production rates. The overall BRFs CASRO Response Rate was 42.6%, the cooperation rate was 78.7% and the refusal rate was 8.3%.

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<sup>2</sup> To avoid the possibility of unintentionally losing any data because of a programming error in a coding instrument, OSR staff routinely output a copy of the data files for interviews after coding but before their being certified. This provides an additional backup copy of the data for each respondent just in case a programming error results in the response to some item being blanked out inappropriately.

Table 2. Distribution of Final Outcome Dispositions in Washtenaw BRFSS Sample

<b>CDC-BRFSS Final Disposition Code and Category</b>	<b>Frequency</b>
110 Completed INVW	1,625
120 Partial complete	37
210 Termination in interview	16
220 Refusal after R selected	383
230 R never reached or did not start interview	290
240 R away from residence	22
250 Language problem after R selected	22
260 R physically/mentally unable	35
270 Hang up or termination after # adults recorded but before R select	-
280 HH contact after # adults recorded but before R selected	1
305 Residents away for duration	7
310 HU or term, unknown elig	807
315 HH contact, elig not known	285
320 Language prob before R selected	104
325 Physical/mental problem before R selected	36
330 HU, term, unknown if residence	445
332 Contact, unknown if private residence	0
335 MAD, message indicates HH	105
340 Tele Tech barrier, message indicates HH	0
345 MAD, unsure if HH	387
350 Tele Tech barrier, unsure if HH	0
355 Phone num changed from HH to non-work during calling	209
360 No Answer	100
365 Busy	16
370 On Never Call List	0
405 Out of state	0
410 HH, no eligible respondent	158
420 Not Private residence	254
430 FAX, Data, Modem line, no contact	64
435 Cell Phone (started Quarter 2)	14
440 Fast Busy	15
450 Non-Working, Disconnected	1163
<b>Total</b>	<b>6,600</b>

**Weighting.** OSR has weighted the final data set to correct for unequal probabilities of selection and to maximize the representativeness of the sample findings for the county's population of adults. Initially, the data set was weighted by the inverse of the probability of selection, taking into account the two phone strata (listed numbers, not-listed numbers from 1+ listed banks) and the four geographic strata, the number of phone lines to the household, and the number of adults living in the household to adjust for unequal probabilities of selection in the sample. This initial weight was then adjusted with a post-stratification factor to match as closely as possible the demographic profile of households and the adult population of the county with respect to gender, age, and race based on the bridged-race Vintage 2005 postcensal population estimates for calculating vital rates produced by the Population Estimates Program of the U.S. Census Bureau in collaboration with the National Center for Health Statistics (NCHS), released August, 2006. Population estimates for the resident population of Washtenaw County were

extracted and tabulated for purposes of constructing caseweights. Adjustments for level of education by race and sex were based on downloadable tables for Washtenaw County from the Census website. The final caseweight that takes all of these adjustments into account and which should be used for doing countywide analyses is named CNTYWT and saved in the data file.

The total adult population of the county in 2005 is estimated to be 268,056. If an analyst working on this data file is not using software designed to deal with complex survey designs, then to make full use of the over-sampling of Asian Americans, African Americans, and residents of the western region, then a different caseweight variable should be used when comparisons of these groups to others in the county are intended. OVERRACEWT, should be used when making comparisons among the racial groups. Weighted by OVERRACEWT, the weighted number of African Americans and Asian Americans in the data file equals the actual number interviewed. For comparisons between respondents in the western region and others in the county, the data file should be weighted by OVERGNWT so that the weighted number of western region respondents equals the actual number interviewed. And, for making projections to the numbers of individuals at-risk in the whole adult population of the county, we have included another weight variable, EXPANDWT, which is an expansion weight that projects the 2,088 cases in the data file to the 268,056 in the 2005 Washtenaw County adult population.

The final working sample size was 2,088. In general, the overall margin of sampling error for a sample of 2,088 is  $\pm 2.1\%$  or less. The final data set contains 310 interviews with residents of western region (the name of the variable that identifies these is REGION); 270 interviews with African Americans, and 118 interviews with Asian Americans.

Table 3 provides a demographic profile of the weighted sample for the county. The weighted data file very closely matches the population profile.

Table 3. Demographic Profile of the Weighted Sample, by Geographic Area Within the County

Characteristic		2005 Census of Washtenaw County	Weighted Sample
Sex	Male	49.5%	49.1%
	Female	50.5%	50.9%
Age	18-34	41.4%	44.6%
	35-54	36.0%	32.9%
	55-64	11.6%	10.4%
	65+	11.0%	12.1%
Race	White	79.4%	79.0%
	African American	11.8%	11.2%
	Asian/PI	8.4%	7.8%
	Other	2.4%	2.0%
Education	< High School	8.3%	7.4%
	High School Grad.	16.6%	16.4%
	Some College	33.9%	32.8%
	College	41.2%	43.3%

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The Washtenaw BRFs also collected health information about children residing in the households selected and interviewed. Data were collected on a total of 714 children in Washtenaw County. A second set of caseweights were constructed to weight the data on children to be representative of children countywide. Again using the bridged-race Vintage 2005 postcensal population estimates for calculating vital rates produced by the Population Estimates Program of the U.S. Census Bureau, caseweights were calculated to ensure the weighted data file matched the population profile of children 0-17 years of age with respect to sex x age x race. The final caseweight that makes all of these adjustments is CH\_SAMPLEWT. This is the caseweight that should be used for analyses to produce countywide estimates. The estimated total population of children in the county for 2005 is 72,479. An expansion weight, CH\_POPWT, has been calculated and saved in the data file. When applied, it can be used to estimate the actual number of children in the population that have a particular characteristic.