Methodology Wave 1

Fall 2016 | City of Detroit

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I. SUMMARY

Wave 1 of the Detroit Metropolitan Area Communities Study includes interviews with a representative address-based sample of 714 Detroit residents. Interviews were administered online, using paper and pencil, and over the phone, in English and Spanish, between October 2016 and January 2017. Respondents were recruited via mail, phone, and in person. Post-stratification survey weights are provided to account for differential non-response. The margin of sampling error for the full sample, accounting for the increase in variance due to weighting, is +/- 4.8 percentage points at the 95% confidence level.

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II. SAMPLE DESIGN

The target population for this study was the adult household population of the City of Detroit. A simple random sample of addresses was drawn from a list of all household addresses in the City. A total of 3100 addresses were selected from FIPS 26/22000, City of Detroit. The sample file contained information including the tract number, block and block group, and whether the address was a single or multiple family structure. The sample provider also matched each address to the likely name and phone number of a resident when such information was available. Approximately 90% of the sample lines came with a possible name match and 68% with a possible telephone number match.

III. QUESTIONNAIRE DEVELOPMENT, PROGRAMMING, AND TESTING

The questionnaire was developed by the DMACS Principal Investigators and was translated into Spanish by Language Services Associates. The web version of the instrument was programmed and administered in Illume Next. A paper version was created simultaneously. A small number of questions were inadvertently left off the initial version of the paper questionnaire, resulting in missing data for these items.

IV. DATA COLLECTION PROTOCOL

Survey Research Operations at the University of Michigan was responsible for the data collection, with consultation from the DMACS Primary Investigators.

An initial mailing was sent to each of the 3100 sample addresses on October 3, 2016. The mailing contained an invitation letter, an informed consent document, eligibility and respondent selection instructions, a prepaid $2.00 incentive, and a web address (URL) for respondents to reach the survey instrument. Households were asked to have the adult who had the most recent birthday complete the survey. The invitation letter had English and Spanish versions printed back-to-back. Spanish versions of all other materials were also included in the initial mailing.

Respondents were asked to complete the survey online but were also provided with contact information (an email address and a toll-free phone number) they could use to request a paper version. Everyone who attempted to respond to the survey online was asked to enter a sample ID and confirm that they lived at the sampled address.

Two weeks after the initial mailing, those who had not yet responded were sent a reminder postcard (in English only), encouraging them to complete the survey and reminding them how they could request a paper copy.

Finally, on November 3, 2016, households that had not yet responded were mailed a paper copy of the questionnaire (in English, but with an option to request a Spanish version) and a second $2 pre-paid incentive. A total of 2,836 questionnaires were mailed out at this point.

Three interviewers, including one Spanish-speaking interviewer, were trained on October 19, 2016. Throughout the month of November, they conducted reminder calling using the telephone numbers matched during the sampling process. Interviewers were instructed to encourage respondents to complete the survey online as the highest priority, then to offer a paper version of the questionnaire, and finally to offer to complete the survey with the respondent over the phone. Interviewers made up to five contact attempts for each sample line, and two interviewer-administered surveys were completed via telephone. Calls were attempted to a total of 1517 potential sample lines.

The interviewers then conducted in-person recruitment among a subsample of 16% of non-respondents (307 cases), from mid-December through the second week of January. Interviewers were to visit subsampled households, recruit them to participate, ideally completing the survey on the web. Interviewers also brought paper versions of the survey, to be left at the household if no one answered or if the respondent requested that version. As a last resort, the interviewer was to complete the paper version with the respondent; this resulted in one completed interview. One visit was made per household.

Respondents were offered a $20 post-paid incentive for completion of the interview. A total of 303 interviews were completed online, 409 administered using paper and pencil, and 3 cases were interviewer-administered (2 via telephone, 1 face-to-face).

V. WEIGHTING

A post-stratification weight was developed to calibrate the demographic distribution of respondents to the target population of the City of Detroit. The final sample weight (w1_wgt_notrim) was developed with an iterative proportional fitting (raking)[1] procedure (using the "ipfraking" package in Stata 15)[2] and includes adjustments for age, gender, race, and education[3] to match the American Community Survey (ACS) 2011-2015 estimates for the population 18 and older in the City of Detroit. Table 1 illustrates the unweighted and weighted results for these categories compared to the 2011-2015 ACS estimates for the City.

The final values of the weights range from 0.17 to 6.65; the weights for all but 16 respondents fall between 0.25 and 4.0. The final weight is not trimmed.

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[1] For more information, see "Raking" in Lavrakas, P. J. (2008). Encyclopedia of survey research methods Thousand Oaks, CA: SAGE Publications Ltd.

[2] For more information on the "ipfraking" package, see Kolenikov, S. (2014). "Calibrating survey data using iterative proportional fitting (raking)." The Stata Journal 14, pp. 22-59.

[3] Before conducting the raking analysis, we imputed the survey measures of age, gender, race, and education using the "hotdeckvar" package for Stata, written by Matthias Schonlau (see http://www.schonlau.net/stata/hotdeckvar.hlp for more information). Hotdeck imputations for age were performed separately within the following subgroups: (1) respondents who were both retired and on medicare, (2) those were either retired or on medicare (but not both), (3) those who were neither retired nor on medicare, (4) cases in which we had missing data on retirement or medicare status. Hotdeck imputations for race were performed separately for subgroups of respondents defined by the following typology of block-group racial composition from the 2011-2015 American Community Survey: (1) block groups in which less than 50% of the population was black, (2) block groups in which 50-79.9% of the population was black, and (3) block groups in which 80% or more of the population was black. Hotdeck imputations for education were performed separately for subgroups of respondents defined by whether they reported their household income to be (1) below $35,000, (2) $35,000 or more, or (3) did not answer the question about household income.

Table 1: Unweighted and Weighted Demographic Estimates

	2015 ACS Estimate for City of Detroit	Unweighted %	Weighted %
Male	46%	33%	46%
Female	54%	67%	54%
No Response			
18-34	33%	17%	31%
35-54	33%	28%	31%
55-65	17%	24%	16%
65+	17%	24%	16%
No response		7%	6%
White Alone	14%	14%	14%
African American Alone	80%	75%	77%
Other	6%	7%	6%
No response		4%	4%
←HS education	22%	10%	20%
HS/GED	33%	20%	31%
Some college/Associates	33%	43%	32%
Bachelors	14%	24%	14%
No response		3%	3%

VI. MARGIN OF ERROR CALCULATION

For a simple random sample with no weighting required, the margin of sampling error for a sample of 714 is +/- 3.7 percentage points at the 95% confidence level. However, weighting such as described above results in an increase in variance. Accounting for this increase using an approximation for the design effect of $deff=1+cv^2(w1\_wgt\_notrim)$, the margin of sampling error for full sample estimates at 50% is +/-4.8 percentage points at the 95% confidence level[4].

Sampling is not the only potential source of error in the survey estimates, however, and it is important to keep in mind other potential sources of error and uncertainty,

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[4] For more on design effects, see Kish, L. (1965). Survey Sampling. New York: John Wiley & Sons; and Kish, L. (1987). Weighting in Deft2. The survey statistician, pp. 26-30.

including bias or variability resulting from non-response, from question design or interpretation, and from incomplete coverage of the target population.

VII. DISPOSITION AND RESPONSE RATE

The response rate to the Wave 1 survey was 26.9%, calculated using AAPOR Response Rate 2 The final dispositions are reported in Table 2.

Table 2: Dispositions and Response Rate

Category	AAPOR code	Results
Interview (Category 1)		
Complete/Partial (all versions)	1.0/1.1	714
Eligible, non-interview (Category 2)		
Refusal	2.11	10
Unknown eligibility, non-interview (Category 3)		
Unknown if housing unit/unknown if occupied	3.1	1917
Not eligible (Category 4)		
Vacant housing unit	4.6	463
Response Rate:		
(I+P)/((I+P) + (R+NC+O) + (UH+UO))		0.270