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**2010 CENSUS PLANNING MEMORANDA SERIES**

**No. 167**

MEMORANDUM FOR The Distribution List

From: Arnold Jackson *[signed]*
Acting Chief, Decennial Management Division

Subject: 2010 Census Integrated Communications Program (ICP) Evaluation Report

The Census Bureau contracted with NORC at the University of Chicago to conduct an independent evaluation of the Integrated Communication Program for the 2010 Census. Attached is NORC's Final Report for the 2010 Census Integrated Communication Program Evaluation. We are issuing this document in our memo series for the record.

The U.S. Census Bureau conducted other evaluations and assessments pertaining to the Integrated Communications Campaign, such as the Census in Schools, National Partnerships, and 2010 Integrated Communications Program. Those reports are being issued separately.

If you have any questions about this document, please contact Donna Souders at (301) 763-1810.

Attachment

FINAL REPORT

# 2010 Census Integrated Communications Program Evaluation (CICPE)

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# Acknowledgments

Many people contributed to the drafting and shaping of this report.

George Washington University professor and NORC team member Doug Evans shaped our approach to evaluating the paid media portion of the campaign and provided general review and input. Northwestern University professor and NORC team member Bruce Spencer advised extensively on the sampling and weighting strategies, and thinking through the overall evaluation approach. Northwestern University professor and NORC team member Bob Calder drafted the conceptual model underlying the evaluation.

Jill Connelly managed the report assembly, formatting and editing process and wrote several sections about data collection operations. Additional members of the analysis and writing team include: Peter Hepburn, Kate Baldwin, Daniel Morris and Jafar Haider.

Authorship of specific sections worth noting:

- Analysis of non-response bias (Chapter 2): Steven Pedlow and Bruce Spencer
- Analysis of panel conditioning (Chapter 2): Ting Yan
- Analysis of message receptivity (Chapter 6): Doug Evans and Ting Yan
- Preparation of supplemental data (Chapter 7): Doug Evans, Peter Hepburn, Ting Yan and Kate Baldwin
- Approach to assess ICC effect on differential undercount (Appendix A): Bruce Spencer

The 2010 CICPE project was led at NORC by Chet Bowie. Micah Sjoblom served as Deputy Project Director for Data Collection and Processing, and was assisted in data collection management by Suzanne Bard, Jill Connelly and Peter Hepburn. Steven Pedlow was responsible for the sample design and implementation and developing weights. Rupa Datta served as Deputy Project Director for Design and Analysis, overseeing questionnaire design, data delivery and analysis; Datta worked closely with Ting Yan on all of these tasks.

At the Census Bureau, we received the most input and guidance from a team including: Nancy Bates, Larry Cahoon, Mike Bentley, Donna Souders, Karen Medina, Eric Newburger, Monica Wroblewski, and consultant Mike Lotti.

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# Executive Summary

## Overview

The 2010 Decennial Census effort included a broad-based, multi-faceted 2010 Integrated Communications Campaign (ICC) to encourage participation in the Census. Components of the 2010 ICC included paid media advertising, partnership efforts in local communities, a Census in Schools program for outreach to students in elementary and secondary schools, and earned media in traditional and digital media outlets. ICC outreach began in late 2009, with peak paid media and partnership activities taking place from January through June, 2010.

The 2010 Census Integrated Communications Program Evaluation (CICPE) was conducted by NORC (NORC) at the University of Chicago under contract from the Census Bureau to:

- track the evolution of knowledge of and attitudes toward the Census prior to and during the 2010 Census;
- evaluate the effect of the 2010 ICC on mail return and cooperation with enumerators;
- increase understanding of the mechanisms through which a communications campaign can affect census participation; and
- emphasize the perspectives of hard-to-count groups in achieving these analytical objectives.

This report presents the results of a three-year study that combines survey data with census operational records and a variety of other commercial and administrative data sources to achieve these objectives.

Main findings of the report include:

- Knowledge of the census increased significantly for the U.S. population as a whole and among key subgroups from fall 2009 to late spring 2010. Attitudes toward the census also became more favorable during that period.
- Exposure to the 2010 ICC was quite high for the population as a whole and for key subgroups, particularly through paid media broadcast on television. On average, a national sample of Americans recalled seeing census-related communications about once a week during the spring of 2010.
- Multivariate regressions indicate relationships between campaign exposure and increases in knowledge and attitudes. We establish these relationships through direct estimation as well as

through use of message receptivity analysis, a validated approach from the communication sciences literature.

- A consistent finding of this evaluation (and shown in these tables) is that different subgroups vary in their responses to the different components of the campaign. Aside from word of mouth, statistically significant associations between campaign exposure and mail return promote rather than depress mail return.
- Increased campaign exposure is associated with increased mail return and cooperation with enumerators for some subgroups. The associations of greater knowledge with mail return and cooperation with enumerators are often larger in magnitude.

Financial data on investment in the ICC were not sufficiently detailed for use in return on investment calculations within the CICPE design. As an alternative, we estimate lower and upper bound estimates of the change in mail return rate and/or cooperation with enumerators associated with campaign exposure. We note that the finding of differential effects across subgroups means that the maximal return comes from targeting components to subgroups. Broader implementation of components to subgroups that do not exhibit returns to those components dilutes the overall return to the campaign.

## CICPE Survey Design

The principal data source was a set of three nationally-representative household surveys conducted between October 2009 and August 2010 to capture knowledge, attitudes and exposure to the campaign. To increase the ability to understand person-specific response to the campaign, the surveys included a panel sample in which the same individuals were interviewed in each of the three waves.

Survey data collection for the 2010 CICPE took place at three points:

[1] Wave 1 was conducted mid-September 2009 through mid-January 2010, during early partnership activity, to assess baseline levels of all measures of public attention and intentions that will be the focus of the 2010 Census ICC;

[2] Wave 2 took place January 19 through March 18, 2010, during the peak of the paid media campaign and partnership activities, but before census forms were distributed to households; and

[3] Wave 3 was conducted during the NRFU period from mid-April through mid-July 2010 when people had made their decisions about participating in the mailback phase and had been exposed to the full course of the main paid media and partnership campaigns.

Census data on actual 2010 participation are also combined with survey data to determine households' census behavior.

Survey samples included approximately equal numbers of individuals from five hard to count groups and one comparison group (Hispanic, non-Hispanic African American, American Indian, Asian, Native Hawaiian, and non-Hispanic Whites).

**Table ES-1.** Completed Cases by Race/Ethnicity Group in Nationally Representative Sample

| | Total Cases Completed | | |
|---|---|---|---|
| **Race/Ethnicity** | **Wave 1** | **Wave 2** | **Wave 3** |
| Hispanic | 461 | 369 | 539 |
| Non-Hispanic African American | 377 | 384 | 526 |
| Non-Hispanic White[1] | 404 | 358 | 472 |
| American Indian | 457 | 392 | 529 |
| Asian | 542 | 410 | 548 |
| Native Hawaiian | 430 | 350 | 494 |
| **Total** | **2671** | **2263** | **3108** |

2010 CICPE Final Report: unweighted; Heavy-up sample excluded.

Such data quality issues as non-response bias or (for the panel sample) conditioning effects could severely limit the representativeness of the survey data or its relevance to the objectives of the evaluation. Data examinations indicate that the survey data show only negligible non-response bias in terms of census participation, and minimal conditioning effects except in having heard of the census. These examinations endorse the use of the survey data to understand the full population eligible for the decennial census, not only those who completed the 2010 CICPE surveys.

## Limitations of the Analysis and the Study

The objectives of the 2010 CICPE are quite ambitious, and in several ways not feasible to fully achieve. In this section, we discuss several limitations to the study. The limitations come variously from the design of the ICC, the design of the 2010 CICPE, limits on respondent cognition, and the absence of relevant additional data sources to supplement survey data as we had intended.

[1] This category includes all non-Black, non-Hispanic individuals, including Asians, NHOPI and American Indians and Alaska Natives. For ease of interpretation, we label the category 'non-Hispanic White' reflecting the most numerous group within the category.

We begin by noting that the 2010 CICPE cannot provide an estimate of the total effect of the 2010 ICC. The main reason such an estimate is not possible is that we lack a reasonable 'control' group. In fact, the 2010 ICC has many features that make it almost immune to effective evaluation. In addition to the absence of an experimental design or a control group, we see that many of the resources allocated were targeted toward hard-to-count groups as were new operational features such as bilingual and replacement questionnaires. The result is a singular focus on applying resources to those who are at most risk of non-compliance. Without effective controls, this pattern generates the impression of a negative relationship: increasing devotion of resources is associated with lower likelihood of census participation. While this resource allocation makes sense as a policy choice for improving census participation, it renders ineffective simple correlational analysis to assess ICC effects. Furthermore, it heavily conflates various efforts to improve participation in ways that almost defy estimation of individual component-level effects.

Analyses reported in this document are based predominantly on individuals' self-reports of exposure to the 2010 ICC. Self-reports are a limited tool for campaign evaluation for two reasons. First, there is leakage between what a campaign implements and what reaches its target individuals. Second, there is the potential issue of systematic bias in who recalls exposure and what exposure is recalled. This report uses supplemental data drawn from administrative and operational records to develop alternative measures of exposure that might more directly capture campaign activity without being subject to the flaws of self-reports. Of course, administrative and operation records of campaign implementation are themselves imperfect even for measuring average exposure, and they do not at all measure individual exposure. As we discuss elsewhere, the administrative and operational records available to the project team were inadequate for use in the evaluation, leaving self-reported exposure as the primary viable data source. One important limitation is the inability of respondents to distinguish between exposure to different campaign elements. One danger is the misattribution of an instance of exposure to the wrong campaign component. A second danger is that a respondent might multiply report a single instance of exposure under different components. Although we present results for different campaign components throughout this report, and these results are often quite stable, we note that there is some likely blurring of components throughout.

Evaluation of the partnership component of the ICC is particularly hampered. First, evaluation literature is richer for marketing evaluation than for this type of social campaign (Evans, W.D., et. al. 2009), so we do not have strong methodological models to follow. Second, the nature of partnership expectations and participation is sufficiently varied that we were not able to develop many enhanced questionnaire items for capturing the quality of partnership exposure experienced by survey respondents.

The 2010 CICPE questionnaires were designed to make use of much of the current methods of evaluating paid and public health media campaigns, including understanding message receptivity, documenting exposure through confirmed awareness items, and incorporating gross-ratings points supplemental data into analyses. Ultimately, final ads were not available for NORC to include the desired types of items in the Wave 2 questionnaire. Thus the 2010 CICPE measures of paid media exposure during the peak of the paid media efforts are built from relatively simple questionnaire items rather than items that most reliably measure paid media exposure. The more desirable item types were included in the Wave 3 questionnaire.

Finally, the 2010 CICPE includes some research objectives that focus on households with lower propensity for survey completion. It is the case, however, that the response rates to the 2010 CICPE did not generally exceed mailback rates and certainly did not exceed final rates of census form completion at the close of the NRFU period. Thus, 2010 CICPE analyses carry the burden of arguing that partial response to our surveys is still sufficient to shed light on non-response problems in the census. We provide evidence that the 2010 CICPE survey data in fact suffer only negligible non-response bias and are therefore appropriate for generalizing to the population of households eligible for the 2010 Census.

Despite these limitations, the 2010 CICPE design — taking advantage of survey data and various supplemental data— is robust enough to assess response to the ICC as a whole, and to describe the mechanisms through which ICC exposure can affect knowledge, attitudes, and behaviors toward the census.

## Recommendations for Future Evaluations

In light of the limitations discussed above, we feel it appropriate to make some suggestions for improving the success of future evaluations of this type. We have identified several steps that the Census Bureau could take over the next several years so that any evaluation of the communications campaign of the 2020 Decennial Census might be constrained by fewer or less severe limitations. Briefly, we suggest:

- Some experimental variation in campaign implementation expanding on the idea of the Paid Advertising Heavy-Up Experiment conducted as part of the 2010 ICC.
- Development of an evaluation plan during campaign planning rather than after the fact,
- Improved collection of administrative/operational data on the implementation of the campaign for use in campaign evaluation.
- Advancing the methodology for assessing partnership activities, and developing assessment tools for any new methods of outreach in future communications campaigns.

## Outcomes of Interest

This evaluation addresses two of the three main objectives of the 2010 ICC: the effect of the campaign on mail return rates and on cooperation with enumerators.

We define mail return as return of a mail questionnaire by April 18, 2010 (prior to the start of Nonresponse Followup [NRFU]). The table below shows this mail return rate by sample type for the CICPE sample.

**Table ES-2.** Actual Census Behavior by Sample Type

| Sample Type | Sample Size of Each Subgroup | | Census Form Returned Before 4/18/2010 | |
|---|---|---|---|---|
| | # Unweighted | # Weighted (in Millions) | % Yes | s.e. |
| Hispanic | 823 | 11.7 | 46.1$^{G}$ | 3.9 |
| Non-Hispanic African American | 720 | 12.1 | 45.2$^{G}$ | 3.7 |
| Non-Hispanic White[2] | 676 | 76.3 | 67.1$^{G}$ | 4.7 |
| **National Estimate** | **2219** | **100.1** | **62.0** | **3.6** |
| American Indian | 516 | 0.74 | 39.5$^{G}$ | 3.9 |
| Asian | 890 | 4.0 | 61.2 | 3.3 |
| Native Hawaiian | 770 | 0.13 | 51.4$^{G}$ | 3.3 |

2010 CICPE Final Report.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control.

We define 'cooperation with enumerators' as completion of the enumeration by a member of the household (rather than a proxy) for households eligible for NRFU. This measure is documented in the table below for the CICPE sample types.

[2] This category includes all non-Black, non-Hispanic individuals, including Asians, NHOPI and American Indians and Alaska Natives. For ease of interpretation, we label the category 'non-Hispanic White' reflecting the most numerous group within the category.

**Table ES-3.** Cooperation Measured Through Non-Proxy NRFU Enumeration by Sample Type

| | Sample Size of Each Subgroup | | Completed Enumeration (Not By Proxy) | |
|---|---|---|---|---|
| **Sample Type** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** |
| Hispanic | 222 | 4.3 | 77.2 | 5.7 |
| Non-Hispanic African American | 259 | 4.9 | 74.6 | 4.3 |
| Non-Hispanic White | 119 | 16.6 | 75.9 | 4.7 |
| **National Estimate** | **600** | 25.8 | **75.8** | **3.0** |
| American Indian | 189 | 0.3 | 87.6[g] | 3.8 |
| Asian | 196 | 1.0 | 82.6 | 1.8 |
| Native Hawaiian | 241 | 0.04 | 83.8 | 4.3 |

2010 CICPE Final Report.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate.

## Exposure to the 2010 ICC

Understanding individuals' exposure to the ICC is essential to evaluating the impact of the campaign. As we describe earlier, the 2010 ICC had many different components -- including paid media, partnerships, Census in Schools, and earned media – as well as a platform of shared materials and messages to encourage integration across these components.

In Table ES-4, we see that respondents reported that they were exposed to the ICC one or fewer times in the month prior to Wave 1. This increased to under once per week in the month prior to Wave 2. In Wave 3, respondents reported exposure to the ICC generally from 1 to 1.5 times per week throughout the 90 day reference period for that interview. Increases relative to Wave 1 are significant for all sample types at Waves 2 and 3. Hispanic individuals reported total exposure to the ICC of almost 23 times over the 90 days, significantly higher than the rest of the country.

**Table ES-4.** Frequency of Exposure to 2010 ICC by Sample Type, by Wave

| | Frequency of Total Exposure to 2010 ICC Past 30 (Waves 1 and 2)/90-Days (Wave 3) | | |
|---|---|---|---|
| **Sample Type** | **W1(s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Hispanic | 1.3 (0.4) | $4.5^{GT}$ (0.4) | $22.9^{GT}$ (3.0) |
| Non-Hispanic African American | 1.3 (0.4) | $4.2^{T}$ (1.0) | $14.7^{T}$ (2.2) |
| Non-Hispanic White | 0.9 (0.2) | $3.0^{GT}$ (0.2) | $13.6^{GT}$ (1.4) |
| **National Estimate** | 1.0 (0.1) | $3.3^{T}$ (0.3) | $14.8^{T}$ (1.6) |
| American Indian | 0.8 (0.1) | $3.7^{T}$ (0.5) | $13.6^{T}$ (2.1) |
| Asian | $0.4^{G}$ (0.1) | $3.5^{T}$ (0.5) | $11.1^{T}$ (1.6) |
| Native Hawaiian | $0.3^{G}$ (0.1) | $2.8^{T}$ (0.3) | $16.2^{T}$ (1.9) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

## Knowledge and Attitudes about the Census

We are interested in knowledge and attitudes about the census for two primary reasons: 1) to understand the extent to which knowledge and attitudes about the census are related to intent to participate and/or actual census participation, and 2) to investigate the relationship between individuals' exposure to various 2010 ICC components and their (changes in) knowledge and attitudes about the census. We begin by reporting overall changes in attitudes and knowledge from Wave 1 to Wave 3, including awareness of the census and intent to participate. For knowledge and attitudes, we see substantial improvements for most subgroups from Wave 1 to Wave 3, with many differences across subgroups being eliminated by Wave 3. Recall of the census is very high from Wave 1. Knowledge and positive attitudes are high but increase significantly from Wave 1 to Wave 3. Relatively few individuals hold negative attitudes toward the census, but even these decrease from Wave 1 to Wave 3. For most of these measures, we see that some groups experience significant change from Wave 1 to Wave 2, while others do not experience significant improvements relative to Wave 1 until Wave 3. Table ES-5 details the progression of positive and negative attitudes across the three waves.

**Table ES-5.** Positive and Negative Attitudes toward the Census by Sample Type and Wave

| | Count of Agree Responses to Positive Attitudes (out of 5) | | | Count of Agree Responses to Negative Attitudes (out of 6) | | |
|---|---|---|---|---|---|---|
| **Sample Type** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Hispanic | 3.4 (0.3) | 3.9 (0.2) | 4.4$^{GT}$ (0.0) | 1.1 (0.2) | 1.1$^{G}$ (0.2) | 0.8$^{t}$ (0.1) |
| Non-Hispanic African American | 3.0 (0.3) | 3.5 (0.3) | 3.8$^{T}$ (0.1) | 1.1 (0.2) | 0.8 (0.2) | 0.9$^{G}$ (0.1) |
| Non-Hispanic White | 3.4 (0.1) | 4.0$^{T}$ (0.1) | 4.0$^{T}$ (0.1) | 0.9 (0.1) | 0.6$^{GT}$ (0.1) | 0.5$^{GT}$ (0.1) |
| **National Estimate** | 3.4 (0.1) | 3.9$^{T}$ (0.1) | 4.0$^{T}$ (0.1) | 1.0 (0.1) | 0.7$^{T}$ (0.1) | 0.6$^{T}$ (0.1) |
| American Indian | 3.1 (0.1) | 3.8$^{T}$ (0.2) | 3.9$^{T}$ (0.3) | 0.9 (0.1) | 0.8 (0.1) | 0.8$^{g}$ (0.1) |
| Asian | 2.5$^{G}$ (0.2) | 3.5$^{gT}$ (0.2) | 3.5$^{gT}$ (0.2) | 1.1 (0.1) | 1.1$^{g}$ (0.2) | 0.8$^{T}$ (0.1) |
| Native Hawaiian | 2.9 (0.3) | 3.9$^{T}$ (0.1) | 3.8$^{T}$ (0.2) | 0.9 (0.1) | 1.0$^{G}$ (0.1) | 0.9 (0.2) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

In Table ES-6, we report the regression results from exploring the association between campaign exposure and respondent attitudes and knowledge about the census. We attempt to predict knowledge scores, and counts of positive and negative attitudes using five binary indicators of exposure to campaign components, and a sixth continuous measure of total number of exposures to the ICC. We find that the relationship of exposure to knowledge varies widely across subgroups defined by age, home ownership status and sample type, with virtually every component serving as a significant predictor for at least one subgroup. Predicting positive attitudes using exposure measures generates somewhat more consistent results. Across age and home ownership categories, word of mouth and earned media exposure seem often to be associated with increased positive attitudes. Across sample types, any earned media exposure and frequency of total exposure are often associated with increased positive attitudes. Essentially none of our exposure measures predict count of negative attitudes.

**Table ES-6.** Predicting Positive Attitudes Using Exposure by Demographic Group

| | Model 0 All Cases | | Model I 45 years or older | | Model II Less than 45 years old | | Model III Homeowner | | Model IV Non-Homeowner | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | (p-value) | Coefficient | (p-value) | Coefficient | (p-value) | Coefficient | (p-value) | Coefficient | (p-value) |
| Exposed to paid media | -0.14 | (0.62) | -0.07 | (0.80) | -0.23 | (0.59) | -0.13 | (0.73) | -0.29 | (0.27) |
| Exposed to partnerships | 0.28 | (0.23) | 0.17 | (0.55) | 0.34 | (0.30) | 0.21 | (0.39) | 0.34 | (0.56) |
| Exposed to Census in Schools | 0.43 | (0.15) | 0.34 | (0.33) | 0.51 | (0.14) | 0.54 | (0.18) | 0.19 | (0.57) |
| Exposed to earned media | **0.41**** | (0.02) | **0.34*** | (0.06) | **0.47*** | (0.08) | 0.27 | (0.29) | 0.66 | (0.13) |
| Exposed to word of mouth | **0.58**** | (0.03) | **0.45*** | (0.09) | **0.61*** | (0.05) | 0.49 | (0.12) | **0.76**** | (0.01) |
| Frequency of total exposure | 0.02 | (0.47) | **0.16**** | (0.03) | -0.03 | (0.50) | 0.02 | (0.72) | 0.03 | (0.66) |
| R-square | 0.09 | | 0.11 | | 0.09 | | 0.06 | | 0.16 | |

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Note: Weighted least squares regression predicting count of positive attitudes. Wave 3 cases, with weights, heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

We also compare the 2010 CICPE data with data from its predecessor study, 2000 Census Paid Media and Partnership Evaluation (PMPE). We find relatively few differences in knowledge, attitudes, or exposure between the two census years. Where we do find differences in attitudes, 2010 attitudes are generally more favorable toward the census than in 2000. Despite this, Wave 1 intent was lower among Hispanics and non-Hispanic African Americans in 2010 than in 2000. We also find some differences in exposure to non-English campaign outreach between the two census years. The results seem consistent with more effective targeting of 'in-language' communications in 2010, so that Hispanics, who might speak Spanish, had approximately the same recall of non-English communications, while non-Hispanic African Americans and non-Hispanic Whites (who might be less likely to speak a non-English language) had lower recall of non-English communications in 2010 than in 2000.

**Table ES-7.** Exposure in a Non-English Language by Race/Ethnicity, Wave, and Census Year

| | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | |
|---|---|---|---|---|---|---|
| **Race/Ethnicity** | **2000** | **2010** | **2000** | **2010** | **2000** | **2010** |
| Hispanic | 54.8 (7.2) | 41.5$^{G}$ (12.2) | 62.5 (5.4) | 58.3$^{G}$ (7.4) | 81.3 (5.1) | 71.0$^{GT}$ (5.5) |
| Non-Hispanic African American | 20.4 (5.1) | 4.2$^{GD}$ (1.4) | 22.0 (3.8) | 9.4$^{D}$ (3.6) | 29.8 (3.3) | 21.7$^{T}$(4.0) |
| Non-Hispanic White | 10.2 (5.1) | 6.0$^{G}$ (2.3) | 17.5 (4.1) | 10.5$^{G}$ (2.5) | 27.5 (3.8) | 17.9$^{GTd}$ (4.3) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics. For comparisons across waves (time), the letter "T" (uppercase) indicates p< 0.05 while the letter "t" (lowercase) indicates p<0.10 (but p>0.05). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. For comparisons across decennial censuses (2000 vs. 2010), the letter "D" (uppercase) in the 2010 column indicates p< 0.05 while the letter "d" (lowercase) in the 2010 column indicates p<.10 (but p > .05). No testing was done between waves or groups of the 2000 data. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

## Modeling Effects of Exposure

We use multivariate regression techniques to estimate the association of ICC exposure to mail return of the census form by April 18 (prior to NRFU). Perhaps the clearest message of these models is that ICC exposure does not work the same way for all groups: partnership works for some but not others, paid media works separately from earned media, etc. We can see this in Table ES-8, in which we attempt to predict mail return prior to NRFU using five binary indicators of campaign exposure and the frequency of all exposures to the ICC. We are reporting odds-ratios, so numbers below one indicate suppression of mail return and numbers above one indicate greater likelihood of mail return relative to the reference category for each variable.

**Table ES-8.** Predicting Pre-NRFU Mail Return using Exposure by Sample Type

| | Hispanic | Non-Hispanic African American | Non-Hispanic White | American Indian | Asian | Native Hawaiian |
|---|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Exposed to Paid Media | 1.11 (0.90) | 1.30 (0.64) | 1.82 (0.40) | 0.95 (0.95) | 1.59 (0.38) | 0.43 (0.18) |
| Exposed to Partnership | 1.36 (0.48) | **2.16**** (0.01) | 1.68 (0.20) | **0.43*** (0.07) | 1.33 (0.36) | 0.92 (0.90) |
| Exposed to Census in School | 1.35 (0.30) | 1.44 (0.60) | 1.16 (0.85) | 1.20 (0.73) | 0.78 (0.48) | 1.01 (0.98) |
| Exposed to Earned Media | 1.00 (1.00) | 1.56 (0.38) | 1.13 (0.80) | **3.38**** (<0.01) | 1.13 (0.64) | **1.62*** (0.07) |
| Exposed to Word of Mouth | 0.58 (0.13) | **0.30*** (0.06) | **0.44**** (0.05) | 1.73 (0.43) | **0.54*** (0.10) | 0.81 (0.50) |
| Frequency of Total Exposure | 0.98 (0.75) | 1.10 (0.42) | 1.12 (0.16) | **1.33**** (0.05) | **1.24**** (0.02) | **1.16*** (0.07) |
| Pseudo R-square | 0.01 | 0.06 | 0.24 | 0.01 | 0.01 | 0.01 |
| Max-Rescaled R-square | 0.02 | 0.11 | 0.24 | 0.13 | 0.04 | 0.03 |

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Note: Logistic regression models predicting mail return prior to NRFU (4/18). Wave 3 sample excluding Heavy-up cases. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Although we do not find very consistent patterns in relationships between ICC exposure and mail return, we do find some stronger and more stable relationships between knowledge and mail return. We report some of these results in Table ES-9. When all other factors are held constant, more knowledge is associated with greater likelihood of mail return for all groups but home owners and Hispanics.

**Table ES-9.** Predicting Pre-NRFU Mail Return using Knowledge and Attitudes by Sample Type

| | Hispanic | Non-Hispanic African American | Non-Hispanic White | American Indian | Asian | Native Hawaiian |
|---|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Knowledge Scores | 0.87 (0.43) | **1.19**** (0.04) | **1.21**** (0.04) | **1.12**** (<0.01) | **1.26**** (0.01) | **1.28**** (0.05) |
| Positive Attitudes | 0.99 (0.94) | 1.23 (0.17) | **1.31**** (0.02) | **1.61**** (<0.01) | 1.10 (0.38) | **0.83**** (<0.01) |
| Negative Attitudes | 1.36 (0.46) | 1.05 (0.82) | 1.36 (0.15) | 0.94 (0.93) | 0.68 (0.19) | 0.70 (0.11) |
| Pseudo R-square | 0.01 | 0.04 | 0.31 | 0.01 | 0.02 | <0.01 |
| Max-rescaled R-square | 0.02 | 0.07 | 0.31 | 0.14 | 0.08 | 0.04 |

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Note: Logistic regression models predicting mail return prior to NRFU (4/18). Wave 3 sample excluding Heavy-up cases. Positive and negative attitudes measures based only on 'strongly' agree/disagree values. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Among sample types as shown in Table ES-9, a higher knowledge score is significantly associated with increased mail return for every group except Hispanics. Among Hispanics, none of these variables (knowledge, positive attitudes, or negative attitudes) are significantly associated with mail return. Knowledge and attitudes seem to explain almost a third of variation in mail return among non-Hispanic whites, but for all other groups, this model has minimal explanatory power.

**Table ES-10.** Predicting Cooperation with Enumerators using Knowledge and Attitudes by Age and Home Ownership

| | All Cases | Model I 45 years or older | Model II Less than 45 years old | Model III Non-Homeowner | Model IV Homeowner |
|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Knowledge Scores | **1.46**** (<0.01) | 1.12 (0.33) | **1.68**** (<0.01) | **1.42*** (0.05) | **1.32**** (0.03) |
| Positive Attitudes | 1.22 (0.23) | 0.96 (0.86) | 1.34 (0.26) | 1.42 (0.10) | 1.10 (0.76) |
| Pseudo R-square | 0.12 | 0.01 | 0.24 | 0.12 | 0.06 |
| Max-rescale R-square | 0.18 | 0.01 | 0.32 | 0.19 | 0.08 |

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Note: Logistic regression predicting cooperation with enumerators. Wave 3 cases, with weights, Heavy up excluded. Positive and negative attitudes measures based only on 'strongly' agree/disagree values. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Knowledge does seem positively associated with cooperation with enumerators among all cases as well as with all but individuals older than 45 years. The count of positive attitudes is (positively) associated with cooperation with enumerators only for non-homeowners.

We further investigate the relationship of knowledge and mail return and find that it is the Wave 3 knowledge – from around the time of the census mailout and mailback phase – that is associated with mail return. Whether someone has had that knowledge for six months or acquired it in the prior two weeks does not seem to affect the connection of knowledge to mail return. This is hopeful for a census communications campaign, since it suggests that conveying knowledge to people over the course of the campaign can be effective in getting them to return their census forms by mail.

We also adopt the technique of message receptivity analysis from the communication sciences literature. We find that higher message receptivity (measured by frequency of paid media exposure as well as reactions to that exposure) is associated with higher census-related knowledge and attitudes, but not intent to participate or mail return. The message receptivity analysis results suggest that the links between exposure and knowledge/attitudes, and between knowledge/attitudes and census participation, are stronger than the direct links between ICC exposure and census mail return.

The Census Bureau had asked that the 2010 CICPE also assess the impact of phenomena outside of the ICC that may have had significant influence on mail return rates. As part of the rapid response efforts within the ICC, the Census Bureau did identify possible outside influences on attitudes toward the Census or census participation. Many of these were local in nature, or not suitable for measurement using the CICPE data. Unlike for the 2000 decennial census, when privacy issues seemed to have a potentially large influence on attitudes toward the census, we have not identified non-ICC events that seem appropriate for assessment using the data and methods of this study.

## Use of Supplemental Data

The 2010 CICPE design called for integration of supplemental, operational data on the various components of the ICC to provide measures of exposure that were independent of the survey self-reports. We investigated several data sources, and did some modeling with a subset of these, including operational data from the partnership component, as well as spending and ratings data from the paid media component. We did not find the available data well-suited for the purposes of this evaluation. Although including these variables improves our overall predictive power, we did not find independent effects of these potential exposure measures, nor did they change our interpretation of the earlier documented relationships between ICC exposure and census participation.

## Return on Investment Analysis

**Table ES-11.** Estimated Changes in Mail Return Rate Associated with Changes in Exposure

| Assuming that all other exposure levels remained constant… | | |
|---|---|---|
| **Subgroup** | **Increasing by one percentage point the percentage of this group who have had any exposure to paid media, increases the group's mail return by…** | **Increasing by one percentage point the percentage of this group who have had any exposure to partnership, increases the group's mail return by…** |
| 45 years or older | Not significant | 0.14% |
| Less than 45 years | 0.27% | Not significant |
| Homeowners | Not significant | 0.12% |
| Non-homeowners | 0.27% | Not significant |

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In Table ES-11 we translate the regression coefficients from Chapter 6 into 'real world' values. For example, the percentage of non-home-owners who reported some paid media exposure at Wave 3 was 70.5. Increasing that percentage to 71.5 – all other things staying unchanged – would be associated with an increase in mail return for non-home-owners from 47.4 percent to 47.7 percent. Of course, greater shifts in mail return can be achieved by achieving greater shifts in exposure.

Alternatively, we see that the entire increase in knowledge from Wave 1 to Wave 3 is associated with an increase in cooperation with enumerators (among NRFU households) of 10.86 percentage points for individuals less than 45 years old.

**Table ES-12.** Estimated Changes in Cooperation with Enumerators Associated with Changes in Knowledge

| | **Assuming that all attitudes remain constant…** | |
|---|---|---|
| | **Increasing the average *knowledge* at Wave 1 of this group to its average knowledge at Wave 3, increases the group's cooperation with enumerators by …** | **Increasing the average *knowledge* at Wave 2 of this group to its average knowledge at Wave 3, increases the group's cooperation with enumerators by …** |
| 45 years or older | Not significant | Not significant |
| Less than 45 years | 10.86 % | 7.52% |
| Own Home | Not significant | Not significant |
| Don't Own Home | 6.39% | -0.14% |

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Together, then, these two tables can be interpreted as providing lower and upper bounds to what might be the magnitude of effects on mail return rate and cooperation with enumerators of ICC exposure and changes in knowledge during the ICC. Of course, there can be other returns to the investment in the ICC other than mail return and cooperation with enumerators; we have not attempted to estimate those here.

A consistent finding of this evaluation (and shown in these tables) is that different subgroups vary in their responses to the different components of the campaign. The maximal return can be achieved by implementing a campaign that includes any given component only for those populations that exhibit a response to that component. Including a component for a population that doesn't exhibit response to that component only dilutes the overall return to the campaign.

We do document increases in mail return rate and cooperation with enumerators associated with increased campaign exposure for some subgroups. The larger estimated effects in both outcomes, however, are associated with increased knowledge (whether through campaign exposure or other sources).

# Chapter 1: Introduction

This report presents final results from the 2010 Census Integrated Communications Program Evaluation (CICPE), conducted by NORC at the University of Chicago under contract with the U.S. Census Bureau. The purpose of the 2010 CICPE was to evaluate the success of the Census Bureau's communications efforts to encourage participation in the 2010 Decennial Census; this effort is known as the 2010 Integrated Communications Campaign (ICC). A prior, companion Post-Census Data Collection Report was submitted by the 2010 CICPE team to the Census Bureau in December, 2010, and contains substantial detail on the methodology implemented in data collection efforts as well as some more detailed tabulations.

## 1.1. Communications Campaigns for the Decennial Census

Census 2000 was the first decennial census to use a paid advertising campaign. The campaign featured use of print and broadcast media, as well as outdoor advertising, to emphasize the importance of responding to the census. Five advertising agencies were used: one to create the core message, and the others to tailor it to specific audiences. The Census Bureau also established partnerships with many diverse groups at all levels of government, both to publicize the census and to encourage participation. Numerous promotions and special events were held across the country. The available evidence suggests that the Census 2000 Partnership and Marketing Program, along with other efforts aimed at improving census participation, succeeded in reversing a long-term decline in mail response rates (especially in traditionally hard-to-enumerate groups), and may also have improved cooperation with Census Bureau enumerators, helping to shorten and reduce the costs of Nonresponse Followup (NRFU) efforts.

The 2010 Census ICC was intended to build on the success of the Census 2000 Partnership and Marketing Program with the same goals of increasing mailback of the census form, improving cooperation with enumerators, and reducing the differential undercount. For 2010, the Census Bureau used an approach that integrated a mix of mass media advertising, targeted media outreach to specific populations, national and local partnerships, grassroots marketing, school-based programs, and special events. By integrating these elements with each other and with the Census Bureau's 2010 operations, the campaign's goal was to more effectively ensure that everyone was reached, especially the hard to enumerate.

The 2010 Census ICC contract was a major public expenditure and had great potential to affect the quality and overall cost of the 2010 Census. For these reasons, a rigorous and independent evaluation of

the 2010 Census ICC is essential for evaluating the success of the 2010 Census and for planning for the 2020 Census.

The Census Bureau sought an independent evaluation of the 2010 Census ICC to determine if the campaign achieved its goals. NORC at the University of Chicago was selected to conduct that evaluation. The evaluation will help stakeholders determine if the significant investment in the 2010 Census ICC was justified by such outcomes as increased mail returns and increased cooperation with enumerators. The full breadth of the campaign has been studied, including paid media/advertising, partnerships, the Census in Schools program, earned media, and other campaign activities. The 2010 CICPE was designed as a multi-method study that will increase the depth and breadth of the evidence available about the 2010 ICC and will support valid, robust, and actionable conclusions about the impact of the 2010 Census ICC.

The 2010 Census ICP Evaluation approach is based partly on the Census 2000 Partnership and Marketing Program Evaluation (PMPE), also conducted by NORC at the University of Chicago. That experience demonstrated the strengths of a traditional time-series survey design for measuring the impact of an integrated communications program on critical indicators of exposure, awareness, attitudes, and other predictors of census response behavior. It also revealed significant weaknesses of time-series survey data to assess the impact of an integrated communications campaign, pointing to the potential benefits of a multi-method approach to evaluate the effectiveness of a complex, multidimensional effort to influence public participation in one of the most important civic activities supporting American society and democracy.

## 1.2. 2010 Census Integrated Communications Campaign

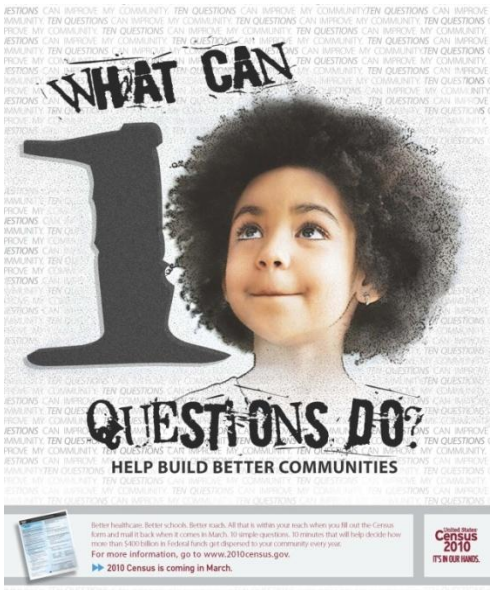
Several different components constituted the 2010 ICC. These included paid media, partnership, earned media, and Census in Schools. Paid media includes advertisements run on traditional media such as television, radio, and print; as well as on-line advertisements such as pop-up and banner ads; and "out of home" advertising such as billboards, park benches, and coffee cups. The paid media effort included a national effort using mainstream (English-language) media outlets, as well as large a number of specific plans targeting hard-to-count audiences, usually in a non-English language and often in very small media outlets.

The partnership component involved a large contingent of Census Bureau staff located throughout the regions whose job it was to work with existing entities to enlist support for the 2010 Census. Examples of partnership activities include Complete Count Committees often created by local governments, the Univision cable channel which wrote the census into a plot line of a popular telenovela, and churches or

community groups, which distributed census materials or hosted census speakers at events such as socials or street fairs. Another large-scale partnership activity was participation by retail outlets and other publicly accessible locations such as "Be Counted" sites where Census Bureau printed materials would be available. Earned media included content covered by the media, sometimes in response to press releases or other material produced by the Census Bureau. Print, radio, and television could all be venues for earned media elements of the campaign. Census in Schools involved the provision of printed materials and lesson plans for use by staff in K-12$^{th}$ grade schools as a means of reaching parents with the message of census importance through education of their children.

The 2010 ICC was indeed integrated in its implementation. For example, the paid media contractor also produced template materials for use by partner organizations so that partners' materials would echo the messages of the paid media spots. Partners were encouraged to disseminate text produced for earned media dissemination, for example in a village newsletter. Partners and even the Census Bureau itself produced public service announcements and mini-documentaries to be posted on YouTube or aired by local media, often with the same themes or visual elements as the paid media advertisements. The campaign also included some high profile activities that blur lines between components. Examples include the 2010 Census Road Tour, NASCAR sponsorship, and airing of census ads by national chains (such as on television screens in a major television retailer, or on the sides of beverage trucks for a leading soft drink producer).

As illustration, we exhibit the following poster, which was available through the Census Bureau's partnership website listed as both an awareness poster and an element of the "Toolkit for Reaching the Black Community": in the former context, the poster represents partnership activity; in the latter, it might be paid media.




Another example is this template provided to partners for use in their own brochures about the Census.


These templates come with a caveat: "these template shells reflect the 'look and feel' of the 2010 Census communications program. While their overall designs cannot be altered, you may drop in and exchange logos as appropriate and write copy that resonates with specific groups." They permit a degree of latitude, but the idea is clearly to associate a given organization's logo with those of the United States Census 2010 and the "It's In Our Hands" tagline. Available fact sheets likewise featured logos and messages, especially the 10 questions/10 minutes refrain, that were used heavily in paid media outreach.

Reflecting the times, the 2010 ICC also made extensive use of Internet and other digital technologies. These included: pop-up Internet ads, websites for partnership activities, Census Bureau-produced public

service announcements that were posted on the World Wide Web, use of Facebook and other social networking sites to promote census participation, and extensive information on the Census Bureau's own website about the progress of the census.

## 1.3. 2010 CICPE Objectives

The main objectives of the 2010 CICPE are to assess the extent to which the 2010 Census ICC achieved specific goals related to increased mail returns and improved cooperation with enumerators. Specific analytic questions to be addressed by the 2010 CICPE include:

- What impact did the 2010 Census ICC as a whole have on the likelihood of returning a census form or cooperating with enumerators? Specifically, what are impacts of paid media advertising, partnerships, Census in Schools, earned media, and word of mouth interactions about the census?
- Which elements of the 2010 ICC were reported or recalled either least or most often?
- How effective was the campaign in changing positive and negative attitudes and beliefs about the census, and how did this vary by campaign component?
- What differences in awareness, knowledge, and attitudes before, during, and after the 2010 Census ICC were significantly different from those measured before, during, and after the 2000 Advertising Campaign?
- What advertisements, programs, and events (including breaking news events) outside of the 2010 Census ICC had an effect on respondent attitudes and behaviors?
- What return on investment can be estimated for the 2010 Census ICC?

A conceptual model depicting the 2010 ICC campaign, its mediators, and its outcomes is shown in Figure 1 at the end of Section 1.5. The questionnaires for the study aligned closely with the model shown in Figure 1.1 in Section 1.5 below. Considerable attention was paid to exposure to and interpretation of paid media in the campaign, as well as to the evolution of knowledge, attitudes, and beliefs, and how those may tie to census participation. Recognizing the difficulty in accurately measuring exposure and tying it to behavior, NORC has also emphasized the potential mechanisms for affecting behavior (namely, changes in knowledge, attitudes, and beliefs) in its model and analysis approach. While it would be desirable to be able to evaluate the effectiveness of each campaign component separately, the deeply integrated nature of the 2010 ICC limits the extent to which components of the campaign can be distinguished.

## 1.4. Study Design

At the center of the 2010 CICPE design is a set of three household surveys conducted at different points in the implementation of the ICC (before the paid media campaign, during the paid media campaign but before Census Day, and during NRFU). In the second and third waves, cross-sectional cases are supplemented with a longitudinal panel of cases interviewed in Wave 1.

Survey data collection for the 2010 CICPE took place at three points: [1] Wave 1 was conducted mid-September, 2009 through mid-January, 2010, during early partnership activity, to assess baseline levels of all measures of public attention and intentions that will be the focus of the 2010 Census ICC; [2] Wave 2 took place January 19 through March 18, 2010, during the peak of the paid media campaign and partnership activities, but before households received their census forms; and [3] Wave 3 was conducted during the NRFU period from mid-April through mid-July, 2010 when people had made their decisions about participating in the mailback phase and had been exposed to the full course of the main paid media and partnership campaigns. Wave 2 gives us a measure of partial exposure to the campaign, prior to a household's receipt of the census form. We hypothesize that the interpretation of the ICC and intent to complete can change fundamentally once the actual census form has been received by the household. For this reason, NORC completed all Wave 2 interviews prior to mail receipt of the census form.

Wave 3 gives a picture of the cumulative or total exposure to the main campaign (understanding that a smaller, NRFU phase was ongoing throughout this wave). Respondents were likely to still adhere to the knowledge, attitudes, and beliefs that they held on or about Census Day during these interviews, and almost all were interviewed at times when they were able to recall details of the messaging of specific ads. We note that a typical purpose of the third wave of an evaluation design is to collect outcome information, and indeed, the Wave 3 interview captures information about receipt of the census form and steps taken to complete and return the form.

We append to these data the actual census behavior of sampled addresses – when or if they returned a census form by mail, and if not, the Nonresponse follow-up activities for that specific household, including whether or not a household member completed the enumeration.

There is some danger in drawing conclusions about hard-to-count individuals on the basis of survey data, when in fact many hard-to-count will not complete such a survey. The merging of actual mail return information on the full CICPE sample (including non-respondents) allows us to estimate non-response bias in our survey data. Chapter 2 below documents that non-response bias pertaining to census mail return is negligible in our survey data.

The 2010 CICPE time series and longitudinal design documents changes over time in exposure to the components of the 2010 ICC. They also reveal whether increases in reported exposure for individuals and groups are accompanied by changes in reported awareness, attitudes, and motivation (compared to baseline levels measured prior to the peak of the 2010 ICC), and ultimately to census response behavior. A signal contribution of the panel component is to improve the evaluation's ability to detect within-person change in response to the campaign. One potential risk of a panel component is the possibility of conditioning effects among respondents that bias their later responses. As we note in Chapter 2 below, we find minimal evidence of conditioning effects among panel respondents.

The study design also called for use of supplemental data sources about each of the campaign components to provide alternative measures of exposure. Although several data sources were acquired and investigated, these have yielded fewer fruitful analyses than we had hoped for. The supplemental data are discussed in Chapter 7 of this report.

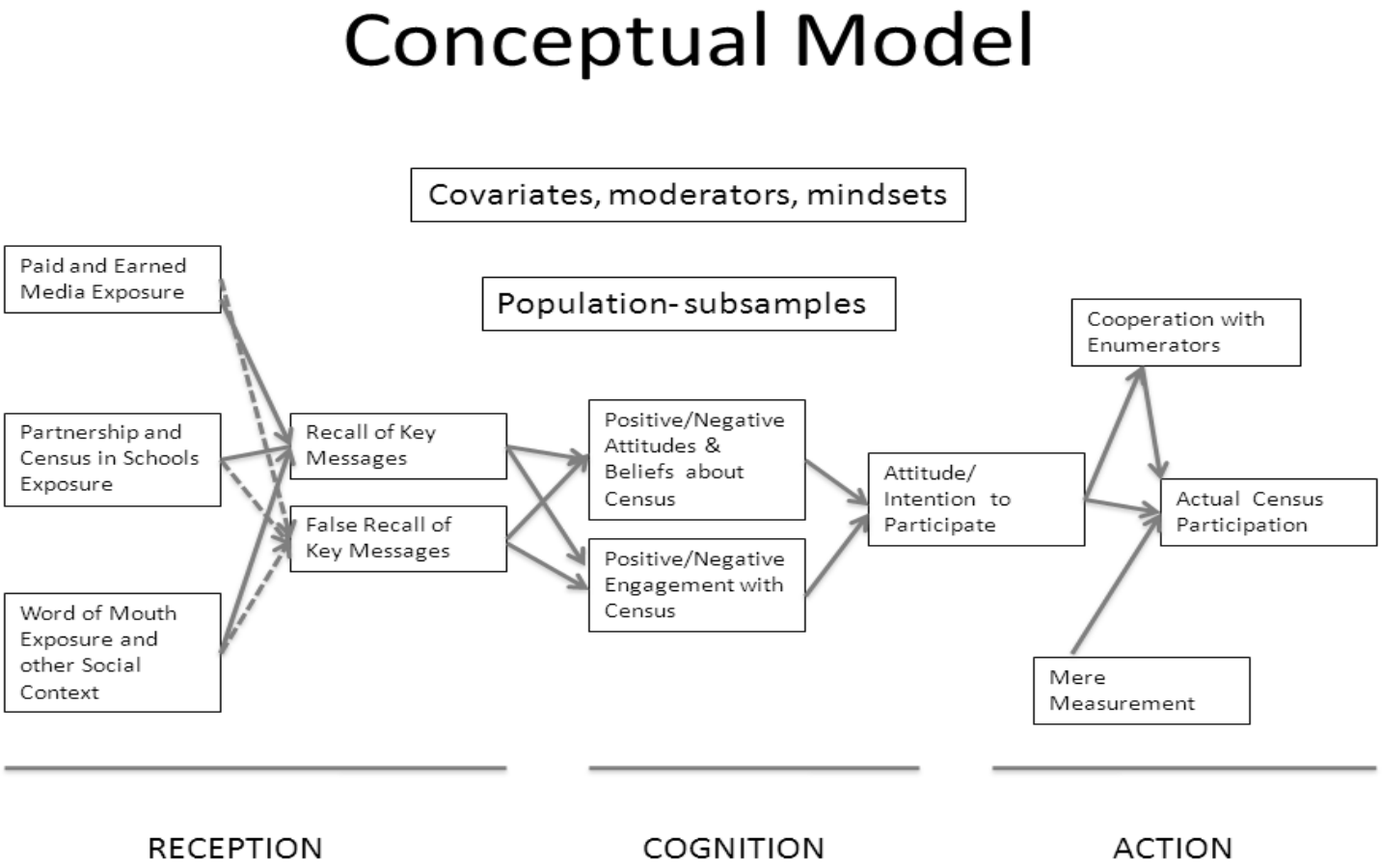
Another feature of this evaluation is the Paid Advertising Heavy-Up (PAHU) experiment. For this experiment, pairs of Designated Market Areas (DMAs) were matched on indicators such as hard-to-count scores, mail return rates in Census 2000, race/ethnic populations, poverty rates, urban/rural composition, linguistic isolation population, and number of households. Eight pairs of DMAs were identified, with one DMA of each pair randomly assigned to receive an increase to approximately double the budget initially allocated for paid advertising in that DMA (also known as a "Heavy-up"). Being able to exploit experimental variation in paid media exposure greatly improves the potential for describing the contribution of campaign components to the outcomes of interest. The Census Bureau is conducting a separate evaluation of the PAHU experiment (Bates, N., et al. forthcoming); we include PAHU tabulations primarily for informational purposes, or when the objectives of the 2010 CICPE are better served through analysis of the PAHU data.

## 1.5. Conceptual Model

The 2010 CICPE design does not support estimation of a "total" effect of the campaign. Rather, the evaluation analyses will seek to determine the relationship, if any, between increased "dosage" of campaign exposure and changes in interim or final outcomes such as knowledge, attitudes, beliefs, or mailback behavior.

Figure 1.1 on the next page visually depicts relationships between campaign exposure, the outcomes of primary interest, and other relevant factors. The figure provides a context in which to consider the objectives for the 2010 CICPE as listed in Section 1.3 above.

Figure 1.1. CICPE Conceptual Model



The conceptual model for the 2010 CICPE was developed by NORC team member Bob Calder and has driven the development and implementation of this evaluation. This model helps to explain decisions made regarding questionnaire items and design, methodology, and analytic plans for the CICPE. The graphic in Figure 1.1 presents the model in schematic form, and we describe it in greater detail below.

The general strategy of the model is to detect three stages of media effects: reception, cognition, and action. Messages regarding the census — be they distributed via paid media, partnership, Census in Schools, earned media, or other means — go through these three stages. In the Reception phase individuals have been exposed to the messages; this is the easiest phase in which to detect effects of the ICC but also the one which is assumed to have least impact on behavior. The Cognition phase involves the processing of the received messages and their integration into views held by the individual regarding the census in particular and the public good more generally. This phase results in greater impact on actual census completion behavior and has relatively easy-to-detect indicators. Lastly, in the Action phase, individuals translate their attitudes about the census and the public good into concerted behavior. This is the easiest phase to measure, as we have data regarding actual returns and enumeration, but also the one in which the causal linkages between messages and effect are most tenuous.

The Reception phase splits messages into three broad categories: paid and earned media, partnership activities, and social/community contacts. For each of these categories we attempt to gather both objective measures of ICC activity by geographic location and respondent-reported exposure. This reported exposure helps to weight the objective campaign strength by integrating likelihood of reception. Our hypothesis is that exposure intensity should affect message recall, which we measure with questionnaire items. We also include false recall of messages, which should not be affected by exposure levels and also provides us a baseline against which to measure recall of true messages.

The Cognition phase of the model has two elements which measure the effect of messages on attitudes and beliefs about and engagement with the census, respectively. The former (attitudes and beliefs about) covers inherent positive or negative aspects of participating in the census, such as the time required or the potential invasion of privacy. The latter (engagement with) pertains to the motivations for participation that stem from the individual's broader views about the public good. An example is provided in our question 16G, "Answering and sending back the census matters for my family and community." These two elements then inform intention of the individual to participate.

Intention alone does not entail follow-through, and in the final, Action phase of the model we measure this in a number of ways. First and foremost, we have a record of actual behavior from the Census

Bureau. In the Wave 3 questionnaire, we also capture reported willingness to cooperate with enumerators, which we correlate with actual behavior documented in Census Bureau operational records. In the final stage, we can check for mere measurement effect – that is, conditioning effects of participation in the 2010 CICPE interview.

## 1.6. Limitations of the Analysis and the Study

The objectives of the 2010 CICPE are quite ambitious, and in several ways not feasible to fully achieve. In this section, we discuss several limitations to the study. The limitations come variously from the design of the ICC, the design of the 2010 CICPE, limits on respondent cognition, and the absence of relevant additional data sources to supplement survey data as we had intended.

We begin by noting that the 2010 CICPE cannot provide an estimate of the total effect of the 2010 ICC. For example, what would have been the outcome of the 2010 Decennial Census in the absence of such a campaign? The main reason such an estimate is not possible is that we lack a reasonable 'control' group. An experimental design that varies campaign levels across similar sites would be ideal, but may not ever be politically feasible. Other researchers have investigated possible comparisons (see Bates and Mulry (forthcoming)), but we do not exploit such an evaluation design. Moreover, the contract for this evaluation was awarded on a timeline so that baseline data collection was preceded by the start of some partnership activities, as well as significant earned media publicity pertaining to census job announcements, so that even our initial data already reflect initial effects of census-related communications activities.

In fact, the 2010 ICC has many features that make it almost immune to effective evaluation. In addition to the absence of an experimental design or a control group, we see that many of the resources allocated were targeted toward hard-to-count groups. Furthermore, the 2010 Census introduced operational features such as a bilingual questionnaire, target and blanket replacement questionnaires and a multi-lingual postcard, all of which focused on the hard-to-count groups. The result is a singular focus on applying resources to those who are at most risk of non-compliance. Without effective controls, this pattern generates the impression of a negative relationship: increasing devotion of resources is associated with lower likelihood of census participation. While this resource allocation makes sense as a policy choice for improving census participation, it renders ineffective simple correlational analysis to assess ICC effects. Furthermore, it heavily conflates various efforts to improve participation in ways that almost defy estimation of individual component-level effects.

The sample sizes for the 2010 CICPE surveys are moderate. In most cases, the samples are adequate to measure change and detect relationships. As we focus on specific subgroups or discuss rarer phenomena, we may have inadequate sample to detect statistical significance. Throughout our analyses, there are situations where results do not achieve statistical significance, though the effect size seems considerable. Sometimes, while there are no statistically significant relationships, consistent patterns emerge that suggest that our limited sample sizes are too small to detect the actual relationships.

We also note that this evaluation can only measure what was executed in this particular campaign – the ads produced, the partnerships negotiated, the earned media coverage achieved, (also, the political climate, other media context, etc.). An evaluation result that the campaign had an effect, means just that, of course – the campaign had that effect. An evaluation result that the campaign did not have an effect needs to be interpreted more carefully. The design of this evaluation cannot support a negative result about campaign potential in general – that a communications campaign *cannot* achieve some impact or another. At most, the evaluation could yield the result that that impact was not achieved this time or that the impact was not large enough to be detected with our sample sizes. Such a result does not necessarily say anything about the potential of *some* campaign to have that effect, perhaps with different ads, alternative partnership messaging, etc., only that this particular campaign does not appear to have had the effect.

Analyses reported in this document are based predominantly on individuals' self-reports of exposure to the 2010 ICC. Self-reports are a limited tool for campaign evaluation for two reasons. First, there is leakage between what a campaign implements and what reaches its target individuals. If the data indicate that a doubling of self-reported exposure has a certain effect, one still has not answered the question how much additional campaign outreach is required to achieve that doubling of self-reported exposure. Choice of venues, timing, and messaging can all affect whether or not an individual 'receives' the outreach. Second, there is the potential issue of systematic bias in who recalls exposure and what exposure is recalled. It may be, for example, that individuals who are most favorably or unfavorably pre-disposed toward the Census Bureau are most likely to notice and recall exposure to 2010 ICC outreach, while individuals indifferent to the decennial census do not notice or recall exposure even if the amount and type of exposure was identical for both. This report documents some attempts to look for this type of systematic bias. In addition, supplemental data drawn from administrative and operational records are used to develop alternative measures of exposure that might more directly capture campaign activity without being subject to the flaws of self-reports. Of course, administrative and operation records of campaign implementation are themselves imperfect even for measuring average exposure, and they do not at all measure individual exposure. As we discuss in Chapter 7, the administrative and

operational records available to the project team were inadequate for use in the evaluation, leaving self-reported exposure as the primary viable data source.

One important limitation is the inability of respondents to distinguish between exposure to different campaign elements. We discuss the potential for this confusion in Section 1.2 above, describing some of the ways in which the integrated nature of the campaign challenges measurement of exposure. Consider, for example, an individual who sees a billboard about the 2010 Census. Depending on the image, the billboard could represent either paid media activity or, if the billboard was paid for by a Complete Count Committee, partnership activity. Clearly, we cannot expect individuals to be aware of the sponsors of billboards. One danger is the misattribution of an instance of exposure to the wrong campaign component. A second danger is that a respondent might multiply report a single instance of exposure under different components, thereby reporting an inflated number of exposures. Although we present results for different campaign components throughout this report, and these results are often quite stable, we note that there is some likely blurring of components throughout.

An impressive characteristic of the 2010 ICC was the extent to which non-Census Bureau entities supplemented the work of the communications campaign. This includes not only small-scale partnership activity at local levels, but also significant volumes of advertising sponsored by major cable television networks. Since lay viewers cannot tell the source of sponsorship of the communications they receive, the results of this evaluation are appropriately seen as reflecting the sum of all communications that occurred, not only that portion paid for directly out of the Census Bureau's appropriations. We expect that the Census Bureau will conduct other research into the 2010 ICC that will estimate the magnitude of externally-sponsored paid media and partnership activities that complemented the campaign.

Evaluation of the partnership component of the ICC is particularly hampered. First, evaluation literature is richer for marketing evaluation than for this type of social campaign (Evans, W.D., et. al., 2009), so we do not have strong methodological models to follow. Second, the nature of partnership expectations and participation is sufficiently varied that we were not able to develop enhanced questionnaire items for capturing the quality of partnership exposure experienced by survey respondents.

A similar limitation of the study is the inability to distinguish between national and regional partnerships. A national partnership might exist with a national organization that pledges to support the decennial census (for example, a major corporation or national cable television network). The 2010 CICPE design primarily exploits differences across sampled areas to calculate its "dosage" effects. A circumstance such as a national partnership cannot be evaluated with this design, since there might be no measurable

variation across sampled areas in the incidence of the partnership. In addition, some national partnerships differ locally in their execution (for example, from plant to plant or from one local cable station to another). In this case, the impact of the national partnership would be conflated with the regional partnerships.

As noted above, respondents (or general populations) tend to have difficulty in determining whether a given element of ICC exposure is through partnership, paid media, or earned media. Even beyond that conceptual ambiguity, one can hypothesize a positive correlation between exposure to the different campaign components, making it difficult to analytically separate the distinct contributions of each component, even if individuals were cognitively able to appropriately assign their exposure experiences to different sources.

The 2010 ICC targets hard-to-count groups, as does the 2010 CICPE. The 2010 CICPE hard-to-count groups are defined exclusively by race and ethnicity. In contrast, the 2010 ICC programmed exclusively in non-English languages for several groups, most notably Asians and Hispanics. Thus, the 2010 CICPE data for Asians pertain to all Asians (a majority of whom speak English), while the 2010 ICC paid media outreach was dominantly in Asian languages and using non-English language media. Other differences in hard-to-count group definitions exist as well. In some cases, the 2010 CICPE analytic results dilute the effect of the 2010 ICC by including members of hard-to-count groups who may not have been exposed to or understood non-English outreach. Alternatively, the broader definitions of hard-to-count groups in the 2010 CICPE may indicate the extent to which English-speaking subgroups require targeted outreach as do non-English speakers within the same ethnic and racial categories.

The 2010 CICPE questionnaires were designed to make use of much of the current methods of evaluating paid and public health media campaigns, including understanding message receptivity, documenting exposure through confirmed awareness items, and incorporating gross-ratings points supplemental data into analyses. Ultimately, final ads were not available for NORC to include the desired types of items in the Wave 2 questionnaire. Thus the 2010 CICPE measures of paid media exposure during the peak of the paid media efforts are built from relatively simple questionnaire items rather than items that most reliably measure paid media exposure. The more desirable item types were included in the Wave 3 questionnaire.

Finally, the 2010 CICPE includes some research objectives that focus on households with lower propensity for survey completion. It is the case, however, that the response rates to the 2010 CICPE did not generally exceed mailback rates and certainly did not exceed final rates of census form completion at the close of the NRFU period. Thus, 2010 CICPE analyses carry the burden of arguing that partial

response to our surveys is still sufficient to shed light on non-response problems in the census. In Chapter 2 we provide evidence that the 2010 CICPE survey data in fact suffer only negligible non-response bias and are therefore appropriate for generalizing to the population of households eligible for the 2010 Census.

Despite these limitations, the 2010 CICPE design — taking advantage of survey data and various supplemental data such as gross-rating points data and mailback data — is robust enough to assess a dosage response to the ICC as a whole, and to describe the mechanisms through which ICC exposure can affect knowledge, attitudes, and behaviors toward the census.

## 1.7. Recommendations for Future Evaluations

In light of the limitations discussed in Section 1.6, above, we feel it appropriate to make some suggestions for improving the success of future evaluations of this type. We make recommendations for future campaigns at the end of this report on the basis of our analyses, but in this section we address steps that the Census Bureau could take over the next several years so that any evaluation of the communications campaign of the 2020 Decennial Census might be constrained by fewer or less severe limitations. We acknowledge that these recommendations, while beneficial for achieving a more definitive evaluation of a next communications campaign, might be infeasible due to political, financial, or other obstacles.

The foremost limitation of the 2010 CICPE is inability to estimate the total effect of the campaign. The best way of estimating the total effect of a decennial census communications campaign would be to have some randomized, experimental variation in the campaign implementation. We acknowledge that the constitutional importance of the decennial census likely makes it politically infeasible to withhold the campaign entirely from some locations. We suggest, however, that variation in the timing of campaign activities, in the dosage of the campaign, and in independent and planned variation of the separate campaign components, might be less politically difficult and would have almost the same value from the perspective of statistical evaluation. We applaud the Census Bureau for entering into the Paid Advertising Heavy-Up Experiment during the 2010 ICC, and encourage further efforts of this type in the future, as important contributions toward fully understanding the impact of communications campaigns. Ideally, a randomized experiment would be an integral component of the 2020 communications campaign evaluation, and would be designed by the contractor in collaboration with Census Bureau staff.

Whether or not experimental variation in campaign implementation is possible, it would be invaluable for the Census Bureau to outline an evaluation plan for the campaign as part of its development of the campaign. In the case of the 2010 CICPE, the NORC team was awarded a contract when many campaign

parameters had been set and some were already being implemented. The Census Bureau could develop an outline of such an evaluation plan to be handed over to a contractor for elaboration, improvement and implementation. Or a contractor or consultants could be engaged in advance to develop a draft evaluation plan that would be sensitive to planned campaign implementation. A small investment of this type would likely go a considerable distance in preventing the next communications campaign from being essentially immune to evaluation. Judicious timing of data collection, selection of sampled units, definition of target populations, and alignment with the key campaign strategies could all measurably improve the analytic robustness of any evaluation. One important question to be addressed by such an evaluation plan would be whether or not an appropriate control or comparison could be constructed, through experimental variation, American Community Survey comparisons, or other evaluation approaches.

The 2010 CICPE survey instruments were aligned to the 2010 ICC in a variety of ways, for example, through questions about specific campaign messages and clips of particular paid media advertisements. Although these are important elements of our evaluation data, they are very small attempts at what could be considerable alignment of evaluation data collection with campaign implementation. Alignment could be achieved through closer resemblance between campaign slogans and images with questionnaire references to those items, earlier and more clips about specific advertisements, or inclusion of items to capture identifiable partnership events along the lines of the Census Road Tour.

There are a variety of challenges to aligning the campaign with its evaluation. The implementation of the decennial census is a vast effort with many moving pieces on tight schedules; coordinating with the evaluation is not always a high priority. On the evaluation side, printing and programming schedules and requirements for OMB and other clearances can introduce rigidities that prevent last-minute insertion of new questions or materials. An evaluation plan that is integral to campaign planning and implementation efforts, as well as advance planning for just-in-time questionnaire and sampling changes could ease some of these challenges.

A major intended innovation of the 2010 ICC relative to the evaluation of the Census 2000 communications program was the plan to use administrative data as well as self-reported survey data to measure exposure to the campaign. As we discuss in Chapter 7, despite a variety of attempts to make use of such administrative data in our analyses, we ultimately found that the self-report data were of higher data quality for analysis purposes than alternative data sources. We feel that the use of supplemental data is a promising element for campaign evaluation, and recommend that development of such data be given higher priority in a future evaluation.

We recommend that the Census Bureau also undertake two additional steps. The first would be for the Census Bureau to collect and maintain data about campaign implementation that would be more appropriate for inclusion in analyses. This would include more elaboration on partnership activities, better tracking of television and radio earned media, clearer information about Census in Schools implementation, etc. An evaluation contractor could provide assistance with this task by compiling the data directly, or by providing input into its compilation. This requires significant collaboration before the launch of the campaign, as many of these data types cannot be effectively constructed ex post facto.

A second means of improving supplemental data availability would be for a future evaluation to include direct collection of campaign activities in conjunction with surveys of households. For example, at relatively low additional cost, the 2010 CICPE could have also captured contemporaneous data directly about partnership activities or Census in Schools activities in the localities where CICPE survey respondents were sampled. These data could then have provided alternative measures of campaign exposure to self-reported survey data. We believe that both of these approaches are likely to be valuable and reasonable investments given the potential value in understanding all aspects of the campaign.

Our experience on the 2010 CICPE is that the available tools for evaluating partnership efforts were consistently disadvantaged relative to those for evaluating paid media; operational data, survey questionnaire items, and analytical approaches are all less well-developed for partnerships. For the 2010 ICC, the Census Bureau had put in place a substantial contact management system for the partnership program; although widely used within the Partnership Program, the system did not produce much data that were useful for evaluation of the program. Especially since the Census Bureau has expressed the intention to continue the Partnership Program in the intercensal years, we recommend that some investment be made in advancing the methodology of assessing partnership activities. This would include the development of metrics that meaningfully measure the contact of individuals (potential census respondents) with partnership activities, as well as techniques for better capturing survey data about partnership exposure, and analytic techniques for connecting partnership activities with household response. Where new modes of outreach are incorporated into a future campaign, we encourage similar methodological work to develop tools for assessing those outreach modes as well, if they are not already extant.

We note the strong tradition of experimentation and piloting of activities as part of the decennial census planning program. We believe that many of our suggestions could be implemented during intercensal pilot efforts, for example, as part of the American Community Survey, a Census Dress Rehearsal, or on other relevant activities in advance of the next census.

## 1.8. Report Outline

The remainder of this report proceeds as follows. In Chapter 2 we elaborate on the design and implementation of the three 2010 CICPE surveys. We also summarize two investigations into possible weaknesses of the survey data for the purposes of the evaluation: non-response bias and conditioning effects. On both counts, we find minimal evidence of threat to the applicability of the survey data for this evaluation. In Chapter 3, we present the outcomes of interest, mail return and cooperation with enumerators. Chapter 4 describes the nature of exposure to the 2010 ICC, providing statistics on self-reported recall of exposure across the various campaign components. Chapter 5 examines changes in knowledge and attitudes over the several-months period from fall 2009 into summer 2010. Chapter 6 makes use of multivariate regression techniques and the survey data to estimate the effects of exposure on census participation. In Chapter 7, we discuss the supplemental data sources that were identified and the extent that we were able to make use of them. Chapter 8 concludes the report, including presenting some alternative estimates of return on investment for the 2010 ICC.

# Chapter 2: Survey Sample Design, Data Collection, and Data Quality

This report presents the results of a three-year study that combines survey data with Census operational records and a variety of other commercial and administrative data sources to achieve these objectives. The principal data source was a set of three nationally-representative household surveys conducted between October, 2009 and August, 2010 to capture knowledge, attitudes and exposure to the campaign.

The three waves took place:

- before the launch of paid media (October, 2009 – January, 2010),
- during the peak of the media campaign but before the mail distribution of Census forms to households (January – March, 2010), and
- during the Nonresponse Followup (NRFU) period (April – July, 2010).

Census data on actual 2010 participation are also combined with survey data to determine households' census behavior. Survey samples included equal numbers of individuals from five hard-to-count groups and one comparison group (Hispanic, non-Hispanic African American, American Indian, Asian, Native Hawaiian, and non-Hispanic Whites). To increase the ability to understand person-specific response to the campaign, the surveys included a panel sample in which the same individuals were interviewed in each of the three waves.

Such data quality issues as non-response bias or (for the panel sample) conditioning effects could severely limit the representativeness of the survey data or its relevance to the objectives of the evaluation. Data examinations indicate that the survey data show only negligible non-response bias in terms of census participation, and minimal conditioning effects except in having heard of the census. These examinations endorse the use of the survey data to understand the full population eligible for the decennial census, not only those who completed the 2010 CICPE surveys.

Sections 2.1 and 2.2 of this chapter provide details on the implementation of the three waves of the survey, with an emphasis on factors that inform the interpretation of the evaluation. Sections 2.3 and 2.4 discuss two potential data quality threats that could hamper use of the survey data – non-response bias and conditioning effects – but find in both cases that the data perform well without real indication of limitations.

## 2.1. Sample Design, Description and Estimation

The 2010 CICPE employs a design that incorporates two key classifications adopted by the Census Bureau in its planning for and conduct of the 2010 ICC. These are hard-to-enumerate populations (also referred to below as race/ethnicity groups) that have historically participated in the census at lower rates, and a set of audience segmentation clusters based on Census 2000 participation. The 2010 CICPE design oversamples five of the six race/ethnicity groups. Drawing a sample primarily by segmentation cluster would not have achieved sufficient sample sizes for the race/ethnicity groups because the clusters are not homogenous enough by race/ethnicity.

### Nationally Representative Core Sample

To select the 2010 CICPE Core Sample, NORC used its 2000 NORC National Frame to draw a nationally representative sample of addresses. The 2000 NORC National Frame is efficient, powerful, and flexible because it takes advantage of the availability of the United States Postal Service (USPS) Delivery Sequence File (DSF), which contains complete address lists for much of the United States. Traditional listing (sending out field employees to list every housing unit in certain selected census blocks) is used only in areas for which USPS address lists are unavailable. NORC has researched the DSF, and this work shows that the DSF outperforms traditional listings in urban areas, with better coverage at a lower cost (O'Muircheartaigh, C., et al. 2005).

The 2000 NORC National Frame is a traditional two-stage nationally representative area probability sample. First stage units, or National Frame Areas (NFAs), were selected within three categories. The twenty-four largest metropolitan statistical areas (MSAs) were selected with certainty into the Certainty Urban category (three are combinations of MSAs), which contains about 45 percent of the U.S. population. Thirty other MSAs were selected in the Non-Certainty Urban category, which represents 30 percent of the U.S. population. This category includes only urban census tracts within these MSAs. The third category, rural NFAs, consists of 25 selections from rural census tracts in the non-certainty MSAs, plus counties or county pairs that are not within a metropolitan statistical area. This category represents 25 percent of the U.S. population. In total, the 2000 NORC National Frame has 79 total NFAs. In order to create greater concentration of interviews within media markets (where campaign exposure will occur), the 2010 CICPE uses only half of the non-certainty NORC NFAs (due to their larger size, we do keep more than half of the certainty NFAs, resulting in our design using 44 out of 79 NFAs).

Urban and rural are defined by whether or not the addresses can be found in NORC's database of USPS addresses. Within urban areas, the 2000 NORC National Frame second-stage units are entire census

tracts. In rural areas, smaller segments are selected, consisting of at least 300 housing units (according to 2000 Decennial Census data) located within one census tract. Since the eight audience segmentation clusters defined by the Census Bureau and used for stratifying this sample are also defined by census tract, the sample could be balanced by segmentation cluster by sorting prior to selection.

The 2010 CICPE used an oversampling methodology to achieve equal numbers of interviews among Hispanics, non-Hispanic African Americans, and non-Hispanic Whites within the 2000 NORC National Frame. Second-stage tracts were stratified within the NORC National Frame Areas into high- and low-density tracts for both Hispanics and non-Hispanic African Americans. This resulted in four types of tracts. Tracts that are high-density in one or both of Hispanics or non-Hispanic African Americans were selected at a higher rate. NORC also selected housing units within "high-density" tracts at a higher rate to achieve the targets for Hispanics and non-Hispanic African Americans.

Throughout this report, we will refer to the three groups of the Core sample separately where possible using the following terms: Hispanic, non-Hispanic African American, and non-Hispanic White. The non-Hispanic African American category includes all other Blacks. The non-Hispanic White category includes all non-Black, non-Hispanic individuals, including Asians, Native Hawaiian and Other Pacific Islanders (NHOPI) and American Indians and Alaska Natives (AIAN). For ease of interpretation, we label the category 'non-Hispanic White' reflecting the most numerous group within the category. At times we will refer to the sample collectively as the Core sample when providing totals for this group or when the race/ethnicity of sample members is unknown. Since the non-Hispanic Whites includes Asians, AIAN, and NHOPI (albeit at very low incidence), the Core sample is itself representative of the entire United States population residing in households. As such, the 'National Estimate' rows provided throughout this report are based on the Core sample data only.

In each household, an individual who usually opens the mail and was over age 18 participated in the 2010 CICPE interview. That individual's characteristics (such as race/ethnicity, age, homeownership status and educational attainment) have been attributed to the household.

### Three Supplemental Samples

As mentioned above, manipulating the tracts and segments selected would not have been sufficient to meet the target sample sizes for American Indian and Alaska Natives, Asians, and Native Hawaiian and Other Pacific Islanders. Therefore, these had to be fielded as independent samples. The NORC National Frame provided addresses for the Asian and Native Hawaiian samples, as well as the urban areas for the American Indian and Alaska Native samples, but not for all of the American Indian and Alaska Native

reservations. For some reservations, NORC conducted traditional listing in areas where the USPS Delivery Sequence File provided inadequate coverage. At the time of the sample design planning in early 2009, the best numbers for local areas (cities and reservations) and for race/ethnicity groups was still the 2000 Decennial Census. The first five-year American Community Survey estimates were released in 2010. Therefore, all of the numbers used to precisely design these supplemental samples were from the 2000 Decennial Census and are reported below. The coverage estimates are also based on the 2000 Decennial Census and should be considered approximations.

### American Indian and Alaska Native (AIAN)

According to the 2000 Decennial Census, there were 3,420,171 persons living in the United States who were non-Hispanic and AIAN (alone or in combination with another race), and 998,199 living on any of the 651 U.S. reservations (29.3 percent of the AIAN population). In order to balance costs and coverage, NORC selected most addresses for the Waves 1, 2, and 3 AIAN samples from 10 of the 283 reservations with at least 250 AIAN residents in 2000. To increase the coverage from 28.4 percent (reservations with less than 250 AIAN residents are excluded), we also selected addresses for the Waves 1, 2, and 3 AIAN samples from seven of the ten Metropolitan Statistical Areas with AIAN population densities of at least two percent (i.e., at least two percent of the population is AIAN). The reservations with at least 250 AIANs residents had a high AIAN density of 18 percent. However, the ten urban areas had a combined AIAN density of under four percent. By oversampling tracts with higher AIAN densities, we sought to achieve an overall hit rate (percentage of households with an eligible AIAN adult) of 14.9 percent. Further oversampling was possible, but the variation in the probabilities (and weights) would have reduced the effective sample size, so we chose to limit the estimated loss in effective sample size due to differential probabilities to 20 percent (i.e., a design effect of 1.20 due to differential probabilities). Despite the efforts of NORC and the Census Bureau, two of the ten reservations selected declined to participate. Rather than increase the number of interviews in other reservations after the sample had already been selected, the Census Bureau lowered the target number of completes for Wave I from 500 to 412. We selected 10,665 addresses (including some in the reservation refusals) to obtain 500 AIAN interviews. This large number of addresses was partly because we assumed a lower rate of telephone matching (50 percent). Interestingly, the telephone matching rate was lower for the Native Hawaiian supplemental sample (54 percent) and higher for the Heavy-up sample (70 percent), but similar (60-62 percent) for all other sample groups (including AIAN). Final AIAN sample size targets were reduced due to a refusal to participate by two of the sampled reservations; additional information about outreach to the AIAN reservations is provided in Section 2.2 of this chapter. Throughout this report we refer to the

AIAN sample as "American Indian." This name along with any results for this sample includes Alaska Natives as well.

### Asians

According to the 2000 Decennial Census, there were 11,266,934 persons living in the United States who were non-Hispanic and Asian (alone or in combination with another race). Of these, 77.7 percent lived in the 1,261 U.S. cities with at least 1,000 Asians (alone or in combination). NORC selected the Waves 1, 2, and 3 samples from a representative sample of 25 of these 1,261 cities. The cities ranged in Asian densities from 65.84 percent to 1.94 percent. By oversampling tracts with higher Asian densities, we sought to achieve an overall hit rate of approximately 12.5 percent. Further oversampling (and a higher hit rate) was again possible, but we again limited the loss in effective sample size due to the differential probabilities to 20 percent. This strategy provided more coverage of the Asian population than in the 2000 PMPE, with almost twice the density. It was necessary to select 11,288 addresses to obtain 500 Asian interviews.

### Native Hawaiian and Other Pacific Islanders (NHOPI)

According to the 2000 Decennial Census, there were 860,965 persons living in the United States who were non-Hispanic and NHOPI (alone or in combination with another race). Of these persons, 32.8 percent lived in the state of Hawaii, and 23.32 percent of Hawaii residents were NHOPI; less than one percent of residents were NHOPI in all other states. The state with the largest NHOPI population outside of Hawaii is California, which contained 25.4 percent of U.S. NHOPIs, but only 0.64 percent of California residents were NHOPI. All NHOPI samples were selected from the five counties in Hawaii. The U.S. Census Bureau, with NORC, considered data collection from California as well as Hawaii, but, with such a low density, the additional costs were prohibitive. NHOPI residents are not as concentrated in Hawaii as the other two oversampled groups, but by oversampling tracts with higher NHOPI densities, we sought to achieve an overall hit rate of approximately 26.0 percent. Further oversampling (and a higher hit rate) was again possible, but we again limited the loss of effective sample size due to differential probabilities to 20 percent. With this assumed hit rate, it was necessary to select 5,418 addresses to obtain 500 NHOPI interviews.

In the remainder of this report, we refer to the NHOPI sample as Native Hawaiian. This name along with any results in the tables includes both Native Hawaiians and Other Pacific Islanders.

## Panel Component

Table 2-1 below provides the final numbers of completed interviews for each of these six sample types, split across the fresh and panel samples. Wave 1 sample sizes ranged from 377 for non-Hispanic Blacks

to 542 for Asians. By design, the Wave 2 samples were the smallest, with the larger proportion of cases coming from the panel sample. In Wave 3, the sample types were closer to equal size, with approximately half of all completed interviews coming from the panel sample. Table 2-2 shows the panel selection rates by sample type. Variation in Wave 1 sample sizes forced variation in the panel selection probabilities by sample type, as we were aiming for equal numbers of panel cases in each sample type.

**Table 2-1.** Completed Cases by Race/Ethnicity Group and Panel Type

| | Fresh Cases (Non-Panel) Completed | | | Panel Cases Completed | | Total Cases Completed | | |
|---|---|---|---|---|---|---|---|---|
| **Race/Ethnicity** | **W 1** | **W 2** | **W 3** | **W 2** | **W 3** | **W 1** | **W 2** | **W 3** |
| Hispanic | 461 | 118 | 285 | 251 | 254 | 461 | 369 | 539 |
| Non-Hispanic African American | 377 | 111 | 268 | 273 | 258 | 377 | 384 | 526 |
| Non-Hispanic White[3] | 404 | 99 | 221 | 259 | 251 | 404 | 358 | 472 |
| American Indian | 457 | 107 | 235 | 285 | 294 | 457 | 392 | 529 |
| Asian | 542 | 114 | 264 | 296 | 284 | 542 | 410 | 548 |
| Native Hawaiian | 430 | 119 | 267 | 231 | 227 | 430 | 350 | 494 |

2010 CICPE Final Report: unweighted; Heavy-up sample excluded.

### Panel Selection

Wave 1 respondents were randomly selected for the panel so that the panel sample was representative of the completed Wave 1 cases with regard to race, ethnicity, and other key characteristics. Panel members who did not respond in Wave 2 were still eligible to participate in Wave 3, so the size of the panel sample remained constant across the subsequent waves. Displayed in Table 2-2 below are completed cases at Wave 1, selection rates for the panel, and the number of cases that completed interviews in all three waves. The panel selection rate varied across sample types so that the desired number of panel cases was selected in each sample type.

[3] This category includes all non-African-American, non-Hispanic individuals, including Asians, NHOPI and American Indians and Alaska Natives. For ease of interpretation, we label the category 'non-Hispanic White' reflecting the most numerous group within the category.

**Table 2-2.** Sample Sizes for the Panel Sample by Race/Ethnicity

| Race/Ethnicity | W1 Completed Cases | Panel Selection Rate (%) | Cases Completing All Three Waves (Panel) |
|---|---|---|---|
| Hispanic | 461 | 75.88 | 212 |
| Non-Hispanic African American | 377 | 97.59 | 229 |
| Non-Hispanic White | 404 | 89.16 | 212 |
| American Indian | 457 | 84.15 | 240 |
| Asian | 542 | 76.34 | 245 |
| Native Hawaiian | 430 | 72.15 | 191 |
| **TOTAL** | **2,671** | | **1,329** |

2010 CICPE Final Report: unweighted; Heavy-up sample excluded.

## Audience Segmentation Clusters

The Census Bureau undertook an audience segmentation exercise as part of the planning process for the 2010 Census. Through review of tract-level Census 2000 results, American Community Survey results, and demographic characteristics of households by tracts, the Census Bureau developed an eight-category segmentation of U.S. households for every U.S. census tract that could be classified. That audience segmentation scheme identified who and where the target segments for the 2010 ICC are and has thus informed the planning and implementation of the 2010 CICPE.

The Census Bureau (U. S. Census Bureau, 2008) has summarized the characteristics of each audience segment as follows:

| | |
|---|---|
| **Advantaged Homeowner** | Members of this cluster represent 27.9 percent of occupied housing units in the United States. Of the eight clusters, it reflects the highest mail return rate and the lowest Hard-to-Count (HTC) score from Census 2000. It is also the least densely populated cluster. Other characteristics that define this cluster include homeowners who are married and highly educated. Around 40 percent of them have children under the age of 18. |
| **Average I Homeowner** | Members of this cluster represent 35.3 percent of occupied housing units in the United States. Of the eight clusters, it reflects the second highest mail response rate and the second lowest HTC score from Census 2000. This is the largest of the eight clusters, so a small percentage increase in response can result in a large amount of mail returns. A large percentage of this cluster is located in rural areas. This cluster tends to be skewed toward homeowners and older Americans. |
| **Average II Renter** | Members of this cluster represent 15.5 percent of occupied housing units in the United States. Of the eight clusters, it reflects the third highest mail response rate and an average HTC score from Census 2000. A large percentage of this cluster is located in urban and densely populated areas. This cluster tends to be skewed toward renters and younger Americans. |

| | |
|---|---|
| **Economically Disadvantaged I Homeowner** | Members of this cluster represent 5.8 percent of occupied housing units in the United States. Of the eight clusters, it reflects largely urban, high percent poverty, public assistance, unemployment and less than high school education. This cluster tends to be skewed toward homeowner, (less than one-half rent), one-third live alone, and a large percentage are single mothers. Around 36 percent have children under age of 18. |
| **Economically Disadvantaged II Renter** | Members of this cluster represent 5.8 percent of occupied housing units in the United States. Of the eight clusters, it reflects the lowest mail return rate and the highest HTC score from Census 2000. This cluster tends to be skewed toward renters in urban multi-units. Of the eight clusters, it reflects the highest poverty, public assistance, percentage of single mothers, and unemployment rates. Twenty-three percent of the tracts in this cluster use the bi-lingual form, 39 percent live alone, and 35 percent have children under age 18. |
| **Ethnic I Homeowner** | Members of this cluster represent 3.3 percent of occupied housing units in the United States. Of the eight clusters, it reflects above-average crowding, poverty, public assistance, unemployment, and low education. Tracts in this cluster tend to be less urban and densely populated. This cluster tends to be skewed toward homeowner, stable and married, with around 50 percent having children under the age of 18. Residents are 43 percent foreign born and 80 percent of the tracts receive the bilingual form. |
| **Ethnic II Renter** | Members of this cluster represent 2.3 percent of occupied housing units in the United States. 75 percent of the households are renters, and the clusters are more urban, crowded, multi-unit, and this cluster is the most densely populated. It reflects high poverty, public assistance, and unemployment, with 62 percent foreign born, with 31 percent linguistically isolated (tracts where up to 79 percent of households speak Spanish, and 74 percent of households speak an Asian/Pacific Island language), and with 80 percent using the bilingual form. Forty-four percent have children under the age of 18. |
| **Mobile/Single** | Members of this cluster represent 7.2 percent of occupied housing units in the United States. Large percentages of this cluster are located in very densely populated areas and are highly mobile single renters in multi-unit urban living quarters. This cluster tends to be young singles, in school, just finished, or in their first job. This cluster also includes many first time Census participants. |

In order to measure to what extent the 2010 ICC has influenced each segmentation cluster we have associated with every 2010 CICPE case the audience segment of the census tract in which it is located. Table 2-3 shows the distribution of cases by wave across the eight segments, including panel and non-panel sample members. This table indicates sample sizes for later tables by segmentation clusters assuming no item non-response in key variables involved. Perhaps because of the relatively small sample sizes in many of the segments, differences between segments are rarely statistically significant in this report except when comparing the two largest segments (the Advantaged Homeowner and the Average I Homeowner) against the rest of the nation.

We note that households may not share the characteristics that drove their tract's assignment to an audience segment. For example, an elderly married couple living in their home for 30 years may be located in a tract designated as "mobile/single."

**Table 2-3.** Distribution of Cases by Audience Segmentation Cluster and Wave

| | Fresh Cases (Non-Panel) | | | | | | Panel Cases | | | | Total | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Segmentation Cluster** | **W1 #** | **W1 %** | **W2 #** | **W2 %** | **W3 #** | **W3 %** | **W2 #** | **W2 %** | **W3 #** | **W3 %** | **W1 #** | **W1 %** | **W2 #** | **W2 %** | **W3 #** | **W3 %** |
| Advantaged Homeowner | 470 | 24.2 | 132 | 26.9 | 250 | 27.9 | 292 | 22.2 | 269 | 23.4 | 470 | 24.2 | 424 | 23.6 | 519 | 25.7 |
| Average I Homeowner | 710 | 31.6 | 167 | 29.3 | 390 | 27.4 | 442 | 33.7 | 452 | 34.5 | 710 | 31.6 | 609 | 32.5 | 842 | 30.9 |
| Average II Renter | 333 | 17.9 | 73 | 11.5 | 183 | 18.1 | 200 | 18.1 | 182 | 18.1 | 333 | 17.9 | 273 | 16.2 | 365 | 18.1 |
| Economically Disadvantaged I Homeowner | 245 | 6.2 | 55 | 6.7 | 154 | 8.8 | 141 | 6.6 | 157 | 5.1 | 245 | 6.2 | 196 | 6.7 | 311 | 7.0 |
| Economically Disadvantaged II Renter | 132 | 3.2 | 29 | 1.5 | 138 | 5.0 | 87 | 3.5 | 81 | 3.1 | 132 | 3.2 | 116 | 2.9 | 219 | 4.0 |
| Ethnic I Homeowner | 270 | 3.6 | 74 | 10.3 | 158 | 5.0 | 149 | 2.9 | 152 | 4.0 | 270 | 3.6 | 223 | 5.1 | 310 | 4.4 |
| Ethnic II Renter | 268 | 8.2 | 68 | 9.9 | 165 | 5.7 | 142 | 6.5 | 134 | 6.1 | 268 | 8.2 | 210 | 7.5 | 299 | 5.9 |
| Mobile/Single | 211 | 5.3 | 46 | 3.9 | 89 | 2.1 | 127 | 6.0 | 125 | 5.9 | 211 | 5.3 | 173 | 5.4 | 214 | 4.0 |

2010 CICPE Final Report: unweighted counts and weighted percentages; some tracts were not assigned to a segmentation cluster by the Census Bureau; Heavy-up sample excluded.

## Paid Advertising Heavy-Up Experiment

The 2010 CICPE also includes in Waves 1 and 3 interviews associated with the Census Bureau's Paid Advertising Heavy-up (PAHU) experiment. In order to better assess the impact of advertising on census participation, the Census Bureau implemented an experiment in eight pairs of DMAs that share similar characteristics such as hard-to-count scores, mail return rates in Census 2000, race/ethnic populations, poverty rates, urban/rural composition, linguistic isolation population, and number of households. One of each DMA pair (referred to as the treatment group) received an increased level of advertising, while the other DMA of the pair (referred to as the control group) received the basic level of advertising. The main objective for the PAHU experiment is to assess differences in behavior (mail return rates), as well as attitudes, opinions, and self-reported advertising exposure between treatment and control DMAs. The experiment also assesses the impact of the extra media on audience segmentation clusters. Although data were collected from households in these 16 DMAs in Waves 1 and 3, this report will not include analyses of the Heavy-up experiment per se, but will include some analyses of Heavy-up data to supplement key analysis questions of the experiment.

In this report we refer to this sample as "Heavy-up". This name alone collectively refers to both the treatment and control groups. When referring to these groups separately, we use "Heavy-up Treatment" and "Heavy-up Control."

In Table 2-4 we show the number of Heavy-up completes by race/ethnicity for both the treatment and control groups. The match of race/ethnicities between treatment and control sites, as shown in this table, is quite close, with heavy representation of non-Hispanic African American and White households. While these samples do represent the populations of the 16 DMAs in the Heavy-up experiment, they are not representative of any population beyond those areas.

**Table 2-4.** Wave 1 and Wave 3 Heavy-up Sample by Race/Ethnicity

| | Wave 1 | | | | Wave 3 | | | |
|---|---|---|---|---|---|---|---|---|
| **Race/Ethnicity** | **Treatment #** | **Treatment %** | **Control #** | **Control %** | **Treatment #** | **Treatment %** | **Control #** | **Control %** |
| Hispanic | 78 | 6.7 | 56 | 4.3 | 67 | 6.5 | 79 | 6.3 |
| Non-Hispanic African American | 220 | 25.9 | 220 | 28.2 | 223 | 26.2 | 257 | 30.3 |
| Non-Hispanic White | 663 | 64.7 | 620 | 64.3 | 684 | 63.0 | 669 | 59.8 |
| American Indian | 17 | 2.0 | 31 | 2.2 | 15 | 2.1 | 28 | 2.4 |
| Asian | 7 | 0.7 | 12 | 1.0 | 10 | 2.0 | 14 | 1.2 |
| Native Hawaiian | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |

2010 CICPE Final Report: unweighted counts and weighted percentages; Heavy-up sample only.

## Selected Demographic Characteristics

Table 2-5 provides descriptive statistics of the sample (not including Heavy-up cases) on four key demographic characteristics: age, education, home ownership, and language spoken at home. Across all three waves, sample members are more likely than not to be aged 45 or older, have attended at least some college, be homeowners, and live in English-speaking households. Application of the weights, which are largest for the non-Hispanic White subgroup, make the weighted sample younger, less educated, less likely to be homeowners, and more likely to speak English at home. Panel cases are reported in multiple waves as appropriate.

**Table 2-5.** Sample Size by Demographic Characteristics

| | Wave 1 | | Wave 2 | | Wave 3 | |
|---|---|---|---|---|---|---|
| **Demographic Characteristics** | **#** | **%** | **#** | **%** | **#** | **%** |
| <45 years | 1,193 | 53.8 | 970 | 53.5 | 1,367 | 53.7 |
| 45 years or older | 1,441 | 46.2 | 1266 | 46.5 | 1,722 | 46.3 |
| **Total** | **2,634** | **100.0** | **2,236** | **100.0** | **3,089** | **100.0** |
| High school or less | 1,206 | 48.8 | 991 | 48.6 | 1,388 | 48.6 |
| Some college or more | 1,414 | 51.2 | 1,245 | 51.4 | 1,688 | 51.4 |
| **Total** | **2,620** | **100.0** | **2,236** | **100.0** | **3,076** | **100.0** |
| Homeowners | 1,410 | 66.4 | 1,256 | 65.7 | 1,668 | 66.0 |
| Renters/Non-homeowners | 1208 | 33.6 | 971 | 34.3 | 1,407 | 34.0 |
| **Total** | **2,618** | **100.0** | **2,227** | **100.0** | **3,075** | **100.0** |
| English spoken at home | 2,172 | 92.5 | 1,876 | 91.0 | 2,529 | 91.0 |
| Non-English spoken at home | 463 | 7.4 | 362 | 9.0 | 560 | 9.0 |
| **Total** | **2,635** | **100.0** | **2,238** | **100.0** | **3,089** | **100.0** |

2010 CICPE Final Report: unweighted counts and weighted percentages; Heavy-up sample excluded.

## Estimation

Since the 2010 CICPE samples are not simple random samples, weights and design-corrected standard errors are necessary. Weights have been created for each of the four main CICPE samples separately: Core (including Hispanic, non-Hispanic African American, and non-Hispanic White), Asian, Native Hawaiian and Other Pacific Islanders, and American Indian and Alaska Natives. Within the Core sample, the three race/ethnicity groups can be analyzed separately or together since the Core sample was designed to be a nationally representative sample with oversampling for Hispanics and non-Hispanic African Americans. Since the sample is equally divided between these three groups even though the non-Hispanic White category is the largest in the population, the weights are largest for the non-Hispanic White interviews. Weights have also been calculated for the Paid Advertising Heavy-up (PAHU) sample, but because this sample is not nationally representative, it should never be combined with any of the six race/ethnicity groups in any analyses.

All weighted analyses in this Final Report were performed using these weights. Construction of the weights started with a base weight based on selection probability. Among the Core sample, the base weights were largest for the non-Hispanic White category since Hispanic and non-Hispanic African American areas were oversampled. The base weights were smaller for the supplemental samples since the oversampling was greater, and the base weights were smallest for the Native Hawaiian category (the

AIAN weights were smaller than the Asian weights). The base weights for the Heavy-up sample were larger than the Native Hawaiian weights, but were varied widely, and were largest for the largest DMAs of Jacksonville and Little Rock since all DMAs had a similar number of selected addresses, but the DMAs differed in size. Overall, the Heavy-up base weights were similar in size to the AIAN weights.

The first weight adjustment applied to all samples was an adjustment for the subsampling that took place after the intensive telephone dialing. Cases that were not completed by telephone were subsampled before in-person follow-up took place. These subsampling rates varied among the sample types (Core, AIAN, Asian, NHOPI, and Heavy-up), but were consistent within each sample type. The subsampling rates were larger for the Core since these cases were more spread out and lower subsampling rates would cause inefficient sample assignments.

Before the non-response weight adjustment, an eligibility step set the weights for all ineligible cases to zero. For the unknown eligibility cases, their weights are multiplied by the eligibility rate among the rest of the cases (where eligibility status is known) in the same cell. This probably overestimates the eligibility rate among the unknown eligibility cases, which would result in an underestimation of the response rate (since the denominator of eligible cases is overestimated). Cells were created by cross-tabulating sample type, segment type, and subsampling status. For the Core sample type, the segment types were High Hispanic, High African American, and Low Minority. For the three supplemental samples (AIAN, Asian, and NHOPI), the segments were divided by the population rate of the race/ethnicity sample type into High-, Medium-, and Low-Density. All Heavy-up segments were considered the same type.

In the non-response weight adjustment step, all non-respondent weights were set to zero. The respondent weights were all multiplied by the inverse of the weighted response rate within the cell. The cells used for the eligibility step were modified for the non-response weight adjustment in three ways. First, the AIAN sample was split into "list and go" reservations, other reservations, and metropolitan areas due to differing response rates (higher for the "list and go" and lower for the metropolitan areas). Second, the Core segments were split by urban/rural rather than by segment type (higher response rates were observed for rural segments). Third, each DMA in the Heavy-up sample was split from the others.

The final step in the weighting process was to adjust weights so that they conform to known totals of household numbers (since the CICPE analyses are done at the household level). Due to the unavailability of American Community Survey control totals for small areas at the time of weighting, we used 2000 Decennial Census control totals. Using the 2000 numbers rather than more up-to-date estimates allowed

us to post-stratify for many subgroups. For the Heavy-up data, post-stratification by DMA was used. For the rest of the data, raking was done using 2000 Decennial Census totals by race/ethnicity (6 groups) as well as home ownership status and three race/ethnicity-specific variables: age (18-29, 30-44, 45-64, and 65 and older), education (less than high school, high school but no college, some college, a college degree, and a graduate or professional degree), and household income (less than $25,000, $25,000-$59,999, and $60,000 or more).

The weights for the Core sample result in nationally representative estimates of households, since the outcomes of interest are household-level measures. Many of the tables in this report combine all six race/ethnicity groups to obtain an overall picture of our samples. Strictly speaking, this slightly overrepresents the three oversampled groups because they were also interviewed at their proper population proportions (after weighting) in the Core sample (most of the non-Hispanic non-Black "Other" category are non-Hispanic White, but some would have qualified for the American Indian, Asian, or Native Hawaiian oversamples). Thus, the three supplemental sample groups are double-counted when all six race/ethnicity categories are combined. However, the supplemental sample group weights are much smaller (especially the weights for the Native Hawaiian sample) than those for the Core race/ethnicity groups. So, we have decided that combining the six race/ethnicity groups is appropriate to give these three important hard-to-reach race/ethnicity populations slightly more weight than their representative portion. These national estimates are still dominated by the larger weights of the Core sample race/ethnicity groups.

All five samples (the Core sample, the three supplemental oversamples, and the Heavy-up sample) are area-probability samples, which mean they are multi-stage stratified cluster samples. The Heavy-up sample is actually 16 separate area probability samples (one for each DMA). We calculated design-corrected standard errors that account for the clustered design rather than based on an assumed simple random sample. Area probability samples usually have larger standard errors than simple random samples, and this ratio is represented by the square root of the design effect, which is defined for variances (squared standard deviations). Design effects vary from item to item and from sample to sample. This report focuses on the design-corrected standard errors rather than the design effects. Design effects could be calculated for each item by dividing the square of the reported standard error by the square of the standard error for a simple random sample with the same sample size. The SAS procedures PROC SURVEYMEANS, PROC SURVEYFREQ, and PROC SURVEYREG were all used, which use Taylor series variance estimation using strata and PSU clustering information.

We conduct significance tests across groups, across waves, and across Decennial Censuses. Despite the fact that we conduct multiple significance tests within each of several tables in this report, NORC and the Census Bureau decided that this report will not make any multiple comparison adjustments for these significance tests. Tables are annotated whenever p-values for a statistical test are less than .05 (upper-case letters) or less than .10 (lower-case letters). Significant results are annotated with G or g across groups, T or t across waves (time), and D or d across Decennial Censuses. Standard error calculation was straightforward for the significance tests across groups because the groups compared were independent samples. The SAS procedures easily produced design-corrected standard errors of the differences and calculated the significance level. For significance tests across Decennial Censuses and other specific stand-alone analyses that involve comparisons other than those central to the 2010 CICPE design, we used a two-sample mean-comparison test using only the weighted point estimates and design-adjusted standard errors. Such aggregate level significance testing was performed using the STATA command *ttesti*. These stand-alone analyses include the comparison of 2000 PMPE and 2010 CICPE results as well as the CBAMS appendix and the assessment of conditioning effects in Chapter 1. The significance tests across waves were the most complicated because Waves 2 and 3 are part-panel and part-cross-section. Since our SAS procedures can only handle designs that are panel or cross-sectional, we needed to calculate the design-corrected standard errors for the differences across waves in two steps: the variances for each wave and the covariance between them. These separate results were then combined in a spreadsheet.

## 2.2. Data Collection Procedures

The 2010 CICPE employed a mixed-mode approach for collecting data. Our address-based sampling design married the comprehensive coverage and higher response rates of in-person interviewing with the cost-efficiencies of telephone interviewing. Higher proportions of in-person interviews were completed in the American Indian, Native Hawaiian, and Asian oversampled groups because of the higher incidence of reluctant respondents and households without telephones among these groups. Survey implementation details are provided below.

### Questionnaire Preparation

Between November 2008 and May 2009, the project team worked with the Census Bureau to develop three wave-specific questionnaires that would target participants' attitudes towards the census, government programs, and access and exposure to different forms of media. For resource material, the team worked closely with the 2000 PMPE questionnaires, as well as the Census Barriers, Attitudes and Motivators Survey (CBAMS) questionnaire, which is described further in Chapter 5. A major objective

of the questionnaire design process was to build instruments that would enable investigation of the process through which paid media could affect knowledge, attitudes, and beliefs and therefore behavior. In order to achieve this objective, the team tried to follow best practices identified in the literature on evaluation of communications and marketing campaigns, such as capturing confirmed in addition to unconfirmed awareness of advertisements and including questionnaire items on message receptivity. Another major objective was to similarly deepen coverage of partnership activities, but we were not able to devise many items to address partnership receptivity or salience.

The Wave 1 questionnaire was designed to capture a baseline measure of respondents' knowledge of and attitudes toward the census prior to the start of the 2010 ICC. Sections of the questionnaire included demographics, civic engagement and government awareness, paid media, partnership, Census in Schools, earned media, and general media use. The Wave 2 and Wave 3 questionnaires contained question templates for items that were dependent on ads produced by Draftfcb, such as the confirmed awareness questions and messaging items. The project team planned to develop these questions more fully when the ads were made available to NORC. Extensive cognitive interviewing was done to test the wording of questions in the questionnaires, with special attention to the questions on media exposure. Based on the results of these interviews, final adjustments were made to the wording of some questions.

The questionnaires were translated into the five languages in which census forms were published: Spanish, Chinese, Vietnamese, Korean, and Russian. Spanish interviews were conducted both by phone and in the field, while interviews in the other four languages were routed through the phone shop.

The Wave 2 questionnaire developed in the spring of 2009 required some modifications to the section on paid media exposure. Working with storyboards provided by Draftfcb, the project team developed a series of confirmed awareness questions to test recall of specific paid media advertisements and additional messaging items. Cognitive interviews were conducted to test these questions in October 2009. With input from the Census Bureau, adjustments were made to these questions to be included into the Wave 2 questionnaire.

The Census Bureau informed NORC on November 10, 2009, that mass communications base plan ads were being redesigned and would not be available to NORC as scheduled. As a result of this decision, NORC had to revise the Wave 2 questionnaire in order to meet the production schedule. Because the content of the ads was unknown, the confirmed awareness questions, which are the best practice in measuring paid media exposure, were removed from the Wave 2 questionnaire and replaced with more general questions asking whether respondents saw any ads. As a result, the Wave 2 questionnaire

provides a less reliable measure of respondents' exposure to the paid media campaign while it was at its peak. For example, we elicit respondents' descriptions of ads that they recall seeing rather than specifying particular ads for their confirmation. The former question type under-reports actual exposure to ads, and introduces greater measurement error into our analyses of the relationship between exposure and knowledge, attitudes, and behavior.

The Wave 3 questionnaire focused on the same topics as the Waves 1 and 2 questionnaires, with the addition of the confirmed awareness questions described above and a series of questions collecting information on respondents' actual census behavior. An additional round of cognitive interviewing was also completed to develop ad descriptions and code frames for inclusion in the questionnaire.

## Pre-field Preparations

### AIAN Reservations

NORC worked under the close supervision of the Census Bureau Manager of Partnership and Data Services AIAN Program to make outreach to the AIAN Partnership contacts in regional field offices overseeing the AIAN areas selected for the 2010 CICPE sample.

Of the ten sampled reservations, eight agreed to participate in the study. NORC project staff gained cooperation from the sampled reservations through in-person presentations to Tribal Councils. The presentations to Tribal Councils included a description of the project and of NORC as an organization. Council members were made aware of the activities that would take place, including listing in some areas, hiring tribal members as interviewers wherever possible, training, confidentiality, screening, and interviewing (including incentives). The presenter answered all questions, distributed informational material about NORC and the project, and presented token gifts including pens, paper, Chicago mementos, and the like.

## Data Collection

The same multimode address-based sampling approach was adopted across all three waves of data collection. In order to take advantage of the cost efficiencies of telephone data collection, cases were worked first by telephone wherever possible. After a designated period of time, cases that showed no progress in the phone shop were sent to field interviewers to exploit the high quality and response rates of in-person interviewing. While all phone-matched cases were worked in the CATI mode, cases to be worked in the field were subsampled to reduce the size of the in-person caseload. The project used subsampling as another tool to favor inexpensive modes over field data collection. In all three waves,

data were collected from four sample groups: the Core sample, Asians, Native Hawaiians, and American Indians. Waves 1 and 3 also included the Heavy-up sample group.

In order to better measure changes over time in individual behavior and attitudes regarding the census, Waves 2 and 3 included a panel component in addition to cross-sectional samples. In addition to telephone and in-person data collection, data were also collected from the panel sample group by paper-and-pencil self-administered questionnaire (SAQ). In Wave 3 there was also a web version of this questionnaire available to panel members.

Wave 1 data collection began on September 9, 2009, and continued through January 16, 2010.[4] Wave 2 data collection started on January 19, 2010, and ran through March 14, 2010. Wave 3 data collection ran from April 19, 2010 through July 17, 2010.

**Table 2-6.** Characteristics of Each Wave of Data Collection

| | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| Telephone data collection | ✓ | ✓ | ✓ |
| Field data collection | ✓ | ✓ | ✓ |
| Paper SAQ for panel sample | | ✓ | ✓ |
| Web data collection for panel sample | | | ✓ |
| Heavy-up sample included in data collection | ✓ | | ✓ |
| Weeks of data collection | 19 | 11 | 13 |
| Percent of cases previously interviewed | 0 | 60.3 | 50.4 |
| Timing relative to the ICC | Before paid media | During the peak of paid media before the mailout of census forms | After eligibility of NRFU |

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Table 2-7 documents the number of interviews completed in each data collection mode (Field, Computer-Assisted Telephone Interview, and Self-Administered Mail or Web Questionnaire). The self-administered mail and web modes were successful with the panel samples in Waves 2 and 3, but in all three waves, the telephone mode fell short of expectations.

[4] NORC was informed on August 11, 2009, that that the CICPE project was being placed under a stop work order due to re-interpretation of Census Bureau guidelines for information technology security. This order was rescinded on September 4, 2009. Data collection was to have begun on August 17 and ended up being delayed nearly a full month. This led to delays in full system testing and readiness, attrition in staff, reductions in the time between advance mailings and respondent contact, and greater field period overlap with the traditionally less productive holiday season. The full impact of this delay was outlined in an August 13 memo from NORC to the Census Bureau.

**Table 2-7.** Numbers of Completed Cases by Data Collection Mode, by Wave and Sample Type

| | Core | American Indian | Asian | Native Hawaiian | Heavy-up | Total |
|---|---|---|---|---|---|---|
| | | | Wave 1 | | | |
| Field | 907 | 472 | 365 | 387 | 1,116 | 3,247 |
| CATI | 335 | 70 | 65 | 70 | 808 | 1,348 |
| SAQ/Web | | | | | | |
| **Total** | **1,242** | **542** | **430** | **457** | **1,924** | **4,595** |
| | | | Wave 2 | | | |
| Field | 688 | 233 | 194 | 239 | 0 | 1,354 |
| CATI | 151 | 34 | 46 | 30 | 0 | 203 |
| SAQ/Web | 294 | 121 | 110 | 123 | 0 | 706 |
| **Total** | **1,133** | **388** | **350** | **392** | **0** | **2,263** |
| | | | Wave 3 | | | |
| Field | 1,057 | 293 | 291 | 318 | 1,202 | 3,161 |
| CATI | 176 | 100 | 94 | 80 | 844 | 1,294 |
| SAQ/Web | 304 | 155 | 109 | 131 | 0 | 699 |
| **Total** | **1,537** | **548** | **494** | **529** | **2,046** | **5,154** |

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### Timing of Interviews

Because data collection took place at various points during the ICC, it may be of interest to know when in the data collection period interviews were actually completed. Differences in exposure to the campaign or knowledge, attitudes, and beliefs could stem simply from differences in interview timing rather than other factors. Table 2-8 shows for each sample type what fraction of all interviews was completed at different points during the data collection period.

**Table 2-8.** Cumulative Percent of Cases Completed in Each Wave by Week and Sample Type

| CICPE Data Collection Wave | Week Number | Date | 2010 Census Activities | CICPE Data Collection Activities | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Core | American Indian | Asian | Native Hawaiian | Heavy-up | Total |
| 1 | 1 | Sept. 7, 2009 | Partnership and Earned media activities underway | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1 | 3 | Sept. 21, 2009 | | 18.1 | 0.0 | 7.2 | 9.1 | 0.0 | 6.6 |
| 1 | 6 | Oct. 12, 2009 | | 32.4 | 0.9 | 16.1 | 17.4 | 29.0 | 24.5 |
| 1 | 9 | Nov. 2, 2009 | | 48.0 | 14.2 | 23.8 | 29.3 | 47.1 | 39.7 |
| 1 | 12 | Nov. 23, 2009 | | 67.2 | 53.0 | 36.2 | 58.6 | 63.2 | 59.7 |
| 1 | 15 | Dec. 14, 2009 | | 85.0 | 87.1 | 78.8 | 91.2 | 87.6 | 86.2 |
| 1 | 18 | Jan. 4, 2010 | 2010 Census Portrait of America Road Tour begins on January 4, 2010 | 94.0 | 99.3 | 99.1 | 100.0 | 97.8 | 97.3 |
| 1 | 19 | Jan. 11, 2010 | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 2 | 1 | Jan. 18, 2010 | Paid media campaign begins on January 17, 2010 | 0.0 | 0.0 | 0.0 | 0.0 | n/a | 0.0 |
| 2 | 3 | Feb. 1, 2010 | | 22.2 | 23.7 | 20.0 | 28.0 | n/a | 23.0 |
| 2 | 6 | Feb. 22, 2010 | | 74.1 | 64.8 | 69.5 | 85.1 | n/a | 73.4 |
| 2 | 9 | Mar. 15, 2010 | Mail out of Census Forms March 15-17, 2010 | 99.6 | 99.7 | 99.8 | 100.0 | n/a | 99.7 |
| 2 | 11 | Mar. 29, 2010 | Census Day - April 1 | 100.0 | 100.0 | 100.0 | 100.0 | n/a | 100.0 |
| 3 | 1 | Apr. 19, 2010 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | 3 | May 3, 2010 | NRFU begins in May and runs through early July | 28.4 | 18.3 | 28.3 | 27.7 | 24.9 | 25.9 |
| 3 | 6 | May 24, 2010 | | 62.3 | 63.3 | 52.7 | 65.0 | 61.2 | 61.2 |
| 3 | 9 | Jun. 14, 2010 | | 80.2 | 85.1 | 77.2 | 91.3 | 86.5 | 83.9 |
| 3 | 12 | Jul. 5, 2010 | | 99.7 | 100.0 | 99.1 | 99.4 | 100.0 | 99.7 |
| 3 | 13 | Jul. 12, 2010 | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

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Wave 1 data collection lasted for 19 weeks. Work began on the American Indian sample more than a month after other samples were fielded. Both Core and Heavy-up samples had close to half of their total completes by week 9 (the week beginning November 2, 2009). By week 15 (the week beginning December 14, 2009), all sample types had at least 75 percent of their interviews completed.

Wave 2 data collection took place over an 11 week period. By the third week (the week beginning February 1, 2010), one-fifth of the final completes had been achieved for all sample types. Approximately two-thirds of the final completes were completed by week 6 (the week of February 25, 2010) for all sample types.

Wave 3 data collection lasted 13 weeks. By the third week (the week beginning May 5, 2010), one-fifth of the completes had been achieved for all sample types except for the American Indian sample. Six weeks later (the week beginning June 14, 2010), all sample types had obtained more than 75 percent of the total completes.

## Survey Response Rates and Eligibility

Table 2-9 provides weighted eligibility and response rates for fresh cases from all three waves of data collection, broken down by sample type.

**Table 2-9.** Weighted Eligibility and Response Rates for Fresh Cases by Wave and Sample Type

| | Wave 1 | | Wave 2 | | Wave 3 | |
|---|---|---|---|---|---|---|
| **Sample Type** | **Weighted Eligibility Rate (%)** | **Weighted Response Rate (%)** | **Weighted Eligibility Rate (%)** | **Weighted Response Rate (%)** | **Weighted Eligibility Rate (%)** | **Weighted Response Rate (%)** |
| Core | 84.6 | 60.5 | 88.3 | 60.9 | 82.5 | 63.1 |
| American Indian | 7.7 | 56.5 | 12.5 | 43.2 | 11.2 | 37.9 |
| Asian | 4.7 | 50.7 | 5.0 | 64.2 | 5.2 | 73.8 |
| Native Hawaiian | 34.4 | 30.6 | 19.0 | 46.1 | 19.3 | 53.3 |
| Heavy-up | 84.3 | 68.3 | n/a | n/a | 82.8 | 70.8 |

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The study sample required a significant amount of oversampling of some race/ethnic groups. Consequently, weighted eligibility and response rates are provided in Table 2-9 to accurately reflect the oversampling. The eligibility rate is weighted by the base weight (inverse of the probability of selection); the response rate is weighted by the eligibility-adjusted weight (the base weight adjusted to reflect only

the eligible cases). Response rates were calculated using the AAPOR standard which assumes the eligibility rate among the "eligibility-unknown" cases is the same as the eligibility rate for cases for which eligibility is known. This assumption can inflate or deflate the reported eligibility rate depending on the accuracy of the assumption.

Wave 1 eligibility rates for the American Indian and Asian groups are lower than the unweighted planned eligibility "hit" rates since cases in these groups were oversampled in areas with expected higher eligibility rates, leading to smaller weights for the cases in oversampled areas. Looking at response rates, we note that the Native Hawaiian response rate in Wave 1 is much lower than other study samples. The Native Hawaiian sample has more "eligibility-unknown" cases than other groups. This, along with the standard assumption concerning the eligibility rate of the "eligibility-unknown" cases, suggests the low response rate may be an artifact of the key assumption concerning the proportion of eligible cases.

In Wave 2, the weighted eligibility rates for the Core and American Indian samples are somewhat larger. The Wave 2 weighted eligibility rate for the Asian sample is about the same as for Wave 1. However, for the Native Hawaiian sample, the Wave 2 eligibility rate is much lower than for Wave 1. The decrease in the eligibility rate for the Native Hawaiian sample is a result of a reduction in the number of unknown eligible cases.

With respect to response rates, the Core sample has stable rates for Wave 1 to Wave 2. The response rate is higher for the Asian sample and lower for the American Indian sample in Wave 2.

Only vacant housing units (and those rare housing units without an adult) are ineligible for the Core, but the weighted response rate depends heavily on the mix of eligible, ineligible, and unknown eligibility households determined by our phone and field staff.

Turning to Wave 3, we see that the Native Hawaiian and Asian samples have higher response rates than Wave 2; the response rate is lower, however, for the American Indian sample.

For the panel sample, eligibility has already been determined, so we report only the weighted response rates. We also have complete race/ethnicity data for the Core sample. Table 2-10 shows that the three Core race/ethnicity groups all have retention rates around 75 percent in Wave 2, though the retention rate is higher for Wave 1 Hispanic respondents and lower for Wave 1 non-Hispanic White respondents. In Wave 3, the three Core race/ethnicity groups all have retention rates around 70 percent. The lowest retention rate across both waves is for the Asian sample (62.1 percent and 58.5 percent), while the highest retention rate is for the Hispanic sample (78.2 percent and 71.7 percent).

**Table 2-10.** Weighted Retention Rates for the Panel Sample by Wave

| Sample Type | Wave 2 | Wave 3 |
|---|---|---|
| Core – Hispanic | 78.2 | 71.7 |
| Core – Non-Hispanic African American | 74.8 | 68.4 |
| Core – Non-Hispanic White | 71.8 | 70.0 |
| American Indian | 77.5 | 71.0 |
| Asian | 62.1 | 58.5 |
| Native Hawaiian | 67.2 | 68.9 |

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## Data Collection Challenges

Approaching and interviewing eligible respondents within the hard-to-count subgroups presents several data collection challenges. Operational elements such as the implementation of a hybrid mixed-mode data collection design across sample groups, the achievement of sufficiently large effective sample sizes with high ineligibility rates, management of a rigid schedule for each wave of data collection, and the need to quickly capture observations prompted the creation of data collection procedures to address effective outreach strategies within selected communities.

In the face-to-face environment, fostering respect and understanding within the community is critical for successful outreach. This was especially true when fielding the American Indian reservation samples. NORC's data collection task leader was charged with scheduling personal visits with tribal leaders to explain the study and secure permission to conduct research on tribal lands. In addition, interviewer recruiting of local American Indian tribal members was an integral method of involving community members and reaching targets. Establishing this relationship prior to the start of data collection was critical to the success of data collection activities in the American Indian reservations selected.

During data collection, the demands of the short data collection period reduced the value of establishing a presence in certain communities especially for personal visits. The hybrid mode of data collection focused on an intensive two week CATI dialing of phone-matched addresses. Subsampling routines on all CATI pending sample were performed and field assignments created. The lower-than-projected number of addresses associated with phone numbers plus the higher number of unresolved sample lines for the hard-to-count samples resulted in a much larger number of households considered for subsampling. This resulted in a high volume of sample units assigned to the field for an abbreviated fielding, requiring rapid ramp-up of interviewer hours plus the need to reallocate resources across NORC's field operations to cover areas with more sample released. In an attempt to moderate the volume

of cases assigned into the field, subsample routines were modified to allow in-person outreach to begin earlier for non-phone-matched sample. This fielding decision not only improved response in personal visits but also provided field staff experience with the interviewing tasks before the larger subsampling assignments were released.

#### Wave 1 Observations Collected in January 2010

Because Wave 1 carried over into January, data collection overlapped with the start of the publicity push for the 2010 Census. Although the paid media advertising campaign was not slated to begin until January 17, a number of events took place starting on January 4, 2010, to promote the beginning of the campaign. For instance, Director Robert Groves appeared on a number of television programs to discuss the 2010 Census, the *Portrait of America* Road Tour began its cross-country journey to increase awareness, and the media coverage of the census paid advertising campaign increased. There was concern that these events would contaminate the cases collected between January 4 and January 16 and thereby provide an inaccurate baseline for comparison with interviews from later waves. In the six main race/ethnicity groups, 301 cases were collected between January 4 and January 15, 2010, roughly 6.5 percent of the total completes for Wave 1. We document in Chapter VI of the 2010 CICPE Post-Census Report (Datta, A. R., et al. 2010) that the late Wave 1 cases show very little indication of being contaminated by early media activity.

## 2.3. Analysis of Non-Response Bias

One of the principal outcomes of interest of the 2010 CICPE is the mail return status of sampled households in the 2010 Census. Thus, the design of this evaluation is to conduct a suite of three surveys with a primary objective of understanding mechanisms and determinants of survey non-response. The challenge is greater still since the 2010 CICPE surveys predictably achieved lower response rates than did the 2010 Census itself. The three waves of surveys conducted for this evaluation can certainly help us to understand evolutions in knowledge, attitudes, and behaviors of selected households, as well as their qualitative reactions to the 2010 ICC. Ideally, the surveys would also support inferences to the populations of interest, specifically all U.S. households in 2010, especially those who may have been classified as hard-to-enumerate. Our survey had non-response, and it is reasonable to believe that non-respondents to our survey will differ in their knowledge of, attitudes toward, and behavior in the decennial census. To better understand the limitations or the potential of the 2010 CICPE survey data to generalize to the full population of interest, we exploit a feature of our survey design to estimate the non-response bias in our survey in the exact outcomes of analytical interest. We are able to do so because we

have matched our sampled housing units to their decennial census behavior, regardless of whether they were respondents, eligible non-respondents, ineligible, or unscreened (unknown eligibility).

As we described in Section 2.1 above, sampling weights for our survey data are constructed through a sequence of weighting adjustments. In this section, we compare three variables for respondents and non-respondents using the weight immediately before non-response adjustment (wt2). This weight (wt2) reflects selection probability differences, the effect of subsampling cases not completed in the phone shop for field work, and eliminates the ineligible households. It does not include any adjustments for non-response and is not post-stratified to match known population totals. The difference between the outcome variable of interest for respondents and the outcome variable of interest for all eligible households (respondents and non-respondents) is our estimate of non-response bias. Findings of very small non-response bias will support our use of the survey data to make inferences about the full set of households eligible for the decennial census, rather than restricting to those who completed our survey or were similarly (not) hard-to-count. We also examine the outcome variables of interest for respondents after the non-response weight adjustment to see if the estimated bias is reduced by the adjustment. The weight immediately after non-response weight adjustment, but before post-stratification (wt3) is zero for non-respondents, and the weight of the non-respondents is shifted to the respondents within class variables (which included sample type). In this section, we present analyses for three outcome variables:

- 2000 Census Hard-to-Count (HTC) Score, which is defined at the Census Tract (CT) level (all households in the same CT have the same 2000 Census HTC score)
- 2010 Census Mail Return before the start of NRFU (by April 18)
- 2010 Census Early Mail Return (by April 4)

We provide these analyses here to allay concerns about non-representativeness of the 2010 CICPE survey data, but subsequent chapters will provide additional information about the constructs and measures presented here.

We present one table for each of these outcome variables of interest. We include all households that were sampled for any of the three waves. All households were matched to a Census Master Address File ID (MAFID) by the Bureau of the Census Geography Division. We divided all households into the following sample outcome classes:

- Unknown Eligibility – These are selected households where a screening interview was not done so that their eligibility status is unknown. We follow the AAPOR standard and assume the same eligibility rate among those with unknown eligibility as those with known eligibility.

- Eligible Incompletes – We know the case is eligible, but did not complete an interview.
- Respondents, "Refusers" – Respondent refused at least one time.
- Respondents, "Difficult" – Respondent was attempted in more than one mode[5] or had equal to or more than the median number of attempts in one mode.
- Respondents, "Easy" – Respondent was interviewed by the first mode attempted and had fewer than the median number of attempts in that mode.

It should be noted that two other categories of households exist. However, since the weight immediately before non-response adjustment is zero for Ineligibles and those households subsampled out between phone interviewing and field work, they are excluded from our non-response bias analysis.

While our analysis could have been completed separately for each of the three waves, we chose to compare all three waves (all panel cases are counted as Wave 1 cases) together in one analysis. There is no reason to suspect that the non-response bias should be significantly different between the waves, and Wave 2 in particular does not have a large enough sample of cases for the analysis to be reliable. Table 2-11 below shows the sample sizes for each of the sample outcome classes by sample type. It is quite clear that the largest class for each sample type except the Heavy-up sample is the Unknown Eligibility category. These cases do have smaller wt2 weights because their weights have been multiplied by the estimated eligibility rate among them (using the AAPOR standard of the eligibility rate among those whose eligibility status is known).

**Table 2-11.** Sample Sizes of Selected Sample Outcome Classes (Waves 1, 2 and 3 Combined)

| SAMPLE OUTCOME CLASS | American Indian | Asian | Core | Native Hawaiian | Heavy-up |
|---|---|---|---|---|---|
| Unknown eligibility | 2,043 | 2,006 | 1,012 | 1,948 | 1,153 |
| Eligible incompletes | 197 | 241 | 444 | 318 | 346 |
| Respondents-Refusers | 162 | 260 | 850 | 271 | 1,464 |
| Respondents-Difficult | 269 | 248 | 920 | 380 | 1,315 |
| Respondents-Easy | 368 | 184 | 558 | 393 | 1,191 |

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[5] If a respondent was attempted in more than one mode, this means that we successfully matched a phone number to the address, but could not complete the interview by phone, and the case was subsampled into the field effort.

## Census 2000 Hard-To-Count (HTC) Score

The first variable that we examined is the Hard-to-Count (HTC) score determined from Census 2000 in preparation for the 2010 Census. The Census Bureau created a Tract Level Planning Database for 2010, utilizing Census 2000 Data, that assembled a range of housing, demographic, and socioeconomic variables found to be correlated with mail non-response. The variables included were guided by extensive research conducted by the Census Bureau and others to measure census coverage and to identify reasons people are missed in the census. The variables include housing indicators (percent renters, multi-units, crowded housing, lack of telephones, vacancy) and personal indicators (poverty, not high school graduate, unemployed, complex households, mobility, language isolation). Other operational and demographic data were also included (such as race/ethnic distributions). Every census tract in the country was assigned a "Hard-To-Count" (HTC) score, summarizing the "measured" degree of enumeration difficulty, based on the 12 variables most highly correlated with non-response rates in 1990 and 2000.

HTC scores can range from 0 to 132. The higher the score, the more difficult enumeration was expected to be for the 2010 Census. Areas with the highest scores (over 70) were thought likely to be the areas with relatively high non-return rates and undercount rates while areas with the lowest scores were thought likely to be areas with low rates of non-mail return and undercount.

Table 2-12 below shows the non-response bias analysis for the 2000 Census Hard-to-Count (HTC) Score. The analysis shows the mean HTC score for every subgroup by sample type. For example, in the Core sample type, the highest mean HTC score is for the eligible incompletes (37.8) while the lowest mean HTC score is for the “refuser” respondents (33.5). So, within the Core sample, the highest mean HTC score is for those who refused to complete a CICPE interview, but the lowest mean HTC score is for those who initially refused to complete a CICPE interview, but eventually did. Looking at the other sample types, the “refuser” respondents had the highest mean HTC score for the American Indian and Native Hawaiian samples, while the “difficult” respondents had the highest HTC score for the Heavy-up sample and the unknown eligibility (unscreened) cases had the highest HTC score for the Asian sample.

For the purposes of our non-response bias, we combined the three respondent categories to calculate a mean HTC score for respondents, and compared that with the mean HTC score for the combination of the two non-respondent categories (“unknown eligibility” and “eligible incompletes”). For the Core sample type, the mean HTC score for respondents is 35.5 while the mean HTC score for non-respondents is 36.4. Combining respondents and non-respondents, the mean HTC score is 35.9. We estimate the non-response

bias as the difference between the mean HTC score for respondents and the mean HTC score for respondents and non-respondents combined (35.5 – 35.9 = -0.4).

Since we expect higher HTC scores for non-respondents, we expect this estimated bias to be negative. However, the largest estimated bias is 5.4 for the American Indian sample type, where the mean HTC score is much larger for our respondents than our non-respondents. The Asian sample type has the largest bias in the expected direction (-1.9).

All of the above calculations were done using the weight before our non-response adjustment (wt2). We calculated the mean HTC score for respondents using the weight after our non-response adjustment (wt3) to see if this adjustment reduced the estimated bias. For the Core sample, the mean HTC score for respondents using wt3 was 36.0, which changed the estimated bias from -0.4 to 0.1. Overall, the results were mixed. For two of the sample types (Asian and Core), the adjustment did reduce the small estimated bias to zero, but the estimated bias grew slightly for two other sample types (American Indian and Heavy-up), while the estimated bias was unchanged for the Asian sample.

In summary, the estimated bias was small except for the American Indian sample type in which the estimated bias was in the direction opposite of what we would expect; the mean HTC score for the respondents was higher than the mean HTC score for the non-respondents. Non-response bias does not appear to be a concern based on HTC score, but we now move on to two more important variables based on 2010 Census mail return status.

**Table 2-12.** Non-response Bias Analysis for the 2000 Census Hard-to-Count (HTC) Score

| MEANS OF HARD-TO-COUNT SCORES BY SAMPLE OUTCOME CLASS (Type of weighting: before non-response adjustments [wt2]) | | | | | |
|---|---|---|---|---|---|
| **Wave 1, 2 and 3 combined** | **HTC SCORES (Mean)** | | | | |
| **SAMPLE OUTCOME CLASS** | **American Indian** | **Asian** | **Core** | **Native Hawaiian** | **Heavy-up** |
| Unknown eligibility | 35.5 | 42.0 | 35.9 | 41.9 | 29.1 |
| Eligible incompletes | 22.3 | 38.4 | 37.8 | 40.2 | 27.8 |
| Respondents-Refusers | 41.9 | 34.8 | 33.5 | 46.6 | 30.8 |
| Respondents-Difficult | 37.4 | 37.4 | 37.5 | 45.1 | 33.7 |
| Respondents-Easy | 39.2 | 31.1 | 35.0 | 38.3 | 32.2 |
| Respondents | 39.0 | 34.8 | 35.5 | 42.7 | 32.3 |
| Non-respondents | 29.2 | 39.8 | 36.4 | 41.4 | 28.8 |
| Respondents + Non-respondents | 33.6 | 36.7 | 35.9 | 42.0 | 31.2 |
| ESTIMATED NON-RESPONSE BIAS BEFORE ADJUSTMENT | **5.4** | **-1.9** | **-0.4** | **0.7** | **1.1** |
| **MEANS OF HARD-TO-COUNT SCORES BY SAMPLE TYPE (Type of weighting: Non-response adjusted [wt3])** | | | | | |
| Respondents | 39.7 | 34.9 | 36.0 | 42.0 | 32.7 |
| ESTIMATED NON-RESPONSE BIAS REMAINING AFTER ADJUSTMENT | **6.1** | **-1.8** | **0.1** | **0.0** | **1.5** |

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## 2010 Census Mail Return Prior To NRFU

The second variable that we examined is the 2010 Census mail return status before the start of the NRFU operation. We use April 18 as the date the NRFU operation started, so this variable is the mail return status on that date.

As mentioned above, all households in our samples were matched to the Census Master Address File ID (MAFID) by the Bureau of the Census Geography Division. Combining all three waves of CICPE fresh cases released for CICPE data collection, the total sample size was 94,960 addresses. All 94,960 addresses were submitted for a MAFID match, and a match was found for 93,220 addresses (98.2 percent of addresses). These 93,220 MAFIDs were then matched to the Census Bureau's operational data, and a match was found for 89,644 MAFIDs (96.2 percent of MAFIDs). This means that operational data were matched to 89,644 out of our 94,960 sample addresses (94.4 percent of addresses). However, these match rates were not uniform across the sample types. In particular, the match rates were lower for the American Indian sample. The MAFID match rate is around 98 percent for all sample types except

American Indian (78 percent) and Core (95 percent). These are the two sample types that include rural addresses that might not be city-style addresses. For the American Indian sample, several of the reservations are update-enumerate areas for which the mail return variables are not applicable; these are the reservations where matching was most difficult. Table 2-13 shows the sample sizes for the mail return variable analyses. The drop is most pronounced for the American Indian sample when comparing to Table 2-11.

**Table 2-13.** Sample Sizes of Selected Sample Outcome Classes for Mail Return Analyses (Waves 1, 2 and 3 Combined)

| SAMPLE OUTCOME CLASS | American Indian | Asian | Core | Native Hawaiian | Heavy-up |
|---|---|---|---|---|---|
| Unknown eligibility | 1,751 | 1,899 | 917 | 1,843 | 1,070 |
| Eligible incompletes | 171 | 231 | 426 | 307 | 328 |
| Respondents-Refusers | 150 | 257 | 822 | 257 | 1,411 |
| Respondents-Difficult | 148 | 237 | 874 | 359 | 1,253 |
| Respondents-Easy | 215 | 177 | 507 | 373 | 1,143 |

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Table 2-14 below shows the non-response bias analysis for the 2010 Census mail return rate before the start of the NRFU operation. For the Core sample, the highest mail return rate is actually for the eligible incompletes (67.8 percent) while the lowest mail return rate is for the more difficult respondents (56.9 percent). The eligible incompletes also have the highest mail return rate for the American Indian sample type. We would have expected the easier respondents to have the highest mail return rate, and they do in the Asian and Native Hawaiian samples, but the "refusal" respondents have the highest mail return rate in the Heavy-up sample. The more difficult respondents have the lowest mail return rate for all sample types except the Asian sample, for which the eligible incompletes have the lowest mail return rate. The fact that the lowest mail return rate group is most often one of the groups of respondents suggests that there is no strong non-response bias.

Combining the respondent and non-respondent categories, the mail return rate for Core respondents is 61.5 percent compared to 62.3 percent for the Core non-respondents. Combining respondents and non-respondents, the Core mail return rate is 61.8 percent, resulting in an estimated non-response bias of 61.5 percent – 61.8 percent = -0.3 percent.

Since we expect higher mail return rates for respondents, we expect this estimated bias to be positive. The estimated bias for the Asian sample is 3.3 percent, while three of the other sample types all have

estimated biases of less than plus or minus one percent. The American Indian sample again has the largest bias (-6.8 percent), but in the opposite direction than we would have expected. As we did for the HTC score, we calculated the mail return score for respondents using the weight after our non-response adjustment (wt3) to see if this adjustment reduced the estimated bias. For the Core sample type, the mail return rate for respondents using wt3 was 60.6 percent, which increased the estimated bias (in the unexpected direction) from -0.3 percent to -1.2 percent. Once again, the adjustment reduced a small bias for two sample types (Native Hawaiian and Heavy-up), did not change the estimated bias for the Asian sample, and increased the estimated bias in the opposite direction for two samples (American Indian and Core).

In summary, the Asian sample has a small estimated bias unaffected by the non-response weight adjustment, the American Indian sample has an estimated bias in the unexpected direction, and the estimated biases are small for the other three sample types (Core, Native Hawaiian, and Heavy-up).

**Table 2-14.** Non-response Bias Analysis for the 2010 Mail Return Prior to NRFU (April 18)

| MEANS OF RETURN_PRENRFU BY SAMPLE OUTCOME CLASS (Type of weighting: before non-response adjustments [wt2]) | | | | | |
|---|---|---|---|---|---|
| **Wave 1, 2 and 3 combined** | **RETURN_PRENRFU (%)** | | | | |
| **SAMPLE OUTCOME CLASS** | **American Indian** | **Asian** | **Core** | **Native Hawaiian** | **Heavy-up** |
| Unknown eligibility | 55.1 | 54.5 | 60.0 | 60.1 | 62.2 |
| Eligible incompletes | 63.8 | 53.0 | 67.8 | 58.7 | 67.2 |
| Respondents-Refusers | 50.6 | 61.9 | 67.6 | 59.1 | 70.9 |
| Respondents-Difficult | 43.8 | 62.2 | 56.9 | 58.5 | 61.9 |
| Respondents-Easy | 49.8 | 64.3 | 60.0 | 65.2 | 66.8 |
| Respondents | 47.6 | 62.7 | 61.5 | 61.4 | 66.4 |
| Non-respondents | 59.4 | 53.6 | 62.3 | 59.7 | 63.4 |
| Respondents + Non-respondents | 54.4 | 59.4 | 61.8 | 60.5 | 65.6 |
| ESTIMATED NON-RESPONSE BIAS BEFORE ADJUSTMENT | **-6.8** | **3.3** | **-0.3** | **0.9** | **0.8** |
| **MEANS OF RETURN_PRENRFU BY SAMPLE TYPE (Type of weighting: Non-response adjusted [wt3])** | | | | | |
| Respondents | 41.9 | 62.7 | 60.6 | 60.1 | 65.6 |
| ESTIMATED NON-RESPONSE BIAS REMAINING AFTER ADJUSTMENT | **-12.5** | **3.3** | **-1.2** | **-0.4** | **0.0** |

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## 2010 Early Census Mail Return

The third and final variable that we examined is the 2010 Census early mail return status as of April 4. Since this is two weeks before the previous variable (2010 Census mail return status before the start of the NRFU operation), the mail return rates are lower, but we might expect the patterns of non-response bias to be similar.

Table 2-15 below shows the non-response bias analysis for the 2010 Census early mail return rate. For the Core sample type, the highest early mail return rate is for the "refuser" respondents (61.3 percent), while the lowest early mail return rate is again for the more difficult respondents (51.8 percent). The "refuser" respondents also have the highest early mail return rate for the Heavy-up sample type. The Asian and Native Hawaiian samples again have the easier respondents as the highest early mail returners (as we would expect a priori), but the eligible incompletes have the highest early mail return rate in the Asian sample. The more difficult respondents have the lowest early mail return rate for the Core and Native Hawaiian samples, while the unknown eligibility cases have the lowest early mail return rate in the Asian and Heavy-up samples. The "refuser" respondents have the lowest early mail return rate in the American Indian sample. Once again, the inconsistency of which group has the highest and lowest early mail return rates suggest that there is no strong non-response bias.

Combining the respondent and non-respondent categories, the early mail return rate for Core respondents is 56.7 percent compared to 55.0 percent for the Core non-respondents. Combining respondents and non-respondents, the Core early mail return rate is 56.0 percent, resulting in an estimated non-response bias of 56.7 percent – 56.0 percent = 0.7 percent.

Since we expect higher early mail return rates for respondents, we expect this estimated bias to be positive, and it is positive for all sample types except the American Indian. The estimated bias for the Asian sample is 3.4 percent (very close to the 3.3 estimate for the mail return rate above), while the other three positive bias estimates are all below 1.5 percent. Once again, the American Indian sample has the largest bias, and it is in the opposite direction (-6.3 percent) than we would have expected.

For a third time, we calculated the mail return score for respondents using the weight after our non-response adjustment (wt3) to see if this adjustment reduced the estimated bias. For the Core sample type, the early mail return rate for respondents using wt3 was 55.7 percent, which decreased the estimated bias (and reversed its sign) from 0.7 percent to -0.3 percent. For the early mail return variable, the adjustment slightly decreased the estimated bias for all sample types except the American Indian sample. Just as for

the mail return rate above, the estimated bias was increased for the American Indian sample, but the estimated bias is again in the direction opposite to our expectations.

In a final summary of our non-response bias analysis, we were able to do something that very few if any studies get to do. We were able to actually estimate the non-response bias for our sample in a key analytic domain because we were able to match our respondents and non-respondents to census behavior data. For the Core, Native Hawaiian, and Heavy-up samples, our estimates of non-response bias were very close to zero. Our estimates of the Asian sample non-response bias were consistently in the expected direction, but were small. Finally, our estimates of the American Indian sample non-response bias were consistently in the unexpected direction and were larger than for any other sample. While we are unsure of how this could happen for the American Indian sample, we conclude that the non-response biases in the CICPE data set are small. With this reassurance, we exploit the data set extensively in the analyses presented throughout this report, and assert that these analyses not only describe the individuals contributing data, but also support inferences to their reference populations, together comprising American households eligible for census participation in 2010.

**Table 2-15.** Non-response Bias Analysis for the 2010 Early Mail Return (April 4)

| MEANS OF EARLY_RETURN BY SAMPLE OUTCOME CLASS (Type of weighting: before non-response adjustments [wt2]) | | | | | |
|---|---|---|---|---|---|
| **Wave 1, 2 and 3 combined** | **EARLY_RETURN (%)** | | | | |
| **SAMPLE OUTCOME CLASS** | **American Indian** | **Asian** | **Core** | **Native Hawaiian** | **Heavy-up** |
| Unknown eligibility | 47.9 | 49.8 | 53.5 | 55.5 | 56.5 |
| Eligible incompletes | 59.5 | 50.5 | 58.8 | 53.1 | 59.8 |
| Respondents-Refusers | 44.0 | 59.1 | 61.3 | 55.8 | 66.6 |
| Respondents-Difficult | 39.4 | 59.7 | 51.8 | 49.1 | 57.4 |
| Respondents-Easy | 45.4 | 60.0 | 57.8 | 61.6 | 61.7 |
| Respondents | 42.7 | 59.6 | 56.7 | 55.7 | 61.8 |
| Non-respondents | 53.6 | 50.2 | 55.0 | 54.7 | 57.3 |
| Respondents + Non-respondents | 48.9 | 56.2 | 56.0 | 55.2 | 60.5 |
| ESTIMATED NON-RESPONSE BIAS BEFORE ADJUSTMENT | -6.3 | 3.4 | 0.7 | 0.5 | 1.3 |
| **MEANS OF EARLY_RETURN BY SAMPLE TYPE (Type of weighting: Non-response adjusted [wt3])** | | | | | |
| Respondents | 37.4 | 59.2 | 55.7 | 54.9 | 61.0 |
| ESTIMATED NON-RESPONSE BIAS REMAINING AFTER ADJUSTMENT | -11.5 | 3.0 | -0.3 | -0.3 | 0.5 |

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## 2.4. Analysis of Conditioning Effects in Panel Sample

Panel conditioning is potentially a major source of measurement error unique to longitudinal surveys. It refers to the phenomenon where participation in repeated interviews changes respondents' behavior and attitudes, *or* their report of their behavior and attitudes. For the 2010 CICPE, some of the Wave 1 respondents were randomly selected to participate in the Waves 2 and 3 surveys as well. Their participation in the first wave interviews informs them about the survey topic, sponsor, tasks and burdens associated with the survey, and what to expect in the next interviews. All these factors could have an impact on how respondents behave in subsequent interviews. Of particular interest is how longitudinal participation could have affected respondents' reports of awareness, intent to participate in the census, knowledge, attitudes, and beliefs about the census, and reports of exposures to various campaign components compared to respondents who had no prior exposure and experience with the 2010 CICPE. The measures presented in this section are the most central to other analyses in this report. All of the measures are key domains of our overall analyses and will be better defined and explained in subsequent chapters, but we feel it best to set to rest the issue of whether or not the panel sample is compromised in its usefulness (the tables in this section indicate that it is not).

To measure panel conditioning, we compared cross-sectional cases (i.e., "fresh cases") with cases that were selected to participate in later waves (i.e., "panel cases"). In Wave 1, "fresh cases" refer to all respondents who were sampled for and completed Wave 1 and "panel cases" refer to a subset of "fresh cases" who participated later on in Wave 2 and/or Wave 3. In the case of Wave 2, cross-sectional cases who completed only Wave 2 are labeled as "fresh cases," whereas cases who completed both Wave 1 and Wave 2 are referred to as "panel cases." Similarly, cross-sectional cases who completed only Wave 3 are labeled as "fresh cases," and cases who completed both Waves 1 and 3 are labeled as "panel cases." Table 2-16 shows sample counts by panel status. Excluding Heavy-up cases, Wave 1 has 2,671 completed interviews. Among them, 1,834 cases participated later on in Wave 2 and/or Wave 3. In Wave 2, 668 "fresh cases" were selected exclusively as part of the cross-sectional study, and 1,595 "panel cases" were part of Wave 2 as well as part of Wave 1 (and possibly Wave 3, also). In Wave 3, 1,540 cases were exclusively selected as cross-sectional cases (i.e., "fresh cases"), and 1,568 were panel cases that participated in Wave 1 or both Waves 1 and 2.

**Table 2-16.** Sample Counts by Panel Status

| Panel Status | W1 | W2 | W3 |
|---|---|---|---|
| Fresh cases | 2,671 | 668 | 1,540 |
| Panel cases | 1,834 | 1,595 | 1,568 |

2010 CICPE Final Report: unweighted sample counts, Heavy-up sample excluded.

In the key domains of exposure, intent, and knowledge and attitudes toward the census, comparisons by panel status do not provide much evidence of the existence of panel conditioning. The exception, noted below, is in awareness, where panel conditioning does seem to occur, consistent with our understanding of how awareness develops and panel conditioning may occur. In the tables below, we present tabulations of key variables from various domains by panel status and wave. Additional comparisons are available in Chapter 4 of the 2010 CICPE Post-Census Data Collection Report (Datta, A. R., et al. 2010).

Table 2-17 shows self-reported total frequency of exposure across all campaign components in the past 30 days (in Waves 1 and 2) or in the past 90 days (in Wave 3). The estimates are very similar for panel and fresh cases. Exposure measures are described below in Section 4.1.

**Table 2-17.** Total Ads Recalled in Past 30/90 Days by Panel Status and Wave

| Panel Status | W1 (s.e.) | W2 (s.e.) | W3 (s.e.) |
|---|---|---|---|
| Fresh cases | 1.0 (0.1) | 3.1 (0.3) | 15.5 (1.7) |
| Panel cases | 1.0 (0.2) | 3.4 0.3) | 13.8 (1.93) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares Fresh Cases vs. Panel Cases at Wave 2 and Wave 3 only.

Note: No significance testing completed on this table for comparisons across waves (time).

Tables 2-18 and 2-19 examine awareness of the census and intent to participate in the census. In general, panel cases have a higher awareness of the census, a higher familiarity with the census, and higher intent to participate in the census than fresh cases. This domain seems to show the strongest evidence of conditioning effects. The measures presented in Tables 2-18 through 2-21 are discussed in greater depth in Section 5.1 below.

## Table 2-18. Awareness of the Census by Panel Status and Wave

| | Heard of Census | | | Total Heard of Census | | | Very Familiar with Census | | |
|---|---|---|---|---|---|---|---|---|---|
| **Panel Status** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** |
| Fresh cases | 89.0 (1.9) | 94.1 (1.3) | 94.3 (2.1) | 93.1 (1.6) | 95.4 (1.3) | 97.9 (1.1) | 13.5 (1.7) | 13.8 (3.4) | 21.6 (3.6) |
| Panel cases | 88.9 (2.1) | 96.1 (1.4) | 97.8 (1.3) | 93.7 (1.6) | 98.1[g] (0.8) | 99.9[G] (0.1) | 13.8 (2.2) | 18.9 (3.5) | 29.9 (3.7) |

2010 CICPE Final Report: weighted data; Heavy-up sample exclude

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares Fresh Cases vs. Panel Cases at Wave 2 and Wave 3 only.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table 2-19. Intent to Participate in Census by Panel Status and Wave

| Panel Status | W1 % (s.e.) | W2 % (s.e.) | W3 % (s.e.) |
|---|---|---|---|
| Fresh cases | 49.2 (4.0) | 60.7 (4.1) | 62.5 (10.0) |
| Panel cases | 52.0 (5.1) | 62.9 (2.8) | 68.3 (7.5) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares Fresh Cases vs. Panel Cases at Wave 2 and Wave 3 only.

Note: No significance testing completed on this table for comparisons across waves (time).

The count of correctly answered knowledge questions is shown in Table 2-20. There is no consistent pattern of differences across knowledge questions or waves. Although differences may exist for individual knowledge items, no consistent conditioning pattern emerges for knowledge about the census.

**Table 2-20.** Count of Correct Knowledge Questions and "Don't Know" Answers by Panel Status and Wave

| | Count of Correct Responses | | | Count of "Don't Know" Responses | | |
|---|---|---|---|---|---|---|
| **Panel Status** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Fresh cases | 4.3 (0.2) | 4.4 (0.2) | 5.0 (0.2) | 1.2 (0.1) | 1.0 (0.1) | 1.1 (0.2) |
| Panel cases | 4.5 (0.2) | 4.8$^{g}$ (0.1) | 5.5$^{g}$ (0.1) | 1.1 (0.1) | 1.2 (0.1) | 0.9 (0.1) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares Fresh Cases vs. Panel Cases at Wave 2 and Wave 3 only.

Note: No significance testing completed on this table for comparisons across waves (time).

The counts of "Strongly agree" and "Agree" responses for positive and negative census attitudes are shown in Table 2-20. As seen in previous tables, even though panel respondents tended to report more positive and less negative attitudes towards the census than cross-sectional counterparts, most of the differences are small and within limits of sampling variation.

**Table 2-21.** Positive and Negative Attitudes toward the Census by Panel Status and Wave

| | Count of Agree Responses to Positive Beliefs | | | Count of Agree Responses to Negative Beliefs | | |
|---|---|---|---|---|---|---|
| **Panel Status** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Fresh cases | 3.3 (0.09) | 3.7 (0.18) | 3.7 (0.14) | 1.0 (0.07) | 0.9 (0.19) | 0.7 (0.10) |
| Panel cases | 3.5 (0.09) | 4.0$^{g}$ (0.08) | 4.2$^{G}$ (0.09) | 0.9 (0.08) | 0.6 (0.07) | 0.5$^{g}$ (0.09) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares Fresh Cases vs. Panel Cases at Wave 2 and Wave 3 only.

Note: No significance testing completed on this table for comparisons across waves (time).

Another pattern to note is that, throughout the tables, Wave 1 estimates tend to be higher for the subset of respondents who completed more than one wave than the full set of Wave 1 completes. As mentioned earlier, the panel sample is randomly drawn from Wave 1 completes. The differences in Wave 1 estimates between the panel sample and the full sample are likely due to selection bias. In other words, the panel cases who were willing to complete more than one round of interviews were more

knowledgeable about the census, had more positive feelings about the census, and were more exposed to the census campaign than those who were sampled but did not respond to later interviews. Any differences between panel and fresh cases observed in Waves 2 and 3 could be generated by inherent differences in the types of individuals who chose to participate in the panel rather than conditioning effects, which would be the consequence of repeated participation in the panel.

**Table 2-22.** Mail Return by Wave (Fresh cases only)

| | % Return Census Form Before 4/18/2010 |
|---|---|
| **Fresh Cases Only** | **% (s.e.)** |
| All Wave 1 Fresh Cases | 60.1 (3.7) |
| All Wave 2 Fresh Cases | 68.1 (5.5) |
| **All Wave 3 Fresh Cases** | 57.8 (5.3) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each subgroup with a reference category as follows: Wave 1 Fresh cases Only vs. Wave 3 Fresh cases Only, and Wave 2 Fresh cases Only vs. Wave 3 Fresh cases Only. The significance tests were not adjusted for multiple comparisons.

Tables 2-22 and 2-23 show mail return by April 18 across the three waves and by panel status. The mail return rates for the fresh samples of each wave are not statistically different from one another. In contrast, we see in Table 2-23 that individuals who participated in all three waves of the panel were more likely to return their census form by April 18 than those who completed fewer waves of 2010 CICPE interviews.

**Table 2-23.** Mail Return by Panel Completion Status

| | % Return Census Form Before 4/18/2010 |
|---|---|
| **Panel Status** | **% (s.e.)** |
| Panel Cases That Completed Two Waves | 50.2 (7.7) |
| Panel Cases That Completed All Three Waves | $68.1^{G}$ (4.6) |
| **Wave 1 Cases that Completed Only One Wave** | 52.6 (8.0) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each subgroup with a reference category as follows: Panel Cases That Completed 2 Waves vs. Wave 1 Cases that Completed Only One Wave, and Panel Cases That Completed All 3 Waves vs. Wave 1 Cases that Completed Only One Wave. The significance tests were not adjusted for multiple comparisons.

# Chapter 3: Outcomes of Interest

This evaluation addresses two of the three main objectives of the 2010 ICC: the effect of the campaign on mail return rates and on cooperation with enumerators. In this chapter, we introduce the measures used throughout this report to represent these two outcomes:

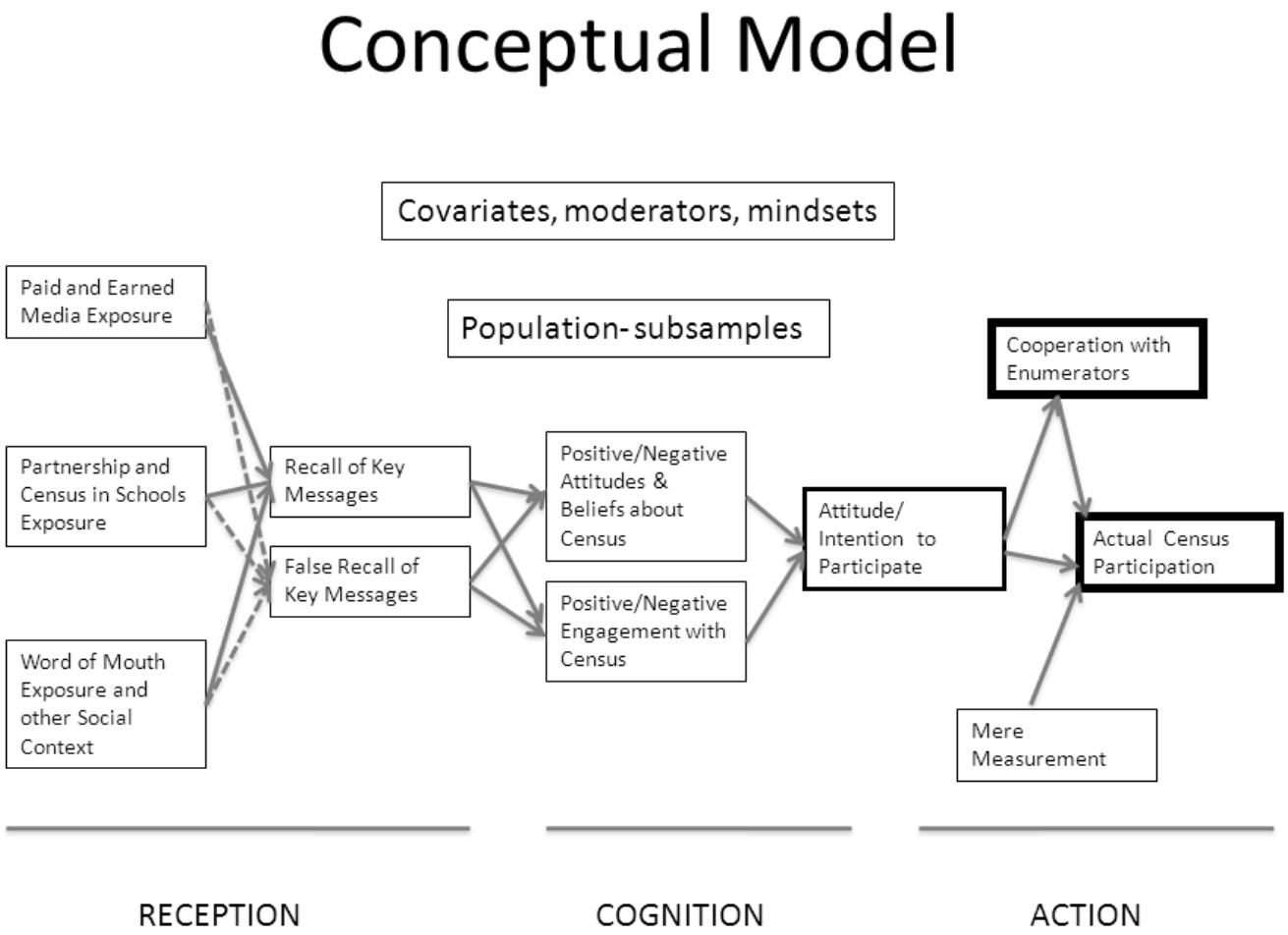
- return of a mail questionnaire by April 18, 2010 (prior to the start of NRFU), and,
- among households eligible for NRFU, completion of the enumeration by a member of the household (rather than a proxy).

In addition to defining these two measures, we discuss some possible shortcomings of these measures. In addition to the 2010 ICC, the Census Bureau also undertook a variety of operational activities to increase mail participation, for example, fielding of a bilingual form, mailing of targeted and blanket replacement forms, and distribution of a multi-language postcard. Within our survey samples, we find positive effects of the bilingual form on our outcomes of interest, but we are not able to detect effects of the other operational activities. Although we note the possibility that the effects of these operational activities could be conflated with the effects of the 2010 ICC in later analyses, we cite the small magnitudes of these effects to suggest that any conflation is likely to be relatively minor.

The main purpose of this chapter of the report is to describe the ways in which we measure the outcomes of interest so as to set the stage for all subsequent chapters in which these measures are used repeatedly. In terms of the CICPE conceptual model, we can think of this chapter as documenting the outcomes of interest labeled as the Action phase. See Figure 3.1 on the following page.

A third objective of the ICC was to reduce differential undercount. This chapter concludes with a discussion of how that third objective may be assessed in future analyses when additional data are available. The topic is addressed further in Appendix A.

Figure 3.1. CICPE Conceptual Model – Outcomes of Interest



## 3.1. Mail Return

We construct two measures of mail return through a merge of address information from the 2010 CICPE survey samples with the Census Bureau's operational records, as described above in Chapter 2, Section 2.3. The first measure indicates whether or not a household returned its census form by April 4th. These would be considered 'early returns' and would have been received in response to just the initial mailing of the census form. The second measure indicates whether or not a household returned its census form by April 18th. This date is the last date of the mailback phase of the campaign, after which all households without returned census forms were designated as eligible for the NRFU portion of the census effort. We sometimes refer to this measure as the Pre-NRFU mail return status. Tables 3-1 through 3-3 document mail return rates as given by these two measures by sample type, audience segmentation cluster, and demographic characteristics. Note that these tables, as well as all subsequent analyses that take mail return as an outcome, exclude addresses that were not eligible for mail return because they were update/enumerate or another status. The tables and related analyses also exclude any sampled addresses that could not be matched to the Census Bureau's Master Address File. These exclusions primarily affect the American Indian sample type.

We see in Table 3-1 that four of the six sample types (Hispanics, non-Hispanic African Americans, American Indians and Native Hawaiians) returned at lower rates than the rest of the country at both time periods, that non-Hispanic Whites (and Others) exceeded the rest of the country, and that Asians' return rate was essentially equal to the national average. At the national level, just under 57 percent of households had returned their census forms by April 4th. In the subsequent two weeks, another five percent returned their forms.

In Table 3-2, we see that the Advantaged Homeowner cluster, which is in fact the largest of the clusters, had mail return rates higher than remaining groups at both dates, but that no other cluster was statistically significantly different from all other clusters combined.

## Table 3-1. Actual Census Behavior by Sample Type

| Sample Type | Sample Size of Each Subgroup | | Census Form Returned Before 4/4/2010 | | Census Form Returned Before 4/18/2010 | |
|---|---|---|---|---|---|---|
| | # Unweighted | # Weighted (in Millions) | % Yes | s.e. | % Yes | s.e. |
| Hispanic | 823 | 11.7 | 40.1[G] | 3.3 | 46.1[G] | 3.9 |
| Non-Hispanic African American | 720 | 12.1 | 37.1[G] | 3.6 | 45.2[G] | 3.7 |
| Non-Hispanic White[6] | 676 | 76.3 | 62.6[G] | 4.3 | 67.1[G] | 4.7 |
| **National Estimate** | **2219** | **100.1** | **56.8** | **3.5** | **62.0** | **3.6** |
| American Indian | 516 | 0.74 | 35.6[G] | 4.2 | 39.5[G] | 3.9 |
| Asian | 890 | 4.0 | 57.9 | 2.9 | 61.2 | 3.3 |
| Native Hawaiian | 770 | 0.13 | 47.0[G] | 3.2 | 51.4[G] | 3.3 |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; and Native Hawaiians vs. the National Estimate.

## Table 3-2. Actual Census Behavior by Segmentation Cluster

| Segmentation Cluster | Sample Size of Each Subgroup | | Census Form Returned Before 4/4/2010 | | Census Form Returned Before 4/18/2010 | |
|---|---|---|---|---|---|---|
| | # Unweighted | # Weighted (in Millions) | % Yes | s.e. | % Yes | s.e. |
| Advantaged Homeowner | 832 | 29.5 | 68.7[G] | 5.5 | 75.1[G] | 4.6 |
| Average I Homeowner | 1,062 | 25.7 | 50.2 | 6.5 | 55.0 | 4.6 |
| Average II Renter | 554 | 16.7 | 49.8 | 4.2 | 56.0 | 5.2 |
| Economically Disadvantaged I Homeowner | 345 | 7.6 | 46.8 | 16.5 | 48.8 | 16.9 |
| Economically Disadvantaged II Renter | 279 | 3.0 | 37.5[G] | 5.4 | 41.7[G] | 5.7 |
| Ethnic I Homeowner | 482 | 6.1 | 53.5 | 6.7 | 56.5 | 6.6 |
| Ethnic II Renter | 467 | 7.1 | 45.9 | 10.1 | 52.5 | 10.4 |
| Mobile/Single | 334 | 3.8 | 53.3 | 4.3 | 56.8 | 3.3 |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category that contains the other seven segmentation clusters (Advantaged Homeowners vs. all seven of the other segmentation clusters, for example).

[6] This category includes all non-Black, non-Hispanic individuals, including Asians, NHOPI and American Indians and Alaska Natives. For ease of interpretation, we label the category 'non-Hispanic White' reflecting the most numerous group within the category.

Table 3-3 shows lower return rates for younger individuals (less than age 45), renters (vs. homeowners), and those with no more than a high school diploma (vs. the college-educated). The education gap becomes statistically insignificant by April 18, but the other two differences remain for both dates.

Language spoken in the household does not statistically differentiate mail return rates in this table, but if we look separately by sample type, we see that among Hispanics less than age 45 years, non-English speakers are more likely to return their mail form than are English speakers (47.5 percent versus 24.2 percent). The reverse is true among Hispanics age 45 years or older (non-English speakers 55.3 percent versus English-speaking 73.0 percent). Among Asians, the pattern is quite different (those under 45 years, Asian-speaking 57.0 percent and English-speaking 53.5 percent; those 45 years or over, Asian-speaking 71.7 percent, English-speaking 83.0 percent).

**Table 3-3.** Actual Behavior by Demographic Characteristics

| | Sample Size of Each Subgroup | | Census Form Returned Before 4/4/2010 | | Census Form Returned Before 4/18/2010 | |
|---|---|---|---|---|---|---|
| **Demographic Characteristics** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** | **% Yes** | **s.e.** |
| <45 years | 1,968 | 56.6 | 45.8[G] | 4.6 | 52.8[G] | 4.9 |
| 45 years or older | 2,373 | 47.3 | 69.4 | 2.6 | 71.9 | 2.7 |
| High school or less | 1,954 | 50.4 | 49.9[G] | 4.4 | 56.4[G] | 4.4 |
| Some college or more | 2,372 | 53.9 | 63.0 | 3.6 | 66.7 | 3.9 |
| Homeowners | 2,301 | 68.1 | 64.3[G] | 3.3 | 69.3[G] | 3.5 |
| Renters/Non-homeowners | 2,014 | 35.8 | 42.2 | 4.6 | 47.4 | 4.4 |
| English spoken at home | 3,458 | 93.1 | 58.3[g] | 3.5 | 62.0 | 3.6 |
| Non-English spoken at home | 887 | 10.9 | 45.4 | 7.2 | 61.8 | 5.5 |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each pair of subgroups listed (< 45 years vs. 45 years or older, for example), with the annotation only shown for the top group..

## 3.2. Operational Interventions in the Mailback Phase

There were several major differences in the operational conduct of the 2010 Decennial Census compared with prior decennial censuses. The most major of these is perhaps the elimination of the long form from the decennial fielding effort, so that all households received the same short form, which was indeed particularly brief in 2010. This change has relatively little impact on our evaluation. In addition, the Census Bureau introduced four 'interventions' for subsets of households in order to increase mail

response. These were: 1) use of a bilingual Spanish/English questionnaire in the initial mailout for all households in areas of high densities of Spanish-speaking households; 2) mailing of a multi-lingual postcard with information in five non-English languages (Chinese, Korean, Vietnamese, Russian, and Spanish) to all households in zip codes with high densities of speakers of these languages one week after the initial mailing; 3) mailing of a "blanket" replacement questionnaire to all households in certain census tracts 15 days after the initial mailing, regardless of the mailback status of those households; 4) mailing of a 'targeted' replacement questionnaire to households in certain census tracts 15 days after the initial mailing, only if those households had not already returned a mail questionnaire. Selection of the tracts for the targeted and blanket replacement questionnaires was based on expected low mail return rates for those tracts based on prior data on decennial and American Community Survey participation, as well as actual behavior in 2010. Returns to the replacement questionnaires began appearing by April 5, which is why we have defined 'early' return as ending by April 4.

Both the ICC activities and the various interventions targeted hard to count groups and did so on the basis of geographic concentrations. For example, the Hispanic component of the paid media campaign likely overlapped geographically with the bilingual initial questionnaire. This poses the risk that we could attribute to the campaign an increase in mail return that was actually induced by the operational interventions. As we mention above, the 'Return by 4/4' variable has the advantage of preceding two of the four interventions, although the 'Return by NRFU' variable reflects the effects of all four interventions (as well as campaign exposure). In the tables below, we present simple tabulations that give us a rough sense of the magnitude of effects on our chosen outcome variables that might be due to interventions. These tables are not intended as evaluations of the selected interventions; those evaluations are being done separately by the Census Bureau. Rather, we intend these tables to provide context as to the extent to which apparent campaign effects may be conflated with effects of these interventions.

Since all of these interventions were assigned by geography, they imprecisely target households. The bilingual form was only in Spanish and English, but households in all six sample types could have received it. In Table 3-4, we do see a large but statistically insignificant gain in mail return rates among Hispanic households that received the bilingual form (46 percent compared with 30 percent for Hispanic households not receiving the form). Curiously, Asian households show a statistically significant positive response to the Spanish/English form (72 percent returning in bilingual form areas vs. 55 percent returning in English-only form areas). In the national estimate, we see that households in English-only form areas returned their forms more often (though not with statistical significance) than households in bilingual form areas. This apparently perverse result that an intervention seems to suppress census

participation is a common theme in our data, where we lack appropriate control groups to counteract the pattern of greater intervention for households who are expected to be harder to count.

**Table 3-4.** Early Return by Bilingual Form by Sample Type

| | Bilingual Form | Sample Size | | Census Form Returned Before 4/4/2010 | |
|---|---|---|---|---|---|
| **Sample Type** | **Condition** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** |
| Hispanic | No | 152 | 4.1 | 29.9 | 7.7 |
| | Yes | 671 | 7.6 | 45.6 | 5.3 |
| Non-Hispanic African American | No | 587 | 9.0 | 37.4 | 3.8 |
| | Yes | 133 | 3.1 | 36.2 | 7.1 |
| Non-Hispanic White | No | 504 | 69.1 | 62.7 | 4.7 |
| | Yes | 172 | 7.1 | 61.6 | 12.9 |
| **National Estimate** | **No** | **1,243** | **82.3** | **58.3[G]** | **4.2** |
| | **Yes** | **976** | **17.9** | **50.4** | **3.7** |
| American Indian | No | 485 | 0.64 | 34.7 | 6.3 |
| | Yes | 31 | 0.10 | 41.7 | 10.0 |
| Asian | No | 793 | 3.3 | 54.8[G] | 2.5 |
| | Yes | 97 | 0.73 | 71.7 | 5.9 |
| Native Hawaiian | No | 770 | 0.13 | 47.0 | 3.2 |
| | Yes[§] | 0 | -- | -- | --- |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares No vs. Yes within each subgroup (i.e., Hispanics, non-Hispanic African Americans, non-Hispanic Whites, American Indian, Asian, Native Hawaiian, and National Estimate). § indicates the number of cases is not enough cases to conduct a significance test.

The multi-lingual postcard would seem to be most likely to increase participation among Asian or Hispanic households, among whom the speakers of the five languages would be concentrated. We do not see differences in either of these groups. We do see overall and among non-Hispanic African Americans and non-Hispanic Whites that not receiving a postcard is associated with higher mail return rates; again this is an indication that not receiving a postcard is associated with lower hard-to-count status, rather than a response to the (lack of) postcard per se.

**Table 3-5.** Return Pre-NRFU by Multi-lingual Post Card by Sample Type

| | Multi-lingual Postcard | Sample Size | | Census Form Returned Before 4/18/2010 | |
|---|---|---|---|---|---|
| **Sample Type** | **Condition** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** |
| Hispanic | No | 642 | 8.1 | 47.8 | 5.7 |
| | Yes | 181 | 3.6 | 42.4 | 5.6 |
| Non-Hispanic African American | No | 698 | 11.4 | 46.2[G] | 4.1 |
| | Yes | 22 | 0.8 | 30.8 | 4.8 |
| Non-Hispanic White | No | 605 | 71.7 | 68.4[G] | 4.9 |
| | Yes | 71 | 4.6 | 46.9 | 5.5 |
| **National Estimate** | **No** | **1,945** | 91.3 | **63.7[G]** | **3.9** |
| | **Yes** | **274** | 9.0 | **43.7** | **3.8** |
| American Indian | No | 500 | 0.7 | 37.2 | 3.2 |
| | Yes[§] | 16 | 0.0 | 88.9 | 1.3 |
| Asian | No | 452 | 1.9 | 61.2 | 4.3 |
| | Yes | 438 | 2.2 | 61.1 | 5.2 |
| Native Hawaiian | No | 643 | 0.1 | 52.6 | 3.4 |
| | Yes | 127 | 0.0 | 47.7 | 6.6 |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p < 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares No vs. Yes within each subgroup (i.e., Hispanics, non-Hispanic African Americans, non-Hispanic Whites, American Indian, Asian, Native Hawaiian, and National Estimate).

The blanket replacement form went to households in designated areas whether or not they had already returned a completed census form. For most sample types, those who did and did not receive a blanket replacement form have statistically indistinguishable mail return rates.

**Table 3-6.** Pre-NRFU by Blanket Replacement Mailing by Sample Type

| | Blanket Replacement Form | Sample Size | | Census Form Returned Before 4/18/2010 | |
|---|---|---|---|---|---|
| **Sample Type** | **Condition** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** |
| Hispanic | No | 620 | 10.1 | 44.6[g] | 4.6 |
| | Yes | 203 | 1.7 | 55.5 | 4.4 |
| Non-Hispanic African American | No | 312 | 6.9 | 49.2 | 4.7 |
| | Yes | 408 | 5.3 | 39.9 | 5.8 |
| Non-Hispanic White | No | 517 | 63.5 | 69.0[G] | 5.0 |
| | Yes | 159 | 12.8 | 57.6 | 5.5 |
| **National Estimate** | **No** | **1,449** | 80.4 | **64.2[G]** | **4.2** |
| | **Yes** | **770** | 19.7 | **52.7** | **3.9** |
| American Indian | No | 353 | 0.53 | 36.8 | 6.0 |
| | Yes | 163 | 0.20 | 46.7 | 3.6 |
| Asian | No | 739 | 3.6 | 59.1[G] | 3.5 |
| | Yes | 151 | 0.46 | 76.7 | 6.5 |
| Native Hawaiian | No | 433 | 0.08 | 54.6[G] | 3.5 |
| | Yes | 337 | 0.05 | 46.8 | 3.6 |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p < 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares No vs. Yes within each subgroup (i.e., Hispanics, non-Hispanic African Americans, non-Hispanic Whites, American Indian, Asian, Native Hawaiian, and National Estimate).

Relatively few of our sampled households were located in tracts designated for targeted replacement forms. Households receiving these forms would have failed to send in their forms by April 4, so the proportions showing in the 'yes' rows of Table 3-7 would be only those households that sent in forms between April 4 and April 18. We saw in Table 3-1 that there were relatively few households in that category.

**Table 3-7.** Pre-NRFU by Targeted Replacement Mailing by Sample Type

| | Targeted Replacement Form | Sample Size | | Census Form Returned Before 4/18/2010 | |
|---|---|---|---|---|---|
| **Sample Type** | **Condition** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** |
| Hispanic | No | 684 | 10.3 | 51.3[G] | 3.9 |
| | Yes | 139 | 1.4 | 9.0 | 5.0 |
| Non-Hispanic African American | No | 677 | 10.8 | 50.8[G] | 4.8 |
| | Yes | 43 | 1.4 | 0.8 | 0.9 |
| Non-Hispanic White | No | 654 | 74.5 | 68.6[G] | 4.9 |
| | Yes | 22 | 1.7 | 0.2 | 0.2 |
| **National Estimate** | **No** | **2,015** | 95.6 | **64.7[G]** | **3.8** |
| | **Yes** | **204** | 4.5 | **3.1** | **1.1** |
| American Indian | No | 469 | 0.58 | 48.7[G] | 3.0 |
| | Yes | 47 | 0.16 | 6.2 | 3.3 |
| Asian | No | 804 | 3.6 | 67.8[G] | 3.9 |
| | Yes | 86 | 0.42 | 3.9 | 1.7 |
| Native Hawaiian | No | 712 | 0.12 | 54.0[G] | 3.4 |
| | Yes | 58 | 0.01 | 2.0 | 1.5 |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p < 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares No vs. Yes within each subgroup (i.e., Hispanics, non-Hispanic African Americans, non-Hispanic Whites, American Indian, Asian, Native Hawaiian, and National Estimate).

As we discuss above, these tables frequently show the seemingly perverse result that those receiving interventions actually had lower mailback rates than those who did not. Of course, this is a selection effect, since the households that received interventions were expected to mail back at lower rates.

Based on Tables 3-4 through 3-7, we continue in the following chapters to present the Pre-NRFU outcome variable in simple tabulations. In multiple regression contexts, however, we sometimes include variables indicating households' inclusion in the four interventions as additional independent variables. Because these interventions show up so often in our estimates as having negative effects or very small effects, we do not believe that exclusion of the interventions from our models is likely to significantly compromise our estimates of the effects of the ICC on census participation.

## 3.3. Actual Behavior by Self-Reports

### Self-Reported Mail Return Versus Actual Census Participation Behavior

Throughout our report, we focus on actual census behavior, since we have available that 'gold standard' measure. Even so, we recognize that in many data sets, only self-reported behavior may be available, and that it can be useful to understand the correspondence between the two. Table 3-8 specifies the match rate between self-reported mail return and actual return as recorded by the Census Bureau. The accuracy of self-reports of returning and not returning the form are reasonable, with only one in four who reported returning not having done so by April 18, and one in 25 of those saying that had not returned doing so by the same date. The (small) groups saying they had not received the form or were unaware of its status had rates of actual mail return by April 18 of over 20 percent, suggesting that another household member may have taken care of the census form. Only Wave 3 data collection occurred after Census Day, so only Wave 3 data are used for this analysis.

**Table 3-8.** Actual Census Behavior by Self-Reported Behavior

| | Sample Size of Each Subgroup | | Census Form Returned Before 4/4/2010 | | Census Form Returned Before 4/18/2010 | |
|---|---|---|---|---|---|---|
| Self-Reported Behavior | # Unweighted | # Weighted (in Millions) | % Yes | % Yes | % Yes | % Yes |
| Returned form | 2221 | 90.6 | 64.2 | 3.1 | 72.0 | 3.0 |
| Form received, did not return | 238 | 6.1 | 3.9 | 2.0 | 4.4 | 2.4 |
| Did not receive form | 217 | 8.7 | 22.1 | 7.0 | 22.3 | 7.0 |
| DK/Refused/Missing | 104 | 3.7 | 11.8 | 4.0 | 24.4 | 10.8 |

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Note: No significance testing completed on this table.

In Table 3-9, we compare mail return rates for people who reported returning the form versus all other reports across sample types. The agreement between self-reported and actual behaviors is the highest for Asians: 70 percent of Asian respondents who reported having returned their census form actually did mail back the form before April 4th, and 73 percent returned them before April 18th. The agreement is the lowest for non-Hispanic African Americans. Less than half of the non-Hispanic African American respondents (48.3 percent) who reported having returned their census form did actually return their form before April 4th, and 53 percent returned their form before April 18th.

The differential mail return rates across sample types seem to extend also to different mail return rates conditional on reporting that the form was returned. That is, groups that are less likely to return their census form in general also have a weaker association between their self-reported mail return behavior and their actual mail return behavior. This suggests that self-reports of mail return, though perhaps of tolerable accuracy in the aggregate, will not be useful in distinguishing mail returners from non-returners across groups with different mail return propensities.

**Table 3-9.** Actual Behavior Versus Self-reported Behavior by Sample Type

| | | Census Form Returned Before 4/4/2010 | | Census Form Returned Before 4/18/2010 | |
|---|---|---|---|---|---|
| **Sample Type** | **Self-reported Behavior** | **% Yes** | **s.e.** | **% Yes** | **s.e.** |
| Hispanic | Returned form | 51.7[G] | 6.0 | 56.8[G] | 6.7 |
| | Other | 6.7 | 4.5 | 6.9 | 4.7 |
| Non-Hispanic African American | Returned form | 48.3[G] | 4.2 | 52.5[G] | 4.8 |
| | Other | 27.9 | 6.1 | 28.3 | 6.1 |
| Non-Hispanic White | Returned form | 67.4[G] | 4.3 | 76.2[G] | 3.8 |
| | Other | 12.2 | 6.1 | 12.5 | 6.2 |
| **National Estimate** | Returned form | 64.0[G] | 3.3 | 72.0[G] | 3.1 |
| | Other | 14.4 | 4.2 | 14.7 | 4.4 |
| American Indian | Returned form | 57.8[g] | 8.1 | 62.7[G] | 7.2 |
| | Other | 18.3 | 13.9 | 18.3 | 13.8 |
| Asian | Returned form | 70.2[G] | 4.0 | 73.5[G] | 3.2 |
| | Other | 18.4 | 11.6 | 18.9 | 11.6 |
| Native Hawaiian | Returned form | 55.5[G] | 3.8 | 60.2[G] | 4.3 |
| | Other | 18.4 | 2.4 | 21.8 | 2.2 |

2010 CICPE Final Report: Wave 3 sample only, weighted data, Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares Return form vs. Other within each subgroup (i.e., Hispanics, non-Hispanic African Americans, non-Hispanic Whites, American Indian, Asian, Native Hawaiian and National Estimate).

## Self-Reported Intent Versus Actual Census Participation Behavior

As previously discussed, respondents were asked their intent to participate in the census in both Wave 1 and Wave 2. Table 3-10 shows actual census participation rates for different self-reports of intent to participate for the entire Core sample combined. It appears that Wave 1 intent is more directly associated with mail return than is Wave 2 intent, and that early returns are more closely associated with intent reports than are Pre-NRFU returns. Those reporting 'definitely would' do seem very likely to return their

census forms, at least 60 percent do so, but all other intent categories vary in their predictive power depending on when they were collected and when mail return is measured.

**Table 3-10.** Actual Behavior Versus Intended Behavior for Core Sample Only

| | Census Form Returned Before 4/4/2010 (Wave 1 Intent) | | Census Form Returned Before 4/18/2010 (Wave 1 Intent) | | Census Form Returned Before 4/4/2010 (Wave 2 Intent) | | Census Form Returned Before 4/18/2010 (Wave 2 Intent) | |
|---|---|---|---|---|---|---|---|---|
| **Intend to Participate in the Census** | **% Yes** | **s.e.** | **% Yes** | **s.e.** | **% Yes** | **s.e.** | **% Yes** | **s.e.** |
| Definitely would | 66.6 | 5.8 | 70.8 | 5.3 | 63.8 | 5.6 | 67.3 | 5.4 |
| Probably would | 50.7 | 4.6 | 60.2 | 4.7 | 47.7 | 6.3 | 60.9 | 6.0 |
| Might or might not | 43.3 | 12.9 | 45.5 | 13.2 | 56.4 | 16.7 | 56.8 | 16.8 |
| Probably would not | 27.7 | 13.4 | 27.7 | 13.4 | 58.6 | 22.8 | $72.5^{t}$ | 22.6 |
| Definitely would not | 90.7 | 6.9 | 90.7 | 6.9 | 57.1 | 22.7 | 79.3 | 17.8 |
| ($\chi$2, DF) | (17.5, 4), $p$<.005 | | (17.3, 4), $p$<.005 | | (4.85,4), $p$>.10 | | (1.26, 4), $p$>.10 | |

2010 CICPE Final Report : Core sample only (Hispanic+non-Hispanic African American+Non Hispanic White Other), weighted data. Table displays the design-corrected chi-square test, degrees of freedom, and p-values.

Note: Comparisons across waves (time) were conducted for Census Form Returned Before 4/18/2010 only. The letter "T" (uppercase) indicates p< 0.05 while the letter "t" (lowercase) indicates p<0.10 (but p>0.05). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 3-11 distinguishes 'definitely would' from all other intent responses by sample type. Intent seems to be a weak predictor of mail return among Hispanic individuals, but among other sample types, 'definitely would' intent is associated with higher rates of actual mail return than with other intent categories (not necessarily with statistical significance). As we found with self-reported mail return, the actual return rate conditional on reported intent varies substantially across sample types and is closely related to a group's overall likelihood of census participation. Across subgroups with varying levels of propensity-to-cooperate, self-reported intent may not be a very useful data point.

**Table 3-11.** Actual Behavior Versus Intended Behavior by Sample Type

| | | Census Form Returned Before 4/4/2010 (Wave 1 Intent) | | Census Form Returned Before 4/18/2010 (Wave 1 Intent) | | Census Form Returned Before 4/4/2010 (Wave 2 Intent) | | Census Form Returned Before 4/18/2010 (Wave 2 Intent) | |
|---|---|---|---|---|---|---|---|---|---|
| **Sample Type** | **Intend to Participate in the Census** | **% Yes** | **s.e.** | **% Yes** | **s.e.** | **% Yes** | **s.e.** | **% Yes** | **s.e.** |
| Hispanic | Definitely would | 48.7 | 8.1 | 51.6 | 8.3 | 33.7 | 7.5 | 35.5 | 7.8 |
| | Other | 34.8 | 8.5 | 36.6 | 8.4 | 34.1 | 8.9 | 50.5 | 10.4 |
| Non-Hispanic African American | Definitely would | 53.9[G] | 8.2 | 57.5 | 8.2 | 54.7[G] | 8.4 | 57.5 | 8.3 |
| | Other | 35.6 | 7.0 | 46.0 | 9.2 | 19.9 | 6.8 | 41.9 | 8.9 |
| Non-Hispanic White | Definitely would | 69.5[G] | 6.9 | 73.8[G] | 6.1 | 69.4 | 6.6 | 73.2 | 6.4 |
| | Other | 48.8 | 6.9 | 55.2 | 6.0 | 58.5 | 7.3 | 65.6 | 6.7 |
| National Estimate | Definitely would | 66.6[G] | 5.8 | 70.7[G] | 5.3 | 63.8[G] | 5.5 | 67.3 | 5.4 |
| | Other | 44.9 | 4.9 | 51.2 | 4.8 | 50.0 | 5.2 | 60.3 | 5.4 |
| American Indian | Definitely would | 47.5 | 7.5 | 52.9 | 5.8 | 46.3[G] | 5.2 | 51.1[G] | 5.8 |
| | Other | 32.4 | 8.8 | 41.0 | 7.9 | 31.8 | 4.4 | 33.8 | 3.4 |
| Asian | Definitely would | 56.5 | 7.6 | 65.6 | 7.1 | 54.0 | 7.4 | 59.9 | 8.7 |
| | Other | 51.8 | 5.5 | 58.5 | 6.4 | 51.2 | 4.5 | 54.9 | 4.8 |
| Native Hawaiian | Definitely would | 51.8 | 10.6 | 53.2 | 10.6 | 53.4 | 6.3 | 55.4 | 6.1 |
| | Other | 42.2 | 4.1 | 45.0 | 5.2 | 40.7 | 6.5 | 44.0 | 6.8 |

2010 CICPE Final Report : Core sample only, weighted data.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares Return form vs. Other within each subgroup (i.e., Hispanics, non-Hispanic African Americans, non-Hispanic Whites, American Indian, Asian, Native Hawaiian and National Estimate).

## 3.4. Cooperation with Enumerators

A second objective of the 2010 ICC was to increase cooperation with enumerators. The third, NRFU phase of the 2010 ICC focused on this objective with the message that households that did not return a questionnaire by mail would receive an in-person visit from a census enumerator. We measure cooperation with enumerators in three ways. The first measure is a self-report of those who would feel 'very comfortable' opening the door to a census enumerator. This measure comes from the Wave 3 CICPE interview. We first informed respondents that households that do not return a census form may be

visited by an enumerator and then asked how comfortable they would feel opening the door to such an individual. This measure is valid for all households regardless of their mailback status. Table 3-12 shows Wave 3 interviews only for this survey item. We see that just over one-third of individuals across most sample types report that they would be very comfortable opening the door to an enumerator. Asian and Native Hawaiian households are less likely to report being 'very comfortable' than their comparison groups.

**Table 3-12.** Cooperation Measured in Survey Data by Sample Type

| | Sample Size of Each Subgroup | | Very Comfortable with Census Bureau Enumerator | |
|---|---|---|---|---|
| **Sample Type** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** |
| Hispanic | 539 | 12.4 | 34.1 | 4.5 |
| Non-Hispanic African American | 526 | 12.7 | 33.9 | 6.0 |
| Non-Hispanic White | 472 | 87.5 | 36.9 | 4.5 |
| **National Estimate** | **1,537** | 112.6 | **36.3** | **3.4** |
| American Indian | 529 | 0.9 | 38.1 | 5.0 |
| Asian | 548 | 4.2 | 24.1$^{G}$ | 4.0 |
| Native Hawaiian | 494 | 0.14 | 28.1$^{G}$ | 2.6 |

2010 CICPE Final Report.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; and Native Hawaiians vs. the National Estimate.

The above survey measure is defined for all survey respondents, but it is a hypothetical cooperation report, since no behavior is associated with it. Two additional measures of cooperation with enumerators come from the NRFU operational data, and therefore are linked to behavior. We designate as 'cooperative' those individuals whose households were eligible for NRFU follow-up and where the NRFU enumeration was completed with a household member. NRFU enumeration could also have been completed with a proxy (such as a neighbor). NRFU households with proxy enumerations are designated as not cooperative in this measure. A third case occurs when the NRFU enumeration is completed with individuals who have moved into the household since April 1, and so can only provide proxy response about the household's inhabitants on Census Day. In this situation, the NRFU enumeration informant would belong to the same household as the Wave 3 respondent (both of them taking place after April 1), so we consider these enumerations evidence of cooperation with enumerators. NRFU households with no completed enumeration are omitted from this tabulation.

These measures of a household's cooperation with enumerators (that they opened the door when an enumerator knocked) are defined only for NRFU households. Table 3-13 shows that American Indian households were significantly more likely to cooperate with enumerators according to this measure, but that cooperation rates among NRFU households were actually quite high (always over 70 percent cooperating, sometimes over 80 percent).

**Table 3-13.** Cooperation Measured Through Non-Proxy NRFU Enumeration by Sample Type

| | Sample Size of Each Subgroup | | Completed Enumeration (Not By Proxy) | |
|---|---|---|---|---|
| **Sample Type** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** |
| Hispanic | 222 | 4.3 | 77.2 | 5.7 |
| Non-Hispanic African American | 259 | 4.9 | 74.6 | 4.3 |
| Non-Hispanic White | 119 | 16.6 | 75.9 | 4.7 |
| **National Estimate** | **600** | **25.8** | **75.8** | **3.0** |
| American Indian | 189 | 0.3 | 87.6[g] | 3.8 |
| Asian | 196 | 1.0 | 82.6 | 1.8 |
| Native Hawaiian | 241 | 0.04 | 83.8 | 4.3 |

2010 CICPE Final Report.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p < 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; and Native Hawaiians vs. the National Estimate.

Table 3-14, across demographic groups, shows that the only statistically significant difference of the four characteristics is that homeowners cooperated with enumerators more often than those who did not own their home.

**Table 3-14.** Cooperation Measured Through Non-Proxy Enumeration by Demographic Characteristics

| | Sample Size of Each Subgroup | | Completed Enumeration (Not By Proxy) | |
|---|---|---|---|---|
| **Demographic Characteristics** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** |
| <45 years | 717 | 19.5 | 77.9 | 3.4 |
| 45 years or older | 497 | 7.6 | 71.7 | 3.9 |
| High school or less | 645 | 15.6 | 75.1 | 4.2 |
| Some college or more | 565 | 11.5 | 77.6 | 4.3 |
| Homeowners | 464 | 13.9 | 84.5[g] | 4.9 |
| Renters/Non-homeowners | 743 | 13.1 | 67.2 | 5.7 |
| English spoken at home | 977 | 24.1 | 75.9 | 3.3 |
| Non-English spoken at home | 237 | 2.6 | 75.6 | 6.8 |

2010 CICPE Final Report.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each pair of subgroups listed (< 45 years vs. 45 years or older, for example), with the annotation only shown for the top group.

Since the two cooperation measures discussed so far are quite different, it is useful to know their relationship to one another. In Table 3-15, we consider those Wave 3 households that are also eligible for NRFU enumeration. We see no significant difference in enumeration rates by how comfortable the individual reported being in the interview. The lack of differentiation suggests that these two measures of cooperation may not be measuring similar constructs.

**Table 3-15.** Cooperation Measured in Survey Data and Non-Proxy NRFU Enumeration

| | Sample Size of Each Subgroup | | Completed Enumeration (Not By Proxy) | |
|---|---|---|---|---|
| **Very Comfortable with Census Bureau Enumerator** | **# Unweighted** | **# Weighted (in Millions)** | **% Yes** | **s.e.** |
| Yes | 297 | 12.1 | 81.3 | 9.5 |
| Otherwise | 506 | 17.0 | 75.8 | 5.6 |

2010 CICPE Final Report.

A third measure of cooperation is again restricted to those households eligible for NRFU fielding. Here, we tabulate the number of contact attempts required by enumerators to finalize the enumeration. Households that evade or are reluctant to open the door to enumerators should require larger numbers of

contact attempts. Of course, other factors can also increase contact attempts; for example, enumerators could approach the household when no one is home, so that the attempt count increases, but the household has not exhibited any intentional lack of cooperation. Table 3-16 gives the average number of attempts required by sample type for NRFU enumeration (including by proxy respondents). Only American Indians are significantly different from the national estimate, taking 1.9 attempts on average instead of 2.4 for the country as a whole. Theirs was the only sample type that was significantly more cooperative in Table 3-14 as well.

**Table 3-16.** Cooperation Measured Through NRFU Attempts by Sample Type

| | Sample Size of Each Subgroup | | NRFU Visits/Attempts | |
|---|---|---|---|---|
| **Sample Type** | **# Unweighted** | **# Weighted (in Millions)** | **Mean** | **s.e.** |
| Hispanic | 247 | 4.5 | 2.5 | 0.2 |
| Non-Hispanic African American | 279 | 5.3 | 2.5 | 0.2 |
| Non-Hispanic White | 136 | 19.2 | 2.3 | 0.2 |
| **National Estimate** | **662** | **29.0** | **2.4** | **0.2** |
| American Indian | 208 | 0.33 | 1.9[G] | 0.2 |
| Asian | 219 | 1.1 | 2.1 | 0.2 |
| Native Hawaiian | 266 | 0.04 | 2.2 | 0.2 |

2010 CICPE Final Report.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; and Native Hawaiians vs. the National Estimate.

Because the NRFU data are the closest measure of cooperation with enumerators, we work with this measure in subsequent chapters, even though the survey data would have allowed substantially larger sample sizes. Since all of our other outcome measures are binary, we prefer the non-proxy enumeration measure to the number of visits required, which also has other sources of variation not necessarily related to household cooperativeness.

## 3.5. Reduction of Differential Undercount

A third objective of the 2010 ICC was reduction of differential undercount. The Census Bureau has been conducting a variety of data collections and analyses that will allow estimation of differential undercount at the local level in many areas as part of Census Coverage Measurement efforts. Those data and tabulations are not available at the time of this writing. Because they will enable superior analysis of the

extent to which the ICC affected differential undercount, we defer discussion of this third objective until those data are available and can be integrated into the analyses structured here. We note that the structure of the analyses that we conduct throughout this report -- estimating the effect of campaign exposure on key outcomes – will extend readily to outcomes measuring differential undercount for specific subgroups across geographic locations. Appendix A of this report discusses in detail an analytic approach for estimating the effect of the 2010 ICC on differential undercount.

# Chapter 4: Exposure to and Experience of the 2010 Integrated Communications Campaign (2010 ICC)

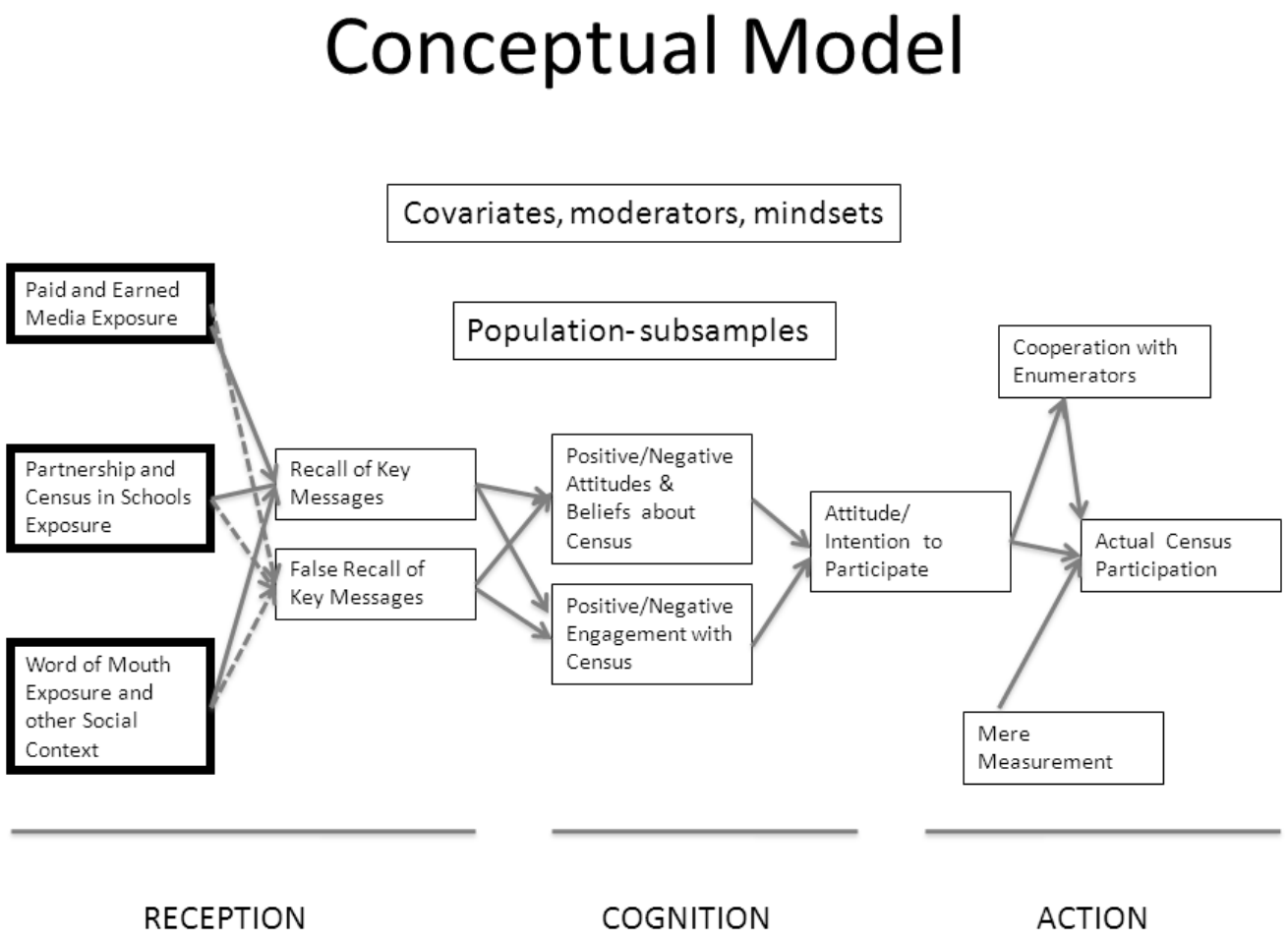
Understanding individuals' exposure to the ICC is essential to evaluating the impact of the campaign. As we describe in Section 1.2, the 2010 ICC had many different components -- including paid media, partnerships, Census in Schools, and earned media – as well as a platform of shared materials and messages to encourage integration across these components. In this chapter, we provide basic tabulations from self-reported exposure data collected in the 2010 CICPE questionnaires. The chapter paints a portrait of how the ICC was experienced by key subpopulations within the U.S., and also provides a basis for interpreting later chapters' analyses of the relationship between ICC exposure and other measures. As shown in Figure 4.1 on the following page, this chapter documents the initial 'exposure' column of the CICPE conceptual model.

The 2010 CICPE questionnaires asked about each component of the ICC, as well as the various elements of those components (not just about recall of paid media advertising, but specifically about ads on television, radio, etc.). Wave 1 interviews were conducted before the start of the paid media campaign and before the peak of partnership activities. From then to Wave 3 (in the final phase of the paid media and partnership efforts), we see steep increases in exposure across all subgroups and in all components of the ICC. In Wave 3 interviews, individuals reported that in the 90 days prior to the interview, they had been exposed to the campaign almost 15 times – about once per week. On average, eight of these 15 exposures were paid media advertisements.

Across the components, the largest fraction of individuals reported exposure to paid media, mostly on television. Partnership, earned media, then finally Census in Schools each had successively fewer self-reports of exposure. Within paid media, television was most often recalled, and magazines or the Internet were least often recalled. Within partnership, signs, posters and meeting exhibits were most often recalled, while meetings convened by local, state, or tribal governments were least often recalled. These patterns of most and least frequent recall were consistent across all six sample types.

As we describe in Section 1.2, the nature of the 2010 ICC was that only an insider might be able to determine whether a particular sign was an advertisement or a partnership posting, making it clear that component-specific reports are at best approximations. Our cognitive testing during questionnaire design, as well as comments made by respondents during interviews made clear that individuals do have some

Figure 4.1. CICPE Conceptual Model - Exposure



difficulty distinguishing between these components. We view the classification of ICC components by respondents as likely having a fair amount of error. At the same time, we see consistent patterns across individuals and over time, suggesting that there is a good bit of information that can still be retrieved from the component-specific reports. Chapter 7, which brings in supplemental data sources, provides additional insight into the accuracy of the component-specific self-reports.

Another caveat associated with these self-reports is that these are the exposures to the campaign that individuals are able to recall. It may be that many more exposures occurred, but that those exposures had low salience to individuals who are unable to recall them later. (There may be some offsetting where people double-count exposures that were particularly salient to them.) We can think of the self-reported exposure as recalled exposures, understanding that the 'true' number and type of exposures may be different.

In the remainder of the report, we focus on five summary measures of exposure to the campaign: whether or not an individual reported any exposure to each of the four components of the campaign, as well as the estimated frequency of total exposure to all parts of the campaign in the prior 30/90 days. We also include whether or not the individual reported any word of mouth activity about the Census, noting that this component falls within and outside of the ICC. As appropriate, individual analyses may rely on component-level exposure measures (for example, some of the detail on receptivity to paid media advertising), but most analyses will focus on the campaign in its entirety.

## 4.1 Self-Reported Exposure through Survey Items

### Paid Media Exposure

Individual self-reports of exposure were collected in all three waves of the CICPE survey. Survey respondents who reported hearing or seeing something recently about the 2010 Census were asked a series of questions measuring exposure to paid media. The Q17 series measured exposure to different subcomponents of the paid media, which allowed us to create binary exposure measures for the paid media in whole as well as binary exposure measures for the subcomponents of the paid media part of the campaign. Q18 provided the measures of frequency of exposure to paid media in whole.

Q17. Have you heard or seen advertisements about the census...

a. on television?
b. on the radio?
c. in magazines?
d. in newspapers?
e. on the Internet?
f. in other places such as coffee cups, billboards, or park benches?

Q18. Thinking about all of the advertisements you heard or saw in the **past 30 days** about the census, how many different times in the **past 30 days** would you say you saw or heard something about the census? [Note that in Wave 3 this question was adapted to ask about exposure in the last three months]

Table 4-1 displays the percentages of people who reported exposure to paid media overall. Respondents in all sample groups reported exposure to paid media in Wave 1, despite the fact that Wave 1 data collection took place before the Census Bureau launched its main advertising campaign. We see consistent increases in exposure to paid media activities in each wave and for each sample type. In Wave 3, between 71.5 percent and 82.1 percent of respondents reported exposure to paid media through at least one medium, a much narrower range than in Wave 1. In Waves 1 and 2, Native Hawaiians were the only sample type with significantly lower exposure levels than the rest of the population, but by Wave 3, their exposure levels were not distinguishable from those of other groups.

**Table 4-1.** Any Exposure to Paid Media by Sample Type and by Wave

| | Any Exposure to Paid Media | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 461 | 12.4 | 41.2 (8.8) | 369 | 12.4 | 69.8$^{T}$ (5.9) | 539 | 12.4 | 82.1$^{T}$ (3.4) |
| Non-Hispanic African American | 377 | 12.7 | 27.1 (5.5) | 384 | 12.7 | 67.2$^{T}$ (6.8) | 526 | 12.7 | 78.8$^{T}$ (4.9) |
| Non-Hispanic White[7] | 404 | 87.5 | 27.9 (4.5) | 358 | 87.5 | 70.8$^{T}$ (4.2) | 472 | 87.5 | 77.5$^{T}$ (4.7) |
| **National Estimate** | 1,242 | 112.6 | 29.2 (3.5) | 1,111 | 112.6 | 70.3$^{T}$ (3.6) | 1,537 | 112.6 | 78.2$^{T}$ (4.0) |
| American Indian | 457 | 0.9 | 24.4 (2.5) | 392 | 0.9 | 67.0$^{T}$ (2.2) | 529 | 0.9 | 72.9$^{T}$ (3.1) |
| Asian | 542 | 4.2 | 23.1 (3.2) | 410 | 4.2 | 68.5$^{T}$ (5.6) | 548 | 4.2 | 72.3$^{T}$ (5.4) |
| Native Hawaiian | 430 | 0.1 | 13.5$^{G}$ (3.0) | 350 | 0.1 | 53.8$^{GT}$ (4.9) | 494 | 0.1 | 71.5$^{T}$ (3.4) |
| Heavy-up – Treatment | 985 | 2.7 | 30.5 (2.7) | N/A | N/A | N/A | 999 | 2.7 | 76.1$^{T}$ (2.0) |
| Heavy-up – Control | 939 | 2.6 | 37.8 (3.6) | N/A | N/A | N/A | 1,047 | 2.6 | 76.7$^{T}$ (4.3) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 4-2 shows the number of exposures recalled within the prior 30 days for those who reported at least some paid media exposure. We see that the paid media exposure reported in Wave 1 actually amounts to just one advertisement viewed per person. This low frequency could be explained by public service announcements or other media outside of the ICC, or by census job announcements, which some respondents cited in this category. By Wave 3, respondents who recalled at least some paid media

[7] This category includes all non-Black, non-Hispanic individuals, including Asians, NHOPI and American Indians and Alaska Natives. For ease of interpretation, we label the category 'non-Hispanic White' reflecting the most numerous group within the category.

exposure reported seeing almost ten ads in the prior 90 days. Note that the Wave 2 and Wave 3 frequencies are not additive – much of the Wave 2 reference period of 30 days prior to the interview date is a subset of the wave reference period of 90 days prior to the interview date. All groups show significant increases in their frequency of paid media exposure from Wave 1 to Wave 2 and from Wave 1 to Wave 3. Between groups, we see that Hispanics have higher exposure frequency than the rest of the population in all three waves. Non-Hispanic Whites, in contrast, have lower exposure frequency than their reference group in all three waves. In the supplemental samples, Asians had lower exposure in Waves 1 and 3, while Native Hawaiians were lower in Wave 2. Note that the differences in reports of paid media exposure frequency are not significantly different between the Heavy-up treatment and control groups, although the experiment design might have predicted significant differences at Wave 3.

**Table 4-2.** Frequency of Paid Media Exposure in the Past 30/90 Days.

| | Frequency of Exposure in Past 30/90 Days | | |
|---|---|---|---|
| **Sample Type** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Hispanic | 1.9$^{G}$ (0.5) | 5.7$^{GT}$ (0.3) | 13.8$^{GT}$ (1.0) |
| Non-Hispanic African American | 0.9 (0.2) | 4.3$^{T}$ (0.8) | 9.5$^{T}$ (1.0) |
| Non-Hispanic White | 0.7$^{G}$ (0.1) | 3.6$^{GT}$ (0.5) | 9.3$^{GT}$ (0.8) |
| **National Estimate** | 0.8 (0.1) | 3.9$^{T}$ (0.4) | 9.8$^{T}$ (0.7) |
| American Indian | 0.8 (0.1) | 3.7$^{T}$ (0.5) | 7.8$^{T}$ (1.0) |
| Asian | 0.5$^{g}$ (0.1) | 3.5$^{T}$ (0.5) | 7.3$^{gT}$ (1.2) |
| Native Hawaiian | 0.3$^{G}$ (0.1) | 3.1$^{gT}$ (0.2) | 8.7$^{T}$ (0.7) |
| Heavy-up –Treatment | 0.8 (0.1) | N/A | 10.4$^{T}$ (1.0) |
| Heavy-up – Control | 1.2 (0.1) | N/A | 9.5$^{T}$ (0.8) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

We present tabulations of recalled paid media exposure for each separate medium in Appendix Tables C-1 through C-6. Those tables, taken together, describe the paid media elements recalled most often and least often by respondents with exposure to the overall paid media campaign. We do not report results of significance testing comparing each medium to the others, but we do see some apparent patterns. Television appears to be recalled most often. By Wave 3, more than 80 percent of respondents reporting paid media exposure recalled seeing something about the census on television. By contrast, magazines

were recalled fairly rarely among respondents who reported exposure to paid media. By Wave 3, the percentage of respondents who reported seeing something about the census in magazines ranges from 15.8 percent (Heavy-up treatment) to 37.7 percent (Hispanics). There were some differences in exposure patterns by sample type. Across all three waves, non-Hispanic African American respondents were very likely to be exposed to paid media through television (81.2 percent in Wave 1, 93.4 percent in Wave 2, and 90.1 percent in Wave 3) and not likely through magazines (14.5 percent in Wave 1, 20.2 percent in Wave 2, and 27.3 percent in Wave 3). By contrast, Asians were relatively more likely to be exposed to paid media through the Internet in Wave 1 (52.4 percent), but less likely through public places such as billboards or park benches (15.7 percent).

The Wave 3 questionnaire used various techniques to improve data quality on paid media recall. These included implementation of confirmed awareness items in which respondents demonstrated their exposure to an ad by providing confirmatory details of the ad, as well as audio or photographic cues for respondents to facilitate recall of a specific ad. Analyses are available elsewhere (Datta, A. R., et al. 2011), but it is worth noting that although only about one-third of individuals who reported having seen a given ad were able to confirm their awareness in follow-up questions, almost ninety percent of individuals who reported seeing one of three ads were able to confirm their awareness of at least one of those ads. Thus, the "confirmed" rates of paid media recall are quite close to the unconfirmed rates reported here.

### Partnership Activities Exposure

Measuring exposure to partnership activities presented more challenges than measuring exposure to paid media or earned media. In particular, the variety of partnership activities made it more difficult to cue respondent recall of these events than for paid media exposure, and the methodology of partnership evaluation is less developed in the scientific community than for media campaign evaluation. Through review of the literature on partnership programs, we found many evaluations of programs that attempt to affect the behaviors of groups, but those partnership efforts were quite distinct from the ICC partnership effort, which aimed to change the behavior of individuals. In the absence of other tools, we collected data about partnership exposure in parallel to our paid media exposure measures. The 2010 CICPE questionnaires included a section devoted to respondent exposure to Census Bureau partnership activities. Respondents who reported having heard of or seen something about the 2010 Census recently were asked about a number of venues where this may have occurred (Q20). Q20 allowed the creation of a binary exposure measure for the partnership activities in whole and for specific subcategories of partnership activities. Q21a provides a measure of overall exposure frequency to partnership activities.

Q20. Have you heard or seen anything about the census…

a. in a meeting of a religious group?
b. at an activity of a community organization?
c. at a meeting or gathering held by a tribal, state, or local government?
d. at a speech made by a local leader?
e. at a local event like a festival or fair?
f. on a sign, poster, or meeting exhibit?
g. in a paystub or utility bill insert?

Q21a. Thinking about all of the places in your community we've just talked about, how many different times during the **past 30 days** would you say you heard or saw something about the census from any of those sources? [Note that in Wave 3 this question was adapted to ask about exposure in the last three months]

As shown in Table 4-3, reported incidence of exposure to partnership activities appears generally to be lower than reported exposure to paid media. All Wave 2 and Wave 3 measures of any partnership exposure are higher than the corresponding Wave 1 scores. We see almost a quarter of Americans reporting some partnership exposure at Wave 2, and almost one-half doing so at Wave 3. Incidence of exposure to partnership activities begins quite evenly across groups at Wave 1, with only Asians having a statistically different (lower) rate of having had any partnership exposure. At Wave 2, some differentiation begins, with non-Hispanic Whites having lower incidence of partnership exposure than the rest of the population, and American Indians having greater incidence than the nation as a whole. At Wave 3, Asians and Native Hawaiians report lower rates of having any partnership exposure than the nation as a whole. We also see that the Heavy up treatment group is less likely to have reported any partnership exposure than is the Heavy-up control group, even though the Heavy-up experiment did not involve planned variation of partnership activities (only of paid media activities).

**Table 4-3.** Any Exposure to Partnership Activities by Sample Type, by Wave

| | Overall Exposure to Partnership Activities | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 461 | 12.4 | 10.5 (2.3) | 369 | 12.4 | 30.0$^{T}$ (5.8) | 539 | 12.4 | 47.6$^{T}$ (5.2) |
| Non-Hispanic African American | 377 | 12.7 | 17.1 (4.6) | 384 | 12.7 | 41.4$^{T}$ (6.0) | 526 | 12.7 | 58.3$^{T}$ (6.5) |
| Non-Hispanic White | 404 | 87.5 | 11.7 (2.8) | 358 | 87.5 | 22.6$^{GT}$ (4.4) | 472 | 87.5 | 48.6$^{T}$ (4.6) |
| **National Estimate** | 1,242 | 112.6 | 12.2 (2.4) | 1,111 | 112.6 | 25.5$^{T}$ (4.1) | 1,537 | 112.6 | 49.6$^{T}$ (3.7) |
| American Indian | 457 | 0.9 | 14.1 (2.2) | 392 | 0.9 | 37.6$^{GT}$ (2.4) | 529 | 0.9 | 43.1$^{T}$ (4.1) |
| Asian | 542 | 4.2 | 7.6$^{g}$ (1.5) | 410 | 4.2 | 27.4$^{T}$ (5.0) | 548 | 4.2 | 38.7$^{gT}$ (4.2) |
| Native Hawaiian | 430 | 0.1 | 8.3 (2.6) | 350 | 0.1 | 23.0$^{T}$ (5.8) | 494 | 0.1 | 43.0$^{gT}$ (3.9) |
| Heavy-up – Treatment | 985 | 2.7 | 14.2 (1.7) | N/A | N/A | N/A | 999 | 2.7 | 42.5$^{gT}$ (2.1) |
| Heavy-up – Control | 939 | 2.6 | 16.0 (2.1) | N/A | N/A | N/A | 1,047 | 2.6 | 49.5$^{T}$ (3.9) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

From among individuals in Table 4-3 who report at least some partnership exposure, Table 4-4 shows the number of exposures reported in the prior 30 days [90 days for Wave 3]. We see significant increases in frequency of exposures from an average 0.3 instances in the 30 days leading up to Wave 1, to one instance in the 30 days prior to Wave 2, and 3.8 instances in the 90 days prior to Wave 3. Although we restrict to individuals who report some partnership exposure, they may have recalled that exposure prior to the 30 [90] days asked about in Q21a, thus making it logically possible to have averages less than one. Between groups in Table 4-4, we see that American Indians had higher frequency of exposure than the national estimate in Waves 1 and 2. Non-Hispanic African Americans in Waves 2 and 3 and Hispanics in

Wave 3 also exceeded their reference groups in reported frequency of partnership exposure. Non-Hispanic Whites had lower frequencies of exposure in Waves 2 and 3 than their reference group.

**Table 4-4.** Frequency of Exposure to Overall Partnership Activities, by Sample Type, by Wave

| | Frequency of Exposure in Past 30/90 Days | | |
|---|---|---|---|
| **Sample Type** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Hispanic | 0.2 (0.0) | 1.5$^{T}$ (0.3) | 5.3$^{GT}$ (0.6) |
| Non-Hispanic African American | 0.4 (0.2) | 1.4$^{GT}$ (0.2) | 6.0$^{GT}$ (1.0) |
| Non-Hispanic White | 0.3 (0.1) | 0.8$^{GT}$ (0.2) | 3.3$^{GT}$ (0.5) |
| **National Estimate** | 0.3 (0.1) | 1.0$^{T}$ (0.2) | 3.8$^{T}$ (0.5) |
| American Indian | 0.4$^{G}$ (0.1) | 1.4$^{gT}$ (0.2) | 3.6$^{T}$ (0.7) |
| Asian | 0.1 (0.1) | 0.8$^{T}$ (0.1) | 3.3$^{T}$ (0.7) |
| Native Hawaiian | 0.2 (0.1) | 1.1$^{T}$ (0.5) | 3.4$^{T}$ (0.6) |
| Heavy-up – Treatment | 0.3 (0.1) | N/A | 3.8$^{T}$ (0.4) |
| Heavy-up – Control | 0.4 (0.1) | N/A | 4.1$^{T}$ (0.4) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Appendix Tables C-7 to C-13 present the percentages of respondents exposed to various specific subcomponents of partnership activities, excluding those who were not exposed to any partnership activities. This set of tables shows the element of partnership activities recalled most and least often by respondents with exposure to overall partnership activities. There are large variations by waves and sample type regarding which element(s) of partnership activities was recalled most and the least often. However, it seems that signs, posters, and meeting exhibits were recalled most often in the latter two waves for most sample groups. Meetings held by tribal, state, or local governments were recalled least often in Wave 3 for all sample groups except American Indians, who seemed to recall being exposed to partnership activities least often through religious groups.

The partnership component seems to lend itself most easily to having different types of partnerships reach different subpopulations. This is especially true for the local venues – whether local events, church- or community-based activities, or local/tribal government meetings – in which we see that some partnership subcomponents are really recalled by only one or two subgroups.

## Census in Schools Exposure

As part of the 2010 ICC, the Census Bureau created a Census in Schools Program called '2010 Census: It's About Us.' This program provided educators with materials to teach children in grades K-12 about the census in order to involve them in communicating the message about the importance of the census to their families. School principals in all 50 states, the District of Columbia, and U.S. territories were sent Census in Schools program kits at the beginning of the 2009-2010 school year. They were encouraged to hold a Census in Schools week celebration between January and March 2010 and to distribute family take-home pages to facilitate conversations about the census at home. These activities would have occurred during Wave 2 of data collection. Schools were also encouraged to stage 'Census Day' events, which would have been reported only in Wave 3.

In order to measure exposure to the Census in Schools program, respondents with children in the household attending kindergarten through 12th grade were asked if their child/children had told them anything about the census (Q22E) or presented them with printed materials about the census (Q22F) and, if so, with what frequency (Q22G).

> Q22D. Do you have children in your household who attend Kindergarten through 12th grade in public, private or tribal school?
>
> Q22E. Did the student(s) tell you anything about the 2010 Census?
>
> Q22F. Did the student(s) show you printed materials or information about the 2010 Census?
>
> Q22G. Thinking about all of the ways the students told you or showed you something about the census during the **past 30 days**, how many different times in the past 30 days would you say they told you or showed you something about the census? [Note that in Wave 3 this question was adapted to omit the time period altogether]

Compared to the other three categories–paid media, partnership, and earned media–reported exposure to Census in Schools activity was low across all sample types and all waves (again, these estimates are for all households, not restricted to those with school-age children), as shown in Table 4-5. There are significant increases for all sample types in having any Census in Schools exposure from Wave 1 to Wave 3, although only for a few sample types between Wave 1 and Wave 2. For across group comparisons in Wave 3, Hispanics and American Indians were more likely than their reference groups to report any Census in Schools exposure, while Non-Hispanic Whites were less likely to report any exposure to this ICC component. Since the Census in Schools exposure was intended primarily to be a single outreach, it is not surprising that frequencies of exposure are quite close to zero. Almost all sample types report increases in frequency from Wave 1 to Wave 3; the exception is Hispanics, who are the sample type with the greatest reported rate of any exposure to the component.

**Table 4-5.** Exposure to Census in Schools and Frequency of Exposure by Sample Type, by Wave

| | Exposed to Census in Schools at Least Once | | | Frequency of Exposure in Past 30 Days/Ever | | |
|---|---|---|---|---|---|---|
| **Sample Type** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Hispanic | 3.4$^{G}$ (2.4) | 10.5$^{GT}$ (2.5) | 19.9$^{GT}$ (4.7) | 0.12 (0.09) | 0.15 (0.04) | 0.88 (0.48) |
| Non-Hispanic African American | 0.7 (0.5) | 5.8 (3.6) | 12.2$^{T}$ (3.0) | 0.01 (0.00) | 0.02 (0.01) | 0.25$^{T}$ (0.08) |
| Non-Hispanic White | 0.5$^{g}$ (0.3) | 2.2$^{g}$ (1.8) | 5.5$^{GT}$ (2.1) | 0.01 (0.01) | 0.07 (0.05) | 0.11$^{T}$ (0.04) |
| **National Estimate** | 0.8 (0.4) | 3.5$^{t}$ (1.6) | 7.8$^{T}$ (1.9) | 0.02 (0.01) | 0.08 (0.04) | 0.21$^{T}$ (0.08) |
| American Indian | 2.2$^{G}$ (0.5) | 4.2$^{t}$ (1.6) | 13.9$^{GT}$ (2.4) | 0.04 (0.01) | 0.10 (0.05) | 0.38$^{T}$ (0.12) |
| Asian | 1.2 (0.7) | 1.1$^{G}$ (0.4) | 7.8$^{T}$ (1.7) | 0.01 (0.01) | 0.02 (0.01) | 0.23$^{T}$ (0.06) |
| Native Hawaiian | 0.9 (0.3) | 5.9$^{T}$ (1.2) | 9.2$^{T}$ (2.6) | 0.01 (0.00) | 0.10$^{T}$ (0.01) | 0.26$^{T}$ (0.06) |
| Heavy-up – Treatment | 0.9 (0.4) | N/A | 7.0$^{T}$ (0.9) | 0.01 (0.01) | N/A | 0.21$^{T}$ (0.05) |
| Heavy-up – Control | 1.4 (0.5) | N/A | 8.5$^{T}$ (1.1) | 0.03 (0.01) | N/A | 0.22$^{T}$ (0.03) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 4-6 takes into account the fraction of households with a student in kindergarten through 12$^{th}$ grade. Significance testing is not reported, but we see that the proportion of such households is quite similar across the three waves. Controlling for presence of a school-age child, we see apparent increases in the fraction of households reporting Census in Schools exposure from Wave 1 to Wave 3.

**Table 4-6.** Prevalence of Households with School-age Children and CIS Exposure among cases Outside of Heavy-up Experiment

| | **% of Households with a K-12 student** | **% of Households with a K-12 Student reporting CIS Exposure** | **% of All Households reporting CIS Exposure** |
|---|---|---|---|
| Wave 1 | 27.3 | 7.8 | 2.1 |
| Wave 2 | 29.8 | 14.7 | 4.4 |
| Wave 3 | 29.1 | 33.4 | 9.7 |

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## Earned Media Exposure

Respondents who reported hearing about or seeing the 2010 Census recently were asked about the medium through which they may have seen stories or features about the census (television, newspaper, the internet, etc.). Q24 permits the creation of binary exposure to the earned media in whole and to the specific subcomponents of the earned media exposure. Q25 provides the frequency measure to the overall earned media exposure.

Q24. Not including advertisements, have you heard or seen any stories or features about the census…

a. in a newspaper or magazine article?
b. on television or radio?
c. on the internet?

If yes to 24c, please answer the following…

On the internet, did you hear or see anything about the census on…

d. internet blogs?
e. social networking sites (e.g. Facebook, MySpace)?
f. regular web sites?

Q25. Thinking about all of the places you heard or saw stories or features about the census in the **past 30 days**, how many different times in the past 30 days would you say you heard or saw something about the census? [Note that in Wave 3 this question was adapted to ask about exposure in the last three months]

**Table 4-7.** Any Exposure to Earned Media by Sample Type, by Wave

| | Any Exposure to Earned Media | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 461 | 12.4 | 29.0 (4.3) | 369 | 12.4 | 51.1$^{T}$ (5.4) | 539 | 12.4 | 58.3$^{T}$ (7.3) |
| Non-Hispanic African American | 377 | 12.7 | 20.1 (5.4) | 384 | 12.7 | 48.6$^{T}$ (7.1) | 526 | 12.7 | 54.5$^{T}$ (6.9) |
| Non-Hispanic White | 404 | 87.5 | 23.7 (3.5) | 358 | 87.5 | 51.1$^{T}$ (5.0) | 472 | 87.5 | 54.0$^{T}$ (4.1) |
| **National Estimate** | 1,242 | 112.6 | 23.8 (3.0) | 1,111 | 112.6 | 50.8$^{T}$ (4.5) | 1,537 | 112.6 | 54.6$^{T}$ (4.1) |
| American Indian | 457 | 0.9 | 19.5 (2.2) | 392 | 0.9 | 57.0$^{T}$ (2.4) | 529 | 0.9 | 52.8$^{T}$ (4.1) |
| Asian | 542 | 4.2 | 19.7 (3.3) | 410 | 4.2 | 49.9$^{T}$ (5.4) | 548 | 4.2 | 46.6$^{T}$ (3.3) |
| Native Hawaiian | 430 | 0.1 | 12.0$^{G}$ (3.0) | 350 | 0.1 | 36.0$^{GT}$ (4.1) | 494 | 0.1 | 52.1$^{T}$ (7.5) |
| Heavy-up – Treatment | 985 | 2.7 | 26.3 (1.7) | N/A | N/A | N/A | 999 | 2.7 | 43.1$^{GT}$ (2.3) |
| Heavy-up – Control | 939 | 2.6 | 30.5 (3.7) | N/A | N/A | N/A | 1,047 | 2.6 | 56.9$^{T}$ (3.8) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 4-7 reports the incidence of any exposure to earned media as recalled by each sample type. The changes in incidence relative to Wave 1 are significant at Waves 2 and 3 for all sample types. At Waves 2 and 3, the national estimates indicate that approximately one-half of individuals recalled at least some earned media exposure. We see few differences between sample types except that Native Hawaiians recall less earned media exposure than the rest of the nation at Waves 1 and 2. The Heavy-up treatment group recalls less earned media exposure than the Heavy-up control group, although the Heavy-up experiment posited no difference in earned media exposure for these groups.

**Table 4-8.** Frequency of Exposure to Earned Media by Sample Type, by Wave

| | Frequency of Earned Media Exposure in Past 30/90 Days | | |
|---|---|---|---|
| **Sample Type** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Hispanic | 1.2 (0.4) | $2.4^{T}$ (0.4) | $7.4^{GT}$ (0.9) |
| Non-Hispanic African American | 0.5 (0.2) | $2.1^{T}$ (0.4) | $5.5^{T}$ (0.8) |
| Non-Hispanic White | 0.7 (0.1) | $2.0^{T}$ (0.2) | $4.9^{T}$ (0.6) |
| **National Estimate** | 0.7 (0.1) | $2.0^{T}$ (0.2) | $5.2^{T}$ (0.5) |
| American Indian | 0.5 (0.1) | $2.4^{T}$ (0.4) | $4.8^{T}$ (0.6) |
| Asian | $0.4^{g}$ (0.1) | $1.9^{T}$ (0.3) | $4.0^{T}$ (0.7) |
| Native Hawaiian | $0.3^{G}$ (0.1) | $1.1^{GT}$ (0.1) | $4.5^{T}$ (0.6) |
| Heavy-up – Treatment | 0.7 (0.1) | N/A | $4.4^{T}$ (0.7) |
| Heavy-up – Control | 0.9 (0.1) | N/A | $5.8^{T}$ (0.6) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Among those reporting at least some Earned Media exposure, we see significant increases in the number of exposures reported from a national average of 0.7 instances at Wave 1 to 2.0 at Wave 2, and from Wave 1 to 5.2 instances at Wave 3. These increases relative to Wave 1 are significant for all sample types. Between group differences are quite small. At Wave 1, Asians and Native Hawaiians are below the national average, but all other groups report equivalent numbers of exposures. At Wave 2, Native Hawaiians are still below the national average, with all other groups statistically indistinguishable. At Wave 3, it is the Hispanic sample type that differs from its reference groups by having a higher frequency of earned media exposure among those who reported any such exposure. We cannot know the source or cause of this difference, but note that the Hispanic media, especially cable networks and many community papers, were extremely active in supporting the ICC through a range of pro-census messaging, as we describe in our discussion of ICC partners in Section 1.3 above.

Appendix Tables C-14 to C-19 show the level of self-reported exposure to specific components of earned media by sample type and by wave. Similar to exposure to paid media subcomponents, television and radio were recalled very often in all three waves by all samples except Native Hawaiians in Wave 1. The Internet was less often recalled as a source of earned media exposure than newspapers and magazines or television and radio. Among the three different Internet elements (blogs, social networking sites, and

regular web sites) regular web sites were recalled most often in all three waves for all sample types. Significance testing was done to compare sample types and waves, but not between different subcomponents of earned media outreach.

## Total Frequency of Total Exposure to 2010 ICC

After being asked about paid media, partnership, Census in Schools, and earned media, respondents were asked about their aggregate estimated exposure to information about the census in the prior 30 days (Q26b). In Wave 3 the time period was expanded to three months. This item was asked of individuals who were aware of the census, and was not restricted by whether or not component-level exposure was reported. In that sense, the measure differs from the other frequency of exposure measures, which excluded individuals without any exposure to the relevant ICC component.

> 26b. Thinking about all the possible sources we have just talked about, including advertisements, places in your community, and other media, how many different times **during the past 30 days** would you say you saw or heard something about the census? [Note that in Wave 3 this question was adapted to ask about exposure in the last three months]

In Table 4-9, we see that respondents reported that they were exposed to the ICC one or fewer times in the month prior to Wave 1. This increased to under once per week in the month prior to Wave 2. In Wave 3, respondents reported exposure to the ICC generally from 1 to 1.5 times per week throughout the 90 day reference period for that interview. Increases relative to Wave 1 are significant for all sample types at Waves 2 and 3. Hispanic individuals reported total exposure to the ICC of almost 23 times over the 90 days, significantly higher than the rest of the country. At the other extreme, non-Hispanic Whites reported fewer than 14 exposures over 90 days, significantly less than the rest of the country. Hispanics and non-Hispanic Whites report significantly different frequencies from their reference groups at Wave 2 as well. Asians and American Indians also reported low exposure counts, but those counts do not emerge as statistically significant. We see also that individuals in the Heavy-up treatment areas reported a total frequency of exposure that is greater than that reported by individuals in Heavy-up control areas, although the difference is not statistically significant.

**Table 4-9.** Frequency of Exposure to 2010 ICC by Sample Type, by Wave

| | Frequency of Total Exposure to 2010 ICC Past 30/90-Days | | |
|---|---|---|---|
| **Sample Type** | **W1(s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Hispanic | 1.3 (0.4) | $4.5^{GT}$ (0.4) | $22.9^{GT}$ (3.0) |
| Non-Hispanic African American | 1.3 (0.4) | $4.2^{T}$ (1.0) | $14.7^{T}$ (2.2) |
| Non-Hispanic White | 0.9 (0.2) | $3.0^{GT}$ (0.2) | $13.6^{GT}$ (1.4) |
| **National Estimate** | 1.0 (0.1) | $3.3^{T}$ (0.3) | $14.8^{T}$ (1.6) |
| American Indian | 0.8 (0.1) | $3.7^{T}$ (0.5) | $13.6^{T}$ (2.1) |
| Asian | $0.4^{G}$ (0.1) | $3.5^{T}$ (0.5) | $11.1^{T}$ (1.6) |
| Native Hawaiian | $0.3^{G}$ (0.1) | $2.8^{T}$ (0.3) | $16.2^{T}$ (1.9) |
| Heavy-up – Treatment | 1.0 (0.1) | N/A | $17.9^{T}$ (1.6) |
| Heavy-up – Control | 1.4 (0.1) | N/A | $16.7^{T}$ (1.4) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

## 4.2 Correlations between Campaign Components

The correlation of reported exposure or reported frequency of exposure across campaign components speaks to our ability to use the 2010 CICPE survey data to distinguish contributions of each component separately. The higher the correlation, the less able we will be to detect a paid media effect separate from a partnership effect. We might expect such correlations, for example, since people who consume more media would be expected to be exposed to high levels of earned media as well as the paid media advertisements interspersed within that earned media coverage. Alternatively, high correlations may be evidence that respondents are unable to distinguish between their experiences of different campaign components. For example, if respondents consistently mistake television talk shows for paid advertisements, then we would expect to see a high correlation between earned media and paid media.

The tables below display simple correlations between reported exposure to different campaign components (Table 4-10), and between reported frequencies of exposure by campaign component (Table 4-11). Correlations are shown for all three waves. Since these are correlations in self-reported exposure, other patterns of correlations might obtain if non-survey administrative data about campaign components were used to calculate similar correlations.

**Table 4-10.** Correlations between Any Exposure to Campaign Components

| | Exposed to Partnership | | | Exposed to CIS | | | Exposed to Earned Media | | |
|---|---|---|---|---|---|---|---|---|---|
| | **W1** | **W2** | **W3** | **W1** | **W2** | **W3** | **W1** | **W2** | **W3** |
| Exposed to Paid Media | 0.49 | 0.33 | 0.48 | 0.12 | 0.12 | 0.15 | 0.68 | 0.55 | 0.56 |
| Exposed to Partnership | | | | 0.18 | 0.26 | 0.15 | 0.47 | 0.37 | 0.34 |
| Exposed to CIS | | | | | | | 0.14 | 0.13 | 0.14 |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Table 4-10 examines the correlations between respondents' reported exposure to different elements of the 2010 ICC. The exposure measures are those reported above in Tables 4-1, 4-3, 4-5 and 4-7. The table shows that in all waves exposure to the Census in Schools exhibits the least degree of correlation with other aspects of the campaign. Paid media and earned media are the most strongly correlated elements in all waves and show very similar patterns of correlation with the other information sources.

**Table 4-11.** Correlations between Frequency of Campaign Component Exposure

| | Partnership Frequency | | | CIS Frequency | | | Earned Media Frequency | | | Total Frequency | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **W1** | **W2** | **W3** | **W1** | **W2** | **W3** | **W1** | **W2** | **W3** | **W1** | **W2** | **W3** |
| Paid Media Frequency | 0.33 | 0.32 | 0.44 | 0.06 | 0.12 | 0.18 | 0.52 | 0.52 | 0.53 | 0.53 | 0.67 | 0.65 |
| Partnership Frequency | | | | 0.07 | 0.30 | 0.18 | 0.35 | 0.40 | 0.39 | 0.47 | 0.41 | 0.47 |
| CIS Frequency | | | | | | | 0.05 | 0.12 | 0.14 | 0.11 | 0.15 | 0.21 |
| Earned Media Frequency | | | | | | | | | | 0.87 | 0.72 | 0.66 |

2010 CICPE Final Report : weighted data; Heavy-up sample excluded. No significance testing completed.

Table 4 -11 displays the correlations between the frequencies with which respondents report they have been exposed to different elements of the campaign in the prior 30 days (or 3 months, as in Wave 3). Looking at the components of the campaign, we see that paid media and earned media again show the highest correlation for both waves. It makes sense that in Wave 1 earned media frequency would be highly correlated with total campaign frequency, since the other components of the campaign were not as active during that early period. Consistent with the component-level frequencies reported, paid media and earned media seem to be most strongly associated with total campaign exposures reported.

## 4.3 Word of Mouth

In planning the 2010 ICC, the Census Bureau saw Word of Mouth as another potential component of the campaign, providing a way to extend the reach of the campaign by working toward word of mouth propagation of pro-census messaging. This model seems to involve having a conversation once in a partnership setting, then propagating the acquired information through conversations with personal contacts. For example, an individual might speak with a union representative in the workplace as part of a partnership contact, then go home and discuss the conversation with family members. To this end, the 2010 CICPE questionnaire asked about participation in Word of Mouth. Respondents were asked how often they had had conversations about the 2010 Census with people they know, and who these people were if they reported conversations with any frequency.

21b. During the **past 30 days**, about how many different times would you say you had conversations about the Census with friends, family, or other people you know, for example at home, at work, or at the barbershop? [This was changed to "during the past 90 days" in Wave 3.]

22A_1. Who in your community have you spoken to or heard talk about the Census?

Table 4-12 shows the fractions of individuals by sample type who reported having had this kind of contact. The table shows significant increases in word of mouth exposure from a national estimate of 17.1 percent at Wave 1 to 29.1 percent at Wave 2 and 51.5 percent at Wave 3. Changes from Wave 1 are significant for all sample types at Wave 3, and for all but Hispanic and non-Hispanic African Americans at Wave 2. Significant differences between sample types are infrequent, occurring in Wave 1 when the three supplemental samples (American Indian, Asian, and Native Hawaiian) were all less likely than others to report word of mouth exposure, and at Wave 3, when Hispanics were more likely to have word of mouth exposure than their reference group.

**Table 4-12.** Exposure to Word of Mouth by Sample Type, by Wave

| | Exposure to Word of Mouth | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **#Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 460 | 12.4 | 24.3 (5.1) | 363 | 12.1 | 33.1 (6.8) | 535 | 12.2 | $61.9^{GT}$ (2.9) |
| Non-Hispanic African American | 377 | 12.7 | 17.9 (6.8) | 383 | 12.7 | 25.8 (4.2) | 522 | 12.6 | $50.5^{T}$ (4.9) |
| Non-Hispanic White | 396 | 84.6 | 16.3 (2.3) | 357 | 87.4 | $29.0^{T}$ (4.3) | 469 | 86.7 | $50.2^{T}$ (3.8) |
| **National Estimate** | 1,233 | 109.7 | 17.4 (2.0) | 1,103 | 112.2 | $29.1^{T}$ (3.3) | 1,526 | 111.6 | $51.5^{T}$ (3.3) |
| American Indian | 455 | 0.9 | $12.3^{G}$ (1.6) | 388 | 0.9 | $34.9^{T}$ (3.9) | 526 | 0.9 | $44.9^{T}$ (4.2) |
| Asian | 530 | 4.1 | $10.3^{G}$ (1.9) | 409 | 4.2 | $26.7^{T}$ (6.2) | 544 | 4.1 | $41.7^{T}$ (5.1) |
| Native Hawaiian | 429 | 0.1 | $8.8^{g}$ (3.2) | 349 | 0.1 | $31.7^{T}$ (5.8) | 492 | 0.1 | $64.5^{T}$ (9.2) |
| Heavy-up – Treatment | 980 | 2.7 | 16.1 (1.9) | N/A | N/A | N/A | 998 | 2.7 | $56.2^{T}$ (1.9) |
| Heavy-up – Control | 928 | 2.5 | 18.2 (2.1) | N/A | N/A | N/A | 1,046 | 2.6 | $55.6^{T}$ (3.7) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons

Table 4-13 shows the fraction of individuals who reported speaking to various types of individuals in their communities. Percentages sum to more than 100 because people may have reported speaking with multiple types of individuals. The incidence of individuals who report speaking with a partnership-type contact (e.g., a government official, a religious leader, a workplace contact), is quite low (36.8 percent for the national estimate), suggesting that partnership messaging might not be getting propagated through these conversations. Of course, the referenced conversations could be propagating other ICC exposure such as paid or earned media.

**Table 4-13.** Persons with Whom Word of Mouth Exposure Occurred

| Type of person spoken with or heard from | % talked to each category |
|---|---|
| Government official | 3.8 |
| Religious leader | 3.3 |
| Someone from my union or workplace | 19.1 |
| Someone from a community organization | 6.2 |
| A friend, relative, or neighbor | 80.5 |
| Census worker | 4.6 |
| Another person | 7.2 |

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In general, we are unable to find evidence that Word of Mouth activity extended the reach of the 2010 ICC. Rather, it appears that individuals reported conversations and perhaps even content that might have taken place even in the absence of the campaign. We retain Word of Mouth exposure in our analyses as requested by the Census Bureau, although we are uncertain how to interpret this component of the ICC.

## 4.4 Conclusion

From these many tables, we get a picture of the nature of exposure to the 2010 ICC. Self-reported exposure to the campaign generally increased from Wave 1, in the Fall of 2009, through Wave 3, concurrent with the NRFU phase. Paid media exposure was the most commonly reported type of exposure, and within that category, television exposure was most often reported. The other components of the campaign all touched significant fractions of the population (Census in Schools, by design, touched the least), and were often less concentrated in a single subcomponent. Partnership, in particular, seemed to offer a menu of subcomponents that resulted in different groups experiencing quite different packages of partnership exposure.

Given the extremely integrated nature of the campaign as discussed in Chapter 1, we recognize the limitations that respondents faced in attempting to accurately report the nature of their exposure to the campaign. It is even more difficult to link that exposure back to a specific campaign component. For example, individuals may be reporting that they saw an ad on television, but we can still not be sure whether that was part of the paid media campaign or perhaps an element of a local partnership effort.

We include word of mouth exposure as an indication of individuals' census-related environment, although we find mostly that word of mouth exposure happened with personal contacts rather than in partnership-mediated interactions.

In many components, we find that Hispanics report higher levels of exposure to the campaign than the rest of the population. Other differences between sample types are more variable across the components and waves. In the remainder of the report, we focus on five summary measures of exposure to the campaign: whether or not an individual reported any exposure to each of the four components of the campaign (paid media, partnership, Census in Schools, and earned media), as well as the estimated frequency of total exposure to all parts of the campaign in the prior 30/90 days. We also include whether or not the individual reported any word of mouth activity about the census, noting that this component falls within and outside of the ICC. As appropriate, individual analyses may rely on component-level exposure measures (for example, some of the detail on receptivity to paid media advertising), but most analyses will focus on the campaign in its entirety.

# Chapter 5: Knowledge and Attitudes about the Census

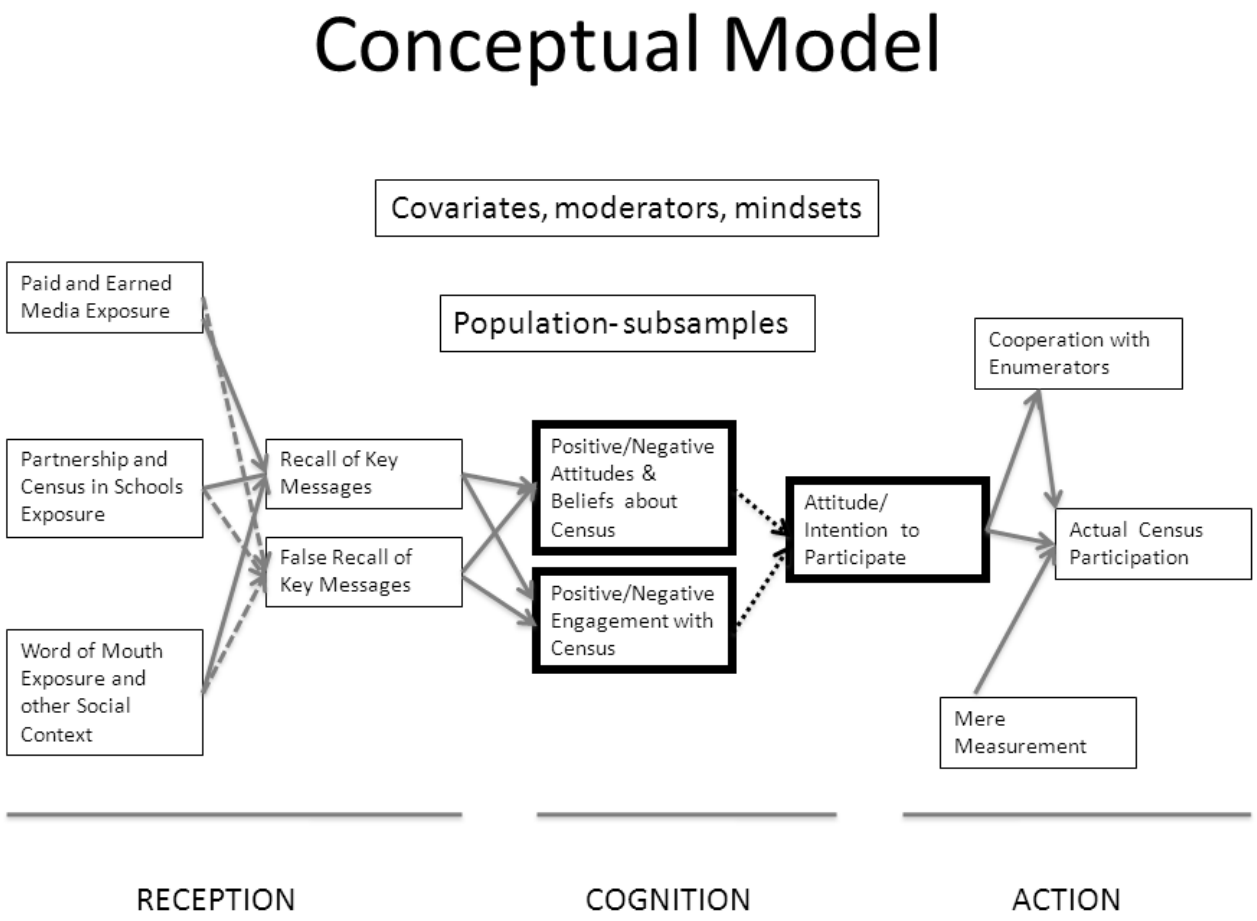
We are interested in knowledge and attitudes about the census for two primary reasons: 1) to understand the extent to which knowledge and attitudes about the census are related to intent to participate and/or actual census participation, and 2) to investigate the relationship between individuals' exposure to various 2010 ICC components and their (changes in) knowledge and attitudes about the census. In this chapter we describe the knowledge, attitudes, and beliefs data collected through all three waves and look at associations between ICC exposure and knowledge and attitudes. These items together flesh out the cognition portion of the CICPE conceptual model, as shown below in Figure 5.1.

Section 5.1 reports on overall changes in attitudes and knowledge from Wave 1 to Wave 3, including awareness of the census and intent to participate. We examine changes in recall of the census, intent to participate in the census, and knowledge, positive attitudes and negative attitudes toward the census. For all of these constructs, we see substantial improvements for most subgroups from Wave 1 to Wave 3, with many differences across subgroups being eliminated by Wave 3. Recall of the census is very high from Wave 1. Knowledge and positive attitudes are high but increase significantly from Wave 1 to Wave 3. Relative few individuals hold negative attitudes toward the census, but even these decrease from Wave 1 to Wave 3. For most of these measures, we see that some groups experience significant change from Wave 1 to Wave 2, while others do not experience significant improvements relative to Wave 1 until Wave 3.

In Section 5.2, we exploit the panel sample to look more closely at individuals' changes in knowledge and attitudes over the same period. We find some evidence that knowledge and attitudes converged over time, with considerable gains observed among those least knowledgeable about the census or having the least positive or most negative attitudes about the census at the start of the campaign.

In Section 5.3, we explore the association between campaign exposure and respondent attitudes and knowledge about the census. We attempt to predict knowledge scores, and counts of positive and negative attitudes using five binary indicators of exposure to campaign components, and a sixth continuous measure of total number of exposures to the ICC. We find that the relationship of exposure to knowledge varies widely across subgroups defined by age, home ownership status and sample type, with virtually every component serving as a significant predictor for at least one subgroup. Predicting positive

Figure 5.1. CICPE Conceptual Model – Knowledge, Attitudes, and Beliefs about the Census



attitudes using exposure measures generates somewhat more consistent results. Across age and home ownership categories, word of mouth and earned media exposure seem often to be associated with increased positive attitudes. Across sample types, any earned media exposure and frequency of total exposure are often associated with increased positive attitudes. Essentially none of our exposure measures predict count of negative attitudes.

Section 5.4 compares the 2010 CICPE data with data from its predecessor study, 2000 Census Paid Media and Partnership Evaluation (PMPE). We find relatively few differences in knowledge, attitudes, or exposure between the two census years. Where we do find differences in attitudes, 2010 attitudes are generally more favorable toward the census than in 2000. Despite this, Wave 1 intent was lower among Hispanics and non-Hispanic African Americans in 2010 than in 2000. We also find some differences in exposure to non-English campaign outreach between the two census years. The results seem consistent with more effective targeting of 'in-language' communications in 2010, so that Hispanics, who might speak Spanish, had approximately the same recall of non-English communications, while non-Hispanic African Americans and non-Hispanic Whites (who might be less likely to speak a non-English language) had lower recall of non-English communications in 2010 than in 2000. Because of substantial improvements in sample design for Asians and American Indians in 2010, we do not interpret differences between the two census years for these groups.

## 5.1 Overview of Data Items

There were a few types of knowledge and attitude items in the 2010 CICPE questionnaires. Knowledge items included aided and unaided awareness of the census, as well as specific knowledge items (both true and false) that respondents were asked to respond to. Attitude items included expressions of favorability toward the census, intent to participate, and a series of (positive and negative) statements about the census that respondents were asked to agree or disagree with. Items were selected from earlier questionnaires about census participation, including the 2000 PMPE instruments, the 2008 Census Barriers, Attitudes and Motivation Survey, and other Census Bureau research into census participation. Some items were selected because it was anticipated that they would be specifically addressed in ICC messaging, for example, the perceived length of the census form.

### Awareness

Since it was a primary objective of the 2010 ICC to increase the public's awareness of the census, this is a key construct measured by the 2010 CICPE. The CICPE questionnaires included three questions measuring respondent awareness of the census. Respondents were first asked whether they had heard of

the census (Q4C)—unaided recall. If they had not, respondents were then presented with an aided recall form of the question that included a brief description of the census (Q5). If respondents reported awareness of the census in either question, they were then asked to rate how familiar they were with the way census data impacts their community (Q13).

### Awareness Items

4C. Have you ever heard of the census?

5. The Census is the count of all the people who live in the United States. Have you ever heard of that before?

13. In general, how familiar are you with the way census data impacts you and your community. Would you say very familiar, somewhat familiar, not very familiar, or not familiar at all?

The tables below show the levels of respondent awareness of the census for all waves by sample type, audience segment, and demographic characteristics. The "Heard of census" item (Q4C) is described as unaided recall. The "Total heard of census" column indicates respondents who responded positively either to the unaided item (Q4C) asked of all sample members, or to the aided recall of the census (Q5). The familiarity item (Q13) was asked only of those who are counted in the "Total heard" measure. Individuals who had neither aided nor unaided recall of the census are generally excluded from all remaining questions about knowledge and attitudes discussed in this chapter.

## Table 5-1. Awareness of the Census by Sample Type and Wave

| | Heard of Census | | | Total Heard of Census | | | Very Familiar with Census | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sample Type** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** |
| Hispanic | 83.6$^{g}$ (4.7) | 91.7 (3.8) | 95.9$^{T}$ (2.2) | 87.3$^{G}$ (4.3) | 93.8$^{G}$ (3.4) | 99.2$^{T}$ (0.5) | 18.2 (3.6) | 26.3$^{GT}$ (5.5) | 29.7$^{t}$ (6.0) |
| Non-Hispanic African American | 77.1$^{G}$ (8.3) | 87.5$^{G}$ (4.8) | 94.6$^{T}$ (2.4) | 86.9 (6.9) | 92.6$^{G}$ (3.8) | 98.2 (1.4) | 17.0 (6.1) | 18.3 (4.3) | 27.5$^{t}$ (4.0) |
| Non-Hispanic White[8] | 92.8$^{G}$ (2.3) | 97.7$^{G}$ (0.9) | 96.6 (1.4) | 95.9$^{G}$ (1.9) | 98.8$^{G}$ (0.6) | 99.3$^{t}$ (0.6) | 12.6 (2.1) | 16.1$^{g}$ (2.5) | 25.3$^{T}$ (2.0) |
| **National Estimate** | 90.0 (2.0) | 95.9$^{T}$ (1.1) | 96.3$^{T}$ (1.3) | 93.9 (1.6) | 97.5$^{T}$ (0.7) | 99.2$^{T}$ (0.5) | 13.7 (1.7) | 17.4 (2.4) | 26.0$^{T}$ (1.7) |
| American Indian | 77.8$^{G}$ (2.5) | 90.1$^{gT}$ (4.4) | 98.2$^{T}$ (1.0) | 88.3$^{g}$ (3.1) | 97.1$^{T}$ (0.7) | 99.6$^{T}$ (0.2) | 10.1 (2.1) | 17.2 (4.3) | 25.6$^{T}$ (2.7) |
| Asian | 65.9$^{G}$ (3.0) | 84.9$^{GT}$ (3.7) | 90.8$^{T}$ (4.5) | 73.1$^{G}$ (3.9) | 89.0$^{GT}$ (3.5) | 91.4$^{GT}$ (4.2) | 8.2$^{g}$ (1.9) | 15.7 (2.2) | 19.0$^{GT}$ (2.2) |
| Native Hawaiian | 73.4$^{G}$ (4.8) | 87.9$^{GT}$ (3.7) | 91.9$^{T}$ (3.4) | 80.9$^{G}$ (6.6) | 94.8$^{gT}$ (1.8) | 97.8$^{T}$ (1.4) | 6.8$^{G}$ (1.0) | 11.9 (2.9) | 16.6$^{GT}$ (2.4) |
| Heavy-up – Treatment | 86.4$^{G}$ (1.0) | N/A | 98.4$^{GT}$ (0.5) | 92.2$^{G}$ (0.7) | N/A | 99.0$^{T}$ (0.4) | 13.7 (1.2) | N/A | 20.2$^{T}$ (2.2) |
| Heavy-up – Control | 88.6 (0.9) | N/A | 95.2$^{T}$ (1.9) | 94.0 (0.9) | N/A | 99.0$^{T}$ (0.4) | 14.9 (1.8) | N/A | 20.5$^{T}$ (0.9) |

2010 CICPE Final Report: weighted data; Heavy-up sample included.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p < 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

[8] This category includes all non-Black, non-Hispanic individuals, including Asians, NHOPI and American Indians and Alaska Natives. For ease of interpretation, we label the category 'non-Hispanic White' reflecting the most numerous group within the category.

Table 5-1 reports percentages of individuals with unaided recall ('Heard of Census'), unaided or aided recall 'Total heard of Census', and who are very familiar with the census by sample type at all three waves. Recall of the census is very high at all three waves, reaching 90 percent for the national estimate even at Wave 1. At Wave 1, non-Hispanic Whites have higher unaided recall of the census than the rest of the population, with all other groups having lower recall than their reference groups. By Wave 3, none of the racial/ethnically defined sample types is statistically different in unaided recall, as all but non-Hispanic Whites have had significant increases relative to their Wave 1 levels. We also see among those 'very familiar' with the census that all groups have significant increases from Wave 1 to Wave 3. For familiarity, Asians and Native Hawaiians remain lower than the rest of the population even at Wave 3.

As in Table 5-1, we see in Table 5-2 that almost all segmentation clusters moved from quite high unaided awareness of the census in Wave 1 to almost universal unaided awareness of the census in Waves 2 and 3. The Economically Disadvantaged I Homeowner cluster is the only one at Wave 3 that is lower than the population as a whole, with 85.4 percent of individuals having unaided recall of the census. Many clusters exhibit increases from Wave 1 to Wave 3 in the percentage who are 'very familiar' with the census, but the two that are significantly below their reference groups at Wave 3 (Economically Disadvantaged II Renter and Ethnic II Renter) did not increase significantly from Wave 1. This leaves them behind the rest of the population even though there were other clusters that were equally unfamiliar at Wave 1 (but had large gains to Wave 3).

## Table 5-2. Awareness of Census by Audience Segmentation Cluster and Wave

| | Heard of Census | | | Total Heard of Census | | | Very Familiar with Census | | |
|---|---|---|---|---|---|---|---|---|---|
| **Segmentation Cluster** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** |
| Advantaged Homeowner | 93.4$^{g}$ (1.8) | 95.9 (2.2) | 97.2$^{t}$ (1.6) | 96.8 (1.6) | 96.2 (2.1) | 99.8$^{GT}$ (0.1) | 11.8 (2.3) | 23.4$^{t}$ (6.2) | 28.1$^{T}$ (6.6) |
| Average I Homeowner | 92.5 (3.1) | 96.8 (1.6) | 95.6 (2.8) | 96.0 (2.3) | 99.3$^{G}$ (0.5) | 98.7 (0.8) | 10.9 (3.2) | 16.7 (3.1) | 21.7$^{T}$ (2.9) |
| Average II Renter | 94.6$^{G}$ (2.0) | 98.4$^{gt}$ (1.3) | 96.0 (1.8) | 98.1$^{G}$ (1.1) | 99.9$^{Gt}$ (0.1) | 97.3$^{g}$ (2.1) | 17.1$^{g}$ (3.3) | 16.4 (6.2) | 37.9$^{GT}$ (3.1) |
| Economically Disadvantaged I Homeowner | 84.9 (8.8) | 90.2$^{G}$ (3.5) | 85.4$^{G}$ (3.3) | 87.8 (7.7) | 94.4 (4.6) | 99.2 (0.7) | 25.6$^{g}$ (8.3) | 18.8 (4.7) | 21.3 (7.7) |
| Economically Disadvantaged II Renter | 62.2$^{G}$ (8.9) | 96.5$^{T}$ (2.9) | 99.4$^{GT}$ (0.6) | 83.0$^{G}$ (4.8) | 98.9$^{T}$ (0.9) | 100.0$^{T}$ (0.0) | 16.2 (10.8) | 9.8 (5.9) | 18.8$^{G}$ (3.0) |
| Ethnic I Homeowner | 73.1$^{G}$ (6.6) | 87.7$^{Gt}$ (6.1) | 97.8$^{T}$ (1.8) | 82.0$^{G}$ (7.6) | 90.0$^{G}$ (6.2) | 98.1$^{T}$ (1.7) | 16.1 (3.2) | 20.8 (5.6) | 37.6$^{GT}$ (7.0) |
| Ethnic II Renter | 78.1$^{G}$ (2.5) | 89.8$^{T}$ (4.4) | 99.2$^{GT}$ (0.5) | 82.2$^{G}$ (2.0) | 93.4$^{T}$ (4.1) | 99.2$^{T}$ (0.5) | 13.8 (1.9) | 21.0 (6.3) | 14.0$^{g}$ (6.1) |
| Mobile/Single | 93.8 (3.4) | 92.7 (5.1) | 99.7$^{Gt}$ (0.3) | 96.7 (1.7) | 93.4 (4.9) | 99.7$^{t}$ (0.3) | 10.4 (2.8) | 10.0 (5.5) | 19.8 (7.8) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category that contains the other seven segmentation clusters (Advantaged Homeowners vs. all seven of the other segmentation clusters, for example). For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Comparisons across wave were conducted for the "Heard of Census" and "Total Heard of Census" items but not the "Very Familiar with Census" item. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

## Table 5-3. Awareness of Census by Demographic Characteristics and Wave

| | Heard of Census | | | Total Heard of Census | | | Very Familiar with Census | | |
|---|---|---|---|---|---|---|---|---|---|
| **Demographic Characteristics** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** |
| <45 years | 85.7$^{g}$ (3.1) | 93.4$^{GT}$ (2.0) | 94.7$^{T}$ (2.3) | 91.0 (2.7) | 95.8$^{Gt}$ (1.2) | 98.3$^{gT}$ (1.0) | 10.5 (2.6) | 16.6 (2.8) | 27.4$^{T}$ (3.0) |
| 45 years or older | 92.8 (2.2) | 97.7$^{T}$ (0.7) | 97.7$^{T}$ (0.9) | 95.5 (1.8) | 98.8$^{t}$ (0.5) | 99.6$^{T}$ (0.2) | 17.0 (2.6) | 17.4 (2.8) | 23.5$^{T}$ (1.9) |
| High school or less | 84.9$^{G}$ (3.1) | 94.8$^{T}$ (1.1) | 92.6$^{GT}$ (2.4) | 90.0$^{G}$ (2.5) | 96.2$^{T}$ (1.1) | 97.9$^{GT}$ (1.1) | 8.0$^{G}$ (1.5) | 14.7$^{t}$ (3.7) | 20.3$^{GT}$ (2.8) |
| Some college or more | 93.1 (1.7) | 96.0 (1.6) | 99.4$^{T}$ (0.5) | 96.3 (1.5) | 98.2 (0.9) | 99.9$^{T}$ (0.0) | 18.5 (2.6) | 19.2 (2.8) | 30.4$^{T}$ (1.7) |
| Homeowners | 92.2$^{G}$ (2.3) | 97.3$^{GT}$ (0.9) | 97.5$^{gT}$ (1.2) | 95.7$^{G}$ (2.0) | 98.0$^{g}$ (0.8) | 99.5$^{Gt}$ (0.3) | 16.2$^{G}$ (2.9) | 16.3 (2.8) | 27.9$^{T}$ (2.9) |
| Renters/Non-homeowners | 82.3 (3.3) | 91.8$^{T}$ (2.7) | 93.3$^{T}$ (2.6) | 87.8 (2.7) | 95.6$^{T}$ (1.3) | 97.6$^{T}$ (1.4) | 7.9 (1.9) | 19.1$^{T}$ (4.6) | 22.2$^{T}$ (4.3) |
| English spoken at home | 90.3$^{G}$ (1.9) | 96.2$^{GT}$ (1.1) | 96.1$^{T}$ (1.3) | 94.2$^{G}$ (1.6) | 97.9$^{GT}$ (0.7) | 99.1$^{gT}$ (0.6) | 12.6$^{G}$ (1.6) | 17.0 (2.4) | 24.9$^{T}$ (1.6) |
| Non-English spoken at home | 73.3 (5.2) | 88.1$^{T}$ (3.1) | 95.4$^{T}$ (2.0) | 79.6 (4.6) | 90.4$^{T}$ (2.9) | 96.6$^{T}$ (1.7) | 26.4 (4.2) | 20.5 (5.5) | 37.0 (11.2) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each pair of subgroups listed (< 45 years vs. 45 years or older, for example), with the annotation only shown for the top group. For comparisons across waves (time), the letter "T" (uppercase) indicates p< 0.05 while the letter "t" (lowercase) indicates p<0.10 (but p>0.05). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Comparisons across wave were conducted for the "Heard of Census" and "Total Heard of Census" items but not the "Very Familiar with Census" item. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

All four pairs of demographic groups listed in Table 5-3 exhibit increases in aided and unaided recall from Wave 1 to Wave 3. Only individuals not speaking English at home fail to also exhibit increases in the percent 'very familiar' with the census.

## Intent to Participate

Because a critical goal of the 2010 ICC was to increase mailback of the census form, respondents were asked in the Wave 1 and Wave 2 questionnaires about their intent to participate in the 2010 Census (Q9). In Wave 3, which was conducted after census forms had been mailed out and after the deadline to avoid NRFU, this question was worded slightly differently and asked only of those respondents who reported not having received a census form. Results from Waves 1 and 2 are below.

### Intent

9. If the Census were held today, how likely would you be to participate? By participate, we mean fill out and mail in a Census form. Would you say you…definitely would, probably would, might or might not, probably would not, or definitely would not?

The tables below show the percentage of respondents by sample type, audience segment, and demographic characteristics who said they definitely would participate in the census.

**Table 5-4.** Intent to Participate in Census by Sample Type and Wave

| | Definitely Would Participate in the Census | |
|---|---|---|
| **Sample Type** | **W1 % (s.e.)** | **W2 % (s.e.)** |
| Hispanic | 38.5$^{g}$ (9.4) | 61.7$^{T}$ (7.1) |
| Non-Hispanic African American | 37.6 (7.3) | 55.0$^{T}$ (6.8) |
| Non-Hispanic White | 52.7$^{G}$ (4.1) | 63.7$^{T}$ (2.4) |
| **National Estimate** | 49.7 (4.1) | 62.6$^{T}$ (1.7) |
| American Indian | 40.4$^{g}$ (2.9) | 53.7$^{T}$ (5.6) |
| Asian | 33.8$^{G}$ (3.6) | 53.7$^{gT}$ (4.8) |
| Native Hawaiian | 36.8$^{G}$ (2.0) | 43.7$^{Gt}$ (3.3) |
| Heavy-up – Treatment | 55.6 (2.1) | N/A |
| Heavy-up – Control | 53.5 (1.5) | N/A |

2010 CICPE Final Report: weighted data; Heavy-up sample included.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 5-4 shows that in Wave 1, more than 30 percent from each sample type said that they definitely would participate in the census. Non-Hispanic Whites were more likely to intend to participate than the rest of the population. Non-Hispanic African Americans were indistinguishable from their reference group, but all other sample types were less likely to intend to participate than the rest of the country. Intent to participate in the census increased in Wave 2 relative to Wave 1 for all sample types. At Wave 2, many sample types had converged, so that only Asians and Native Hawaiians were less likely than the national average to intend to participate; all other groups were equivalent in their intent.

**Table 5-5.** Intent to Participate in Census by Audience Segmentation Cluster and Wave

| | Definitely Would Participate in the Census | |
|---|---|---|
| **Segmentation Cluster** | **W1 % (s.e.)** | **W2 % (s.e.)** |
| Advantaged Homeowner | 56.0$^{g}$ (3.7) | 69.0$^{T}$ (4.7) |
| Average I Homeowner | 40.4 (10.4) | 63.6$^{T}$ (2.6) |
| Average II Renter | 56.3 (5.0) | 67.8$^{t}$ (5.7) |
| Economically Disadvantaged I Homeowner | 42.9 (14.5) | 50.9 (8.7) |
| Economically Disadvantaged II Renter | 34.0$^{g}$ (6.5) | 39.5$^{G}$ (11.6) |
| Ethnic I Homeowner | 46.5 (3.4) | 58.6 (10.6) |
| Ethnic II Renter | 58.5 (12.4) | 57.3 (5.6) |
| Mobile/Single | 46.7 (5.7) | 60.0 (11.5) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category that contains the other seven segmentation clusters (Advantaged Homeowners vs. all seven of the other segmentation clusters, for example). For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

As can be seen in Table 5-5, three audience segmentation clusters reported increases in intent to participate in the census between Waves 1 and 2 (Advantaged Homeowner, Average I Homeowner, and Average II Renter). At Wave 2, Economically Disadvantaged II Renters had lower intent than the rest of the population, but all other groups were essentially equivalent in their proportions who 'definitely would' participate.

**Table 5-6.** Intent to Participate in Census by Demographic Characteristics and Wave

| | Definitely Would Participate in the Census | |
|---|---|---|
| **Demographic Characteristics** | **W1 % (s.e.)** | **W2 % (s.e.)** |
| <45 years | 43.4$^{G}$ (5.6) | 55.4$^{Gt}$ (4.4) |
| 45 years or older | 55.8 (3.5) | 69.9$^{T}$ (2.8) |
| High school or less | 40.3$^{G}$ (6.2) | 58.2$^{T}$ (3.3) |
| Some college or more | 56.9 (3.2) | 65.4$^{T}$ (2.7) |
| Homeowners | 54.8$^{G}$ (5.1) | 69.6$^{GT}$ (2.5) |
| Renters/Non-homeowners | 37.7 (4.8) | 49.0 (5.7) |
| English spoken at home | 49.3 (3.9) | 61.9$^{T}$ (1.7) |
| Non-English spoken at home | 48.2 (7.4) | 64.7 (8.0) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each pair of subgroups listed (< 45 years vs. 45 years or older, for example), with the annotation only shown for the top group. For comparisons across waves (time), the letter "T" (uppercase) indicates p< 0.05 while the letter "t" (lowercase) indicates p<0.10 (but p>0.05). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 5-6 shows the percentages of various demographic groups that said they 'definitely would' participate in the census at Waves 1 and 2. At Wave 1, individuals under 45 years old, those with at most a high school diploma, and those who did not own their home, all had lower intent to participate than those outside of each group. At Wave 2, home ownership status and age still generated statistically significant differences in intent, but having any college did not. Individuals who spoke English at home had a significant increase in intent from Wave 1 to Wave 2, but their intent was not greater at either wave than those who did not speak English at home.

## Knowledge about the Census

In order to evaluate whether the ICC improved knowledge of the census, the questionnaires for all waves included a series of items designed to measure respondents' understanding of the uses of the census. Respondents were first asked whether they were required by law to participate in the census (Q14). Then they were asked a series of items—some true, some false—about possible uses for census data (Q15).

**Knowledge (true or false)**

14. So far as you know, does the law require you to answer the Census questions?

15. People have different ideas about what the Census is used for. I am going to read some of them to you. As I read each one, please tell me by indicating yes or no whether you think that the Census is used for that purpose. Is the Census used…

a. to decide how much money communities will get from the goverrnment?
b. to decide how many representatives each state will have in Congress?
c. to count both citizens and non-citizens?
d. to determine property taxes?
e. to help the police and FBI keep track of people who break the law?
f. to help businesses and governments plan for the future?
g. to locate people living in the country illegally?

The following tables display an overall knowledge score which presents the number of correct responses to the entire set of eight items, paired with a measure that counts the number of "Don't know" responses to these items. Responses to individual knowledge items may be viewed elsewhere (Datta, A. R., et al. 2010).

**Table 5-7.** Count of Correct Knowledge Questions and 'Don't Know' Answers by Sample Type and Wave

| | Count of Correct Responses | | | Count of "Don't Know" Responses | | |
|---|---|---|---|---|---|---|
| **Sample Type** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Hispanic | 3.8$^{G}$ (0.2) | 4.5$^{t}$ (0.3) | 5.3$^{T}$ (0.2) | 1.2 (0.2) | 1.0 (0.2) | 0.7$^{GT}$ (0.1) |
| Non-Hispanic African American | 3.2$^{G}$ (0.4) | 3.9$^{G}$ (0.3) | 4.4$^{GT}$ (0.2) | 1.7$^{G}$ (0.3) | 1.5$^{g}$ (0.2) | 1.6$^{G}$ (0.2) |
| Non-Hispanic White | 4.6$^{G}$ (0.2) | 4.9$^{G}$ (0.2) | 5.4$^{GT}$ (0.1) | 1.1 (0.1) | 1.1 (0.1) | 1.0 (0.2) |
| **National Estimate** | 4.4 (0.2) | 4.7$^{T}$ (0.1) | 5.3$^{T}$ (0.1) | 1.2 (0.1) | 1.1 (0.1) | 1.0 (0.1) |
| American Indian | 3.6$^{G}$ (0.1) | 4.3$^{T}$ (0.2 ) | 4.7$^{GT}$ (0.3) | 1.3 (0.2) | 1.1 (0.1) | 1.1 (0.1) |
| Asian | 3.1$^{G}$ (0.2) | 4.2$^{GT}$ (0.2) | 4.5$^{GT}$ (0.3) | 1.0 (0.1) | 1.1 (0.2) | 1.0 (0.1) |
| Native Hawaiian | 3.2$^{G}$ (0.3) | 4.2$^{GT}$ (0.1) | 4.7$^{GT}$ (0.2) | 1.5$^{g}$ (0.1) | 1.3 (0.2) | 1.4$^{g}$ (0.1) |
| Heavy-up – Treatment | 4.4 (0.1) | N/A | 5.1$^{T}$ (0.1) | 0.9 (0.1) | N/A | 1.1 (0.1) |
| Heavy-up – Control | 4.4 (0.1) | N/A | 5.2$^{T}$ (0.1) | 1.0 (0.1) | N/A | 0.9 (0.1) |

2010 CICPE Final Report: weighted data; Heavy-up sample included.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 5-7 shows that all sample types experienced statistically significant increases in knowledge from Wave 1 to Wave 3, with the national estimate moving from 4.4 correct responses at Wave 1 to 5.3 in Wave 3. Several groups also had significant gains from Wave 1 to Wave 2, though not non-Hispanic African Americans or non-Hispanic Whites. In terms of 'Don't know' responses to knowledge items, only Hispanics experienced a decline in these numbers from 1.2 at Wave 1 to 0.7 at Wave 3.

At Wave 1, non-Hispanic Whites were most knowledgeable about the census, with all other groups significantly less knowledgeable than the rest of the population. Almost the same pattern held at Wave 3, except that Hispanics were statistically indistinguishable in their knowledge from the rest of the population. Hispanics and non-Hispanic African Americans were less likely than the rest of the population to say 'Don't know' to a knowledge item at Wave 3, while Native Hawaiians were more likely to say 'Don't know.'

In Table 5-8 we see statistically significant increases in knowledge over time for all groups by Wave 3, with only some groups showing Wave 1 to Wave 2 differences that are statistically significant. Although age is a strong differentiator of many measures in our analyses, we see no differences in Table 5-8 between those under 45 years and those 45 years or older. The other three demographic groupings, by whether (at most) high school vs. college attainment, home ownership status, and whether or not English is spoken at home, do show significant differences at all three waves. (English spoken at home is significant only for Waves 1 and 3.)

**Table 5-8.** Count of Correct Knowledge Questions by Demographic Characteristics and Wave

| | Count of Correct Responses | | |
|---|---|---|---|
| **Demographic Characteristics** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| <45 years | 4.1 (0.2) | $4.7^{T}$ (0.1) | $5.2^{T}$ (0.1) |
| 45 years or older | 4.6 (0.2) | 4.7 (0.2) | $5.3^{T}$ (0.1) |
| High school or less | $4.0^{G}$ (0.2) | $4.4^{G}$ (0.2) | $4.7^{GT}$ (0.1) |
| Some college or more | 4.6 (0.2) | $5.0^{t}$ (0.1) | $5.8^{T}$ (0.1) |
| Homeowners | $4.8^{G}$ (0.2) | $5.0^{G}$ (0.1) | $5.7^{GT}$ (0.1) |
| Renters/Non-homeowners | 3.4 (0.3) | $4.3^{T}$ (0.1) | $4.5^{T}$ (0.2) |
| English spoken at home | $4.4^{G}$ (0.2) | 4.7 (0.1) | $5.3^{GT}$ (0.1) |
| Non-English spoken at home | 3.4 (0.2) | $4.4^{T}$ (0.2) | $4.6^{T}$ (0.1) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each pair of subgroups listed (< 45 years vs. 45 years or older, for example), with the annotation only shown for the top group. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

## Attitudes Toward the Census

To evaluate attitudes toward the census and how they might have changed over time, the questionnaires included questions designed to measure respondents' feelings and opinions about the census. First, we asked respondents in Q12 to report on their general feelings about the census. Later, Q16 focused on specific opinions or beliefs about the census. Respondents were presented with a list of ten beliefs about the census and asked to rate their level of agreement with each statement. In some of our analyses below, we distinguish between negative and positive attitudes, and have designated the items accordingly.

### Attitudes and Beliefs

12. Overall, how would you describe your general feelings about the Census? Do you feel...highly favorable, moderately favorable, neutral, not too favorable rather unfavorable?

16. Next, I'm going to read some opinions about the Census. As I read each one, tell me if you strongly agree, agree, disagree, or strongly disagree with each of the statements:

16A. Filling out the Census will let the government know what my community needs.

16B. (negative) The Census is an invasion of privacy.

16C. The Census Bureau's promise of confidentiality can be trusted.

16D. (negative) I am concerned that the information I provide will be misused.

16E. Taking part in the Census shows I am proud of who I am.

16F. (negative) My answers to the Census could be used against me.

16G. Answering and sending back the Census matters for my family and community.

16H. (negative) The government already has my personal information, like my tax returns, so I don't need to fill out a Census form.

16I. (negative) I just don't see that it matters much if I personally fill out the Census form or not.

16J. (negative) It takes too long to fill out the Census information, I don't have time.

In Tables 5-9 to 5-11 below we display respondent attitudes toward the census for each wave by sample group, audience segmentation cluster, and demographic characteristics. To better illustrate attitudes, the 'Strongly agree' and 'Agree' categories are combined into a single category, 'Agree'. For comparison purposes, we present two summary measures (represented as counts of strongly agree/agree responses) for each sample group; that is, the average number of agree responses to the positive attitudes and beliefs about the census in Q16 and the average number of agree responses to the negative attitudes and beliefs about the census.

**Table 5-9.** Positive and Negative Attitudes toward the Census by Sample Type and Wave

| | Count of Agree Responses to Positive Attitudes | | | Count of Agree Responses to Negative Attitudes | | |
|---|---|---|---|---|---|---|
| **Sample Type** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Hispanic | 3.4 (0.3) | 3.9 (0.2) | $4.4^{GT}$ (0.0) | 1.1 (0.2) | $1.1^{G}$ (0.2) | $0.8^{t}$ (0.1) |
| Non-Hispanic African American | 3.0 (0.3) | 3.5 (0.3) | $3.8^{T}$ (0.1) | 1.1 (0.2) | 0.8 (0.2) | $0.9^{G}$ (0.1) |
| Non-Hispanic White | 3.4 (0.1) | $4.0^{T}$ (0.1) | $4.0^{T}$ (0.1) | 0.9 (0.1) | $0.6^{GT}$ (0.1) | $0.5^{GT}$ (0.1) |
| **National Estimate** | 3.4 (0.1) | $3.9^{T}$ (0.1) | $4.0^{T}$ (0.1) | 1.0 (0.1) | $0.7^{T}$ (0.1) | $0.6^{T}$ (0.1) |
| American Indian | 3.1 (0.1) | $3.8^{T}$ (0.2) | $3.9^{T}$ (0.3) | 0.9 (0.1) | 0.8 (0.1) | $0.8^{g}$ (0.1) |
| Asian | $2.5^{G}$ (0.2) | $3.5^{gT}$ (0.2) | $3.5^{gT}$ (0.2) | 1.1 (0.1) | $1.1^{g}$ (0.2) | $0.8^{T}$ (0.1) |
| Native Hawaiian | 2.9 (0.3) | $3.9^{T}$ (0.1) | $3.8^{T}$ (0.2) | 0.9 (0.1) | $1.0^{G}$ (0.1) | 0.9 (0.2) |
| Heavy-up – Treatment | 3.4 (0.1) | N/A | $3.9^{T}$ (0.1) | $1.0^{G}$ (0.0) | N/A | $0.7^{GT}$ (0.1) |
| Heavy-up – Control | 3.5 (0.1) | N/A | $3.9^{T}$ (0.1) | 0.8 (0.0) | N/A | 0.8 (0.0) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 5-9 displays the average number of positive and negative attitude responses for each sample type for each wave. The count is out of a maximum five positive attitudes and six negative attitudes. People held more positive attitudes than negative ones, even though they were offered more opportunities to agree with negative statements. All sample types increased their positive attitudes toward the census from Wave 1 to Wave 3. All sample types other than Hispanics and non-Hispanic African Americans increased their positive attitudes from Wave 1 to Wave 2 as well. A few groups decreased their negative attitudes (became more favorable) from Wave 1 to Wave 3: Hispanics, non-Hispanic Whites, and Asians. Between groups, Hispanics held more positive attitudes and Asians fewer positive attitudes than their reference populations at Wave 3. Non-Hispanic African Americans and American Indians held more negative attitudes and non-Hispanic Whites fewer negative attitudes than their reference populations at Wave 3.

**Table 5-10.** Positive and Negative Attitudes toward the Census by Audience Segmentation Cluster and Wave

| | Count of Agree Responses to Positive Attitudes | | | Count of Agree Responses to Negative Attitudes | | |
|---|---|---|---|---|---|---|
| **Segmentation Cluster** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| Advantaged Homeowner | 3.4 (0.2) | 3.7 (0.2) | $4.0^{t}$ (0.2) | 0.9 (0.2) | 0.7 (0.2) | $0.5^{T}$ (0.1) |
| Average I Homeowner | 3.5 (0.2) | $4.2^{GT}$ (0.1) | $3.9^{T}$ (0.2) | 1.0 (0.2) | 0.7 (0.2) | 0.7 (0.2) |
| Average II Renter | 3.3 (0.2) | $4.0^{T}$ (0.1) | $3.9^{T}$ (0.2) | 1.0 (0.2) | $0.5^{T}$ (0.1) | 0.5 (0.1) |
| Economically Disadvantaged I Homeowner | 3.3 (0.4) | $3.4^{G}$ (0.2) | 4.0 (0.1) | 1.1 (0.3) | $0.4^{T}$ (0.2) | $0.7^{T}$ (0.1) |
| Economically Disadvantaged II Renter | 2.8 (0.3) | $3.8^{t}$ (0.1) | $3.8^{T}$ (0.1) | 0.9 (0.1) | 0.4 (0.2) | $1.2^{G}$ (0.3) |
| Ethnic I Homeowner | 3.4 (0.3) | 3.8 (0.4) | $4.4^{GT}$ (0.1) | 0.8 (0.1) | $1.0^{g}$ (0.2) | 0.5 (0.1) |
| Ethnic II Renter | $2.9^{g}$ (0.2) | $3.3^{GT}$ (0.2) | $4.2^{gT}$ (0.1) | 1.1 (0.2) | $1.0^{G}$ (0.1) | 0.6 (0.1) |
| Mobile/Single | 3.6 (0.2) | 4.0 (0.3) | $4.3^{T}$ (0.3) | 1.1 (0.2) | $0.7^{t}$ (0.2) | $0.3^{gT}$ (0.1) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each pair of subgroups listed (< 45 years vs. 45 years or older, for example), with the annotation only shown for the top group. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 5-10 shows positive and negative attitudes for each of the audience segmentation clusters. Except Economically Disadvantaged II Renters, all other clusters experienced significant increase in positive attitudes from Wave 1 to Wave 3. Two clusters at Wave 3 had greater positive attitudes than the rest; those were the Ethnic I Homeowner and Ethnic II Renter clusters. Negative attitudes declined significantly for Advantaged Homeowners, Economically Disadvantaged I Homeowners, and Mobile/Single. The last group reduced negative attitudes enough to have significantly fewer than the rest of the population. The only other cluster that was different from its reference group was Economically Disadvantaged II Renter, which was worse than the rest of the population at 1.2 negative attitudes held on average.

**Table 5-11.** Positive and Negative Attitudes toward the Census by Demographic Characteristics and Wave

| | Count of Agree Responses to Positive Attitudes | | | Count of Agree Responses to Negative Attitudes | | |
|---|---|---|---|---|---|---|
| **Demographic Characteristics** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** | **W1 (s.e.)** | **W2 (s.e.)** | **W3 (s.e.)** |
| <45 years | 3.2 (0.2) | $3.8^{T}$ (0.1) | $4.0^{T}$ (0.1) | 0.9 (0.1) | $0.6^{T}$ (0.1) | $0.5^{GT}$ (0.1) |
| 45 years or older | 3.4 (0.1) | $4.0^{T}$ (0.1) | $3.9^{T}$ (0.1) | 1.1 (0.1) | 0.8 (0.2) | $0.8^{T}$ (0.1) |
| High school or less | $3.2^{g}$ (0.1) | $3.9^{T}$ (0.1) | $3.9^{T}$ (0.1) | $1.1^{G}$ (0.1) | $0.8^{T}$ (0.1) | $0.7^{gT}$ (0.1) |
| Some college or more | 3.5 (0.1) | $3.9^{T}$ (0.1) | $4.0^{T}$ (0.1) | 0.8 (0.1) | 0.6 (0.1) | $0.5^{T}$ (0.1) |
| Homeowners | $3.6^{G}$ (0.1) | $4.0^{gT}$ (0.1) | $4.0^{T}$ (0.1) | 0.9 (0.1) | $0.7^{T}$ (0.1) | $0.6^{T}$ (0.1) |
| Renters/Non-homeowners | 2.9 (0.2) | $3.7^{T}$ (0.2) | $3.9^{T}$ (0.1) | 1.0 (0.1) | 0.8 (0.1) | 0.7 (0.1) |
| English spoken at home | 3.4 (0.1) | $3.9^{T}$ (0.1) | $4.0^{T}$ (0.1) | 0.9 (0.1) | $0.7^{gT}$ (0.1) | $0.6^{gT}$ (0.1) |
| Non-English spoken at home | 3.0 (0.2) | $3.8^{T}$ (0.2) | $4.1^{T}$ (0.2) | 1.2 (0.3) | 1.2 (0.3) | 0.9 (0.1) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each pair of subgroups listed (< 45 years vs. 45 years or older, for example), with the annotation only shown for the top group. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

At Wave 3, all four pairs of demographic groups discussed in Table 5-11 had statistically equivalent counts of positive attitudes, and all of the groups had increased their positive attitudes relative to Wave 1. Two groups had no change from Wave 1 in their number of negative attitudes held (Non-homeowners and those who did not speak English at home), but the other six groups had reductions in negative attitudes held relative to Wave 1. In general, those 45 years and older were more favorable to the census, but they held more negative attitudes at Wave 3 than did those younger than 45 years. Individuals with no more than a high school diploma and individuals not speaking English at home had more negative attitudes toward the census than did their counterparts.

Between Wave 1 and Wave 3 attitudes toward the census improved among all audience segments and the selected demographic groups, with some gains larger than others. There are timing differences, with some groups gaining early and others later.

## 5.2 Within-Person Changes in Knowledge and Attitudes

While the tables in Section 5.1 give us an overall picture of changes in knowledge and attitudes, the 2010 CICPE panel allows us to hone further, examining change at the individual level. This section uses data from the individuals who completed all three waves of interviews. We saw in Section 5.1 that there were

very dramatic increases in knowledge from Wave 1 to Wave 3. These differences could come with different distributions: for example, everyone could experience the same improvement in knowledge, or the knowledgeable could become even more knowledgeable. In this section we use the panel data to examine knowledge and attitude change in slightly more detail.

Table 5-12 looks at the Wave 1 to Wave 3 progression of knowledge scores across three pairs of groups. One pair is defined based on their knowledge at Wave 1: those who had no correct knowledge versus those who had at least some correct knowledge. The former group represents the approximately 15 percent least knowledgeable individuals in the Wave 1 panel sample. The second pair is defined by their positive attitudes at Wave 1: those who held no positive attitudes versus those who had at least one positive attitude toward the census. Finally, we distinguish those who held no negative attitudes versus those who had at least one negative attitude.

Reading the bottom row of Table 5-12, we see that among those who had at least one negative attitude in Wave 1, their mean knowledge score was 4.5 in Wave 1, 4.8 in Wave 2 and 5.5 in Wave 3, indicating relatively high levels of knowledge throughout, with a modest increase from Wave 2 to Wave 3. In the top row, we see that the individuals who were least knowledgeable in Wave 1 went from 0 correct responses in the first wave to 4.5 correct responses in the last wave. Although still lower than the other groups in Wave 3, this demonstrates substantial catch-up by the least knowledgeable over the course of the campaign and contradicts the hypothesis that only the knowledgeable increased their knowledge over time.

**Table 5-12.** Knowledge Scores Over Time By Initial Knowledge/Positive Attitudes/Negative Attitudes Level

| | Sample sizes | | Wave 1 | | Wave 2 | | W3 | |
|---|---|---|---|---|---|---|---|---|
| **Knowledge Scores** | **Unweighted n** | **Weighted (in millions)** | **Mean** | **s.e** | **Mean** | **s.e** | **Mean** | **s.e.** |
| No Correct Knowledge at Wave 1 | 176 | 13.8 | 0.0 | 0.0 | 3.3 | 0.4 | 4.5 | 0.3 |
| Some Correct Knowledge at Wave 1 | 1,153 | 104.0 | 5.0 | 0.1 | 5.0 | 0.2 | 5.6 | 0.2 |
| No Positive Attitudes at Wave 1 | 190 | 14.6 | 1.0 | 0.4 | 3.6 | 0.5 | 4.8 | 0.4 |
| Some Positive Attitudes at Wave 1 | 1,139 | 103.2 | 4.9 | 0.2 | 5.0 | 0.2 | 5.6 | 0.2 |
| No Negative Attitudes at Wave 1 | 755 | 73.0 | 4.4 | 0.3 | 4.8 | 0.3 | 5.5 | 0.2 |
| Some Negative Attitudes at Wave 1 | 574 | 44.8 | 4.5 | 0.3 | 4.8 | 0.2 | 5.5 | 0.2 |

2010 CICPE Final Report. No significance testing reported.

**Table 5-13.** Count of Positive Attitudes Over Time By Initial Knowledge/Positive Attitudes/Negative Attitudes Level

| | Sample Sizes | | W1 | | W2 | | W3 | |
|---|---|---|---|---|---|---|---|---|
| **Positive Attitudes Count** | **Unweighted n** | **Weighted (in millions)** | **Mean** | **s.e** | **Mean** | **s.e** | **Mean** | **s.e** |
| No Correct Knowledge at Wave 1 | 176 | 13.8 | 0.5 | 0.4 | 3.8 | 0.2 | 3.2 | 0.4 |
| Some Correct Knowledge at Wave 1 | 1,153 | 104.0 | 3.8 | 0.1 | 4.0 | 0.2 | 4.3 | 0.1 |
| No Positive Attitudes at Wave 1 | 190 | 14.6 | 0.0 | 0.0 | 3.6 | 0.2 | 3.2 | 0.4 |
| Some Positive Attitudes at Wave 1 | 1,139 | 103.2 | 3.9 | 0.1 | 4.0 | 0.2 | 4.3 | 0.1 |
| No Negative Attitudes at Wave 1 | 755 | 73.0 | 3.6 | 0.2 | 4.3 | 0.2 | 4.2 | 0.2 |
| Some Negative Attitudes at Wave 1 | 574 | 44.8 | 3.2 | 0.2 | 3.4 | 0.2 | 4.1 | 0.1 |

2010 CICPE Final Report. No significance testing reported.

In Table 5-13, we look at the same three pairs defined by Wave 1 responses, but now examine their count of positive attitudes over time. Those with no positive attitudes in Wave 1 increased to 3.6 positive

attitudes in Wave 2, and 3.2 in Wave 3. Again, this 'extreme' group of cases converged substantially to the rest of the population after Wave 1. We also see that increases in positive attitudes, when they occurred, did not happen at the same time. Some groups increased early then plateaued, others increased late, still others increased throughout the period. These trajectories may suggest something about the timing with which knowledge and attitude change can occur.

**Table 5-14.** Count of Negative Attitudes Over Time By Initial Knowledge/Positive Attitudes/Negative Attitudes Level

| | Sample Sizes | | W1 | | W2 | | W3 | |
|---|---|---|---|---|---|---|---|---|
| | **Unweighted n** | **Weighted (in millions)** | **Mean** | **s.e** | **Mean** | **s.e** | **Mean** | **s.e** |
| No Correct Knowledge At Wave 1 | 176 | 13.8 | 0.3 | 0.3 | 0.6 | 0.2 | 0.5 | 0.1 |
| Some Correct Knowledge at Wave 1 | 1,153 | 104.0 | 0.8 | 0.1 | 0.6 | 0.2 | 0.6 | 0.1 |
| No Positive Attitudes at Wave 1 | 190 | 14.6 | 0.7 | 0.3 | 0.8 | 0.2 | 0.8 | 0.1 |
| Some Positive Attitudes at Wave 1 | 1,139 | 103.2 | 0.8 | 0.1 | 0.6 | 0.2 | 0.6 | 0.1 |
| No Negative Attitudes at Wave 1 | 755 | 73.0 | 0.0 | 0.0 | 0.4 | 0.2 | 0.5 | 0.2 |
| Some Negative Attitudes at Wave 1 | 574 | 44.8 | 2.0 | 0.1 | 0.9 | 0.2 | 0.7 | 0.1 |

2010 CICPE Final Report. No significance testing reported.

Negative attitudes are quite rare in general, so movement in the count of negative attitudes is generally small. Here too we see that the most negative fell from an average of two negative attitudes in Wave 1 to less than one negative attitude in Wave 3. We also see in Tables 5-13 and 5-14 that positive and negative attitudes indeed moved separately. Those with no negative attitudes and those with some positive attitudes do not appear to be the same people, nor did their changes in attitudes move in tandem.

**Table 5-15.** Outcomes of Interest by Initial Knowledge/Positive Attitudes/Negative Attitudes Level

| | Return Census Form Before NRFU | | | | Cooperation with Enumerator | | | |
|---|---|---|---|---|---|---|---|---|
| | Unweighted n | Weighted n (in millions) | % | s.e. | Unweighted n | Weighted n (in millions) | % | s.e. |
| No Correct Knowledge at Wave 1 | 158 | 4.7 | 61.7 | 15.0 | 66 | 4.2 | 92.3 | 4.9 |
| Some Correct Knowledge at Wave 1 | 1,035 | 68.5 | 69.7 | 4.4 | 256 | 19.6 | 84.0 | 7.9 |
| No Positive Attitudes at Wave 1 | 171 | 13.8 | 54.7 | 13.6 | 68 | 5.4 | 82.6 | 10.8 |
| Some Positive Attitudes at Wave 1 | 1,022 | 97.6 | 70.8 | 4.4 | 254 | 18.4 | 86.3 | 7.0 |
| No Negative Attitudes at Wave 1 | 674 | 69.7 | 66.2 | 7.1 | 185 | 17.4 | 90.2 | 4.0 |
| Some Negative Attitudes at Wave 1 | 519 | 41.7 | 73.2 | 5.3 | 137 | 6.4 | 72.9 | 12.4 |

2010 CICPE Final Report. No significance testing reported.

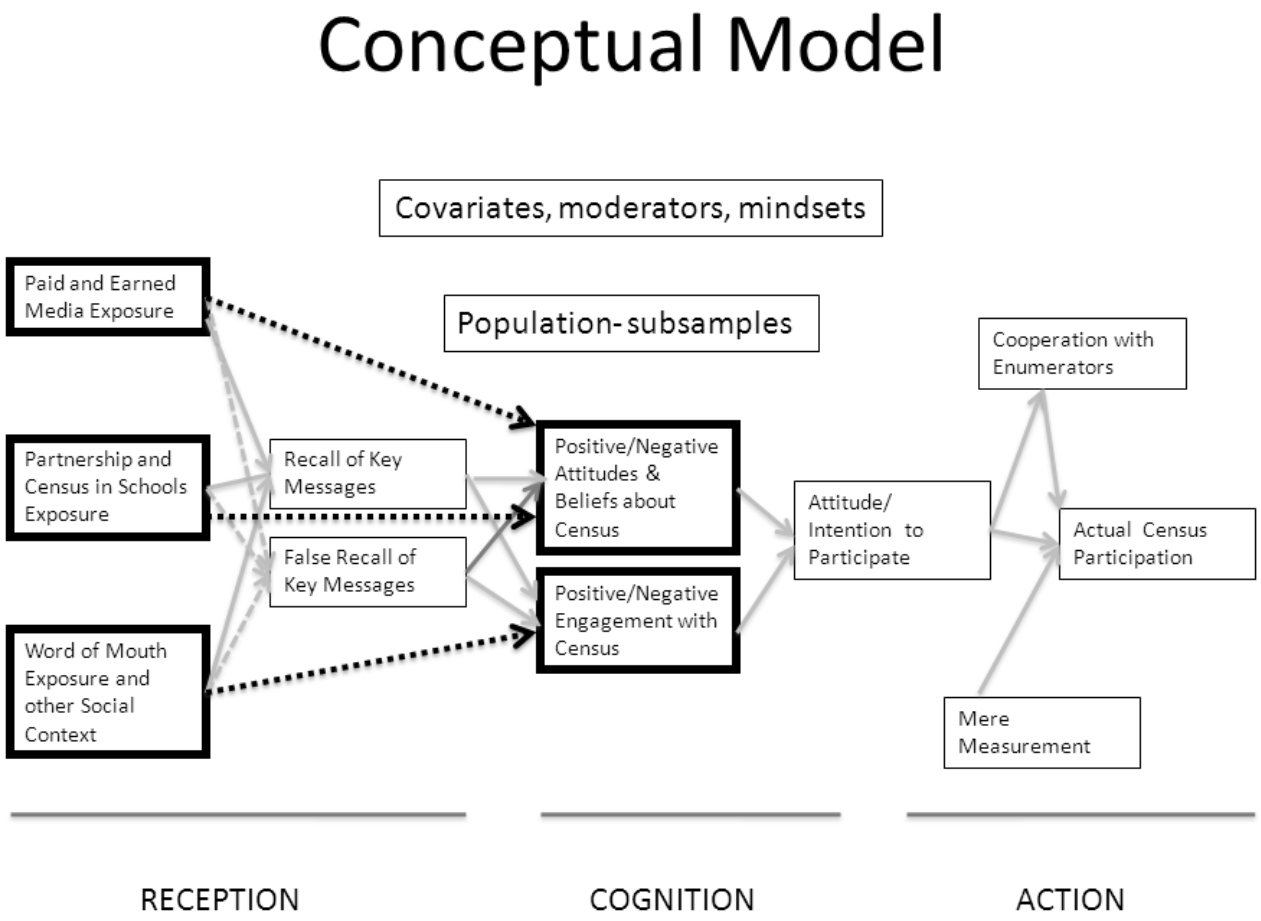
We discuss the association of knowledge and attitudes with census participation much more extensively in Chapter 6, but provide a preview in Table 5-15. We see that mail return rates between these extreme groups and the remainder of the population were not significantly different, although they were usually in the expected direction. The exception is that those with no negative attitudes returned their mail forms (insignificantly) less frequently than those having some negative attitudes at Wave 1. For cooperation with enumerators among households that were eligible for NRFU, again, the differences are not significant, and twice out of three times they are in the expected direction.

## 5.3 Associating Program Exposure with Knowledge, Attitudes, and Beliefs

In this section we investigate the relationship between ICC exposure and knowledge, positive attitudes, and negative attitudes. One plausible mechanism for the ICC to affect census participation is through attitudes and knowledge. In such a mechanism, increased exposure to the campaign results in greater knowledge or more favorable attitudes. These in turn might increase one's likelihood of census participation. In terms of the CICPE conceptual model, this section investigates a connection between the first and second phases. See Figure 5.2.

As a first step, we examine whether or not there is any relationship between self-reported ICC exposure and knowledge, positive attitudes, or negative attitudes. Tables 5-16 through 5-21 investigate this

Figure 5.2. CICPE Conceptual Model – Association of Program Exposure with Knowledge, Attitudes, and Beliefs



relationship. In each case, we have as the dependent variable one of the three summary measures in this domain: knowledge score, count of positive attitudes held, or count of negative attitudes held. Because different campaign components might affect different subgroups differently, we begin by running separate models for each of 10 subgroups: among demographics, less than 45 years or 45 years or more and homeowner or non-homeowner; among sample types, all six. We see some similarities between the effect of exposure to campaign components on individuals' knowledge and positive attitudes. For the negative attitudes, we see that very little is statistically significant. It appears that 2010 ICC exposure is associated with knowledge, but that the association varies across subgroups, as evidenced in Tables 5-16 and 5-17.

**Note on presentation of regression results:** These are the first regression results presented in this report. We generally state the dependent variable in the table title, which also includes the key domains on the right hand side of the model, as well as any subgroups for which results are reported. For Table 5-16, the dependent variable is knowledge of the census, right hand side variables pertain to campaign exposure, and analyses are reported for demographic subgroups. The first row of the table lists the specific subgroups used in the analysis. Each column described by a subgroup represents a separate model that we have estimated using all of the variables listed in the first column. For weighted least squares regressions such as these, we report coefficients and p-values. In later tables that report logistic regression results, we report odds-ratios and p-values. Goodness of fit measures are in the last row of the table. The footnotes specify the specific cases included (Wave 3 other than Heavy-up, in this case), and weights used (Wave 3). All models include a constant term.

**Table 5-16.** Predicting Knowledge of the Census Using Exposure by Demographic Group

| | Model 0 All Cases | | Model I 45 years or older | | Model II Less than 45 years old | | Model III Homeowner | | Model IV Non-Homeowner | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** |
| Exposed to paid media | 0.63 | (0.10) | **0.68*** | (0.08) | 0.47 | (0.40) | 0.35 | (0.38) | **0.86*** | (0.09) |
| Exposed to partnerships | 0.06 | (0.80) | **-0.49**** | (0.04) | 0.45 | (0.15) | 0.04 | (0.89) | -0.36 | (0.23) |
| Exposed to Census in Schools | **0.52**** | (0.02) | 0.16 | (0.79) | **0.72**** | (<0.01) | 0.36 | (0.11) | 0.51 | (0.30) |
| Exposed to earned media | 0.27 | (0.27) | **0.64**** | (0.04) | 0.00 | (0.99) | 0.27 | (0.20) | 0.51 | (0.11) |
| Exposed to word of mouth | **0.38*** | (0.07) | 0.30 | (0.22) | 0.45 | (0.10) | **0.79**** | (<0.01) | -0.08 | (0.85) |
| Frequency of total exposure | 0.05 | (0.38) | **0.15**** | (<0.01) | 0.04 | (0.63) | 0.00 | (1.00) | **0.14**** | (0.01) |
| R-squared | 0.10 | | 0.13 | | 0.11 | | 0.11 | | 0.11 | |

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Note: Weighted least squares regression predicting knowledge score, using Wave 3 only. Heavy up cases excluded. Standard errors were properly adjusted for the complex survey design. The symbol ** indicates $p<.05$, while * indicates $p< 0.1$.

In Table 5-16, we report the results of regressing knowledge score on five indicators of any exposure to ICC components, and one continuous measure of frequency of total ICC exposure. It is clear that different components operate differently for different people. Every component seems to have an effect on knowledge for at least one of the groups listed in the table, but none for more than two groups. Only having any partnership exposure is negatively associated with knowledge score for individuals 45 years or older. All other exposure indicators are associated with increases in knowledge score whenever there is a statistically significant relationship.

In Table 5-17 we again report results of regressions modeling knowledge score using binary measures of exposure to five ICC components, together with a continuous measure of total frequency of ICC exposure. This table shows results separately for each of the six sample types. Frequency of total exposure is positively associated with knowledge score for four sample types. In this table, none of the significant coefficients on exposure operates negatively, but again, every component is significant for at least one group, and none for more than two groups. Asians have a particularly large positive association to any paid media exposure.

Table 5-18 lists results of regressing the count of positive attitudes held at Wave 3 on the five indicators of campaign exposure plus the continuous frequency measure. In this table, subgroups are defined by age and home ownership status. Every subgroup has a positive association between any word of mouth exposure and positive attitudes, although for homeowners the relationship just barely misses statistical significance. Earned media is significant or almost significant for three of the four groups in the table, so that having any earned media exposure is associated with increased positive attitudes. None of the other components (paid media, partnership, or Census in Schools) has significant relationships with the count of positive attitudes. Unlike in the tables on knowledge, frequency of total exposure is rarely significant, only for individuals aged 45 years or older.

**Table 5-17.** Predicting Knowledge of the Census using Exposure by Sample Type

| | Model V Hispanic | | Model VI Non-Hispanic African American | | Model VII Non-Hispanic White and Other | | Model VIII American Indian | | Model IX Asian | | Model X Native Hawaiian | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** |
| Exposed to paid media | -0.19 | (0.64) | -0.34 | (0.67) | 0.77 | (0.17) | -0.15 | (0.77) | **2.50**** | (<0.01) | **0.60*** | (0.05) |
| Exposed to partnerships | **0.50**** | (0.02) | 0.67 | (0.15) | -0.05 | (0.85) | -0.02 | (0.92) | -0.05 | (0.89) | -0.20 | (0.46) |
| Exposed to Census in Schools | -0.12 | (0.45) | **1.16*** | (0.05) | **0.97**** | (<0.01) | 0.16 | (0.83) | -0.16 | (0.80) | 0.03 | (0.90) |
| Exposed to earned media | **0.98**** | (<0.01) | 0.38 | (0.40) | 0.18 | (0.60) | 0.34 | (0.46) | -0.01 | (0.96) | **0.64**** | (<0.01) |
| Exposed to word of mouth | 0.19 | (0.60) | -0.26 | (0.62) | 0.45 | (0.11) | 0.58 | (0.16) | 0.58 | (0.11) | **0.24*** | (0.07) |
| Frequency of total exposure | 0.03 | (0.70) | **0.15**** | (<0.01) | 0.02 | (0.83) | **0.25*** | (0.08) | **0.17**** | (0.01) | **0.13*** | (0.08) |
| R-square | 0.16 | | 0.12 | | 0.11 | | 0.12 | | 0.34 | | 0.15 | |

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Note: Weighted least squares regression predicting knowledge score. Wave 3 cases, with weights, heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

**Table 5-18.** Predicting Positive Attitudes Using Exposure by Demographic Group

| | Model 0 All Cases | | Model I 45 years or older | | Model II Less than 45 years old | | Model III Homeowner | | Model IV Non-Homeowner | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** |
| Exposed to paid media | -0.14 | (0.62) | -0.07 | (0.80) | -0.23 | (0.59) | -0.13 | (0.73) | -0.29 | (0.27) |
| Exposed to partnerships | 0.28 | (0.23) | 0.17 | (0.55) | 0.34 | (0.30) | 0.21 | (0.39) | 0.34 | (0.56) |
| Exposed to Census in Schools | 0.43 | (0.15) | 0.34 | (0.33) | 0.51 | (0.14) | 0.54 | (0.18) | 0.19 | (0.57) |
| Exposed to earned media | **0.41**** | (0.02) | **0.34*** | (0.06) | **0.47*** | (0.08) | 0.27 | (0.29) | 0.66 | (0.13) |
| Exposed to word of mouth | **0.58**** | (0.03) | **0.45*** | (0.09) | **0.61*** | (0.05) | 0.49 | (0.12) | **0.76**** | (0.01) |
| Frequency of total exposure | 0.02 | (0.47) | **0.16**** | (0.03) | -0.03 | (0.50) | 0.02 | (0.72) | 0.03 | (0.66) |
| R-square | 0.09 | | 0.11 | | 0.09 | | 0.06 | | 0.16 | |

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Note: Weighted least squares regression predicting count of positive attitudes. Wave 3 cases, with weights, heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

## Table 5-19. Predicting Positive Attitudes using Exposure by Sample Type

| | Model V Hispanic | | Model VI Non-Hispanic African American | | Model VII Non-Hispanic White and Other | | Model VIII American Indian | | Model IX Asian | | Model X Native Hawaiian | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** |
| Exposed to paid media | 0.26 | (0.33) | 0.01 | (0.98) | -0.18 | (0.61) | -0.48 | (0.14) | 0.34 | (0.17) | 0.24 | (0.37) |
| Exposed to partnerships | **0.90**** | (<0.01) | -0.17 | (0.67) | 0.22 | (0.45) | 0.07 | (0.90) | **0.70**** | (<0.01) | 0.52 | (0.16) |
| Exposed to Census in Schools | 0.22 | (0.49) | **0.61*** | (0.08) | 0.72 | (0.16) | 0.87 | (0.15) | 0.41 | (0.31) | 0.04 | (0.91) |
| Exposed to earned media | 0.30 | (0.35) | 0.12 | (0.63) | **0.50*** | (0.05) | **0.51*** | (0.05) | **0.39*** | (0.06) | 0.12 | (0.66) |
| Exposed to word of mouth | -0.07 | (0.72) | **0.55**** | (0.01) | **0.68*** | (0.05) | 0.23 | (0.52) | 0.12 | (0.47) | 0.09 | (0.58) |
| Frequency of total exposure | **0.06**** | (0.02) | **0.18**** | (<0.01) | -0.04 | (0.46) | **0.30**** | (0.01) | 0.05 | (0.22) | 0.13 | (0.14) |
| R-square | 0.23 | | 0.17 | | 0.08 | | 0.22 | | 0.22 | | 0.13 | |

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Note: Weighted least squares regression predicting count of positive attitudes. Wave 3 cases, with weights, heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Attempting to predict positive attitudes using campaign exposure is less consistent across sample types in Table 5-19 than across the demographic groups in Table 5-18, but there are still some patterns. Here again, paid media does not show up as significant for any subgroup, and Census in Schools only once for non-Hispanic African Americans. Earned media is the most often significant, being associated with increased positive attitudes for three of the six subgroups. Word of mouth is significant for just two of the six sample types, but frequency of total exposure again exhibits positive associations with positive attitudes for three of the six subgroups.

Negative attitudes show the least relationship with these demographic and exposure measures. Table 5-20 shows results of regressing counts of negative attitudes on campaign exposure across age and home ownership status. The one statistically significant association is so small as to be substantively unimportant. Table 5-21 similarly shows regression results for negative attitudes across the six sample types. Here again, there are just two statistically significant associations, one of which is small enough to be substantively unimportant. It does not appear that our measures of campaign exposure are useful in predicting Wave 3 counts of negative attitudes.

**Table 5-20.** Predicting Negative Attitudes using Exposure by Demographic Group

| | Model 0 All Cases | | Model I 45 years or older | | Model II Less than 45 years old | | Model III Homeowner | | Model IV Non-Homeowner | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** |
| Exposed to paid media | 0.07 | (0.63) | 0.20 | (0.51) | 0.00 | (0.99) | 0.20 | (0.33) | -0.16 | (0.28) |
| Exposed to partnerships | 0.11 | (0.23) | 0.29 | (0.16) | **0.02*** | (0.08) | 0.04 | (0.64) | 0.24 | (0.28) |
| Exposed to Census in Schools | -0.07 | (0.48) | -0.29 | (0.17) | 0.08 | (0.24) | 0.00 | (1.00) | -0.25 | (0.22) |
| Exposed to earned media | -0.10 | (0.54) | -0.33 | (0.32) | 0.00 | (0.82) | -0.25 | (0.19) | 0.14 | (0.35) |
| Exposed to word of mouth | 0.08 | (0.30) | 0.27 | (0.14) | -0.05 | (0.22) | 0.01 | (0.89) | 0.19 | (0.17) |
| Frequency of total exposure | 0.00 | (0.74) | -0.03 | (0.22) | 0.02 | (0.15) | 0.01 | (0.48) | -0.01 | (0.59) |
| R-square | 0.02 | | 0.07 | | 0.05 | | 0.04 | | 0.05 | |

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Note: Weighted least squares regression predicting count of negative attitudes. Wave 3 cases, with weights, heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

**Table 5-21.** Predicting Negative Attitudes using Exposure by Sample Type

| | Model V Hispanic | | Model VI Non-Hispanic African American | | Model VII Non-Hispanic White and Other | | Model VIII American Indian | | Model IX Asian | | Model X Native Hawaiian | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** | **Coefficient** | **(p-value)** |
| Exposed to paid media | 0.05 | (0.28) | -0.09 | (0.38) | 0.10 | (0.63) | -0.05 | (0.13) | -0.01 | (0.84) | **0.11**** | (0.02) |
| Exposed to partnerships | -0.01 | (0.92) | 0.05 | (0.31) | 0.13 | (0.26) | 0.03 | (0.52) | 0.09 | (0.33) | -0.07 | (0.30) |
| Exposed to Census in Schools | -0.07 | (0.20) | 0.06 | (0.59) | -0.10 | (0.54) | **-0.07**** | (0.01) | 0.15 | (0.16) | 0.07 | (0.31) |
| Exposed to earned media | 0.04 | (0.38) | -0.03 | (0.69) | -0.13 | (0.54) | 0.01 | (0.75) | 0.06 | (0.26) | -0.07 | (0.31) |
| Exposed to word of mouth | -0.05 | (0.38) | 0.05 | (0.33) | 0.11 | (0.30) | -0.04 | (0.44) | -0.04 | (0.66) | -0.09 | (0.24) |
| Frequency of total exposure | 0.02 | (0.34) | -0.01 | (0.13) | 0.01 | (0.54) | -0.01 | (0.27) | -0.02 | (0.26) | 0.00 | (0.93) |
| R-square | 0.04 | | 0.01 | | 0.03 | | 0.02 | | 0.03 | | 0.02 | |

2010 CICPE Final Report.

Note: Weighted least squares regression predicting count of negative attitudes. Wave 3 cases, with weights, heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

## 5.4 Changes from the 2000 PMPE to 2010 CICPE

Census 2000 was the first time that the Census Bureau used a paid media campaign and a comprehensive partnership program to increase awareness of the census and motivate the public to return their census forms. In 2000, a comparable study to this one – the 2000 Paid Media and Partnership Evaluation (2000 PMPE) -- indicated that the Census Bureau did seem to reduce the differential undercount and increase cooperation with enumerators through its communication efforts (Wolter, K. M. and J. Porras 2002).

In this section, we make comparisons between the 2010 CICPE and the 2000 PMPE. We extracted 11 questions that were used in both evaluation studies, as shown in Table 5-22, and compared responses to these 11 questions using results from the 2010 CICPE and the 2000 PMPE. All results (both the 2010 and the 2000 results) are weighted. The 2000 PMPE initial wave was conducted using Random-Digit Dialing and suffered correspondingly poor coverage and response rates. Some difference between the 2000 and 2010 Wave 1 numbers is likely due to differences in the sample design and data collection approach. Both surveys involved interviews at the same points in the campaign: prior to paid media launch, during the peak of the campaign, and during the NRFU phase. For comparison purposes, in this section variables corresponding to the 2010 CICPE are coded following rules implemented in the 2000 PMPE report (i.e., both figures from the years 2000 and 2010 exclude missing data, refusals, 'Don't knows,' and valid skips from the denominator). In this section, it should be noted also that Tables 5-27 and 5-28 display the percent of respondents who answered 'Strongly agree' only. This is different from figures previously reported in Tables 5-9 to 5-11 where categories 'Strongly agree' and 'Agree' were combined into a single category. As a consequence, some 2010 statistics in the following tables are not the same as those presented in previous sections.

We note that the 2010 CICPE coverage of Asians and American Indians is considerably improved over the coverage in the 2000 PMPE surveys. We present tabulations for both groups in the following tables, but the sample design differences are sufficiently large that we do not believe differences in measures should be interpreted primarily as differences in the experiences of the two groups in the two censuses. Significance test results presented in tables take into account the complex designs of the PMPE and the CICPE separately, but not the differences in coverage and sample design between the two surveys.

## Table 5-22. Questions in 2010 CICPE and 2000 PMPE

| Question Text |
|---|
| Have you ever heard of the Census? |
| The Census is the count of all the people who live in the United States. Have you ever heard of that before? |
| Have you heard or seen anything recently about the 2010 Census? |
| Have you heard or seen anything about the Census in a language other than English? |
| So far as you know, does the law require you to answer the Census questions? |
| Filling out the Census will let the government know what my community needs. Do you strongly agree, agree, disagree, or strongly disagree with this statement? |
| The Census Bureau's promise of confidentiality can be trusted. (IF NEEDED: Do you strongly agree, agree, disagree, or strongly disagree with this statement?) |
| My answers to the Census could be used against me. (IF NEEDED: Do you strongly agree, agree, disagree, or strongly disagree with this statement?) |
| Answering and sending back the Census matters for my family and community. (IF NEEDED: Do you strongly agree, agree, disagree, or strongly disagree with this statement?) |
| I just don't see that it matters much if I personally fill out the Census form or not. (IF NEEDED: Do you strongly agree, agree, disagree, or strongly disagree with this statement?) |
| If the Census were held today, how likely would you be to participate? By participate, we mean fill out and mail in a Census form. Would you say you definitely would, probably would, might or might not, probably would not, definitely would not? |

## Table 5-23. Awareness by Race/Ethnicity, Wave, and Census Year

| | Heard of Census (unaided recall) | | | | | |
|---|---|---|---|---|---|---|
| | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | |
| Race/Ethnicity | 2000 | 2010 | 2000 | 2010 | 2000 | 2010 |
| Hispanic | 72.2 (5.0) | 85.4$^{D}$ (4.1) | 84.9 (2.2) | 92.2$^{d}$ (3.8) | 90.8 (3.0) | 95.9$^{T}$ (2.2) |
| Non-Hispanic African American | 86.1 (2.6) | 77.3$^{G}$ (8.3) | 90.8 (1.9) | 88.7$^{G}$ (4.6) | 96.8 (1.0) | 96.3$^{T}$ (1.8) |
| Non-Hispanic White | 93.1 (1.8) | 92.8$^{G}$ (2.3) | 94.3 (1.9) | 97.7$^{GT}$ (0.9) | 97.1 (1.0) | 96.9 (1.4) |
| American Indian | 75.7 (3.3) | 77.8$^{G}$ (2.5) | 81.4 (3.1) | 90.6$^{gTd}$ (4.2) | 91.0 (1.9) | 99.0$^{gTD}$ (0.7) |
| Asian | 53.5 (3.3) | 66.3$^{GD}$ (3.0) | 70.7 (2.6) | 86.6$^{GTD}$ (3.5) | 84.2 (1.8) | 90.8$^{gT}$ (4.5) |
| Native Hawaiian | 76.9 (2.5) | 73.8$^{G}$ (4.9) | 81.1 (3.6) | 89.8$^{GT}$ (4.1) | 94.0 (1.4) | 92.1$^{T}$ (3.4) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. For comparisons across decennial censuses (2000 vs. 2010), the letter "D" (uppercase) in the 2010 column indicates $p< 0.05$ while the letter "d" (lowercase) in the 2010 column indicates $p<.10$ (but $p > .05$). No testing was done between waves or groups of the 2000 data. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 5-23 displays unaided recall of the census by sample type. Setting aside the comparisons of the American Indian and Asian samples, we see that there are relatively few statistically significant differences in awareness at any of the three points by sample type. The exception is that Hispanics in 2010 have had significantly higher unaided recall of the census at all three waves than they did in 2000. The table also shows significant differences between groups in 2010 and waves in the 2010 data, but these are generally discussed elsewhere in this report.

**Table 5-24.** Recent Exposure by Race/Ethnicity, Wave, and Census Year

| | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | |
|---|---|---|---|---|---|---|
| **Race/Ethnicity** | **2000** | **2010** | **2000** | **2010** | **2000** | **2010** |
| Hispanic | 45.6 (5.0) | 54.0 (8.0) | 78.1 (3.1) | 77.7 (6.2)$^{T}$ | 85.1 (3.7) | 83.6 (3.5)$^{T}$ |
| Non-Hispanic African American | 35.7 (3.8) | 44.6 (7.7) | 81.2 (2.6) | 77.3 (4.7)$^{T}$ | 88.5 (1.6) | 84.4 (3.9)$^{T}$ |
| Non-Hispanic White | 36.7 (4.4) | 42.1 (4.0) | 76.4 (6.2) | 81.7 (4.5)$^{T}$ | 84.6 (2.7) | 81.6 (4.6)$^{T}$ |
| American Indian | 31.3 (4.9) | 37.3 (4.4) | 67.5 (5.8) | 72.2$^{g}$ (2.2)$^{T}$ | 79.9 (4.3) | 79.4 (4.0)$^{T}$ |
| Asian | 41.9 (3.8) | 56.1$^{Gd}$ (5.5) | 85.5 (2.4) | 83.8 (4.3)$^{T}$ | 90.7 (1.1) | 87.7 (2.5)$^{T}$ |
| Native Hawaiian | 23.3 (2.7) | 30.3 (7.1) | 59.1 (4.5) | 64.7$^{G}$ (6.7)$^{T}$ | 85.9 (2.2) | 83.1 (6.4)$^{T}$ |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. For comparisons across decennial censuses (2000 vs. 2010), the letter "D" (uppercase) in the 2010 column indicates $p< 0.05$ while the letter "d" (lowercase) in the 2010 column indicates $p<.10$ (but $p > .05$). No testing was done between waves or groups of the 2000 data. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Table 5-24, which provides levels of recent exposure to the census by sample type, indicates that there are no statistically significant differences between 2000 and 2010 in recent exposure to census communications across the four sample types (omitting Asians and American Indians) at any of the three waves of data collection. Thus we see that in 2000, like in 2010, there were dramatic increases in exposure to the campaign from Wave 1 to Wave 3.

**Table 5-25.** Exposure in a Non-English Language by Race/Ethnicity, Wave, and Census Year

| | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | |
|---|---|---|---|---|---|---|
| **Race/Ethnicity** | **2000** | **2010** | **2000** | **2010** | **2000** | **2010** |
| Hispanic | 54.8 (7.2) | 41.5$^{G}$ (12.2) | 62.5 (5.4) | 58.3$^{G}$ (7.4) | 81.3 (5.1) | 71.0$^{GT}$ (5.5) |
| Non-Hispanic African American | 20.4 (5.1) | 4.2$^{GD}$ (1.4) | 22.0 (3.8) | 9.4$^{D}$ (3.6) | 29.8 (3.3) | 21.7$^{T}$(4.0) |
| Non-Hispanic White | 10.2 (5.1) | 6.0$^{G}$ (2.3) | 17.5 (4.1) | 10.5$^{G}$ (2.5) | 27.5 (3.8) | 17.9$^{GTd}$ (4.3) |
| American Indian | 32.9 (10.2) | 7.2$^{D}$ (1.2) | 19.4 (5.0) | 14.8$^{T}$ (4.0) | 30.3 (2.8) | 17.7$^{TD}$ (5.6) |
| Asian | 42.3 (5.9) | 10.6$^{D}$ (3.3) | 64.5 (4.1) | 32.3$^{GTD}$ (8.0) | 67.7 (2.8) | 38.7$^{GTD}$ (4.9) |
| Native Hawaiian | 15.4 (4.5) | 5.4$^{D}$ (2.2) | 19.9 (3.9) | 5.1$^{G\ D}$ (1.6) | 29.5 (3.3) | 18.1$^{TD}$ (3.0) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate. For comparisons across waves (time), the letter "T" (uppercase) indicates p< 0.05 while the letter "t" (lowercase) indicates p<0.10 (but p>0.05). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. For comparisons across decennial censuses (2000 vs. 2010), the letter "D" (uppercase) in the 2010 column indicates p< 0.05 while the letter "d" (lowercase) in the 2010 column indicates p<.10 (but p > .05). No testing was done between waves or groups of the 2000 data. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

Tables 5-25 shows that in 2010, Hispanics reported very high rates of having heard census communications in languages other than English. Hispanics in all three waves and Asians in Waves 2 and 3 were higher than the 2010 national average in these reports. Non-Hispanic Whites had lower rates of recalling non-English communications than the national average in all three waves of 2010. They were joined at 2010 Wave 1 by non-Hispanic African Americans, and by Native Hawaiians in 2010 Wave 2. All sample types in 2010 reported significantly higher rates of non-English ICC exposure in Wave 3 relative to Wave 1.

In terms of comparison with 2000, we see significantly lower rates of non-English exposure in 2010 than in 2000 for non-Hispanic African Americans in Waves 1 and 2, non-Hispanic Whites in Wave 3, and Native Hawaiians in all three waves. (Again, we leave aside intercensal differences among Asians and American Indians.) The difference between the two census years is somewhat surprising, given the emphasis on "in-language" (non-English) communications during the 2010 ICC. Since Hispanics do not show significantly lower rates of non-English exposure, but non-Hispanic Whites and African Americans do, it may be that the 2010 placement of in-language communications was more effectively targeted toward speakers of those languages.

**Table 5-26.** Percent Yes to Knowledge Question "Is Census Required by Law" by Race/Ethnicity, Wave, and Census Year

| | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | |
|---|---|---|---|---|---|---|
| **Race/Ethnicity** | **2000** | **2010** | **2000** | **2010** | **2000** | **2010** |
| Hispanic | 41.7 (5.0) | 41.0 (5.3) | 34.6 (4.6) | 43.2 (6.5) | 49.8 (5.4) | 60.4$^{T}$ (4.2) |
| Non-Hispanic African American | 28.0 (3.1) | 26.7 (6.2) | 25.4 (3.6) | 25.6 (4.4) | 44.9 (3.4) | 47.0$^{T}$ (4.3) |
| Non-Hispanic White | 26.7 (4.0) | 27.9 (3.4) | 32.2 (6.0) | 24.4 (4.6) | 49.8 (3.7) | 59.6$^{TD}$ (2.5) |
| American Indian | 21.4 (3.6) | 19.4 (2.8) | 16.9 (2.6) | 22.0 (3.1) | 42.4 (5.1) | 50.3$^{T}$ (4.7) |
| Asian | 43.0 (4.9) | 31.3$^{d}$ (3.7) | 40.7 (4.2) | 36.1 (7.2) | 61.2 (3.0) | 67.0$^{T}$ (3.3) |
| Native Hawaiian | 30.5 (3.1) | 19.6$^{D}$ (3.0) | 14.2 (3.2) | 16.3 (3.2) | 44.2 (3.4) | 53.3$^{TD}$ (2.7) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across waves (time), the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. For comparisons across decennial censuses (2000 vs. 2010), the letter "D" (uppercase) in the 2010 column indicates $p< 0.05$ while the letter "d" (lowercase) in the 2010 column indicates $p<.10$ (but $p > .05$). No testing was done between waves or groups of the 2000 data. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

A knowledge question asked in both the 2000 PMPE and the 2010 CICPE is whether or not census participation is legally required. At 2010 Wave 3, all sample types were significantly more likely to correctly report that participation is legally required than at 2010 Wave 1. There are relatively few significant differences between the two census years in this table. Non-Hispanic Whites and Native Hawaiians more often correctly answered this question in Wave 3 of 2010 than of 2000. Native Hawaiians were less likely at Wave 1 of 2010 to answer correctly than they had been 10 years earlier.

Tables 5-27 displays the percentage of respondents who answered 'Strongly agree' to three positive attitude questions by sample type, by decennial year, and by wave. There are very few statistically significant differences between these percentages, but in every such difference, the percent who 'strongly agree' is higher in 2010 than in 2000. This happens for all three items in Waves 1 and 3 for non-Hispanic Whites, twice for Hispanics, and all three times in Wave 1 for Native Hawaiians.

## Table 5-27. Positive Attitudes and Beliefs about the Census by Race/Ethnicity, Wave, and Census Year

| | Lets the Government Know What Community Needs (% strongly agree) | | | | | | Promise of Confidentiality Can Be Trusted (% strongly agree) | | | | | | Completing Census Matters for My Family and Community (% strongly agree) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | |
| Race/ Ethnicity | 2000 | 2010 | 2000 | 2010 | 2000 | 2010 | 2000 | 2010 | 2000 | 2010 | 2000 | 2010 | 2000 | 2010 | 2000 | 2010 | 2000 | 2010 |
| Hispanic | 22.8 (5.4) | 19.3 (6.8) | 29.8 (4.6) | 33.2$^{T}$ (4.8) | 23.1 (3.2) | 39.0$^{TD}$ (7.7) | 6.1 (1.5) | 16.9$^{D}$ (4.4) | 19.5 (4.3) | 20.8 (5.8) | 20.0 (5.5) | 13.8$^{G}$ (2.9) | 14.3 (2.5) | 16.0 (5.4) | 25.2 (4.3) | 19.8 (4.2) | 24.6 (5.1) | 28.0 (7.2) |
| Non-Hispanic African American | 20.8 (3.2) | 22.9 (5.3) | 32.3 (3.8) | 31.8 (7.2) | 26.1 (4.0) | 34.9$^{t}$ (5.3) | 6.3 (2.1) | 15.3 (6.2) | 15.9 (2.8) | 10.3$^{G}$ (3.4) | 13.9 (2.5) | 12.9$^{g}$ (3.2) | 16.5 (2.8) | 15.5 (6.2) | 27.2 (3.2) | 19.9 (4.4) | 26.4 (3.2) | 23.0$^{tg}$ (4.4) |
| Non-Hispanic White | 13.6 (3.0) | 25.7$^{D}$ (2.8) | 27.2 (4.9) | 29.1 (4.5) | 23.6 (3.7) | 37.3$^{TD}$ (3.2) | 6.9 (1.6) | 18.7$^{D}$ (3.4) | 14.7 (3.7) | 19.0 (3.3) | 8.6 (2.3) | 25.1$^{GD}$ (4.5) | 11.6 (2.2) | 23.4$^{gD}$ (3.0) | 22.7 (4.8) | 27.6 (3.8) | 20.1 (3.2) | 29.3$^{d}$ (3.8) |
| American Indian | 13.8 (2.4) | 22.0$^{D}$ (2.8) | 22.3 (3.6) | 28.1$^{T}$ (1.8) | 16.6 (2.4) | 40.1$^{TD}$ (3.5) | 7.2 (1.7) | 11.6$^{g}$ (2.4) | 12.1 (2.9) | 17.8$^{t}$ (2.8) | 8.6 (1.6) | 19.8$^{TD}$ (2.7) | 15.4 (2.8) | 19.5 (2.3) | 15.6 (2.6) | 25.6$^{D}$ (3.8) | 15.3 (2.4) | 34.9$^{T D}$ (3.3) |
| Asian | 19.6 (3.6) | 19.5 (2.7) | 20.5 (2.8) | 30.5$^{T D}$ (3.9) | 21.5 (2.0) | 35.7$^{TD}$ (4.4) | 10.0 (2.8) | 14.6 (2.3) | 9.3 (2.0) | 17.6$^{D}$ (3.3) | 11.1 (1.5) | 24.2$^{TD}$ (3.8) | 17.1 (3.3) | 18.2 (2.7) | 11.4 (2.0) | 19.7$^{D}$ (2.8) | 15.4 (1.6) | 24.9$^{T D}$ (2.8) |
| Native Hawaiian | 14.7 (2.2) | 21.9$^{D}$ (2.5) | 23.6 (4.1) | 29.2 (4.7) | 25.7 (2.8) | 32.2$^{T}$ (4.5) | 10.0 (2.0) | 22.4$^{D}$ (5.5) | 13.5 (3.3) | 15.4 (1.7) | 14.0 (2.3) | 15.3 (3.5) | 17.8 (2.4) | 23.4$^{d}$ (1.7) | 21.7 (3.7) | 30.6 (4.7) | 28.3 (3.1) | 31.2 (3.4) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate. For comparisons across waves (time), the letter "T" (uppercase) indicates p< 0.05 while the letter "t" (lowercase) indicates p<0.10 (but p>0.05). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. For comparisons across decennial censuses (2000 vs. 2010), the letter "D" (uppercase) in the 2010 column indicates p< 0.05 while the letter "d" (lowercase) in the 2010 column indicates p<.10 (but p > .05). No testing was done between waves or groups of the 2000 data. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

**Table 5-28.** Negative Attitudes and Beliefs about the Census by Race/Ethnicity, Wave, and Census Year

| | Answers Could Be Used Against Me (% strongly agree) | | | | | | Doesn't Matter Much if I Personally Fill Out Census Form (% strongly agree) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | | W1 % (s.e.) | | W2 % (s.e.) | | W3 % (s.e.) | |
| **Race/Ethnicity** | **2000** | **2010** | **2000** | **2010** | **2000** | **2010** | **2000** | **2010** | **2000** | **2010** | **2000** | **2010** |
| Hispanic | 0.4 (0.2) | 2.0 (1.2) | 0.8 (0.4) | 0.2 (0.1) | 4.9 (3.4) | 0.7 (0.5) | 4.6 (2.9) | 1.8 (1.3) | 2.0 (1.2) | 0.8 (0.4) | 1.8 (0.5) | 0.7[d] (0.3) |
| Non-Hispanic African American | 3.7 (1.5) | 1.9 (0.8) | 2.8 (1.5) | 0.6 (0.3) | 4.6 (1.4) | 1.6 [d] (0.8) | 4.4 (2.0) | 1.5 (0.6) | 2.7 (1.4) | 0.6 (0.3) | 2.4 (0.8) | 1.6 (0.7) |
| Non-Hispanic White | 4.8 (2.4) | 0.8 (0.4) | 2.6 (2.0) | 0.2 (0.1) | 3.3 (1.6) | 2.7 (1.4) | 4.8 (2.5) | 2.0 (1.2) | 6.1 (2.1) | 1.1[D] (0.6) | 1.4 (0.9) | 2.1 (1.3) |
| American Indian | 2.4 (1.2) | 2.1 (1) | 0.9 (0.4) | 1.8[G] (1.2) | 1.3 (0.6) | 0.7[g] (0.5) | 2.3 (0.9) | 2.3 (1.1) | 2.7 (1.1) | 2.5 (1.3) | 1.8 (0.8) | 1.1 (0.3) |
| Asian | 1.9 (1.0) | 1.5 (1) | 1.7 (0.7) | 3.0[G] (0.8) | 2.4 (0.8) | 0.9 (0.8) | 3.5 (1.3) | 6.6[G] (2.7) | 1.4 (0.6) | 2.1[D] (1.1) | 1.5 (0.6) | 1.8[T] (0.7) |
| Native Hawaiian | 3.2 (1.2) | 2.5 (1.4) | 1.4 (0.6) | 2.7[G] (1.1) | 3.8 (1.3) | 0.6[GD] (0.4) | 2.8 (1.1) | 1.4 (0.5) | 2.9 (1.8) | 2.3 (1.3) | 3.6 (1.1) | 1.9 (0.4) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate. For comparisons across waves (time), the letter "T" (uppercase) indicates p< 0.05 while the letter "t" (lowercase) indicates p<0.10 (but p>0.05). If there is a significant change between Wave 1 and Wave 2, the letter is placed in the column for Wave 2. Similarly, if a significant change is detected between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. For comparisons across decennial censuses (2000 vs. 2010), the letter "D" (uppercase) in the 2010 column indicates p< 0.05 while the letter "d" (lowercase) in the 2010 column indicates p<.10 (but p > .05). No testing was done between waves or groups of the 2000 data. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

**Table 5-29.** Intent to Participate in Census by Race/Ethnicity, Wave, and Census Year

| | W1 % (s.e.) | | W2 % (s.e.) | |
|---|---|---|---|---|
| **Race/Ethnicity** | **2000** | **2010** | **2000** | **2010** |
| Hispanic | 62.6 (5.1) | 38.5$^{gD}$ (9.4) | 69.9 (4.0) | 61.7$^{T}$ (7.1) |
| Non-Hispanic African American | 49.8 (3.3) | 37.6$^{d}$ (7.3) | 64.6 (3.4) | 55.0$^{T}$ (6.8) |
| Non-Hispanic White | 57.7 (5.0) | 52.7$^{G}$ (4.1) | 67.3 (4.5) | 63.7$^{T}$ (2.4) |
| American Indian | 34.9 (4.4) | 40.4$^{g}$ (2.9) | 42.5 (4.1) | 53.7$^{T}$ (5.6) |
| Asian | 49.6 (3.7) | 33.8$^{GD}$ (3.6) | 64.6 (3.5) | 53.7$^{gTd}$ (4.8) |
| Native Hawaiian | 36.5 (3.0) | 36.8$^{G}$ (2.0) | 50.8 (4.4) | 43.7$^{Gt}$ (3.3) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates p< 0.05 while the letter "g" (lowercase) indicates p<0.10 (but p>0.05). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate. For comparisons across waves (time) for 2010, the letter "T" (uppercase) indicates p< 0.05 while the letter "t" (lowercase) indicates p<0.10 (but p>0.05). If there is a significant change between Waves 1 and 2 of 2010, the letter is placed in the column for Wave 2. For comparisons across decennial censuses (2000 vs. 2010), the letter "D" (uppercase) in the 2010 column indicates p< 0.05 while the letter "d" (lowercase) in the 2010 column indicates p<.10 (but p > .05). No testing was done between waves or groups of the 2000 data. Statistical significance tests were adjusted to account for the panel component of the survey. The significance tests were not adjusted for multiple comparisons.

The two items presented in Table 5-28 are negative. As we have seen in earlier tables, few individuals hold negative attitudes about the census. We see only four statistically significant differences in the percentages of individuals strongly agreeing with these negative statements. In all four instances, fewer people in 2010 strongly agree with the negative statement than had done so in 2000.

Table 5-29 shows the percentage of individuals who reported at Waves 1 and 2 that they 'definitely would' participate in the census. In contrast to Tables 5-27 and 5-28, where 2010 attitudes toward the census were uniformly equivalent to or better than 2000 attitudes, here we see that Wave 1 intent was lower in 2010 than in 2000 for Hispanics and non-Hispanic African Americans. At Wave 3, none of the comparisons between 2000 and 2010 are statistically significant. (We again set aside the Asian comparisons because of differences in sample designs between the two census years.) No other statistically significant differences are observed in the table.

# Chapter 6: Modeling Effects of Exposure

As depicted in the CICPE conceptual model, we have identified a few mechanisms as being of primary interest in this evaluation. We envision that exposure can affect individuals' participation in the census through changing their knowledge of and attitudes toward the census. That set of knowledge and attitudes can then itself trigger participation (or lack thereof) in the census. Alternatively, we can articulate a direct effect of campaign exposure on census participation. Census participation can be measured either through mail return, or failing that, cooperation with enumerators during the NRFU phase.

In this chapter we build on the work of the preceding chapters to introduce multivariate regressions to understand the associations of ICC exposure or of knowledge and attitudes with our two outcomes of interest, mail return and cooperation with enumerators. Perhaps the principle finding of the chapter is that exposure in particular works very differently for different subgroups of the population, so that it is not meaningful to think of one way in which exposure predicts mail return for all individuals. Rather, we describe the (multiple) ways in which exposure (and knowledge and attitudes) affect mail return.

This chapter proceeds as follows: In Section 6.1, we model mail return using exposure variables and using knowledge and attitudes variables. These efforts give us multivariate estimates of the relationship between exposure and mail return, or knowledge and attitudes and mail return. We find that whenever word of mouth exposure has a statistically significant association with mail return, word of mouth exposure is associated with decreased likelihood of mail return. Effects of exposure vary by age, home ownership status, and sample type, but any exposure to paid media, partnership, or earned media is found to be associated with increased likelihood of mail return for at least some subgroups. Frequency of total ICC exposure is also associated with higher mail return rates for some sample types. Knowledge positively predicts mail return rate for all sample types but Hispanics.

In section 6.2, we conduct two follow-up analyses to the Section 6.1 regressions, one exploiting the panel sample with the 2010 CICPE surveys, and the other running our main models on the Heavy-up sample. These can be thought of as sensitivity checks. The panel sample analysis indicates that it is Wave 3 knowledge that matters in predicting mail return behavior; whether that knowledge was newly acquired since Wave 1 or held since Wave 1 does not alter the relationship between knowledge and mail return. Running our models on the Heavy-up sample does not replicate our findings from the full sample. In the

Heavy-up sample, paid media exposure is significant (and positively associated with mail return) for most groups, and knowledge is the same. These are more similar results across demographic groups than we find in our full sample.

In section 6.3, we turn to an alternate analytic approach, adopting the methods of message receptivity analysis from the field of public health communications evaluation to understand only the paid media portion of the campaign. As hypothesized, and consistent with other communications evaluations, we find that there is a positive association between message receptivity and knowledge and attitudes. We do not find any statistically significant association between message receptivity and mail return.

In section 6.4, we model cooperation with enumerators. The results for exposure are mixed. Where statistically significant, the association between exposure and cooperation is often negative. When significant, more knowledge is generally associated with increased likelihood of cooperation with enumerators among households eligible for NRFU.

## 6.1 Modeling Mail Return Using Exposure and Knowledge/Attitudes

Table 6-1 presents our first multivariate regressions predicting mail return. Throughout this chapter, we measure mail return prior to the NRFU phase, which is by April 18. Before we begin studying either exposure or knowledge and attitudes, we set some context for predicting mail return. In each case, we are using Wave 3 data only (as these have the most appropriate exposure data), but no Heavy-up cases (which do not allow us to construct nationally representative estimates). Standard errors are corrected for the complex survey design.

We note several cautions with regard to modeling fitting and interpretation. First, we mentioned in Chapter 3 that variation in our data is limited because the design of the ICC was to allocate resources disproportionately into areas with lower expected census participation. Specifically, there are few places with high expected cooperation and high ICC activity, or with low expected cooperation and low ICC activity. As a result, we may encounter results suggesting that increased ICC exposure suppresses census participation.

Second, the interpretation of a regression coefficient must be made only with reference to the other variables that are included in the models. For instance, the interpretation of the paid media coefficient tells us how the outcome variable would be expected to change with a unit change of the paid media variable assuming the earned media remained unchanged. Third, the causal interpretation of our models is further hindered when the regression models omit variables that are additionally predictive of the

outcomes. For example, local area conditions affect cooperation with the census, but the regression analyses are driven by demographic rather than geographic variables.

Lastly, we also acknowledge the fact that our coefficients are estimated with sampling error because the 2010 CICPE is a sample survey rather than a census. Therefore, if the CICPE had drawn different samples, the estimates of the coefficients would differ as a result of variability of the data from one sample to the next. The standard error is a measure of the sampling variability. We present p-values for all reported coefficients and odds-ratios so that readers may assess the extent of sampling variability.

In Table 6-1, we present results of three models predicting mail return prior to NRFU. Models are logistic regressions using the Wave 3 sampling weights for the Core sample and supplemental samples, but no Heavy-up cases. For ease of interpretation, we present odds-ratios (OR) rather than regression coefficients themselves. Model I models mail return using a narrow set of demographic variables, including the characteristics that we have reported in other chapters: language spoken in the home, age, education, sample type (race/ethnicity), and home ownership status. We also include a few additional variables, including annual income, marital status, and employment status.

We see that three variables emerge with statistically significant coefficients: home ownership and non-employment increase the likelihood of mail return, and being under age 45 years decreases that likelihood. The 'Not working' category includes all individuals who reported that they spent zero hours working for pay in a usual week, including due to unemployment, retirement, disability, not wishing to participate in the labor force, or other reasons. Note that non-Hispanic White is the omitted sample type, and that none of the included sample types has statistically significant coefficients with that reference group.

In Model II, we add to Model I three variables that have been previously documented in the census participation literature as important: civic participation, community connectedness, and media use. None of the three has a strong relationship with mail return, although they do somewhat weaken the coefficients on age and home ownership.

In Model III, we add further the four 'operational' variables we described in Chapter 3. These were the additional operational activities undertaken by the Census Bureau to increase mail return among hard-to-count groups, such as bilingual questionnaires, targeted and blanket replacement questionnaires, and the multi-language postcard. The bilingual questionnaire and the two replacement questionnaires show positive associations with mail return prior to NRFU, but because of the peculiar results shown in Chapter

3 that suggest that we are not able to identify these estimates properly given our data, we do not include these operational variables in subsequent analyses.

**Table 6-1.** Models Predicting Census Form Return Before 4/18/2010

| | Model I Demographics | Model II (Model I+Civic Partnership+ Media) | Model III (Model II+ Operational Variables) |
|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| English Spoken in Household | 0.70 (0.59) | 0.65 (0.51) | 0.72 (0.64) |
| Less than 45 | **0.69*** (0.09) | **0.63**** (0.04) | **0.55**** (<0.01) |
| Currently married | 1.22 (0.58) | 1.17 (0.67) | 1.37 (0.44) |
| Less than High School | 1.00 (0.61) | 0.93 (0.79) | 0.88 (0.89) |
| High School | 0.68 (0.37) | 0.72 (0.44) | 0.70 (0.48) |
| Annual Income Less than $25,000 | 0.71 (0.30) | 0.74 (0.33) | 0.78 (0.41) |
| Annual Income $25,000 to $59,999 | 0.95 (0.55) | 1.03 (0.41) | 1.03 (0.48) |
| Homeowner | **2.39**** (0.01) | **2.22**** (0.02) | **1.99**** (0.03) |
| One-Person Household | **0.98*** **(0.10)** | 1.85 (0.17) | 1.99 (0.12) |
| Two-person Household | 1.35 (0.83) | 1.36 (1.00) | 1.32 (0.74) |
| Not working | **2.06**** (0.03) | **1.97**** (0.05) | **1.68*** (0.07) |
| Hispanic | 0.65 (0.65) | 0.62 (0.63) | 0.43 (0.11) |
| Black | 0.66 (0.49) | 0.67 (0.61) | 0.91 (0.90) |
| American Indian | 0.59 (0.33) | 0.57 (0.33) | 0.84 (0.88) |
| Asian | 0.91 (0.47) | 0.92 (0.41) | 1.23 (0.32) |
| Native Hawaiian | 0.83 (0.64) | 0.78 (0.82) | 1.15 (0.26) |
| Civic Participation | | 1.11 (0.45) | 1.06 (0.68) |
| High Media Use | | 1.08 (0.82) | 1.01 (0.97) |
| High in Neighborhood Connectedness | | 1.59 (0.13) | 1.69 (0.11) |
| Bilingual Form Received | | | **2.82**** (<0.01) |
| Target Replacement Form Received | | | **0.02**** (<0.01) |
| Blanket Replacement Form Received | | | **0.38**** (<0.01) |
| Language Postcard Received | | | 0.70 (0.30) |
| Pseudo R-square | 0.13 | 0.14 | 0.21 |
| Max-Rescaled R-square | 0.17 | 0.19 | 0.29 |

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Note: Logistic regression predicting Mail Return prior to NRFU (by 4/18). Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

## The Direct Relationship of Exposure to Mail Return

We now move on to estimating the effect of ICC exposure on pre-NRFU mail return. We estimate a simple model that can be depicted visually with reference to the CICPE conceptual model. See Figure 6.1 on the following page. Results in Table 6-1 echo tabulations in prior chapters that indicate that age and home ownership status are important co-variates of mail return. With this in mind, we first present subgroup analyses in which we run a single model separately for the whole sample and then for each of ten subgroups: two defined by age, two by home ownership status, and six by sample type. For exposure measures, we include binary indicators of whether or not an individual reported any exposure to each of the four main components of the ICC (paid media, partnership, Census in Schools, and earned media), as well as a continuous measure of number of exposures to any ICC activity recalled in the 90 days prior to the Wave 3 interview, and a binary indicator of any word of mouth exposure. No other variables are included in the model.

In Table 6-2, the first column shows results for all cases; we see one statistically significant effect, for word of mouth exposure. Since these are odds-ratios, we interpret the 0.46 coefficient on word of mouth to mean that having any word of mouth exposure is associated with a lower likelihood of pre-NRFU mail return than having no word of mouth exposure, all other exposure measures held constant. The later columns in the table reinforce the value of conducting subgroup analyses. There are significant coefficients for each subgroup, but the effects across groups get washed out in estimates for the full sample.

Figure 6.1. CICPE Conceptual Model - ICC Exposure on Mail Return

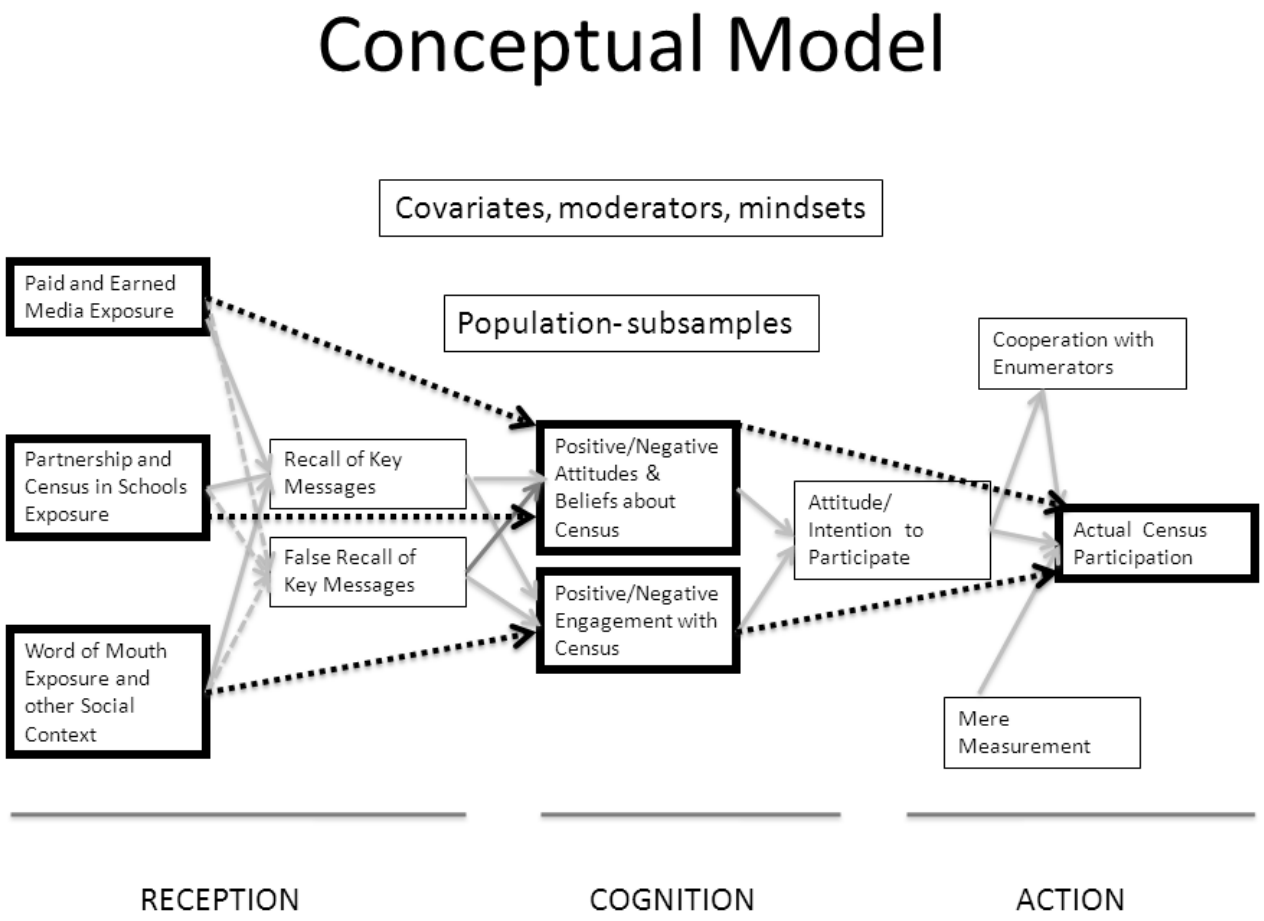

**Table 6-2.** Predicting Pre-NRFU Mail Return using Exposure by Age and Home Ownership

| | All | 45 Years or Older | Less than 45 years | Non-Homeowners | Homeowners |
|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Exposed to Paid Media | 1.69 (0.31) | 0.85 (0.83) | **2.96*** (0.08) | **2.96**** (<0.01) | 1.03 (0.96) |
| Exposed to Partnership | 1.62 (0.12) | **2.13*** (0.08) | 1.51 (0.28) | 0.92 (0.86) | **1.82*** (0.08) |
| Exposed to Census in Schools | 0.86 (0.61) | 0.62 (0.47) | 1.17 (0.64) | 0.90 (0.82) | 0.69 (0.46) |
| Exposed to Earned Media | 1.21 (0.55) | 1.80 (0.28) | 0.76 (0.53) | 1.95 (0.17) | 1.14 (0.74) |
| Exposed to Word of Mouth | **0.46**** (0.01) | 0.56 (0.14) | **0.41**** (0.02) | **0.30**** (<0.01) | 0.62 (0.22) |
| Frequency of Total Exposure | 1.05 (0.39) | 0.98 (0.76) | 1.10 (0.25) | 1.04 (0.67) | 1.06 (0.51) |
| Pseudo R-square | 0.05 | 0.04 | 0.09 | 0.05 | 0.03 |
| Max-Rescaled R-square | 0.06 | 0.06 | 0.11 | 0.08 | 0.04 |

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Note: Logistic regression predicting Mail Return prior to NRFU (by 4/18). Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

For individuals 45 years or older, the only significant association is a doubling of mail return likelihood for individuals exposed to partnership versus unexposed to partnership, other exposure remaining unchanged. Individuals younger than 45 years and non-homeowners have remarkably similar results. In both cases, they show increased likelihood of mail return associated with having paid media exposure, while having any word of mouth exposure is associated with a lower likelihood of mail return. Homeowners' results are parallel to those of individuals 45 and over; any partnership exposure is related to increased mail return rates, no other exposure is statistically significant. The goodness of fit measures indicate that very little of the variation in mail return rates is explained through this model.

**Table 6-3.** Predicting Pre-NRFU Mail Return using Exposure by Sample Type

| | Hispanic | Non-Hispanic African American | Non-Hispanic White | American Indian | Asian | Native Hawaiian |
|---|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Exposed to Paid Media | 1.11 (0.90) | 1.30 (0.64) | 1.82 (0.40) | 0.95 (0.95) | 1.59 (0.38) | 0.43 (0.18) |
| Exposed to Partnership | 1.36 (0.48) | **2.16**** (0.01) | 1.68 (0.20) | **0.43*** (0.07) | 1.33 (0.36) | 0.92 (0.90) |
| Exposed to Census in School | 1.35 (0.30) | 1.44 (0.60) | 1.16 (0.85) | 1.20 (0.73) | 0.78 (0.48) | 1.01 (0.98) |
| Exposed to Earned Media | 1.00 (1.00) | 1.56 (0.38) | 1.13 (0.80) | **3.38**** (<0.01) | 1.13 (0.64) | **1.62*** (0.07) |
| Exposed to Word of Mouth | 0.58 (0.13) | **0.30*** (0.06) | **0.44**** (0.05) | 1.73 (0.43) | **0.54*** (0.10) | 0.81 (0.50) |
| Frequency of Total Exposure | 0.98 (0.75) | 1.10 (0.42) | 1.12 (0.16) | **1.33**** (0.05) | **1.24**** (0.02) | **1.16*** (0.07) |
| Pseudo R-square | 0.01 | 0.06 | 0.24 | 0.01 | 0.01 | 0.01 |
| Max-Rescaled R-square | 0.02 | 0.11 | 0.24 | 0.13 | 0.04 | 0.03 |

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Note: Logistic regression models predicting mail return prior to NRFU (4/18). Wave 3 sample excluding Heavy-up cases. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Again in Table 6-3 we see that different groups respond differently to the campaign. For Hispanics, we see no statistically significant effects for any of the exposure measures, although word of mouth is almost significantly associated with lower mail return. For non-Hispanic African Americans, we see positive partnership and negative word of mouth effects when everything else in the model is held constant. The negative word of mouth result also appears for non-Hispanic Whites. American Indians and Native Hawaiians have positive effects for both earned media exposure and frequency of total exposure, although the coefficients are about one-third the size for the latter group controlling for other variables in the model. American Indians also exhibit a negative partnership effect. Asians seem to have only a positive (increased mail return) response to the total count of ICC exposures and again, a reduced mail return rate associated with having word of mouth exposure.

## The Relationship of Knowledge and Attitudes to Mail Return

We also model the direct relationship of knowledge and attitudes to mail return.

**Table 6-4.** Predicting Pre-NRFU Mail Return using Knowledge and Attitudes by Age and Home Ownership

| | Model 0 All Cases | Model I 45 years or older | Model II Less than 45 years old | Model III Homeowner | Model IV Non-Homeowner |
|---|---|---|---|---|---|
| | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Knowledge Scores | **1.18**** (0.01) | **1.13*** (0.10) | 1.20 (0.12) | 0.95 (0.47) | **1.31**** (0.01) |
| Positive Attitudes | **1.24**** (0.01) | 1.34 (0.11) | 1.21 (0.17) | **1.29**** (0.01) | 1.22 (0.16) |
| Negative Attitudes | 1.32 (0.13) | 1.21 (0.36) | 1.24 (0.20) | 0.97 (0.93) | **2.01**** (<0.01) |
| Pseudo R-square | 0.06 | 0.05 | 0.07 | 0.04 | 0.10 |
| Max-rescaled R-square | 0.09 | 0.07 | 0.09 | 0.05 | 0.16 |

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Note: Logistic regression predicting Mail Return by 4/18. Wave 3 cases, with weights, Heavy up excluded. Positive and negative attitudes measures based only on 'strongly' agree/disagree values. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

In Table 6-4, we see that, when we include all cases in a single main effect model, higher knowledge scores and the more positive attitudes are both associated with increased likelihood of mail return by April 18, holding everything else constant in the model. As we look separately by age or home ownership status, we see some variation across subgroups. Knowledge is significant and has a positive association with mail return for two groups: individuals 45 years or older and non-homeowners. After controlling for other variables in the model, the number of positive attitudes is significantly associated with mail return only for home-owners, although the magnitude of the coefficient is almost the same for those 45 years or older (just barely missing the threshold for statistical significance). Negative attitudes are statistically significant in predicting mail return only among non-home-owners. The coefficient is highly significant, but positive – that is, more negative attitudes can double the likelihood of mail return.

**Table 6-5.** Predicting Pre-NRFU Mail Return using Knowledge and Attitudes by Sample Type

| | Hispanic | Non-Hispanic African American | Non-Hispanic White | American Indian | Asian | Native Hawaiian |
|---|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Knowledge Scores | 0.87 (0.43) | **1.19**** (0.04) | **1.21**** (0.04) | **1.12**** (<0.01) | **1.26**** (0.01) | **1.28**** (0.05) |
| Positive Attitudes | 0.99 (0.94) | 1.23 (0.17) | **1.31**** (0.02) | **1.61**** (<0.01) | 1.10 (0.38) | **0.83**** (<0.01) |
| Negative Attitudes | 1.36 (0.46) | 1.05 (0.82) | 1.36 (0.15) | 0.94 (0.93) | 0.68 (0.19) | 0.70 (0.11) |
| Pseudo R-square | 0.01 | 0.04 | 0.31 | 0.01 | 0.02 | <0.01 |
| Max-rescaled R-square | 0.02 | 0.07 | 0.31 | 0.14 | 0.08 | 0.04 |

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Note: Logistic regression models predicting mail return prior to NRFU (4/18). Wave 3 sample excluding Heavy-up cases. Positive and negative attitudes measures based only on 'strongly' agree/disagree values. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Among sample types as shown in Table 6-5, a higher knowledge score is significantly associated with increased mail return for every group except Hispanics. Among Hispanics, none of the variables (knowledge, positive attitudes, or negative attitudes) are significantly associated with mail return. Among non-Hispanic Whites, American Indians, and Native Hawaiians, positive attitudes are also associated with mail return, but a larger number of positive attitudes increases the likelihood of mail return among the first two groups and decreases the likelihood of mail return among Native Hawaiians. The count of negative attitudes is not statistically significant for any group, although it is very close to significant among Native Hawaiians, for whom more negative attitudes are associated with lower likelihood of mail return. Knowledge and attitudes seem to explain almost a third of variation in mail return among non-Hispanic whites, but for all other groups, this model has minimal explanatory power.

## 6.2 Selected Additional Models of Mail Return

To try to better understand some of the results we present in Section 6.1 above, as well as a sensitivity check on those results, we run some models on different subgroups and with different data elements.

## Exploiting the Panel Sample to Understand the Relationship of Exposure to Knowledge and Attitudes

**Table 6-6.** Predicting Pre-NRFU Mail Return using Wave 1 to Wave 3 Knowledge and Attitudes by Age and Home Ownership

| | Model 0 All Cases | Model I 45 years or older | Model II Less than 45 years old | Model III Homeowner | Model IV Non-Homeowner |
|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Wave 3 Knowledge Score | **1.31**** (0.02) | **1.26**** (0.03) | 1.28 (0.13) | **1.22**** (0.02) | 1.21 (0.32) |
| Positive Change in Knowledge | 0.78 (0.77) | 1.76 (0.18) | 0.54 (0.66) | 1.12 (0.67) | 0.67 (0.93) |
| Negative Change in Knowledge | 0.79 (0.86) | 0.51 (0.22) | 0.60 (0.86) | 0.74 (0.61) | 0.40 (0.34) |
| Wave 3 Positive Attitudes | **1.31*** (0.05) | **1.97**** (<.01) | 1.25 (0.19) | **1.52**** (<.01) | 1.24 (0.33) |
| Positive Change in Positive Attitudes | 0.95 (0.91) | 1.51 (0.53) | 1.13 (0.86) | 1.12 (0.86) | 1.03 (0.97) |
| Wave 3 Negative Attitudes | **1.72**** (0.05) | **1.79*** (0.07) | 1.55 (0.54) | 0.73 (0.51) | **3.03**** (<0.01) |
| Positive Change in Negative Attitudes | 2.79 (0.13) | 1.35 (0.80) | 5.67 (0.11) | **7.81**** (0.01) | 0.71 (0.68) |
| Pseudo R-Square | 0.12 | 0.18 | 0.15 | 0.16 | 0.13 |
| Max-Rescaled R-Square | 0.17 | 0.31 | 0.17 | 0.22 | 0.18 |

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Note: Logistic regression predicting Mail Return by 4/18. Panel cases completing all waves, with weights, Heavy up excluded. Positive and negative attitudes measures based only on 'strongly' agree/disagree values. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

In Tables 6-6 and 6-7, we exploit the 2010 CICPE panel sample to better understand how the evolution of knowledge and attitudes may affect mail return. To predict mail return prior to April 18, we include the Wave 3 knowledge score as it was included in prior models. We also include two variables which indicate how and to what extent the knowledge score changes from Wave 1 to Wave 3: positively (meaning knowledge increased over time) or negatively (meaning correct knowledge decreased over time). We also include Wave 3 positive and negative attitudes and the extent of positive change from Wave 1 to Wave 3 in each. Running all cases together, we see significant associations with mail return for Wave 3 knowledge and attitudes, and a (perverse) positive relationship for negative attitudes in Wave 3. For this model including all cases, the direction of change in knowledge or attitudes from Wave 1 is not significant for any measure. The rest of Table 6-6 shows results by age and then home ownership. This time, those younger than 45 run parallel to homeowners (not non-homeowners, as in the earlier models), and similar also to the 'all cases' model. Wave 3 negative attitudes are associated with increased mail return for those under 45 years and non-homeowners (for whom the effect is particularly large), holding everything else constant in the model. The only time the change from Wave 1 is

significant is for change in negative attitudes for homeowners; in this group, positive change (i.e., decrease in count) of negative attitudes is associated with increased mail return after controlling for the other variables in the model.

The main implication of this table is that Wave 3 knowledge and attitudes are better predictors of mail return than Wave 1 knowledge and attitudes or the changes from Wave 1 to Wave 3. To the extent that changes in knowledge and attitudes can be affected by a communications program or other influences, this result is very encouraging.

**Table 6-7.** Predicting Pre-NRFU Mail Return using Wave 1 to Wave 3 Knowledge and Attitudes by Sample Type

| | Model V Hispanic | Model VI Non-Hispanic African American | Model VII Non-Hispanic White | Model VIII American Indian | Model IX Asian | Model X Native Hawaiian |
|---|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Wave 3 Knowledge Score | 1.28 (0.19) | 1.19 (0.24) | **1.50**** (0.01) | 1.09 (0.27) | **1.73**** (<.01) | **1.38*** (0.06) |
| Positive Change in Knowledge | 3.18 (0.83) | 0.45 (0.25) | 0.80 (0.92) | 0.84 (0.18) | **3.92**** (0.02) | **0.68**** (<.01) |
| Negative Change in Knowledge | 13.34 (0.12) | 0.92 (0.60) | 0.73 (0.76) | 1.52 (0.28) | **0.42**** (0.01) | 3.95 (0.12) |
| Wave 3 Positive Attitudes | **0.70**** (0.04) | 0.83 (0.53) | **1.60**** (<0.01) | **2.05**** (<0.01) | 1.15 (0.46) | 0.89 (0.40) |
| Positive Change in Positive Attitudes | **8.38**** (0.02) | 0.91 (0.83) | 0.60 (0.51) | **0.26**** (<.01) | 1.00 (1.00) | 0.85 (0.80) |
| Wave 3 Negative Attitudes | **5.87**** (0.05) | 0.95 (0.89) | **1.85**** (0.05) | 1.09 (0.93) | 0.75 (0.63) | **0.41*** (0.08) |
| Positive Change in Negative Attitudes | 6.51 (0.22) | **0.20*** (0.06) | --[1] | **0.17**** (0.02) | 7.23 (0.23) | 1.23 (0.81) |
| Pseudo R-Square | 0.16 | 0.04 | 0.65 | 0.02 | 0.09 | <0.01 |
| Max-Rescaled R-Square | 0.28 | 0.06 | 0.66 | 0.23 | 0.39 | 0.08 |

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Note: Logistic regression predicting Mail Return by 4/18. Panel cases completing all waves, with weights, Heavy up excluded. Positive and negative attitudes measures based only on 'strongly' agree/disagree values. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

1 All individuals with positive change in negative attitudes returned their census form prior to 4/18 in this sample type, so this parameter cannot be estimated.

Table 6-7 presents the results of the same model by sample type. The situation for Hispanics is clearly puzzling. For this group, both Wave 3 positive attitudes and Wave 3 negative attitudes have statistically significant coefficients, but the 'wrong' sign: holding everything else constant, having more positive

attitudes at Wave 3 reduces mail return, as does having more negative attitudes in Wave 3. Only reduction of negative attitudes is significant for non-Hispanic African Americans. Among non-Hispanic Whites, the Wave 3 status of each of the three variables (knowledge, positive attitudes, negative attitudes) is significant and in the expected direction. For non-Hispanic Whites, reduction of negative attitudes since Wave 1 has a potent positive association with mail return. Among American Indians, the Wave 3 count of positive attitudes is associated with mail return, but so are changes in positive and negative attitudes, which work in the reverse directions from expectations. For Asians, all three knowledge variables are statistically significant and in the expected directions. Among Native Hawaiians, Wave 3 knowledge and negative attitudes, plus positive change in knowledge since Wave 1, are all associated with increased mail return.

## Mail Return in the Paid Advertising Heavy-Up Sample

The estimates in this chapter have so far excluded the cases in the Heavy-up sample because those cases do not contribute to national estimates. Readers interested in analysis of the Paid Advertising Heavy-up Experiment may consult Bates, N., et al. (forthcoming). Although these data do not contribute to national estimates, they are a substantial number of cases suitable to providing additional estimates. In Tables 6-8 and 6-9, we repeat the analyses of Tables 6-2 and 6-4, respectively.

**Table 6-8.** Predicting Pre-NRFU Mail Return using Exposure by Age and Home Ownership for Paid Advertising Heavy-Up Sample Only

| | All Cases | 45 Years or Older | Less than 45 Years | Non-Homeowners | Homeowners |
|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Exposed to Paid Media | **1.56*** (0.08) | **1.61*** (0.08) | **1.75**** (0.05) | **1.69*** (0.08) | 1.35 (0.27) |
| Exposed to Partnerships | 0.97 (0.87) | 1.14 (0.51) | 0.86 (0.59) | 1.04 (0.93) | 0.98 (0.92) |
| Exposed to Census in School | 0.89 (0.70) | 1.37 (0.50) | 1.02 (0.94) | 1.10 (0.78) | 0.75 (0.30) |
| Exposed to Earned Media | 1.22 (0.21) | 1.08 (0.69) | 1.26 (0.41) | 1.07 (0.85) | **1.43**** (0.03) |
| Exposed to Word of Mouth | 1.00 (1.00) | 0.87 (0.57) | 1.03 (0.89) | 1.19 (0.52) | 0.88 (0.59) |
| Frequency of Total Exposure | 1.02 (0.63) | 1.05 (0.54) | 1.05 (0.25) | 1.02 (0.72) | 1.03 (0.38) |
| Pseudo R-square | 0.01 | 0.01 | 0.03 | 0.04 | 0.01 |
| Max-rescaled R-square | 0.02 | 0.02 | 0.04 | 0.04 | 0.02 |

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Note: Logistic regression predicting Mail Return by 4/18. Wave 3 cases, with weights, Heavy-up sample only. Standard errors corrected for complex survey design.
* indicates significance at 0.1 level, ** indicates significance at .05 level.

Recall that in the Heavy-up sample areas, eight sites received an increase in dollars spent to purchase paid media, while eight control sites did not receive such an increase. The only significant exposure measure

in Table 6-8 is exposure to paid media; the exception is for homeowners, for whom earned media exposure is the only significant measure. In the analogous Table 6-2, we saw word of mouth associated with depressed mail return among younger individuals and non-homeowners, and a helpful effect of partnership rather than paid media. The positive association of paid media with mail return for younger and non-home owning individuals is similar in the full sample and in the Heavy-up cases. It may be that the paid media exposure in this experiment swamps the potential effects of other components of the campaign.

**Table 6-9.** Predicting Pre-NRFU Mail Return using Knowledge and Attitudes by Age and Home Ownership for Paid Advertising Heavy-Up Sample Only

| | All Cases | 45 Years or Older | Less than 45 Years | Non-Homeowners | Homeowners |
|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Knowledge Scores | **1.22**** (<0.01) | **1.26**** (<0.01) | **1.20**** (0.01) | **1.13*** (0.07) | **1.21**** (<0.01) |
| Positive Attitudes | **1.13**** (<0.01) | 1.06 (0.45) | **1.20**** (0.03) | **1.24**** (0.01) | **1.07*** (0.06) |
| Negative Attitudes | 1.26 (0.14) | **1.96**** (0.03) | **0.71**** (0.03) | 1.10 (0.65) | 1.41 (0.19) |
| Pseudo R-square | 0.04 | 0.04 | 0.05 | 0.05 | 0.02 |
| Max-rescaled R-square | 0.05 | 0.06 | 0.07 | 0.06 | 0.04 |

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Note: Logistic regression predicting Mail Return by 4/18. Wave 3 cases, with weights, Heavy-up sample only. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Comparing Table 6-9 to Table 6-4, we see that the estimates for the full sample are somewhat similar when we compare with the Heavy-up sample. At the subgroup level, though, the similarity ends. Within the Heavy-up cases, knowledge and positive attitudes show significant associations with mail return, while fewer than half of our subgroups exhibited these relationships in the national data. The Heavy-up data show a negative relationship with negative attitudes for individuals less than 45 years old; a similar association with negative attitudes does not emerge in the full data.

Our intent with re-running these models on the Heavy-up sample was as a sensitivity analysis on our work with the full sample. Tables 6-8 and 6-9 suggest that our results are in fact sensitive to the sample used, since the results from the full sample are generally not repeated in the Heavy-up results. Two major differences between our full sample and the Heavy-up sample are of course the controlled variation in paid media exposure, as well as the fact that the full sample is representative of the nation, while the Heavy-up sample only represents the population of the 16 selected areas. For example, we saw in Table 2-4 that the fraction of Hispanics in the Heavy-up is less than half what it is in the national sample. We

do not know the extent to which these factors contribute to the differences in estimates, versus other factors limiting the generalizability of our full sample results.

## 6.3 Message Receptivity Analysis

Message receptivity (MR) is a validated construct used widely in the communication sciences literature that captures audiences' subjective appraisals of message persuasiveness, believability, and emotional appeal (Dillard, J. P., et al. 2007a; Dillard, J. P., et al. 2007b; Bruner, G. C. 1998). The construct is often used as proxy of ad effectiveness as MR predicts changes in attitudes towards behaviors targeted in ads (Evans, W. D., et al. 2011a). For CICPE, we conducted factor analysis of measured survey items and used the resulting factor as an independent variable in subsequent multivariable analyses to determine the effect of MR on census attitudes, beliefs, and mail return behavior. We also examined differences between subpopulations targeted by the campaign. Figure 6.2 on the next page depicts how the mechanism of message receptivity nests in the CICPE conceptual model.

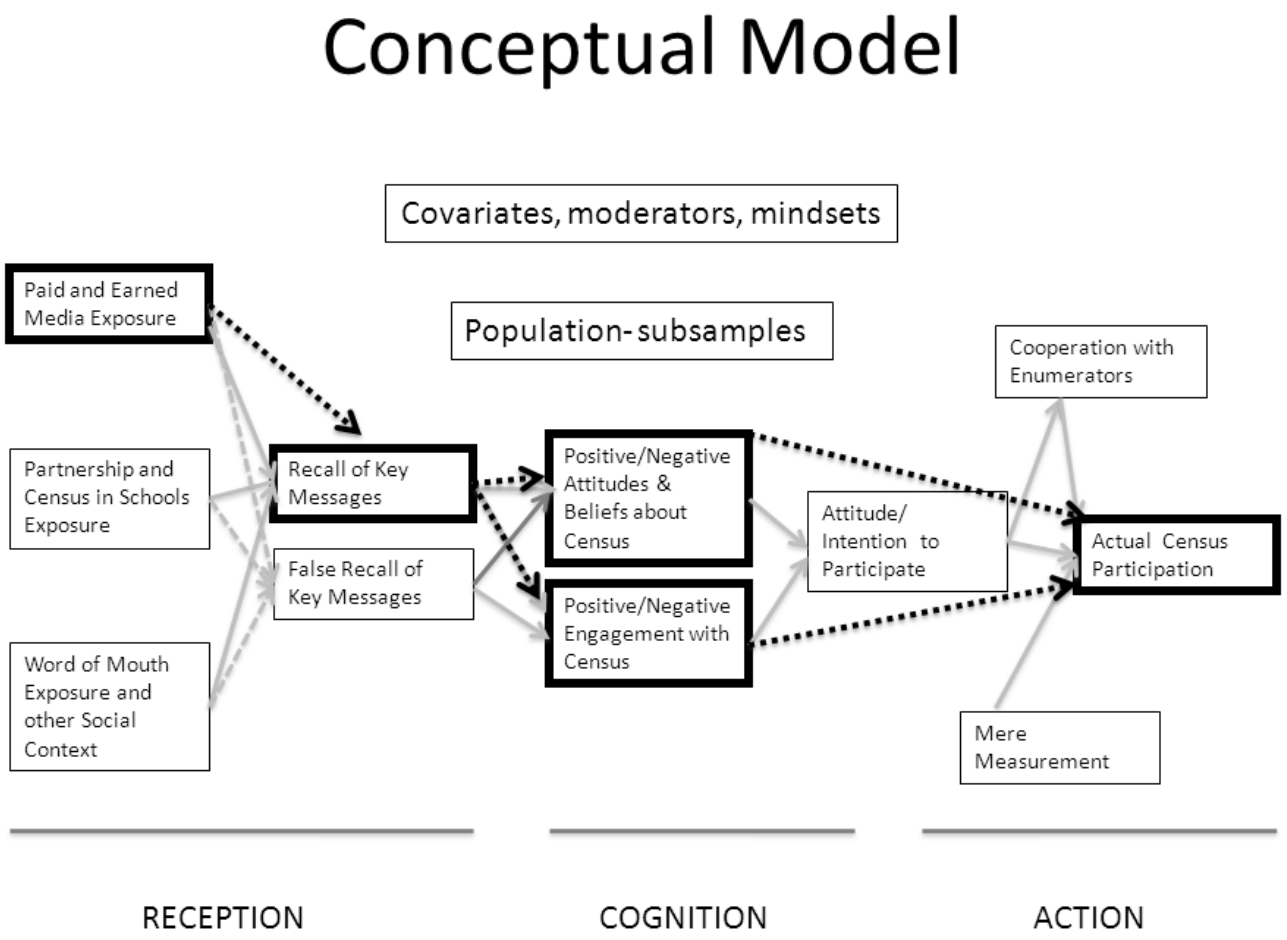
Wave 3 data are used for this analysis (Heavy-up cases were excluded for this analysis, though). In Wave 3, each respondent was asked whether they remembered seeing or hearing three specific advertisements—a diverse mass advertisement, a target population specified advertisement, and a nonresponse follow-up ad. The ads were selected primarily because they received a substantial fraction of air time, but also because testing during questionnaire development indicated that the chosen ads were easier to describe and recognize than other ads in the campaign that ran with similar frequency. For each ad, three messaging items were included in the survey:

- Would you say the ad grabbed your attention? (YES, NO)
- Would you say the ad gave you good reason to mail back your census form? (YES, NO)
- During the past 90 days, how often have you seen this advertisement? Would you say never, once or twice, 3-15 times, 16 to 30 times, or 31 times or more?

We recoded the first two questions so that 1 is YES and 0 is everything else. For the third question, never is recoded as 0, once or twice as 1, 3-15 times as 2, 16 to 30 times as 3, and 31 times or more as 4.[9]

[9] We tried different ways of recoding the frequency question. The results are unchanged. Thus, we presented descriptive statistics and modeling results using this straightforward recoding method.

Figure 6.2. CICPE Conceptual Model – Message Receptivity



In the following, we report two sets of analyses. First, we examined the relationship between self-reported census participation and related knowledge, attitudes and beliefs as the dependent variable and MR as the independent variable. Second, we examined the relationship between actual census mail return as the dependent variable and MR as the independent variable.

## CICPE Self-report Analyses

Based on the above item coding, we calculated an MR score at the ad level for each respondent by summing up the recoded responses to the three messaging items. We then calculated an overall MR index at the respondent level by summing up the message receptivity scores across the three ads. Table 6-10 displays descriptive statistics and reliability analysis of the message receptivity index.

**Table 6-10.** Descriptive Statistics and Reliability Analysis of Message Receptivity Index

| Item | Mean | SE | Factor Loading[2] | Item-Scale Correlation[3] | Inter-item correlation[4] | Alpha[5] |
|---|---|---|---|---|---|---|
| This ad was attention grabbing. | 0.12 | 0.01 | 0.94 | 0.90 | 0.85 | 0.82 |
| Ad gave good reasons to mail. | 0.13 | 0.01 | 0.92 | 0.88 | 0.81 | 0.85 |
| How often have you seen this ad? | 0.29 | 0.02 | 0.89 | 0.94 | 0.75 | 0.90 |
| Message Receptivity Index (summary of the 3 variables) | 0.54 | 0.04 | --- | --- | | |

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[2] FROM PROC FACTOR; [3] CORR W/MR; [4] STANDARDIZED CORR W/TOTAL AFTER DELETION;

[5] ALPHA AFTER DELETION We fit three models to examine whether or not the overall message receptivity index has an effect on respondents knowledge of the Census, attitudes towards the Census, and the self-reported Census return behavior.

Next we fit three models to examine whether or not the overall message receptivity index has an effect on respondents knowledge of the census, attitudes towards the census, and the self-reported census return behavior.

To measure respondents' knowledge of the census, knowledge scores are computed for each respondent by counting the number of correct answers to the eight knowledge questions asked in Wave 3. Covariates included in this model are education, homeownership, whether the respondent speaks or understands another language other than English, and race and ethnicity of the respondents.

To measure respondents' attitudes towards the census, an exploratory factor analysis was performed on the eleven attitudinal questions asking respondents' attitudes towards the census. Two factors were extracted; one factor is only loaded on a question about burden and the other factor is loaded on the other 10 questions. So we used the second factor as the dependent variable in the models. Covariates included in this model are the same as in the preceding analysis.

At Wave 3, respondents self-reported whether or not they completed and mailed back their census form. Based on their responses, a dummy variable is created so that 1 represents census form completed and returned and 0 otherwise. Covariates included in this model are the same as in the preceding analyses.

All models are run with the PROC SURVEYREG or PROC SURVEYLOGISTIC, which accounts for the complex survey design and weights.

Table 6-11 presents crosstabulations of the overall MR factor scores for all respondents by high and low levels of knowledge, positive attitudes, negative attitudes, and exposure to the ICC. High and low categories were calculated based on falling in the upper or lower half of the distribution for the set of knowledge, attitudes, and exposure questions noted above. In Table 6-11, higher mean MR scores within a cell indicate the row variable is correlated with higher MR for the ad in that column. For example, MR correlated with high knowledge scores was higher for Ad 3 than for the population-specific ad or Ad 1. We found that by ad, higher MR was correlated with higher scores on the high knowledge, positive attitudes, and exposure scores/indices, and on the low negative attitude index. Thus higher MR is consistently correlated with more positive cognitions about the ICC by ad.

**Table 6-11.** Message Receptivity (MR) to Census Ads by Census Knowledge, Attitudes, Beliefs, and Exposure [mean, (s.e.)]

| | Ad 1<br>Mean (s.e.) | Population-specific ad<br>Mean (s.e.) | Ad 3<br>Mean (s.e.) |
|---|---|---|---|
| HIGH Knowledge Scores (n=1,430 cases) | 0.46 (0.07) | 0.60 (0.07) | 0.89 (0.14) |
| LOW Knowledge Scores (n=1,678 cases) | 0.36 (0.09) | 0.29 (0.06) | 0.62 (0.09) |
| HIGH Positive Attitude Index (n=1,584 cases) | 0.51 (0.07) | 0.63 (0.10) | 0.90 (0.14) |
| LOW Positive Attitude Index (n=1,524 cases) | 0.31 (0.08) | 0.27 (0.05) | 0.62 (0.08) |
| HIGH Negative Attitude Index (n=1,179 cases) | 0.32 (0.08) | 0.41 (0.05) | 0.70 (0.10) |
| LOW Negative Attitude Index (n=1,929 cases) | 0.44 (0.07) | 0.46 (0.07) | 0.78 (0.10) |
| HIGH W3 Total Campaign Exposure (n=1,285 cases) | 0.65 (0.07) | 0.72 (0.08) | 1.12 (0.14) |
| LOW W3 Total Campaign Exposure (n=1,823 cases) | 0.25 (0.06) | 0.27 (0.04) | 0.53 (0.07) |

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Based on results of the crosstabulations, higher MR appears to be associated with more positive ICC cognitions. This is consistent with the CICPE conceptual model and with MR theory. Previous studies have shown that MR mediates the effects of messaging on attitudes and beliefs targeted by media campaigns (Petty, R. E. et al., 1986; Dillard, J. P., et al. 2007a; Evans, W. D., et al. 2011b). To further test these hypothesized relationships we estimated multivariable regression models shown in Table 6-12. We regressed MR on the knowledge score, attitudes index, census participation intent, and census mail return variables noted earlier. These analyses controlled for the same multiple respondent characteristics noted above. We initially calculated a full model including all covariates. Then we calculated a reduced model including only those covariates found statistically significant in the full model. These included education level, home ownership, and non-English speaking status. We found that both the knowledge score and attitude factor were positively and significantly associated with a higher MR factor. There was no relationship observed between MR and census participation intent or census mail return.

**Table 6-12.** Predicting Knowledge and Attitude Measures using Message Receptivity Multivariable Regressions

| **Outcome** | **Knowledge Score** | | | | **Attitude Factor** | | | |
|---|---|---|---|---|---|---|---|---|
| | N=2,401 | | | | N=1,888 | | | |
| | **Main Effects Model** | | **With Interactions** | | **Main Effects Model** | | **With Interactions** | |
| | **Coefficient** | **p-value** | **Coefficient** | **p-value** | **Coefficient** | **p-value** | **Coefficient** | **p-value** |
| R-square | 0.24 | | 0.27 | | 0.14 | | 0.20 | |
| Message Receptivity Index | **0.16**** | <0.01 | **0.42**** | 0.03 | **0.03**** | <0.01 | 0.08 | 0.38 |
| **Outcome** | **Self-report: Census_Form Returned** | | | | **W2 Intent Factor** | | | |
| | N=2,401 | | | | N=924 | | | |
| | **Main Effects Model** | | **With Interactions** | | **Main Effects** | | **With Interactions** | |
| | **Coefficient** | **p-value** | **Coefficient** | **p-value** | **Coefficient** | **p-value** | **Coefficient** | **p-value** |
| R-square | 0.11 | | 0.14 | | 0.27 | | 0.35 | |
| Message Receptivity Index | 0.10 | 0.15 | 0.23 | 0.53 | 0.02 | 0.27 | -0.09 | 0.47 |

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Note: Weighted least squares for knowledge scores and attitude factor. Logistic regressions for self-reported form return and Wave 2 intent. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

As a follow up, we examined differences in relationships between MR and ICC outcomes for each of the major subpopulations targeted in the campaign for which CICPE had adequate analysis sample. The subpopulations included non-Hispanic African Americans, Hispanics, American Indians, Native Hawaiians, non-Hispanic Whites, and Asians. We developed similar multivariable regression models for

each subpopulation and used the same covariates as in previous analyses. We estimated a reduced model as before and report those results here. The reduced model excluded non-English speaking status for subgroup analyses of Hispanics who speak Spanish due to collinearity.

Overall, we found that the relationships between MR and knowledge scores and attitudes index were generally similar across subpopulations – significant associations with some variation in magnitude. One exception was no significant relationship observed between MR and the attitudes index for Asians. [See Appendix D for tables providing subpopulation regression results.] There were, however, substantially different findings in the case of census mail return. Higher MR was associated with higher mail return in Hispanics (.22, $p < 0.01$), Asians (.28, $p = .01$), and Native Hawaiians (.19, $p = .02$). No other significant associations between MR and outcomes were observed in the subpopulation analyses.

Additionally, we developed models to test whether exposure to at least one ICC ad affected the relationship between MR and outcomes. The previous models calculated MR for all respondents, including those who had not reported exposure to any ads. We now restricted the sample to those respondents who had reported exposure to at least one ICC ad and modeled the relationship between MR and outcomes in this subsample with the same covariates as before.

Results of these subsample analyses varied from the previous models including the full sample. In the overall model for all population groups, higher MR was associated with higher knowledge scores (.04, $p < 0.01$). However, in the overall model, higher MR was no longer associated with higher attitudes index. Higher MR was not associated with higher census mail return, as before.

In subpopulation analyses, the results were mixed. For non-Hispanic African Americans and non-Hispanic Whites, higher MR is no longer associated with higher knowledge scores. For Asians, higher MR is associated with lower knowledge scores (-.10, $p = .004$). No other differences from the previous subpopulation models were observed. In this analysis, only among Hispanics was higher MR associated with a higher attitude index.

For Hispanics (.53, $p < 0.01$), Asians (.25, $p < 0.01$), and Native Hawaiians (.16, $p =<0 .01$), higher MR is associated with higher census mail return. No significant effects were observed for the other subpopulation groups.

Overall, higher MR is associated with higher census-related knowledge and more positive attitudes. This is consistent with the CICPE evaluation conceptual model and previous research on message receptivity. Some population subgroups have higher MR and for those groups higher MR is associated with higher

knowledge, more positive attitudes, and greater census mail return. When the sample is restricted to respondents who self-reported exposure to at least one ICC ad, the picture is more mixed. The latter result requires further analysis and interpretation. One explanation may be simply reduced statistical power due to a small sample of those who self-reported at least one exposure to an ad measured in the CICPE questionnaire. With smaller cell sizes at the subpopulation level in particular, the effects of MR observed in the full sample analyses may be washed out in some cases.

## Census Mail Return Analyses

Next we conducted comparable regression models using actual census mail return data as the dependent variable. We estimated models in which 1 represents census form completed and returned and 0 otherwise. Covariates included in this model are the same as in the preceding analyses. As in the preceding, all models were run with the PROC SURVEYREG or PROC SURVEYLOGISTIC, which accounts for the complex survey design and weights.

To further test these hypothesized relationships we estimated multivariable regression models shown in Table 6-13. We regressed MR on the census mail return variable. These analyses controlled for the same multiple respondent characteristics noted above. As previously, we initially included the full set of socio-demographic variables as covariates. We then estimated a reduced model including only those variables found significant in the initial analysis. We calculated this model for two subgroups within the CICPE sample: 1) all respondents, and 2) respondents who self-reported exposure to at least one ICC advertisement. Based on this final model, we found that there was no relationship observed between MR and actual census mail return. Table 6-13 summarizes these results.

**Table 6-13.** Predicting Pre-NRFU Mail Return Using Message Receptivity (MR)

| | Pre-NRFU Mail Return | | | | | |
|---|---|---|---|---|---|---|
| | **All Covariates** | **All Covariates** | **Reduced model** | **Reduced model** | **Reduced model with interactions** | **Reduced model with interactions** |
| **Respondent (R) Pool** | **All Rs** | **Rs Exposed to at least one ad** | **All Rs** | **Rs Exposed to at least one ad** | **All Rs** | **Rs Exposed to at least one ad** |
| n | 2,134 | 1,202 | 2,731 | 1,488 | 2,731 | 1,488 |
| pseudo-R square | 0.13 | 0.13 | 0.08 | 0.06 | 0.09 | 0.07 |
| | **Estimates (p-value)** | **Estimates (p-value)** | **Estimates (p-value)** | **Estimates (p-value)** | **Estimates (p-value)** | **Estimates (p-value)** |
| Message Receptivity | 0.02 (0.63) | 0.06 (0.49) | 0.04 (0.47) | 0.02 (0.79) | 0.00 (0.98) | -0.05 (0.70) |

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Note: Logistic regressions for actual Census form return. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level

As in the previous models, we also examined differences in relationships between MR and ICC outcomes for each of the major subpopulations targeted in the campaign for which CICPE had adequate analysis sample. The subpopulations included non-Hispanic African Americans, Hispanics, American Indians, Native Hawaiians, non-Hispanic Whites, and Asians. We developed similar multivariable regression models for each subpopulation and used the same covariates as in previous analyses. As before, we developed an initial model with all covariates noted earlier and then estimated a reduced model that included only the statistically significant covariates: education level, home ownership, and non-English speaking status. As before, the last variable was excluded for subgroup analyses of Hispanics who speak Spanish due to collinearity. See Appendix D for full tables with these results.

Overall, we found that there were numerous significant relationships between MR and actual census mail return. As with the self-report data, we estimated models for all respondents and those exposed to at least one ICC advertisement. MR was associated with higher actual census return among all Hispanics exposed to at least one ad (.09, $p$ <0 .03). MR was also associated with higher return among all Hispanics who speak Spanish (.12, $p$ <0 .02). Effects were stronger for Hispanics who were exposed to at least one ad and speak Spanish (.17, $p$ < 0.01).

MR was associated with higher actual census mail return among all American Indians (.17, $p$ <0 .04. Among American Indians exposed to at least one ad, MR was also associated with higher return (.20, $p$ < 0.01). Finally, MR was associated with higher actual census return among Native Hawaiians exposed to at least one ad (.14, $p$ < 0.01). No other significant associations between MR and outcomes were observed in the subpopulation analyses.

## 6.4 Modeling Cooperation with Enumerators

Our other main outcome is cooperation with enumerators. Figure 6.3 on the next page illustrates the relationship of exposure to the ICC components, directly and through knowledge and attitudes to this outcome. We reran the above models by replacing the mail return outcome measure with cooperation with enumerators during the NRFU period. As discussed in Chapter 3, we measure cooperation with enumerators through the completion of the enumeration with a household member (as opposed to a proxy) during NRFU activities. As with mail return, we estimate logistic regressions and account for the complex survey design in calculating standard errors. Because many fewer households were eligible for this phase of census participation, the sample sizes for these estimates are smaller. We remove Census in Schools exposure and negative attitudes from the relevant models because of inadequate incidence among the households with NRFU data.

Figure 6.3. CICPE Conceptual Model – Cooperation with Enumerators

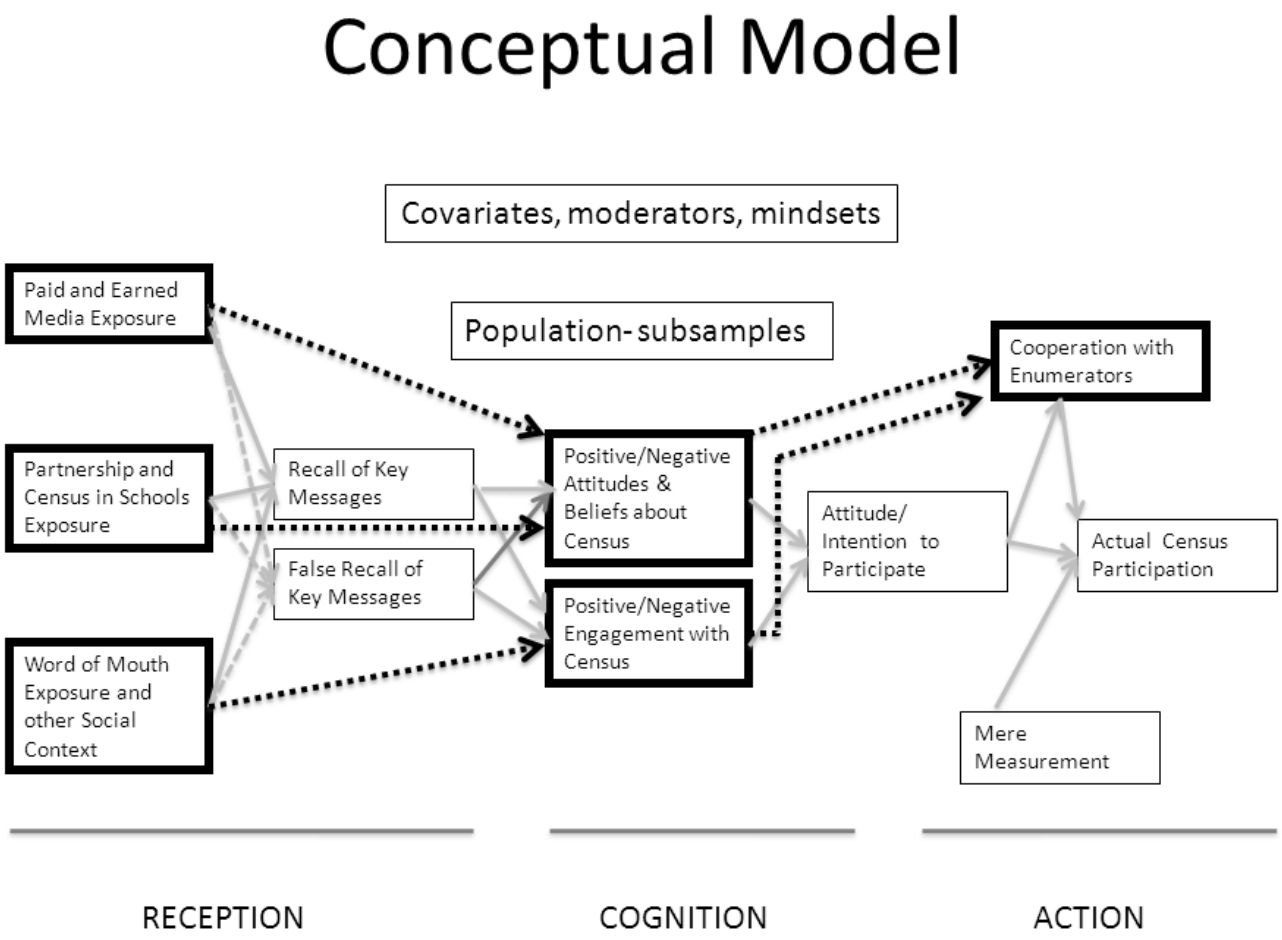

**Table 6-14.** Models predicting Cooperation with Enumerators

| | Demographics | Demographics+Proxy | Demographics+proxy+ operational |
|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| English Spoken in Household | 1.11 (0.88) | 1.34 (0.67) | 0.86 (0.82) |
| Less than 45 | 1.03 (0.94) | 1.00 (1.00) | 0.89 (0.79) |
| Currently married | 1.45 (0.54) | 1.47 (0.51) | 1.95 (0.24) |
| Less than High School | 0.71 (0.46) | 0.77 (0.38) | 0.72 (0.26) |
| High School | **0.19**** (0.03) | **0.21**** (0.01) | **0.13**** (<0.01) |
| Less than $25,000 | **0.20**** (0.02) | **0.21**** (0.01) | **0.31*** (0.10) |
| $25,000 to $59,999 | 0.47 (0.92) | 0.49 (0.91) | 0.58 (0.93) |
| Homeowner | 1.73 (0.53) | 1.70 (0.49) | 1.84 (0.39) |
| One Person Household | 0.88 (0.94) | 0.82 (0.84) | 0.62 (0.29) |
| Two-person Household | 0.85 (0.81) | 0.82 (0.80) | 1.12 (0.40) |
| Not working | 1.53 (0.27) | 1.47 (0.32) | 1.44 (0.28) |
| Hispanic | 1.82 (0.67) | 1.69 (0.73) | 0.55 (0.29) |
| Black | 0.82 (0.24) | 0.88 (0.31) | 0.94 (0.83) |
| American Indian | 3.41 (0.10) | 3.08 (0.13) | **4.53**** (0.02) |
| Asian | 1.24 (0.78) | 1.30 (0.88) | 0.58 (0.16) |
| Native Hawaiian | 1.25 (0.86) | 1.21 (0.83) | 0.91 (0.84) |
| Civic Participation | | 0.82 (0.54) | 0.87 (0.61) |
| High Media Use | | 0.65 (0.21) | 0.72 (0.36) |
| High in Neighborhood Connectedness | | 1.63 (0.18) | 1.33 (0.38) |
| Bilingual Form Received | | | **4.05**** (0.01) |
| Target Replacement Form Received | | | 0.41 (0.25) |
| Blanket Replacement Form Received | | | 1.26 (0.61) |
| Language Postcard Received | | | **5.38**** (0.02) |
| Pseudo R-square | 0.18 | 0.19 | 0.24 |
| Max-rescaled R-square | 0.27 | 0.29 | 0.36 |

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Note: Logistic regression predicting cooperation with enumerators. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

In Table 6-14, we see that not very many of our background and other control variables are significantly associated with cooperation with enumerators. Holding everything else constant, those completing high school are less likely to cooperate with enumerators than are individuals with at least some college education (the omitted category), and individuals with household income less than $25,000 are less likely

to cooperate than households with incomes of $60,000 or above (the omitted category). American Indians are more likely to cooperate than non-Hispanic Whites given the set of controls included in these models. In the final column, we see positive associations of the bilingual form and language postcard with cooperation with enumerators. Since we exclude these interventions from analyses of mail return, where they would be arguably more relevant, we continue to exclude them from analyses of cooperation with enumerators despite these positive associations.

**Table 6-15.** Predicting Cooperation with Enumerators using Exposure by Age and Home Ownership

| | All Cases | 45 Years or Older | Less than 45 years | Non-Homeowners | Homeowners |
|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Exposed to Paid Media | 0.89 (0.88) | 1.30 (0.67) | 0.46 (0.49) | 1.53 (0.65) | 0.45 (0.23) |
| Exposed to Partnership | 0.74 (0.69) | **0.22**** (0.02) | 1.03 (0.97) | 1.04 (0.96) | 0.48 (0.59) |
| Exposed to Earned Media | **3.84**** (0.04) | **17.32**** (<0.01) | 3.07 (0.15) | 3.45 (0.16) | 2.51 (0.44) |
| Exposed to Word of Mouth | 1.06 (0.91) | **0.42**** (0.04) | 1.97 (0.45) | 0.54 (0.38) | 2.21 (0.30) |
| Frequency of Total Exposure | 0.97 (0.84) | 1.40 (0.39) | 0.92 (0.59) | 0.91 (0.47) | **1.50*** (0.05) |
| Pseudo R-square | 0.05 | 0.09 | 0.06 | 0.04 | 0.10 |
| Max-rescale R-square | 0.07 | 0.18 | 0.08 | 0.07 | 0.16 |

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Note: Logistic regression predicting cooperation with enumerators. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Table 6-15 documents associations of exposure with cooperation with enumerators for all cases and by age and home ownership. In the overall model, exposure to earned media is the only significant measure, but this relationship seems to only hold among individuals age 45 and over, holding everything else constant in the model. We see no significant effect of earned media exposure in the other subgroups, but its coefficient is quite large for all groups and near significance for individuals under 45 and non-homeowners. Among the older individuals, partnership and word of mouth have negative associations with cooperation with enumerators. The only other significant coefficient in these models is for homeowners, among whom increased frequency of total exposure brings increased likelihood of cooperation with enumerators.

**Table 6-16.** Predicting Cooperation with Enumerators using Exposure by Sample Type

| | Hispanic | Non-Hispanic African American | Non-Hispanic White | American Indian | Asian | Native Hawaiian |
|---|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Exposed to Paid Media | **0.02**** (<0.01) | 1.39 (0.73) | 0.71 (0.68) | 13.72 (0.11) | **0.15**** (0.05) | 0.14 (0.16) |
| Exposed to Partnership | 2.14 (0.32) | **3.34**** (**0.01) | 0.64 (0.76) | **0.29**** (<0.01) | 1.96 (0.45) | 0.92 (0.92) |
| Exposed to Earned Media | 3.23 (0.35) | 4.81 (0.11) | 4.05 (0.30) | 0.34 (0.37) | 1.63 (0.51) | **3.35**** (0.01) |
| Exposed to Word of Mouth | 1.57 (0.28) | **0.03**** (<0.01) | 1.98 (0.39) | **0.29*** (0.09) | 2.22 (0.45) | 2.31 (0.17) |
| Frequency of Total Exposure | 1.22 (0.29) | **0.78**** (0.01) | **2.18**** (0.04) | 1.23 (0.24) | **2.24**** (0.02) | 0.94 (0.71) |
| Pseudo R-square | 0.18 | 0.18 | 0.59 | <0.01 | 0.02 | <0.01 |
| Max-rescaled R-square | 0.28 | 0.29 | 0.59 | 0.10 | 0.08 | 0.09 |

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Note: Logistic regression predicting cooperation with enumerators. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Table 6-16 looks at the relationship of exposure to cooperation with enumerators by sample type. Having had paid media exposure is associated with lower likelihood of cooperation with enumerators among Hispanics and Asians after controlling for the other variables in the model. Having any paid media exposure just misses the cut-off for statistical significance in the American Indian sample, but the size of the effect is extremely large and positive. Partnership exposure promotes cooperation among non-Hispanic African Americans, and brings lower cooperation among American Indians. Earned media exposure matters to Native Hawaiians (the measure is almost significant for non-Hispanic African Americans as well). Word of mouth is negatively associated with cooperation with enumerators for non-Hispanic African Americans and American Indians. Finally, frequency of total exposure is associated with increased cooperation with enumerators among non-Hispanic Whites and Asians, and decreased cooperation among non-Hispanic African Americans.

These associations are similar to some of the results for the relationship between exposure and mail return (Table 6-4). There too, earned media has a positive main effect, and word of mouth is largely negatively associated with census participation. Partnership is again associated with lower census participation among American Indians.

**Table 6-17.** Predicting Cooperation with Enumerators using Knowledge and Attitudes by Age and Home Ownership

| | All Cases | Model I 45 years or older | Model II Less than 45 years old | Model III Non-Homeowner | Model IV Homeowner |
|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Knowledge Scores | **1.46**** (<0.01) | 1.12 (0.33) | **1.68**** (<0.01) | **1.42*** (0.05) | **1.32**** (0.03) |
| Positive Attitudes | 1.22 (0.23) | 0.96 (0.86) | 1.34 (0.26) | 1.42 (0.10) | 1.10 (0.76) |
| Pseudo R-square | 0.12 | 0.01 | 0.24 | 0.12 | 0.06 |
| Max-rescale R-square | 0.18 | 0.01 | 0.32 | 0.19 | 0.08 |

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Note: Logistic regression predicting cooperation with enumerators. Wave 3 cases, with weights, Heavy up excluded. Positive and negative attitudes measures based only on 'strongly' agree/disagree values.Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

Knowledge does seem positively associated with cooperation with enumerators among all cases as well as with all but individuals older than 45 years. The count of positive attitudes is (positively) associated with cooperation with enumerators only for non-homeowners.

**Table 6-18.** Predicting Cooperation with Enumerators using Knowledge and Attitudes by Sample Type

| | Model V Hispanic | Model VI Non-Hispanic African American | Model VII Non-Hispanic White | Model VIII American Indian | Model IX Asian | Model X Native Hawaiian |
|---|---|---|---|---|---|---|
| **Variable** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** | **OR (p-value)** |
| Knowledge Scores | **1.46**** (0.03) | 1.04 (0.82) | **1.87**** (<0.01) | **1.33**** (<0.01) | 0.87 (0.45) | 0.78 (0.29) |
| Positive Attitudes | 1.43 (0.37) | 0.85 (0.50) | 1.46 (0.11) | 0.83 (0.32) | 1.35 (0.25) | 1.20 (0.35) |
| Pseudo R-square | 0.12 | 0.01 | 0.82 | <0.01 | 0.01 | <0.01 |
| Max-rescale R-square | 0.19 | 0.01 | 0.82 | 0.05 | 0.03 | 0.03 |

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Note: Logistic regression predicting cooperation with enumerators. Wave 3 cases, with weights, heavy up excluded. Positive and negative attitudes measures based only on 'strongly' agree/disagree values. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

In Table 6-18, we see that knowledge scores are positively associated with cooperation with enumerators in three sample types: Hispanic, non-Hispanic White, and American Indian. The count of positive attitudes is not significant for any sample type, just missing the threshold for a positive association with cooperation among non-Hispanic Whites. Knowledge and attitudes together seem to account for a large

majority of the variation in cooperation with enumerators for non-Hispanic Whites. These results do not seem to overlap notably with the results in Table 6-5 for knowledge and attitudes predicting mail return.

# Chapter 7: Supplemental Data

One limitation of using self-reported exposure data to evaluate the effect of exposure is that people who recall and report exposure to the ICC may be systematically different from those who have been exposed but do not recall and report exposure. For example, people who are indifferent to the census may not consciously recall and report their exposure, but they may in fact absorb and react to that exposure. In this case, we would underestimate the effect of true exposure because people were changing their behaviors in response to exposure, but we were unable to measure that exposure. A related threat would be if people who are a priori enthusiastic about the census actually have a higher likelihood of reporting and recalling their ICC exposure. In this case, we may be seeing high likelihood of census participation among those who were pro-participation to begin with, resulting in over-estimating the effect of the campaign by attributing the correlation as causation. The 2010 CICPE design called for use of supplemental data sets that directly measure 2010 ICC activity as a way to mitigate or at least measure this limitation on our survey data.

The supplemental data could also help mitigate a second limitation of the survey data, which pertains to the integrated nature of the campaign and the associated difficulty for respondents to distinguish between campaign components. Good quality data that directly measure individual campaign components would allow us to separate out component-level effects that are difficult to estimate in the self-report data. As with the survey data, it still remains that the areas and individuals who were targeted for partnership activity were also those that were targeted for paid media activity. Better direct data on campaign components may still not enable us to separate out the two components if activity levels are highly correlated across areas.

The 2010 CICPE design called for using supplemental data sources to validate and potentially improve on the evaluation results that rely strictly on survey data. In this chapter, we discuss the five supplemental data sources we were able to identify, and our assessments of their relative appropriateness for inclusion in 2010 CICPE analyses. Overall, we found that most data sources had considerable limitations that prevented their use fully as we had envisioned. Where possible, we compare the supplemental measures of potential exposure with the self-reported measures of exposure as a validation check. Finally, we enhance our main models from the prior chapter by adding to them measures of potential exposure derived from the supplemental data sources.

## 7.1 Data Sources

Data useful for our estimation would have certain properties. The data should provide a measure of campaign activity that describes the potential exposure for households to that activity. Since our estimation strategy is based on comparing low-exposure households with high-exposure households, the data should also be associated with a time-dimension (e.g., month of the campaign) and geographic area that can be tied to our sampled households. Because of our interest in each of the hard-to-count sample types, data should be available for the full 2010 CICPE sample, including the smaller supplement sample populations (American Indians, Asians, Native Hawaiians).

The 2010 CICPE team acquired and investigated at least one data source for each of the components of the campaign:

| Component | Data Source | Relevance for CICPE analysis |
|---|---|---|
| Paid Media | Gross Ratings Points for TV and Radio advertising | Moderate |
| Paid Media | Dollars Spent on all Paid Media | Moderate |
| Partnership | Integrated Partnership Contact Database | Weak |
| Census in Schools | Scholastic Customer Satisfaction Interview data | Inadequate for estimation |
| Earned Media | VOCUS | Inadequate for estimation |

The paid media component of the 2010 ICC was designed and implemented by Draftfcb in conjunction with the Census Bureau. The paid media campaign included a national campaign, local buys, and targeted efforts for different subpopulations. In the national campaign, advertisements were purchased and placed in national venues such as national broadcast or cable networks, national radio, or national magazines. These were primarily for the general population and comprised the dominant fraction of paid media expenditures. Overlaying the national campaign were local buys in which Draftfcb placed ads on local television and print outlets, radio, and other media. Local buys could reach the full population of the area or targeted subpopulations. A variety of subpopulations were targeted, including larger groups such as Hispanics and African Americans, as well as 'emerging' or other smaller groups such as Arab Americans, Russian Americans, Asians, American Indians, and Native Hawaiians and Pacific Islanders. Aside from African Americans, these subpopulations were targeted primarily in languages other than English. The targeted campaigns often emphasized print, radio, and local cable outlets rather than network television or radio, based on the availability of media outlets to reach desired groups. Local buys represented a small portion of dollars spent of the overall campaign, but sizable fractions of the campaign efforts targeted to specific subgroups.

Draftfcb and the Census Bureau provided NORC with information on when and where those ads were placed, with the amounts spent, and with ratings data (Gross Ratings Points, or GRPs) where those were available.

## Paid Media Ratings Data

Ideally, ratings would be used to construct an independent measure of how much paid media each CICPE household might have been exposed to, based on its location and demographic characteristics.

One of the main challenges with the ratings data is that they are not available for the supplemental samples because Nielsen does not produce ratings for those small subgroups of the U.S. population. [Note that one-half of the CICPE sample (excluding Heavy-up) falls into these groups for which ratings are not available.] The ratings data are also available only for TV and radio (and not print or other media). For the national campaign and the local buys for the Core sample, the omitted media represent a relatively small fraction of the paid media activities.

NORC received local and national ratings data from Draftfcb and the Census Bureau. For local media buys, ratings points were provided for general population, non-Hispanic African American, and Hispanic audiences for each DMA (Designated Market Area) in which television and/or radio ads were purchased. (A DMA usually consists of a central metropolitan area and the surrounding counties in which a majority or plurality of households tune into the local television affiliates of the same metro area. Therefore each DMA has a unique definition with respect to its component counties.) Local-media ratings points were not available for any other ethnicities, or for any medium other than TV and radio. Ratings points were reported weekly for the three temporal phases of the campaign (Awareness, Motivation, and NRFU).

For the national media buy, Draftfcb provided TV and radio data at the weekly level for general population, non-Hispanic African American, and Hispanic audiences (no other ethnicities were separately measurable). However, these data were not broken down by DMA. Actual GRP data at the DMA level from the national buy were only available by quarter and only for TV for general population, non-Hispanic African American, and Hispanic audiences. For the data analysis, our goal was to assign to each respondent a total level of exposure keyed to their own characteristics and the time at which they were interviewed, and reflecting exposure to local and national media. Given the constraints of the available data, we instead create a single measure consisting of the total television (and radio, where available) GRPs achieved for a given ethnicity and DMA over the entire campaign. Ethnicity-specific totals were available for non-Hispanic African American and Hispanic respondents; these respondents also received a share of the general-population audience ratings proportional to their population share in a given DMA.

Respondents from all other ethnicities were assigned the general population total ratings points. Note that allocating GRPs in proportion to population share assumes that individuals of all ethnicities were watching and receiving exposure at the same rates; this should not be true if targeting of ethnic groups through differential placement of ads was effective.

Our constructed GRP measure is available for 86 of the counties in which Wave 3 CICPE interviews were conducted. The measure is standardized when entered into regressions below, but in unstandardized form, has a mean of 2840 and a standard deviation of 1880.

*Alternative method of constructing GRPs.* Paid media expenditure data were also made available to the CICPE project team by Draftfcb and the Census Bureau. In consultation with Census Bureau staff and consultants, we explored potential methods to use paid media expenditure data as a means of assigning GRPs to DMAs in order to achieve our data analysis objectives. Ultimately, we agreed that this was not a feasible strategy.

To use the weekly local spending pattern, one would calculate the percentage of a given quarter's total ratings points achieved in each week, and allocate that same percentage of the quarterly total of national ratings to that week. However, a number of the respondents in our sample inhabited smaller markets such as Orlando, FL, and Juneau, AK, in which there was no local spending in a given quarter from which to infer a pattern; all the ads for that DMA in that quarter had been with national media.

Using the national pattern (available by week and by ethnicity, but not by DMA) as a reference point for allocating the quarterly national-media ratings was also problematic. Since this information is not broken out by DMA, using it would incorporate the assumption that the communications campaign followed the same pattern for all DMAs. This assumption is clearly falsified by the observed variation when different types of ads were placed in different cities with varied timings.

## Paid Media Spending Data

Paid media spending data were provided for both local and national media, with different degrees of specificity for each kind of information. Total amounts spent on local media were available by DMA for general population, non-Hispanic African American , Hispanic, Asian, American Indian, and Native Hawaiian respondents. Media spending totals included separate amounts for print (primarily newspapers and magazines), radio, television, digital media, and outdoor displays. The spending data was broken into three types: In-going spending (incorporating the three main Awareness, Motivation, and NRFU phases), Rapid Response spending, and Heavy-up spending (where applicable). Rapid Response spending was spending that was not planned initially, but was intended to respond to conditions as they arose during the

course of the campaign. This type of spending is potentially problematic for our evaluation, since it generally involves spending more money where conditions (like interim participation rates or negative attitudes) are worse. In the absence of good analytical controls, correlational analyses will indicate that increased spending was associated with worse outcomes. Fortunately, this spending stream was a relatively small fraction of the overall paid media expenditure and so unlikely to contaminate results very much.

As discussed above, the largest component of the paid media campaign was the 'national' campaign, which involved purchasing advertisements that would be broadcast across the country on the same show at the same time. Super Bowl advertising is a good example of national advertising. Because these ads were bought and paid for at the national level, it is not possible to state a DMA-level spending dollar value for these national ads directly.

The national-media spending amounts were available by phase, for all five spending categories; the media covered were listed as television, radio, magazines, newspapers, outdoor, digital, and other. These spending totals were likewise available for non-Hispanic African American, general population, Hispanic, Asian, and audiences nationally, but not by DMA.

As with the ratings data, our aim was to obtain the most specific possible determination of the amount spent on the campaign that was relevant to each respondent and could contribute to a usable estimate of their exposure to paid media. Our options for allocating the national spending by DMA were significantly more limited than for the ratings data, however, since the local-media spending was not available by any periods of time shorter than the entire campaign, and the national-media spending, while broken down by phase, was not available for individual DMAs. We judged that any allocation of national spending to DMAs that relied solely on population percentages was not likely to enhance the usefulness of the data in estimating respondents' actual exposure, and might actually be counterproductive, given that it could reduce the amount of variation between households available for statistical modeling to exploit.

Therefore, our final spending measures used only the local-media spending totals for each ethnicity, for the entire campaign. Non-Hispanic African American and Hispanic respondents were assigned a share of the general population spending for each DMA proportional to their share in the population of that DMA. Since population percentages were not available for other ethnicities, only non-Hispanic African American and Hispanic respondents were treated in this way; other ethnicities were allocated only the spending on ads targeted to their particular ethnic group in that DMA. Note that there were some DMAs

in which there was no local spending; individuals in those DMAs are allocated a spending value of zero. The spending data are available for 55 DMAs in which CICPE Wave 3 interviews were conducted. They are entered in standardized form in regressions below, but in unstandardized form, have a mean value of $0.905 million per DMA, and a standard deviation of $1.257 million.

As should be clear, although considerable data were made available by Draftfcb and the Census Bureau regarding the execution of the paid media campaign, our summary supplemental data measures from the spending and GRP data reflect many allocation and approximation decisions, each with its own potential error, as the data captured were not easily manipulated to generate estimates of the differences in potential exposure across sample types and DMAs.

## Partnership Data

The Partnership program played an important role in the 2010 ICC. This program relied on trusted voices in a community to help spread the message about the importance of participating in the Census and to encourage members of key groups to complete and mail back their census forms. The Census Bureau fostered partnerships with a wide range of groups like state, local, and tribal governments, community-based and faith-based organizations, educational institutions and groups, media outlets, businesses, and other grassroots entities. Partners supported the Census and reached out to their communities in a variety of ways. Some partners provided space for testing, developed a public service announcement, donated air time at a local radio or television station, or simply placed a poster in the window of their shop; others served as Be Counted/Questionnaire Assistance Centers or sponsored a Complete Count Committee. Because of the multiple ways in which a partner organization could share the message about the importance of the census, these outreach efforts can be difficult to distinguish from the activities of other campaign components like earned media and paid media.

The Census Bureau kept track of its partners with the Integrated Partner Contact Database (IPCD). Partnership specialists were trained to record each contact with a partner organization along with other information to be used for management purposes such as partner type, community served, race/ethnicity served, and type of commitment activity. This database enabled the Census Bureau to closely manage their partnership organizations by tracking each contact and commitment activity.

Because the IPCD was designed to be used as an operational tool by the Census Bureau rather than an evaluation or research data set, it was important to review the data looking particularly for issues that support or call into question comparability of data across sites. We focused especially on the way that the data would fit into the 2010 CICPE evaluation design – by exhibiting variation across geographic

locations that mimicked households' potential exposure to partnership activities in those locations, and by exhibiting over-time variation within those localities as a further proxy for patterns of partnership exposure.

Ultimately we were not satisfied that we could construct measures out of the IPCD that would be consistent enough across the country to permit meaningful analysis on a fine level. We asked for the assistance of the Field Division, which provided us five variables at the county level that they recommended as being of high quality and comparable across locations. The five county-level variables were: number of active partners, number of active Complete Count Committees (CCC), number of stand-alone Be Counted sites, number of joint Be Counted/Questionnaire Assistance Center sites, and the dollar value of Partner Support Program (PSP) grants awarded. We also received from the Census Bureau the number of unique Partnership staff living in each county. In consultation with Field Division, we then developed a scale for county-level partnership intensity. For each county we were able to associate an estimate of 2009 population based on ACS data and to create a separate variable of county Hard to Count population (using 2000 HTC scores to weight the total population). Variables were standardized and then weighted by an appropriate figure: CCCs were weighted by the natural log of estimated full county population, while the other five variables were weighted by the natural log of Hard to Count population. These six standardized data items were then summed into a single IPCD_scale variable. Across 115 counties in which there were Wave 3 completed interviews outside of the Heavy-up sample, the mean IPCD_scale value is 11.6, with a standard deviation of 22.5. Since the six contributing data items were standardized, the IPCD scale takes on negative as well as positive values.

It can be useful to think about the IPCD scale in relation to self-reports of partnership exposure. The construct of interest is a household's likelihood of partnership exposure. The number of active partners and partnership specialists in an area should certainly be related to household risk of exposure. The number of CCCs will also be, to the extent that more CCCs are associated with more forms of partnership outreach and activity. Be Counted and Questionnaire Assistance sites were drop-in locations where individuals might seek assistance completing a form, or if they did not receive a form, they could pick one up at a Be Counted site. For the vast majority of households completing a form at home and returning by mail, or being visited by a NRFU enumerator, these sites would not represent partnership exposure, except perhaps having seen a Census-related sign or material at such a site. Partnership Support Program grants were awarded to partners to assist with the cost of partnership activities; these could be correlated with level and reach of partnership activities. The biggest missing link between the IPCD data and household exposure is probably some sense of population size corresponding to partners and activities. Without it, we cannot differentiate between a major city public library system that may have more than a

million visitors over the course of the ICC, and a small ethnicity-based community organization with 150 members.

### Census in Schools Data

Census in Schools was an element of the ICC aimed at reaching families by providing information and materials about the 2010 Census to children. For the 2010 ICC, Census in Schools contractor Scholastic developed the "It's About Us: 2010 Census in Schools" program. This program consisted of materials directed toward teachers, younger children, and teenagers, either in hard-copy form or through the Census in Schools website. Teachers were provided with age- and location-specific lesson plans, fact sheets, hand-outs, and maps as well as regular newsletters informing them of ongoing 2010 Census and Census in Schools activities. The Census in Schools website included a set of Census-related games and activities aimed at children and a series of simplified state fact sheets for teens.

In August, 2009 Scholastic distributed teaching kits (consisting of lesson plans, handouts, and maps) to principals at 92,215 K-8 schools around the country. A follow-up mailing was sent in January, 2010. Scholastic contracted with Western Wats to conduct a brief telephone survey of principals or administrators to gauge the reception and use of the provided materials. The interview consisted of two basic questions: "Do you recall receiving these materials?" and, if affirmative, "Were the Census in Schools materials distributed to the teachers in the school?" If materials were not distributed, the respondent was asked if there was a plan to do so. Scholastic generously agreed to provide these data, which were collected for internal operational purposes, as a potential supplemental data source for use in the CICPE.

A number of shortcomings are apparent in these data for our analytical purposes. First, these interviews were conducted in February, 2010, approximately five months after receipt of the packages. Recall error and staff turnover could contribute to measurement error given such a lag. Second, the follow-up question regarding plans to distribute materials appears inconsistently in the data; slightly less than half of eligible cases were asked the question. Third, 10,039 interviews were conducted out of 28,508 selected schools (roughly a 35.2 percent response rate). Overlap of the Scholastic data with the CICPE sample was adequate. Of the 307 counties in which we had completed 2010 CICPE interviews, Scholastic conducted interviews in 246 of them (mean number interviewed in those counties was 12.52 schools; for a total of 3,080 interviews), and had non-responding sample in an additional 42 (288 counties total). Those 288 counties of overlap include 11,692 of the CICPE interviews (97.3 percent of total completions over the three waves). In the 307 CICPE counties, the mean response rate (calculated as number of interviews divided by the total number of interviews and non-interviews) was 38.0 percent, slightly higher

than the national rate. Fourth, for analysis purposes, the data about ICC components should be associated with the likelihood of exposure to the components by households. Without any information about the size of each school, we were unsure that the available data would correlate with risk of household exposure to Census in Schools, even in counties where we were able to generate an estimate. Given the nature of the data, the small number of cases and missing data problems, the CICPE project team and Census Bureau advisors decided that use of the Scholastic data would not enhance our analyses of the Census in Schools program.

### Earned Media Data

As part of its efforts to manage the ICC, the Census Bureau contracted with a vendor to maintain a comprehensive database of earned media coverage. The extensive data source, using a proprietary tool called VOCUS, included information about where a citation appeared, the full text of the coverage, coding of the valence of the coverage and the primary topic addressed, circulation/audience for the media outlet and a date of publication. In our attempts to assess the quality of the VOCUS data, we were unable to improve upon its coverage through use of alternate tools such as Lexis/Nexus or Google News Search.

The primary limitation of the VOCUS data is that it covers almost exclusively print outlets and their online versions, with minimal coverage of televised earned media (unless the station maintains a companion website with written versions of televised stories), and no coverage of radio earned media. When we look at either the spending data for the paid media portion of the campaign, or the survey data on earned media, we see that television is the dominant source of media consumed by individuals, with newspapers and radio lagging behind. The omission of radio and television coverage is a significant limitation of these data.

A second limitation is our ability to assign geography and scale to each piece of earned media coverage that appears in VOCUS. With small outlets (such as the Akron [Ohio] Beacon Journal), we can in principle identify a municipality or a county where the outlet's audience is located. Even so, in some cases, the readership of a publication will often not be restricted only to its municipality limits (for example, the Akron Beacon Journal is also the main newspaper in neighboring Canton, Ohio). With larger entities, such as the New York Times or USA Today, it is more difficult to assign a 'place' to the citation, although the impact of these citations may in fact be much greater than those in smaller venues. Finally, missing data in the database prevented us from classifying articles appropriately. We were unable to systematically distinguish a newsletter with a circulation of 200 from a newspaper with a circulation of 500,000, forcing us to assign equal weights to all citations.

A still more minor limitation is that the Census Bureau maintained a PRNewsWire as a tool for disseminating press releases and sample stories. These releases would often appear, with no or minor edits, in multiple news sources in an area. The problem of deduplication occurs also as some print media have separate online and print versions, while others combine the two. In the VOCUS data, we found inconsistencies in how the same story was treated across multiple media. Since we would be comparing counts across geographic areas, the problem of deduplication is a serious threat to data quality.

Given the gaps in coverage of these data and other limitations of the data file for our purposes, as well as the considerable expense involved in associating media outlets with appropriate levels of geography for matching to our survey data, we did not pursue further analyses of the VOCUS data as a supplementary measure of potential earned media exposure.

## 7.2 Using Supplemental Data Sources to Validate Self-Reports

One use of the supplemental data is to corroborate (or not) the self-reported exposure data. We use the three potentially viable data sources to complete this exercise. First, we classify each geographic area (county for IPCD and DMA for the paid media variables) into the top, middle or bottom third of the distribution for that variable across the country, then examine the self-reported exposure data to see if indeed self-reported rates are higher where the supplemental data variable is higher. In Table 7-1 below, we see that self-reported partnership exposure does seem to increase between low IPCD counties, medium ones, and high ones. Although the reported rates are not always higher in high as compared with medium counties, in no case is the high county self-report statistically lower than the medium county self-report. At this crude level, we do see that higher self-reported partnership exposure occurs where the IPCD scale indicates there is higher partnership activity.

**Table 7-1.** Self-reported Partnership Level by Partnership Level of Local Area as Measured by IPCD

| | % Reporting "Yes" (and s.e.) to Participation in a… | | | | | | | % with (and S.E.)… | |
|---|---|---|---|---|---|---|---|---|---|
| **IPCD level** | **Meeting of a Religious Group** | **Activity of a community organization** | **Meeting or gathering held by a tribal, state or local government** | **Speech made by a local leader** | **Local event like a festival or fair** | **Sign, poster or meeting exhibit** | **Paystub or utility bill insert** | **Exposure to Some Type of Partnership** | **Exposure to Word of Mouth** |
| Low | 4.7 (2.4) | 9.6 (2.6) | 4.0 (2.1) | 0.9$^{G}$ (0.5) | 2.4$^{G}$ (1.1) | 30.6 (7.2) | 3.3$^{G}$ (1.7) | 30.6$^{G}$ (7.2) | 47.1 (11.9) |
| Medium | 3.1 (2.0) | 10.7 (3.9) | 7.4 (1.9) | 7.3 (1.9) | 11.7 (2.2) | 43.4 (9.8) | 4.3$^{G}$ (1.6) | 50.3 (13.1) | 48.2 (6.4) |
| High | 8.9 (2.5) | 15.9 (2.5) | 6.3 (1.1) | 9.8 (1.3) | 10.8 (1.7) | 35.7 (2.3) | 18.0 (2.6) | 49.8 (3.8) | 51.2 (3.6) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Low vs. High, and Medium vs. High. If there is a significant difference between High and any of the two other groups, the letter is placed in either Low or Medium. The significance tests were not adjusted for multiple comparisons.

**Table 7-2.** Self-reported Paid Media Exposure by Paid Media Level of Local Area as Measured by Paid Media Spend Data and Gross Ratings Points

| | % Reporting "Yes" (and s.e.) to Exposure via… | | | | | |
|---|---|---|---|---|---|---|
| **Total Spending Level** | **TV** | **Radio** | **Magazine** | **Newspaper** | **Internet** | **A Public Place** |
| Low | 61.0 (4.7) | 33.5 (5.4) | 15.6 (3.2) | 20.5 (3.3) | 26.2 (9.5) | 30.4 (8.2) |
| Medium | 68.6 (4.6) | 51.9 (7.7) | 17.3 (3.9) | 24.8 (4.5) | 21.0 (5.7) | 26.7 (2.9) |
| High | 66.7 (3.6) | 41.9 (2.8) | 19.0 (2.9) | 30.0 (3.7) | 27.1 (3.9) | 32.4 (5.6) |
| | **% Reporting "Yes" (and s.e.) to Exposure via…** | | | | | |
| **GRP level** | **TV** | **Radio** | **Magazine** | **Newspaper** | **Internet** | **A Public Place** |
| Low | 54.4$^{G}$ (4.0) | 48.4 (10.4) | 14.1 (5.0) | 24.2 (4.7) | 23.2 (7.0) | 20.2$^{g}$ (8.1) |
| Medium | 65.4$^{G}$ (3.2) | 38.9$^{G}$ (3.5) | 16.3$^{g}$ (2.8) | 26.9 (3.8) | 25.2 (3.9) | 28.4$^{G}$ (4.7) |
| High | 74.6 (3.5) | 54.6 (5.8) | 23.9 (3.4) | 30.2 (3.5) | 25.6 (4.7) | 39.0 (3.3) |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Low vs. High, and Medium vs. High. If there is a significant difference between High and any of the two other groups, the letter is placed in either Low or Medium. The significance tests were not adjusted for multiple comparisons.

In Table 7-2, we perform the same analysis for paid media spending and GRP data. The corroboration of self-report with supplemental data is worse for the GRP data than for the IPCD, and worse yet for the paid media spend data. In the spend data, we see frequent alternative orderings of low-medium-high between the self-reports and the supplemental data. These results are again consistent with our assessment that the GRP and paid media spending data are of very limited usefulness, as the necessary allocation rules and assumptions capture only a very small fraction of the variability in implementation of the paid media campaign.

Another way to validate the self-reported data against the supplemental data is to see whether or not the supplemental data can predict the self-reported Wave 3 frequency of exposure measure. Table 7-3 shows the results of weighted least squares regressions that use a variety of demographic and behavioral characteristics to predict self-reported exposure to paid media and partnership activities. Because the supplemental measures (IPCD, spend, and GRP) are geographically defined, we also include a geographical-level control, the tract's hard to count score. Here again, the relationship between self-reports and the supplemental measures is weak. Predicting self-reported paid media exposure using a range of demographic variables including media use, we find only one statistically significant coefficient, on the tract hard to count score, but even then the coefficient is essentially zero. In the spend model, the total DMA spend variable is almost statistically significant, but very small nonetheless. In the GRP and

IPCD models predicting paid media and partnership exposure, respectively, the coefficients on the supplemental variables are positive but not significant. (DMA spending just misses the cut-off for statistical significance, but has small magnitude.)

**Table 7-3.** Predicting Self-reported Exposure Using Supplemental Data

| | Model 1 (exposure to advertisements) | Model 1 (exposure to advertisements) | Model 1 (exposure to partnership) |
|---|---|---|---|
| | **Coefficient (p-value)** | **Coefficient (p-value)** | **Coefficient (p-value)** |
| English Spoken in Household | -0.54 (0.39) | -0.77 (0.49) | -0.07 (0.50) |
| Less than 45 | 0.08 (0.36) | 0.07 (0.37) | 0.28 (0.18) |
| Currently married | -0.52 (0.42) | -0.55 (0.43) | 0.46 (0.34) |
| Less than High School | 0.10 (0.15) | 0.07 (0.16) | -0.14 (0.17) |
| High School | -0.40 (0.27) | -0.40 (0.29) | 0.38 (0.31) |
| Less than $25,000 | -0.58 (0.18) | -0.61 (0.20) | -0.23 (0.17) |
| $25,000 to $59,999 | 0.28 (0.20) | 0.31 (0.21) | 0.27 (0.16) |
| Home Owner | 0.44 (0.28) | 0.50 (0.31) | 0.33 (0.26) |
| One-Person Household | -0.53 (0.31) | -0.51 (0.32) | -0.07 (0.21) |
| Two-person Household | 0.36 (0.20) | 0.37 (0.20) | 0.05 (0.15) |
| Not working | 0.12 (0.20) | 0.14 (0.21) | -0.23 (0.23) |
| Hispanic | 0.42 (0.26) | -0.09 (0.29) | -0.17 (0.22) |
| Non-Hispanic African American | 0.34 (0.34) | 0.11 (0.28) | 0.62 (0.25) |
| American Indian | -0.05 (0.20) | | -0.05 (0.19) |
| Asian | -0.48 (0.28) | | -0.44 (0.25) |
| Native Hawaiian | -0.26 (0.23) | | -0.18 (0.17) |
| Civic Participation | 0.17 (0.17) | 0.14 (0.18) | 0.26 (0.18) |
| High Media Use | 0.20 (0.34) | 0.21 (0.35) | 0.20 (0.17) |
| High in Neighborhood Connectedness | 0.51 (0.28) | 0.51 (0.30) | -0.07 (0.50) |
| Tract Hard to Count Score | **0.01**** (0.01) | **0.01**** (0.01) | 0.28 (0.18) |
| Total DMA Spending | 0.08 (0.12) | | |
| DMA GRP score | | 0.28 (0.24) | |
| IPCD: Partnership Activity | | | 0.46 (0.34) |
| Pseudo-R Square | 0.08 | 0.16 | 0.09 |
| Max-Rescaled R-Square | 0.13 | 0.19 | 0.12 |

2010 CICPE Final Report.

Note: Regressions predicting self-reported exposure. Wave 3 cases, with weights, heavy up excluded. Standard errors corrected for complex survey design.
* indicates significance at 0.1 level, ** indicates significance at .05 level.

On the whole, we find very little corroboration between the supplemental data on paid media or partnership activity. Although we retain some reservations about the quality of the self-report data, we

interpret the results of Tables 7-1 through 7-3 as confirmation of our concerns that the supplemental data sources are of inadequate quality to support evaluation of the ICC. We attempt one final use of these three supplemental measures. In Table 7-4, we add these measures into our previous models predicting mail return. Model I is reproduced here from Table 6-2.

## 7.3 Updating Models with Potential Exposure

**Table 7-4.** Predicting Mail Return Prior to NRFU using Exposure and Supplemental Exposure Data

| | **Model I All cases – Exposure** | | **Model II All cases – Exposure + IPCD and Spend** | | **Model III Core Only - Exposure** | | **Model IV Core Only – Exposure + IPCD and GRP** | |
|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient (p-value)** | | **Coefficient (p-value)** | | **Coefficient (p-value)** | | **Coefficient (p-value)** | |
| Exposed To Paid Media | 0.53 | (0.31) | 0.54 | (0.29) | 0.53 | (0.33) | 0.53 | (0.34) |
| Exposed To Partnership | 0.48 | (0.12) | 0.51 | (0.11) | 0.49 | (0.13) | 0.54 | (0.11) |
| Exposed To Census In Schools | -0.15 | (0.61) | -0.17 | (0.57) | -0.15 | (0.62) | 0.06 | (0.82) |
| Exposed To Earned Media | 0.19 | (0.55) | 0.15 | (0.63) | 0.19 | (0.57) | 0.18 | (0.60) |
| Exposed To Word Of Mouth | **-0.78*** | **(0.01)** | **-0.75*** | **(0.01)** | **-0.79*** | **(0.01)** | **-0.76*** | **(0.02)** |
| Total Exposure Frequency | 0.05 | (0.39) | 0.05 | (0.42) | 0.04 | (0.45) | 0.06 | (0.29) |
| Paid Media Spending | | | 0.17 | (0.26) | | | | |
| Total Gross Ratings Points | | | | | | | **-0.36*** | (0.01) |
| IPCD: Partnership Activity | | | **-0.01*** | (0.05) | | | 0.00 | (0.21) |
| -2 Log Likelihood | 3,627.618 | | 3,594.77 | | 3,461.37 | | 3,398.19 | |
| Degrees Of Freedom | 6 | | 8 | | 6 | | 8 | |
| Likelihood-Ratio Difference (Between Model Without and Model With Supplemental Data) | | | 32.85 | | | | 63.17 | |
| p Value Of Log Likelihood-Ratio Difference | | | <0.0001 | | | | < .0001 | |
| Pseudo-R Square | 0.046 | | 0.06 | | 0.08 | | 0.12 | |
| Max-Rescaled R-Square | 0.062 | | 0.08 | | 0.09 | | 0.13 | |

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Note: Logistic regression predicting Mail Return by 4/18. Wave 3 cases, with weights, heavy up excluded. Standard errors corrected for complex survey design.
* indicates significance at 0.1 level, ** indicates significance at .05 level.

Our next step is to include the measures of potential exposure that we have developed from the supplemental data sources in our models using exposure to predict mail return. Table 7-4 shows Models

II and IV, which add the potential exposure measures of partnership activity from the IPCD and total paid media spend (model II) and IPCD and total gross ratings points (model IV) to models that include only self-reported exposure. Since the GRP data are available only for the Core, we show a Model III, which is restricted to the Core sample. In both pairs of models, we see that adding in the supplementary measures improves the fit of the model, but has very little other effect on the coefficients on exposure. The IPCD measure of partnership activity is statistically significant and negative when combined with expenditure, but the magnitude of the coefficient is very small. Total GRPs are associated with depressed mail return in Model IV, although there is no change to the coefficient on self-reported paid media exposure. It is unclear how this coefficient can be interpreted – holding constant self-reported exposure (and everything else in the model), additional potential exposure to paid media can reduce the likelihood of mail return (perhaps due to saturation). Alternatively, we may be seeing again the pattern that GRPs were invested most in the hardest to count areas, in turn resulting in a negative association between increased GRPs and likelihood of mail return. We do not see the same result when we measure potential paid media expenditures using the spending data as in Model II.

Table 7-5 turns to the models predicting cooperation with enumerators. We run two models, one adding in total dollars spent on paid media and the IPCD measure of partnership activity, and the other adding in total gross-ratings points (GRP) and the IPCD measure of partnership activity. Because GRPs are only available for the Core sample, we also present the exposure model without GRP and IPCD data for comparison. In both cases, we see that inclusion of the supplemental data does improve the fit of the model. When we include GRP in the model, potential partnership exposure (as measured by the IPCD variable) has a small but statistically significant effect on cooperation with enumerators, but no other supplemental variable is significant. We might expect that including the paid media variables (spending and GRP) would affect the coefficient on self-reported paid media exposure, or that inclusion of the IPCD variable would affect the coefficient on self-reported partnership, but we do not see any effects on the coefficients for the exposure variables.

**Table 7-5.** Predicting Cooperation with Enumerators with Exposure and Supplemental Exposure Data

| | Model I All cases – Exposure | | Model II All cases – Exposure + IPCD and Spend | | Model III Core Only - Exposure | | Model IV Core Only – Exposure + IPCD and GRP | |
|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient (p-value)** | | **Coefficient (p-value)** | | **Coefficient (p-value)** | | **Coefficient (p-value)** | |
| Exposed To Paid Media | -0.11 | (0.88) | -0.16 | (0.81) | -0.09 | (0.91) | -0.27 | (0.73) |
| Exposed To Partnership | -0.30 | (0.69) | -0.25 | (0.74) | -0.32 | (0.69) | -0.22 | (0.77) |
| Exposed To Earned Media | **1.35**** | **(0.04)** | **1.26**** | (0.04) | **1.40**** | (0.04) | **1.35**** | (0.03) |
| Exposed To Word Of Mouth | 0.06 | (0.91) | 0.25 | (0.67) | 0.06 | (0.92) | 0.28 | (0.63) |
| Total Exposure Frequency | -0.04 | (0.84) | -0.13 | (0.47) | -0.04 | (0.79) | -0.06 | (0.73) |
| Paid Media Spending | | | 0.58 | (0.20) | | | | |
| Total Grp | | | | | | | -0.17 | (0.62) |
| IPCD: Partnership Activity | | | 0.01 | (0.40) | | | **0.02*** | (0.09) |
| 2 Log Likelihood | 742.79 | | 712.62 | | 711.27 | | 685.74 | |
| Degrees Of Freedom | 5 | | 7 | | 5 | | 7 | |
| Likelihood-Ratio Difference (Between Model Without and Model With Supplemental Data) | | | 30.17 | | | | 25.53 | |
| P Value Of Log Likelihood-Ratio Difference | | | <.0001 | | | | <.0001 | |
| Pseudo-R Square | 0.05 | | 0.09 | | 0.10 | | 0.16 | |
| Max-Rescaled R-Square | 0.07 | | 0.13 | | 0.11 | | 0.18 | |

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Note: Logistic regression predicting cooperation with enumerators. Wave 3 cases, with weights, heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

## 7.4 Using Panel Data to Assess Self-Reported Exposure

This chapter has thus far led us to the dissatisfying conclusion that the available supplemental data sources are inadequate to either assess the quality of self-reported exposure data, or to improve our estimates of the relationship of ICC exposure to census participation. We conduct one additional analysis

in an effort to investigate the self-reported exposure data. The greatest apparent threat to the quality of self-reported exposure data seems to be that these data are subject to the recall bias of individuals. Random recall error is not necessarily problematic for estimation of the association of exposure and census participation. What is problematic is systematic recall error, for example, if individuals who are predisposed in favor of the Census are more likely to recall having seen a Census advertisement (in which case the estimated effect of the campaign will be biased upward), or if individuals who are ill-disposed toward the Census are more likely to recall having seen a Census advertisement (in which case the estimated effect will be biased downward). In Table 7-6, we use the Wave 1 questionnaire data from panel respondents to estimate the extent to which individuals' predispositions in advance of the campaign can predict their self-reports of paid media exposure in Wave 3. We find that there is some evidence that people with more knowledge, more positive or more negative attitudes toward the Census are likely to report more exposure, but that this relationship, though significant, accounts for a very small portion of total variation in self-reported exposure. In addition, because both positively disposed and negatively disposed people appear to be more likely to recall exposure, it is unclear what the direction of any resultant error might be.

**Table 7-6.** Predicting Self-reports of Paid Media Exposure in Wave 3 Using Panel Respondents' Wave 1 Questionnaire Data

| | **Self-Reported Exposure to advertisements in Wave 3** |
|---|---|
| | **Coefficient (p-value)** |
| Knowledge Scores | **0.27** (<0.01) |
| Wave 1 Positive Attitudes | **0.30** (0.03) |
| Wave 1 Negative Attitudes | **0.63** (0.02) |
| Media Use Index | -0.01 (0.46) |
| Pseudo-R Square | 0.11 |
| Max-Rescaled R Square | 0.17 |

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# Chapter 8: Conclusions

## 8.1 Review of Findings

The 2010 Decennial Census effort included the broad-based, multi-faceted 2010 Integrated Communications Campaign (ICC) to encourage participation in the Census. 2010 ICC components included paid media advertising, partnership efforts in local communities, a Census in Schools program for outreach to students in elementary and secondary schools, and earned media in traditional and digital media outlets. The 2010 Census Integrated Communications Program Evaluation (CICPE) was conducted by NORC (NORC) at the University of Chicago under contract from the Census Bureau to:

- track the evolution of knowledge of and attitudes toward the census prior to and during the 2010 Census;
- evaluate the effect of the 2010 ICC on mail return and cooperation with enumerators; and
- increase understanding of the mechanisms through which a communications campaign can affect census participation.

We describe a conceptual model in which exposure to the ICC can affect cognition (such as knowledge and attitudes) and through cognition, possibly census participation. In a separate path, ICC exposure can directly affect census participation. The chapters of this report have moved through the conceptual model, highlighting and investigating different relationships and paths from exposure to census participation. The model and our analyses work closely together to describe the ways in which exposure, knowledge and attitudes, and census behavior, evolved over the course of the campaign and were ultimately related to one another.

This report presents the results of a three-year study that combines survey data with Census operational records and a variety of other commercial and administrative data sources to achieve these objectives. The principal data source was a set of three nationally-representative household surveys conducted between October, 2009 and August, 2010 to capture knowledge, attitudes and exposure to the campaign. The three waves took place:

- Wave 1: before the launch of paid media (October, 2009 – January, 2010),
- Wave 2: during the peak of the media campaign but before the mailout of census forms (January – March, 2010) and

- Wave 3: during the NRFU period (April – July, 2010).

Census data on actual 2010 participation are also combined with survey data to determine households' census behavior.

Survey samples included equal numbers of individuals from five hard-to-count groups and one comparison group (Hispanic, non-Hispanic African American, American Indian, Asian, Native Hawaiian, and non-Hispanic Whites). To increase the ability to understand person-specific response to the campaign, the surveys included a panel sample in which the same individuals were interviewed in each of the three waves.

Such data quality issues as non-response bias or (for the panel sample) conditioning effects could have the potential to compromise the accuracy of the survey data or its relevance to the objectives of the evaluation. Data examinations indicate that the survey data show only negligible non-response bias in terms of census participation, and minimal conditioning effects except in having heard of the census. These examinations endorse the use of the survey data to understand the full population eligible for the decennial census, not only those who completed the 2010 CICPE surveys.

Despite the reassuring indications on survey data quality, there are other limitations that constrain the results of the evaluation. Most importantly, the 2010 CICPE cannot provide a total effect of the ICC; in order to do so, one would want a randomized design or other effective control group for comparison purposes, or at minimum a clean baseline measure well before the start of any component of the campaign. The 2010 CICPE has neither. Moreover, because many 2010 Census efforts -- such as operational interventions, partnership resources, and paid media activity – were overlaid on top of one another, and because these efforts were targeted at places where enumeration was anticipated to be more difficult or costly, it is possible to get apparent 'perverse' findings, such as increased effort is associated with decreased mail return, that are likely consequences of limited independent variation between the various phenomena of interest.

The study focuses on two outcomes of interest, mail return of the census form prior to NRFU, and cooperation with enumerators (in the form of a non-proxy NRFU enumeration) in the NRFU phase. Both of these outcomes have substantial variation across the hard-to-count groups studied in the 2010 CICPE.

Exposure to the ICC is primarily measured through self-reports in the survey data. We have some concern about recall of exposure overlapping across components where individuals may be unable to distinguish, for example, partnership from paid media or paid media from earned media. But the self-

reported exposure data do exhibit characteristics consistent with the design of the campaign. Paid media accounts for the majority of ICC exposure, and television is the very dominant subcategory within paid media. Exposure to all of the other ICC components varied by subpopulation, with Census in Schools being recalled least often. The enumerated ICC components in the survey questionnaires were: paid media, partnership, Census in Schools, and earned media. As recommended by the Census Bureau, the questionnaires also collect information on word of mouth exposure to the census, but this exposure is reported primarily among personal contacts and so may not make sense as an extension of the ICC. The national average for recalled exposures (i.e., individual ads, meetings, signs, or articles read) increased from about 0.25 times per week before the launch of the paid media campaign in January, 2010, to 0.8 times per week across all ICC components in February, 2010, and about 1.2 times per week across all components by spring 2010.

The evaluation measures knowledge of, and positive and negative attitudes toward the census at all three survey waves. We find increases from fall 2009 to spring 2010 in knowledge among virtually every subgroup, as well as increases in positive attitudes and decreases in negative attitudes (negative attitudes were low in all three waves). The changes in knowledge are shown to be particularly large and positive compared to what was documented in 2000 at similar points in the campaign. It is noteworthy that some groups increased knowledge early in 2010, some not until spring 2010, and some steadily in both winter and spring 2010. This may be an indication of the length and level of communication required to effect changes in knowledge and attitudes across different subpopulations.

Multivariate regressions indicate that, all other things equal, greater ICC exposure is associated with greater knowledge of the census. Any paid media and the frequency of total exposure to the campaign are both particularly strongly related to greater knowledge across subgroups. Having had partnership exposure or earned media exposure is related to greater census knowledge among Hispanics.

We use multivariate regression techniques to estimate the association of ICC exposure to mail return of the census form by April 18 (prior to NRFU). Perhaps the clearest message of these models is that ICC exposure does not work the same way for all groups: partnership works for some but not others, paid media works separately from earned media, etc. Having had earned media exposure to the ICC is associated with increased likelihood of mail return for multiple groups, although the magnitude of the estimated effect does vary across groups. Any partnership exposure is associated with increased mail return for African Americans, but decreased mail return for American Indians. The decreased mail return might come from the fact that partnership activities were targeted to areas and subpopulations where mail return was anticipated to be lower. Total frequency of exposure seems to be associated with increased

mail return for the three rarest groups (American Indians, Asians and Native Hawaiians), but there does not seem to be an association at all for the three more populous groups (Hispanics, non-Hispanic African Americans, and non-Hispanic Whites).

Although we do not find very consistent patterns in relationships between ICC exposure and mail return, we do find some stronger and more stable relationships between knowledge and mail return. When all other factors are held constant, more knowledge is associated with greater likelihood of mail return for all groups but home owners and Hispanics.

We further investigate the relationship of knowledge and mail return and find that it is the Wave 3 knowledge – from around the time of the census mailout and mailback phase – that is associated with mail return. Whether someone has had that knowledge for six months or acquired it in the prior two weeks does not seem to affect the connection of knowledge to mail return. This is hopeful for a census communications campaign, since it suggests that conveying knowledge to people over the course of the campaign can be effective in getting them to return their census forms by mail. Indeed, the regressions show very little effect of the change from Wave 1 to Wave 3 in knowledge, suggesting that only Wave 3 knowledge and attitudes are important for predicting mail return, not the path one took to arrive at that level of knowledge.

We also adopt the technique of message receptivity analysis from the communication sciences literature. We find that higher message receptivity is associated with higher census-related knowledge and attitudes. For some subgroups, higher message receptivity is also associated with greater likelihood of census mail return. The message receptivity analysis results are consistent with our earlier modeling results which suggest that the links between exposure and knowledge/attitudes, and between knowledge/attitudes and census participation, are stronger than the direct links between ICC exposure and census mail return.

The relationship between exposure and cooperation with enumerators seems to be another scattered story. Holding constant other campaign exposure, having earned media exposure is generally positively associated with cooperation with enumerators, although the relationship is not always statistically significant. Paid media and partnership both help for at least one subgroup, but not for most. Having word of mouth exposure is generally negatively associated with census participation. Knowledge seems to have the strongest predictive power for cooperation with enumerators.

The 2010 CICPE design called for integration of supplemental, operational data on the various components of the ICC to provide measures of exposure that were independent of the survey self-reports. Although the team acquired and reviewed multiple data sets, only three measures were potentially

suitable for inclusion in modeling: a measure of partnership activity from the Census Bureau's Integrated Partnership Contact Database, a measure of local spending on paid advertising, and a measure of gross ratings points of television advertising. We add these variables into our earlier models estimating the effects of ICC exposure on mail return and cooperation with enumerators, conceiving of the variables as measuring the potential exposure that the individual would have had locally to each component as a context for the exposure that the individual actually reported in the survey data. Although including these variables improves our overall predictive power, we do not find independent effects of these potential exposure measures, nor do they change our interpretation of the earlier documented relationships between ICC exposure and census participation.

The Census Bureau had asked that the 2010 CICPE also assess the impact of phenomena outside of the ICC that may have had significant influence on mail return rates. As part of the rapid response efforts within the ICC, the Census Bureau did identify possible outside influences on attitudes toward the census or census participation. Many of these were local in nature, or not suitable for measurement using the CICPE data. Unlike for the 2000 Decennial Census, when privacy issues seemed to have a potentially large influence on attitudes toward the census, we have not identified non-ICC events that seem appropriate for assessment using the data and methods of this study.

## 8.2 Return on Investment

An obvious question is whether or not the 2010 ICC was cost-effective: did the expenditure of public resources on partnership and paid media (and other components) pay for itself through reduced requirements for expenditures in non-response follow-up in response to higher mail return or greater cooperation with enumerators? As we have discussed elsewhere, the designs of the ICC and the CICPE are not conducive to providing such estimates of total return on investment. This is due to the absence of control or comparison groups (for example through experimental design), and because 2010 ICC activity had already begun prior to the collection of our baseline data. Without a clean baseline or other point of comparison, we are unable to accurately predict what might have occurred in the absence of the ICC (or expenditures on it).

An alternative would be to use the estimation strategy that we have used in our other analyses, which involves comparing high expenditure areas with low expenditure areas to estimate the return to additional expenditures on ICC activities. We have made some attempts in this direction through the incorporation of paid media expenditure data and IPCD activity data into our models in Chapter 6, but those analyses did not support return on investment calculations because of the weak associations between those expenditure measures and census participation. The ICC expenditure data available from the Census

Bureau is national expenditures by fiscal year for each component of the campaign (paid media, partnership, census in schools, none for earned media), which does not allow us to use our approach of exploiting local-level variation in expenditures.

In the spirit, then, of translating the analytical results found in this report into units and measures of salience to the Census Bureau and ICC operations, we offer the following illustrative calculations. Here we return to the subgroup analyses presented in Table 6-2.

**Table 8-1.** Estimated Changes in Mail Return Rate Associated with Changes in Exposure

| Assuming that all other exposure levels remained constant… | | |
|---|---|---|
| **Subgroup** | **Increasing by one percentage point the percentage of this group who have had any exposure to paid media, increases the group's mail return by…** | **Increasing by one percentage point the percentage of this group who have had any exposure to partnership, increases the group's mail return by…** |
| 45 years or older | Not significant | 0.14% |
| Less than 45 years | 0.27% | Not significant |
| Homeowners | Not significant | 0.12% |
| Non-homeowners | 0.27% | Not significant |

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In Table 8-1 we translate the regression coefficients from Chapter 6 into 'real world' values. For example, among individuals 45 years or older, the fraction having any partnership exposure at Wave 3 was 52.3 percent. If additional ICC efforts could raise that percentage to 53.3 percent, then we estimate the mail return for individuals 45 years or older would increase from 71.9 percent by an additional 0.14 percent. On the other hand, the percentage of non-homeowners who reported some paid media exposure at Wave 3 was 70.5. Increasing that percentage to 71.5 – all other things staying unchanged – would be associated with an increase in mail return for non-homeowners from 47.4 percent to 47.7 percent. Of course, greater shifts in mail return can be achieved by achieving greater shifts in exposure. Note that this is self-reported recall of exposure – not only must the potential exposure be increased (another street fair attended), but the self-reported exposure must also be increased (the individual actually remembers the census booth at the street fair and reports it in the 2010 CICPE questionnaire). From the data in Chapter 7, we see some evidence that more activity is associated with more self-reported exposure, but perhaps there is some leakage between potential exposure and self-reported exposure.

Table 8-2 provides the same translation of changes in exposure into changes in cooperation with enumerators. Using the estimates in Table 6-15 predicting cooperation with enumerators using campaign exposure, we can generate estimated changes in cooperation with enumerators associated with a one percent increase in exposure to partnership or earned media activity, all other things remaining unchanged. (Paid media exposure was not associated with statistically significant changes in cooperation with enumerators for any of the four subgroups shown in Table 8-2.) Table 8-2 indicates that among individuals aged 45 or older eligible for NRFU, increasing exposure to partnership activity at Wave 3 from 27.0 to 28.0 percent would be associated with a decline in cooperation with enumerators from 71.7 percent to 71.5 percent among NRFU-eligible households, assuming no other exposure levels changed. A one percentage point increase in exposure to earned media activity at Wave 3 for the same individuals from 34.0 percent would be associated with an increase in cooperation with enumerators from 71.7 percent to 72.1 percent among NRFU-eligible households, again holding other exposure constant.

**Table 8-2.** Estimated Changes in Cooperation with Enumerators Associated with Changes in Exposure

| | **Assuming that all other exposure levels remain constant…** | |
|---|---|---|
| | **Increasing the % of this group exposed to Partnership Activity by one percentage point increases the group's cooperation with enumerators by …** | **Increasing the % of this group exposed to Earned Media by one percentage point increases the group's cooperation with enumerators by …** |
| 45 years or older | -0.20% | 0.40% |
| Less than 45 years | Not significant | Not significant |
| Homeowners | Not significant | Not significant |
| Non-homeowners | Not significant | Not significant |

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The kind of calculations shown in Tables 8-1 and 8-2 make it possible to translate effects we are able to measure in the 2010 CICPE data into mail return rates. However, it appears that the main documented effect of exposure to the ICC was in increasing knowledge, which in turn appears to increase both mail return and cooperation with enumerators. Table 8-3, then, considers the possible effect on mail return rates associated with increases in knowledge. We have seen in Chapter 5 that there is substantial increase in knowledge from Wave 1 to Wave 3. Observing the association of knowledge levels with mail return rates at Wave 3, we can estimate the change in mail return rate that is associated with changes in

knowledge. At one extreme, we could estimate the effect on the mail return rate if there were no increase in knowledge from the lower levels at Wave 1. Table 8-3 uses the model results reported in Table 6-4 to estimate that, assuming no changes in attitudes, we can associate a change in mail return rate of 5.24 percentage points with the full increase in knowledge from Wave 1 to Wave 3 for individuals under 45 years. That was an increase in knowledge from 4.12 to 5.16 correct items (out of eight) at Wave 3. Accounting only for increases in knowledge from Wave 2 to Wave 3 yields an estimated change in mail return rate of 3.81 percentage points for the same group of individuals. Among non-homeowners, the increase associated with knowledge changes from Wave 1 to Wave 3 is a similar 5.35 percentage points. Limiting to the Wave 2 to Wave 3 knowledge increase, however, is associated with a small negative change of 0.13 percentage points.

**Table 8-3.** Estimated Changes in Mail Return Rate Associated with Changes in Knowledge

| | **Assuming that all attitudes remain constant…** | |
|---|---|---|
| | **Increasing the average knowledge at Wave 1 of this group to its average knowledge at Wave 3, increases the group's mail return by …** | **Increasing the average knowledge at Wave 2 of this group to its average knowledge at Wave 3, increases the group's mail return by …** |
| 45 years or older | Not significant | Not significant |
| Less than 45 years | 5.24 % | 3.81% |
| Homeowners | Not significant | Not significant |
| Non-homeowners | 5.35 % | -0.13% |

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Performing the same exercise for cooperation with enumerators in Table 8-4, we see that the entire increase in knowledge from Wave 1 to Wave 3 is associated with an increase in cooperation with enumerators (among NRFU households) of 10.86 percentage points for individuals less than 45 years old. That is, cooperation with enumerators among NRFU households might have been as low as 67 percent rather than the 77.9 percent actually observed. Even the increase in knowledge from Wave 2 to Wave 3 is associated with an increase of 7.52 percentage points for that group, assuming all attitudes remain constant. Among non-homeowners, the full change in knowledge from Wave 1 to Wave 3 is associated with a 6.4 percentage point increase in cooperation with enumerators, assuming all attitudes remain unchanged. [This translates to an estimated cooperation rate of 60.8 percent instead of the observed 67.2 percent among NRFU households.] Again, the partial effect from Wave 2 to Wave 3 is small and

negative at -0.14 percentage points, all attitudes remaining constant. Table 8-4 is based on the regression results found in Table 6-15.

**Table 8-4.** Estimated Changes in Cooperation with Enumerators Associated with Changes in Knowledge

| | **Assuming that all attitudes remain constant…** | |
|---|---|---|
| | **Increasing the average knowledge at Wave 1 of this group to its average knowledge at Wave 3, increases the group's cooperation with enumerators by …** | **Increasing the average knowledge at Wave 2 of this group to its average knowledge at Wave 3, increases the group's cooperation with enumerators by …** |
| 45 years or older | Not significant | Not significant |
| Less than 45 years | 10.86 % | 7.52% |
| Homeowners | Not significant | Not significant |
| Non-homeowners | 6.39% | -0.14% |

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The estimates provided in Tables 8-3 and 8-4 are qualitatively different from those provided in Tables 8-1 and 8-2. In Tables 8-1 and 8-2, we were estimating the effect only of a one percentage point increase in exposure, which is quite a small fraction of the overall exposure level. This may be interpreted as the potential benefit if the Census Bureau were to make enough additional investments in the campaign to achieve a one percentage point increase above and beyond what was achieved in the 2010 ICC. In Tables 8-3 and 8-4, we are estimating more of a maximum possible effect. In those tables, we are estimating the possible portion of census participation rates associated with the entire change in knowledge observed during the 2010 ICC. One might reasonably hypothesize that even if the Census Bureau undertook no communication efforts whatsoever, there would still be earned media and other educational resources that lead to increases in the overall knowledge of the census in a decennial year. In addition, the Tables 8-3 and 8-4 calculations assume that the statistical relationship of knowledge to mail return rate at Wave 3 can be extended to the much lower levels of knowledge that we observe at Wave 1. The four tables, then, can be interpreted as providing lower and upper bounds to what might be the magnitude of effects on mail return rate and cooperation with enumerators of ICC exposure and changes in knowledge during the ICC.

A consistent finding of this evaluation (and shown in these tables) is that different subgroups vary in their responses to the different components of the campaign. The maximal return can be achieved by

implementing a campaign that includes any given component only for those populations that exhibit a response to that component. Including a component for a population that does not exhibit response to that component only dilutes the overall return to the campaign.

This section's translation of statistical estimates of ICC effects into mail return rates and rates of cooperation with enumerators underscores what we have documented in earlier sections. It is clear that knowledge and attitudes toward the census improved substantially over the course of the 2010 ICC. In these improvements and all other aspects of our analyses, it is also evident that the different components of the campaign vary across subgroups within the population, and that a cost-effective communications effort will target subgroups and customize which campaign components are leveraged for which subgroups. We do document increases in mail return rate and cooperation with enumerators associated with increased campaign exposure for some subgroups. The larger estimated effects in both outcomes, however, are associated with increased knowledge (whether through campaign exposure or other sources). In future campaigns and their evaluations, the Census Bureau might consider identifying knowledge as a desired outcome in its own right, rather than limiting its role as an intermediate step toward census participation.

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# Appendix A: A Design for Studying the Relation between ICC Exposure and Differential Census Coverage

## Introduction

In addition to the Census Bureau's goal for the Integrated Communications Campaign (ICC)[10] to improve mail response and thereby reduce field cost, it was hoped that the ICC would reduce differential undercount[11] and its components, omissions and erroneous enumerations. To assess how well this goal is achieved is extremely difficult in light of the lack of an experimental design for the outreach from the partnership and advertising activities in the ICC. Elsewhere (see Chapter 1, Section 6) we have described the difficulties in attributing causal impact to observed cross-sectional associations between mail returns and ICC characteristics, and those same caveats equally apply to attributing causal impact of the ICC on reduction of differential undercount. For example, the ICC was targeted more heavily at areas and subgroups that were hard to count, and even if the ICC were highly successful, it would be possible for the ICC effort and differential undercount to be negatively correlated. The key for the analysis is to treat the allocation of outreach efforts as an observational study or quasi-experiment (Shadish, W. R., et al. 2002) and statistically examine the relation between differences in local area undercount and the variations in the outreach, whether those variations were intended or not.

A variant on this analysis will also be described. In the variant, instead of studying the cross-sectional relationship between ICC exposure and differential census coverage, one studies the cross-sectional relationship between levels of or changes in knowledge and/or attitudes and differential census coverage. The relationship between the ICC and knowledge and/or attitudes can be established as in this report, based on cross-wave comparisons.

## Data Sources

With those limitations in mind, we will now describe how an analysis can be carried out to describe statistically the relation between ICC exposure and various aspects of differential undercount, specifically omissions (gross undercount), erroneous enumerations (gross overcount), and net undercount (gross undercount minus gross overcount). The empirical analysis has not been carried out because the Census Coverage Measurement Program (CCM) data will not become available until after 2011.

[10] The Integrated Communications Campaign (ICC) often is called the Integrated Communications Program (ICP).
[11] The nature of the ICC suggests that it would not reduce erroneous enumerations, and that therefore improvement in accuracy from reducing differential undercount would arise from reduction of census omissions.

Two data sources need to be used for the analysis, one to measure exposure and the other to measure undercount. The CICPE survey provides a variety of measures of exposure (exposed to paid media, exposed to Partnerships, exposed to Census in Schools, exposed to earned media, exposed to word of mouth, frequency of total exposure) for each surveyed individual in Wave 3, as shown in Tables 4-1 through 4-9, for example. Although the survey measures of exposure were supplemented with additional data from other sources, the supplemental data were not very useful (see Chapter 7). The second data source is the post-enumeration survey, which was conducted as part of the Census Coverage Measurement (CCM) program.

## Choice of Unit of Analysis and Variable to Impute

The two CCM and CICPE surveys largely do not overlap, so that if units in the CCM survey are analyzed, most of the exposure data values are missing, and if the units in the CICPE survey are analyzed, most of the undercount variables are missing. Imputation for the missing values is an obvious strategy, but errors in the imputed values will tend to distort the relationship between undercount and exposure. To the extent that the errors are random they may tend to attenuate the association, and to the extent that the errors are systematic the association could be understated or overstated. For reasons discussed below, it seems preferable to impute exposure.

The analytic scheme described below takes as basic units of analysis the block clusters sampled in the post-enumeration survey conducted as part of the Census Coverage Measurement (CCM) program. Aggregations of those block clusters can also be considered.[12] Methodology for developing direct estimates of net undercount for block clusters in the P sample is described for example in Mulry et al (2008, 2005). A *direct estimate* is one that uses only data from the area in question. The direct estimates can utilize poststratification to a limited degree. Mulry et al (2005) used just a few stratifiers, and that appears feasible for 2010. Alternatively, poststratification within block cluster can be based on predictions from the CCM logit model for omissions or erroneous enumerations, as discussed in Alho and Spencer (2005, pp. 320*ff*). The important advantage of using direct estimates for the block clusters is that the covariates available for predicting omission and erroneous enumeration are limited in predictive

[12] Mulry et al (2005) found that the direct estimates for small block clusters frequently appeared unstable, and they based their analysis on large block clusters only. Whether aggregating small block clusters would solve the problem remains to be explored.

power, and the geographic and neighborhood characteristics implicit in the block-cluster information provide strong additional predictive capability.[13]

## Notation for Variables

Denote the direct block-cluster level estimates of undercount (or omissions or erroneous enumerations) by $Y$. To analyze the relation between undercount $Y$ and ICC exposure, say $X$, at the block-cluster level, it is necessary to obtain measures of ICC exposure at the block-cluster level. These will be described next.

The CICPE surveys provide various measures of exposure (exposed to paid media, exposed to Partnerships, exposed to Census in Schools, exposed to earned media, exposed to word of mouth, frequency of total exposure) for each surveyed individual in Wave 3, as shown in Tables 4-1 through 4-9, for example. Denote the exposure measure for an individual by $x_e$. The exposure measures could be supplemented, as desired, by additional exposure measures as shown in Tables 7-4 and 7-5 in the report. In addition to the exposure data the survey data include demographic characteristics (age, homeownership, race/ethnicity, etc.) and some geographic characteristics, which we will refer to as covariates and denote by the vector $z$. Examples of geographic characteristics are whether the individual is in a hard-to-count (HTC) tract and whether the tract is in a HTC county. It is possible to fit regressions (continuous $x_e$) or a logistic regression (categorical $x_e$) to predict $x_e$ as a function of $z$, say $f(z)$. The result would be a model for predicting exposure $x_e$ by $f(z)$ for an individual with covariates $z$. Various models can be run, some using just demographic variables for $z$, some using demographic and geographic variables, and so forth.

Let $p(z)$ denote the proportion of individuals in a given block-cluster with covariate value $z$, such that the sum of $p(z)$ across the possible values of $z$ in the block-cluster equals 1. One can then obtain a block-cluster level of exposure, $X$, by summing the product $p(z)f(z)$ across the possible values of $z$. The data for computing $p(z)$ are not yet available but will be in the future.

[13] An alternative to using direct estimates, which would allow prediction of omission or erroneous enumeration probability for any person, would be to employ the CCM logistic regression models directly, but these would not employ the block-cluster information except for small fractions of the population (i.e., those in CCM block clusters). Such an information loss is too great to justify analysis at the individual person level.

**Table A-1.** Explanation of Notation for Variables

| Variable | Description |
|---|---|
| Y | block-cluster level estimate of undercount (or omissions, etc.) |
| $x_e$ | level of exposure (or knowledge and/or awareness, or change in knowledge and/or awareness, etc.) for an individual |
| z | additional covariates for individuals, e.g., demographic characteristics, geographic characteristics, presence in HTC area |
| f (z) | prediction of $x_e$ |
| p (z) | proportion of individuals in block-cluster with covariate vector z |
| X = $\sum_z p(z)f(z)$ | block-cluster level estimate of exposure (or knowledge and/or awareness, or change in knowledge and/or awareness, etc.) |

## Analyses

Various analyses can be carried out to analyze the association between *Y* and *X*.

a. **Return on investment, in terms of coverage error**. Following Mulry and Keller (2007), we may fit a regression to predict *Y* from *X* where *Y* is the net coverage error (or alternatively, the omissions, or erroneous enumerations) and *X* is the exposure to the ICC. Making the bold interpretation that the level of *Y* when there is no ICC corresponds to the predicted value when *X* is zero, we can estimate the effect on *Y* by comparing the prediction of *Y* with a given *X* to the prediction of *Y* when $X = 0$, the latter corresponding to no ICC.

b. **Return on investment, in terms of differential coverage error.** Following Mulry and Keller (2007), we may fit a regression to predict *Y* from *X* where *Y* is the net coverage error (or alternatively, the omissions, or erroneous enumerations) and *X* is the exposure to the ICC. Define the predicted differential coverage error for block cluster *j* as $U_j = Y_j - \bar{Y}$ where $\bar{Y}$ is the population-weighted average of $Y_j$ across block clusters. The distribution of $U_j$ across block clusters shows the distribution of differential undercount, and the distributions can be compared when alternative values of $X_j$ are assumed.

c. **Excess (or deficit) in undercount or differential undercount compared to expected.** One can also look at the difference $D_j = Y_j - \hat{Y}_j$ between block cluster *j*'s directly estimated undercount *Y* and its "expected" undercount $\hat{Y}$, which is the undercount predicted by applying the Census Bureau's CCM logistic regression model to the enumerations in the block cluster. The differences *D* can be based on centered values of *Y* and $\hat{Y}$ as well, as in part b. Then the associations between *Y* and *X* and between *D* and *X* for both uncentered and centered variants of *Y* and *D* can

be analyzed, where *Y* and *D* refer to net undercount, omissions (gross undercount), and erroneous enumerations (gross overcount). *Caveat:* If the logistic regression uses as an explanatory variable the exposure to the ICC or mail return, which is related to the effect of the ICC, the interpretation of the analysis will be difficult. This is true even if the measure of mail return refers to a date prior to the 2010 Census (e.g., return in Census 2000), because the targeting of the ICC would have been based in part on prediction of mail return based on past experience.

**d. Analyses by subgroup.** In all of the analyses described above, separate analyses could be conducted for various groupings of block clusters and for subgroups of people within block clusters (e.g., race/ethnicity).

**e. Analysis for Heavy-up areas.** It would be desirable to extend the analysis to include the areas in the Heavy-up experiment. Very little of the CCM sample would have fallen into the Heavy-up areas, unfortunately, because both the CCM and the Heavy-up study involved small fractions of the population. Predictions of undercount in the Heavy-up areas based on the CCM logistic regression model will likely be unsuccessful because the areas receiving the Heavy-up treatment were matched to similar areas designated not to receive the Heavy-up treatment, and the similarity of areas leads one to expect that the predictions of undercount will be similar for both members of the matched pair, negating an attempt to associate the Heavy-up treatment with a change in undercount. For future studies, consideration should be given to a more integrated design in which CCM block clusters could be added in Heavy-up areas so that direct estimates of undercount become possible. Power analyses should not be neglected in such designs.

# Appendix B: Census Barriers, Attitudes and Motivators Survey (CBAMS) Mindsets

The Census Barriers, Attitudes and Motivators Survey (CBAMS) was sponsored by the Census Bureau in summer of 2008 as part of its overall 2010 ICC research plan. The primary purpose of the CBAMS was to provide an in-depth understanding of the public's opinions about the 2010 Census. The data gathered from the CBAMS were used to construct a set of mindsets for use in profiling and developing messaging for the ICC. These mindsets complement the audience segmentation model described in Section 2.1 above by providing insight into why certain populations do or do not choose to fill out the census form.

Using the data from the CBAMS, Draftfcb and the Census Bureau developed five CBAMS mindsets into which individuals could be classified, each of which is defined by different attitudes, barriers, and motivators to census participation. The purpose of the mindsets is to target marketing, advertising, and specific messages to audiences who are most likely to be receptive and motivated to participate in the census as a result of exposure. The descriptions of each mindset contained in the 2010 Census Creative Brief issued by Draftfcb in November 2008 can be summarized as follows:

| | |
|---|---|
| **Leading Edge** | Roughly 26 percent of the population falls into this mindset. This group values the census and believes that participation is crucial. |
| **Head Nodder** | This mindset represents about 41 percent of the population. This mindset can be characterized as impressionable: individuals believe everything they are told about the Census. They express intentions to participate, but are unreliable because they are easily swayed. |
| **Insulated** | About 6 percent of the population can be categorized as Insulated. This group is indifferent to and skeptical of the census largely because they are unfamiliar with it and have not seen the impact of it on their communities. |
| **Unacquainted** | This mindset contains roughly 7 percent of the population. This group is unaware of the census. Individuals are often linguistically isolated and not involved in community. Because they have no knowledge, they do not participate in the census. |
| **Cynical Fifth** | This mindset includes roughly 19 percent of the population. Individuals with this mindset are resistant to the census and generally suspicious of government institutions. Because these individuals tend to believe that the census information is misused or not used at all, they are not committed to the census. |

The 2010 CICPE questionnaires included a subset of the CBAMS questions used to classify cases into one of these five mindsets. Since the full set of CBAMS questionnaire items used to construct mindsets was not included in the 2010 CICPE questionnaires, we used a discriminant analysis on the CBAMS dataset to identify the best model for predicting CBAMS mindset using only the subset of mindset items

that appear in the 2010 CICPE questionnaires. These items include aided and unaided recall about the Census, intent to participate, and several knowledge and attitude items. We then applied those coefficients to the Wave 1 CICPE data in order to estimate CBAMS Mindsets for the individuals in the 2010 CICPE Wave 1 sample.

In this appendix, we present several summary tables that document how the CBAMS mindsets relate to exposure, knowledge and attitudes, and mail return over the course of the 2010 ICC. Note that we were not able to fully replicate the mindsets in our data; our mindset classification process generates approximately a 25 percent error rate when used on the CBAMS data. The error rate in classifying within the 2010 CICPE data is, of course, unknown.

Across all of the tables in this appendix, it appears that Wave 1 CBAMS Mindset (as we are able to calculate) is associated with our key measures at all three waves of the 2010 CICPE.

## Table B-1. CBAMS Mindsets by Sample Type (Wave 1 Only)

| | Leading Edge | | Head Nodders | | Insulated | | Unacquainted | | Cynical Fifth | | # Unweighted Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Type** | **# Unweighted** | **Row % (s.e.)** | **# Unweighted** | **Row % (s.e.)** | **# Unweighted** | **Row % (s.e.)** | **# Unweighted** | **Row % (s.e.)** | **# Unweighted** | **Row % (s.e.)** | |
| Hispanic | 70 | 13.0g (3.1) | 199 | 43.1 (8.3) | 60 | 15.7 (4.5) | 62 | 12.7G (4.3) | 70 | 15.5 (6.2) | 461 |
| Non-Hispanic African American | 53 | 7.0G (2.6) | 140 | 39.6 (7.7) | 66 | 27.5G (6.2) | 41 | 13.1 (6.9) | 77 | 12.9G (3.8) | 377 |
| Non-Hispanic White | 128 | 23.4G (3.1) | 110 | 33.5 (3.3) | 43 | 11.7G (2.4) | 19 | 4.1G (1.9) | 104 | 27.2G (3.7) | 404 |
| **National Estimate** | **251** | **20.4 (2.3)** | **449** | **35.3 (3.1)** | **169** | **13.9 (2.0)** | **122** | **6.1 (1.6)** | **251** | **24.3 (2.9)** | **1242** |
| American Indian | 76 | 14.6G (1.4) | 153 | 27.8g (2.7) | 71 | 19.8 (5.1) | 40 | 11.7g (3.1) | 117 | 26.2 (3.5) | 457 |
| Asian | 69 | 9.8G (1.6) | 149 | 28.6 (3.2) | 82 | 11.4 (2.1) | 106 | 26.9G (3.9) | 136 | 23.3 (2.1) | 542 |
| Native Hawaiian | 60 | 9.0G (1.1) | 131 | 26.2 (5.1) | 84 | 23.7G (2.7) | 70 | 19.1G (6.6) | 85 | 22.0 (2.8) | 430 |

2010 CICPE Final Report: unweighted counts and weighted percentages; Heavy-up sample excluded.

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate. The significance tests were not adjusted for multiple comparisons.

Table B-1 displays the unweighted count and the weighted (row) percent of cases for each CBAMS mindset by sample group for Wave 1. Each of the six sample types was statistically distinct from the rest of the population in its share of individuals in the Leading Edge mindset. Non-Hispanic Whites were more likely to be Leading Edge than the rest of the population, and all other sample types were less likely to be in the Leading Edge mindset. American Indians were less likely to be in the Head Nodder mindset, but all other sample types were indistinguishable from their reference groups. The percentage who were in the Insulated mindset is roughly equivalent in most groups, but higher among non-Hispanic African Americans and Native Hawaiians. Non-Hispanic African Americans had the same rate in the Unacquainted group as the rest of the population. Non-Hispanic Whites were less likely to be in the Unacquainted group, and all other sample types were more likely to be in the Unacquainted group. Non-Hispanic Whites were more likely to be in the Cynical Fifth than the other sample types; all other sample types were less likely to have that mindset.

In Table B-2, we show the unweighted count and the weighted (row) percentage of cases for each CBAMS mindset by audience segmentation cluster. The Leading Edge mindset is less common among the Economically Disadvantaged II Renter and Ethnic I Homeowner segments. The Head Nodders mindset is less common among Advantaged Homeowners and more common among Economically Disadvantaged I Homeowners. The Insulated mindset is more common among the Ethnic II Renter segment. Average II Renters were less likely to be Unacquainted, while the three segments (Economically Disadvantaged II Renter, Ethnic I Homeowner, and Ethnic II Renter) were more likely to be in this mindset. Advantaged Homeowners were more likely to be in the Cynical Fifth and Ethnic I Homeowners less likely to be in that mindset than the rest of the population

.

## Table B-2. CBAMS Mindsets by Audience Segmentation Cluster (Wave 1 Only)

| Segmentation Cluster | Leading Edge | | Head Nodders | | Insulated | | Unacquainted | | Cynical Fifth | | # Unweighted Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | # Unweighted | Row % (s.e.) | # Unweighted | Row % (s.e.) | # Unweighted | Row % (s.e.) | # Unweighted | Row % (s.e.) | # Unweighted | Row % (s.e.) | |
| Advantaged Homeowner | 93 | 23.9 (3.8) | 128 | 25.2G (4.2) | 70 | 12.2 (3.7) | 43 | 3.2 (1.6) | 136 | 35.5G (4.4) | 470 |
| Average I Homeowner | 133 | 20.3 (3.7) | 228 | 39.8 (5.9) | 105 | 10.6 (3.5) | 72 | 4.0 (2.3) | 172 | 25.4 (4.5) | 710 |
| Average II Renter | 68 | 24.6 (5.0) | 112 | 34.7 (7.0) | 53 | 18.7 (7.6) | 45 | 1.9G (1.1) | 55 | 20.1 (4.3) | 333 |
| Economically Disadvantaged I Homeowner | 33 | 13.1 (8.5) | 91 | 45.2G (4.2) | 41 | 12.0 (4.6) | 28 | 12.2 (7.7) | 52 | 17.5 (6.2) | 245 |
| Economically Disadvantaged II Renter | 11 | 4.6G (3.1) | 41 | 36.3 (11.7) | 25 | 20.2 (13.1) | 25 | 17.0G (4.8) | 30 | 21.8 (3.8) | 132 |
| Ethnic I Homeowner | 40 | 10.4G (3.6) | 107 | 49.5 (11.9) | 40 | 9.9 (3.9) | 38 | 18.0G (7.6) | 45 | 12.1G (2.8) | 270 |
| Ethnic II Renter | 42 | 9.9 (5.1) | 81 | 30.9 (5.6) | 42 | 23.0g (6.1) | 62 | 17.8G (2.0) | 41 | 18.4 (6.9) | 268 |
| Mobile/Single | 33 | 29.6 (11.5) | 79 | 32.1 (8.0) | 29 | 17.9 (6.1) | 20 | 3.3 (1.7) | 50 | 17.1 (8.8) | 211 |

2010 CICPE Final Report: unweighted counts and weighted percentages; Heavy-up sample excluded

Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category that contains the other seven segmentation clusters (Advantaged Homeowners vs. all seven of the other segmentation clusters, for example). The significance tests were not adjusted for multiple comparisons.

**Table B-3.** Wave 1 CBAMS Mindset by Percent Returning Census Form Pre-NRFU

| | %Pre-NRFU Mail Return (s.e.) | |
|---|---|---|
| Leading Edge | 73.0% | (4.5) |
| Head Nodders | 62.1% | (6.7) |
| Insulated | 55.4% | (8.7) |
| Unacquainted | 36.0% | (10.9) |
| Cynical Fifth | 56.1% | (8.2) |
| ($\chi$2, DF) | (9.59,4), p<0.05 | |

2010 CICPE Final Report Heavy-up sample excluded; weighted data. Table displays the design- corrected chi-square test, degrees of freedom, and p-value.

Table B-3 indicates the pre-NRFU mail return status for Wave 1 cases classified by their Wave 1 CBAMS Mindset. The table indicates that early CBAMS Mindset is a statistically significant predictor of mail return. We do not test differences between mindsets, but do note that the 36 percent mail return rate of the Unacquainted group is quite a bit lower than the 73 percent mail return rate of the Leading Edge group, consistent with the formulation of the mindsets. More than half of those who were in the Cynical Fifth in Wave 1 did return their census form prior to the start of NRFU. In fact, their return rates are not distinguishable from those of the Head Nodders or the Insulated groups as of Wave 1.

**Table B-4.** Exposure to Paid Media Across Waves, by Mindsets

| | Exposure to Paid Media | | |
|---|---|---|---|
| **Mindset** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** |
| Leading Edge | 47.8 (8.4) | 91.4 (3.5) | 85.2T (5.8) |
| Head Nodders | 39.5 (7.6) | 77.9 (4.7) | 82.1T (4.7) |
| Insulated | 34.1 (13.9) | 77.7 (7.3) | 59.4T (14.0) |
| Unacquainted | 0.0 (0.0) | 44.0 (15.5) | 45.6T (15.7) |
| Cynical Fifth | 18.0 (6.5) | 47.2 (11.0) | 66.7T (12.2) |
| ($\chi$2, DF) | (3.1,4), p<0.05 | (35.3,4), p<0.05 | (12.7,4 ), p<0.05 |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded. Table displays the design- corrected chi-square test, degrees of freedom, and p-value. For comparisons across waves (time) the letter "T" (uppercase) indicates p< 0.05 while the letter "t" (lowercase) indicates p<0.10 (but p>0.05). If there is a significant change between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. In this table Wave 1 is compared to Wave 3 only.

Table B-4 is the first of four tables that examine the association of Wave 1 CBAMS Mindset with self-reported exposure to different components of the campaign. In Table B-4, we see that, for each of the three waves of 2010 CICPE data collection, early CBAMS Mindset has a statistically significant

association with whether or not the individual reports any paid media exposure. We also see that all five mindsets report substantial increases in paid media exposure from Wave 1 to Wave 3.

**Table B-5.** Changes in Exposure to Partnership Activities Across Waves, by Mindsets

| | Exposure to Partnership Activities | | |
|---|---|---|---|
| **Mindset** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** |
| Leading Edge | 34.6 (9.0) | 38.5 (10.1) | 64.2T (7.7) |
| Head Nodders | 22.0 (7.9) | 44.4 (7.8) | 57.3T (6.2) |
| Insulated | 14.1 (9.3) | 19.5 (9.3) | 38.7t (12.8) |
| Unacquainted | 0.0 (0.0) | 11.3 (6.0) | 23.5T (10.1) |
| Cynical Fifth | 7.0 (5.5) | 11.0 (5.3) | 37.4T (10.0) |
| ($\chi$2, DF) | (2.1,4), p<0.10 | (23.1,4), p<0.05 | (11.4,4), p<0.05 |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded. Table displays the design- corrected chi-square test, degrees of freedom, and *p*-value. For comparisons across waves (time) the letter "T" (uppercase) indicates $p < 0.05$ while the letter "t" (lowercase) indicates p<0.10 (but $p > 0.05$). If there is a significant change between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. In this table Wave 1 is compared to Wave 3 only.

Table B-5 examines the association of early CBAMS Mindset to exposure to partnership activities. In each of the three waves, Wave 1 mindset is associated with partnership exposure in that wave, although the relationship is weakest for Wave 1 partnership exposure. All five mindsets report statistically significant increases in partnership exposure from Wave 1 to Wave 3.

**Table B-6.** Changes in Exposure to Earned Media Across Waves, by Mindsets

| | Exposure to Earned Media | | |
|---|---|---|---|
| **Mindset** | **W1 % (s.e.)** | **W2 % (s.e.)** | **W3 % (s.e.)** |
| Leading Edge | 39.0 (8.7) | 78.8 (5.4) | 59.5T (7.5) |
| Head Nodders | 37.1 (8.0) | 67.5 (5.9) | 68.3T (6.3) |
| Insulated | 11.7 (6.6) | 40.7 (13.6) | 43.1T (12.3) |
| Unacquainted | 0.0 (0.0) | 30.1 (11.6) | 24.8T (11.8) |
| Cynical Fifth | 16.1 (6.1) | 38.8 (8.9) | 36.7T (8.2) |
| ($\chi$2, DF) | (3.6,4), p<0.05 | (22.8,4), p<0.05 | (17.9,4), p<0.05 |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded. Table displays the design- corrected chi-square test, degrees of freedom, and *p*-value. For comparisons across waves (time) the letter "T" (uppercase) indicates $p < 0.05$ while the letter "t" (lowercase) indicates p<0.10 (but $p > 0.05$). If there is a significant change between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. In this table Wave 1 is compared to Wave 3 only.

Table B-6 shows a similar pattern, with Wave 1 CBAMS Mindset having a statistically significant association with reporting any earned media exposure in each of the three waves. We also see that having

had any earned media exposure increases significantly for each of the five groups from Wave 1 to Wave 3.

**Table B-7.** Changes in Frequency of Total Exposure Across Waves, by Mindsets

| | Frequency of Total Exposure | | |
|---|---|---|---|
| **Mindset** | **W1 Mean (s.e.)** | **W2 Mean (s.e.)** | **W3 Mean (s.e.)** |
| Leading Edge | 1.5 (0.3) | 5.5 (1.0) | 13.7T (1.6) |
| Head Nodders | 1.5 (0.4) | 4.1 (0.7) | 16.7T (3.3) |
| Insulated | 0.5 (0.3) | 2.4 (0.7) | 13.2T (3.9) |
| Unacquainted | 0.0 (0.0) | 1.7 (0.6) | 5.2T (1.9) |
| Cynical Fifth | 1.2 (0.8) | 2.0 (0.5) | 13.0T (4.7) |
| (F-value, DF) | (11.6, 4), p<0.05 | (21.3, 5), p<0.05 | (20.8, 5), p<0.05 |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded. Table displays the design- corrected F test, degrees of freedom, and *p*-value. For comparisons across waves (time) the letter "T" (uppercase) indicates $p < 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. In this table Wave 1 is compared to Wave 3 only.

Table B-7 looks at Wave 1 CBAMS Mindset against the frequency of total exposure reported in each wave. For all three waves, Wave 1 CBAMS Mindset is significantly associated with the number of exposures reported. All five groups report significant increases in the frequency of exposure from Wave 1 to Wave 3. We do not conduct tests comparing mindset groups, but it does appear that even in the third wave, the Unacquainted group has low total exposure compared to other groups.

**Table B-8.** Knowledge About the Census Across Waves, by CBAMS Mindsets

| | Knowledge about the Census | | |
|---|---|---|---|
| **Mindset** | **W1 Mean (s.e.)** | **W2 Mean (s.e.)** | **W3 Mean (s.e.)** |
| Leading Edge | 6.5 (0.1) | 6.2 (0.2) | 6.2 (0.2) |
| Head Nodders | 4.4 (0.1) | 4.7 (0.2) | 5.7T (0.2) |
| Insulated | 1.9 (0.3) | 3.8 (0.4) | 3.9T (0.4) |
| Unacquainted | 0.0 (0.0) | 2.9 (0.7) | 4.3T (0.4) |
| Cynical Fifth | 5.4 (0.3) | 4.8 (0.4) | 5.6 (0.4) |
| (F-value, DF) | (3260.8, 4), p<.05 | (330.9, 5), p<.05 | (484.3, 5), p<.05 |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded. Table displays the design- corrected F test, degrees of freedom, and *p*-value. For comparisons across waves (time) the letter "T" (uppercase) indicates $p < 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. In this table Wave 1 is compared to Wave 3 only.

Tables B-8 through B-10 focus on measures discussed in Chapter 5, on knowledge and attitudes toward the Census. Since knowledge and attitudes are elements of the classification scheme into mindsets, it is

not surprising that Wave 1 mindset is strongly associated with knowledge at each of the three waves. We see that three of the five mindsets experience significant improvement in knowledge from Wave 1 to Wave 3. The two groups that do not had quite high knowledge levels to begin with, namely the Leading Edge and Cynical Fifth groups. Note that it does not appear to be mis-information on key knowledge items about the census that makes the Cynical Fifth averse to the census.

**Table B-9.** Positive Attitudes Towards the Census Across Waves, by CBAMS Mindsets

| | Positive Attitudes Towards the Census | | |
|---|---|---|---|
| **Mindset** | **W1 Mean (s.e.)** | **W2 Mean (s.e.)** | **W3 Mean (s.e.)** |
| Leading Edge | 4.2 (0.3) | 4.2 (0.3) | 4.2 (0.4) |
| Head Nodders | 4.4 (0.1) | 4.3 (0.2) | 4.6T (0.1) |
| Insulated | 2.9 (0.3) | 3.4 (0.3) | 3.9T (0.2) |
| Unacquainted | 0.0 (0.0) | 3.7 (0.4) | 3.0T (0.6) |
| Cynical Fifth | 2.6 (0.2) | 3.6 (0.3) | 3.9T (0.2) |
| (F-value, DF) | (693.6, 4), p<.05 | (312.8, 5), p<.05 | (1924.6, 5), p<.05 |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded. Table displays the design- corrected F test, degrees of freedom, and *p*-value. For comparisons across waves (time) the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. In this table Wave 1 is compared to Wave 3 only.

Table B-9 measures the same set of positive attitudes discussed in more detail in Chapter 5. Wave 1 Mindset is associated with the number of positive attitudes held at Waves 1, 2 and 3. Only the Leading Edge failed to significantly increase their positive attitudes from Wave 1 to Wave 3. In fact, by Wave 3, most groups had converged with the Leading Edge in their positive attitudes held about the census.

**Table B-10.** Negative Attitudes Towards the Census Across Waves, by Mindsets

| | Negative Attitudes Towards the Census | | |
|---|---|---|---|
| **Mindset** | **W1 Mean (s.e.)** | **W2 Mean (s.e.)** | **W3 Mean (s.e.)** |
| Leading Edge | 0.1 (0.1) | 0.7 (0.4) | 0.6 (0.4) |
| Head Nodders | 0.6 (0.1) | 0.4 (0.1) | 0.5 (0.1) |
| Insulated | 1.5 (0.2) | 0.8 (0.3) | $0.5^{T}$ (0.1) |
| Unacquainted | 0.0 (0.0) | 0.8 (0.2) | $0.8^{T}$ (0.2) |
| Cynical Fifth | 1.5 (0.3) | 0.7 (0.2) | $0.7^{T}$ (0.1) |
| (F-value, DF) | (22.1, 4), $p<.05$ | (12.3, 5), $p<.05$ | (33.1, 5), $p<.05$ |

2010 CICPE Final Report: weighted data; Heavy-up sample excluded. Table displays the design- corrected F test, degrees of freedom, and *p*-value. For comparisons across waves (time) the letter "T" (uppercase) indicates $p< 0.05$ while the letter "t" (lowercase) indicates $p<0.10$ (but $p>0.05$). If there is a significant change between Wave 1 and Wave 3, the letter is placed in the column for Wave 3. In this table Wave 1 is compared to Wave 3 only.

Table B-10 shows the association of negative attitudes toward the census held by individuals at each of the three waves, compared to their Wave 1 mindsets. Wave 1 Mindset is associated with these negative attitude levels in all three waves. The changes from Wave 1 to Wave 3 within mindset are varied. No significant change is seen among Leading Edge and Head Nodders. The Insulated group and the Cynical Fifth decreased in the negative attitudes they held toward the Census (that is, they became less negative). The Unacquainted group by definition held no negative or positive attitudes toward the census at Wave 1 (since they had neither aided nor unaided recall of the census at all). This group had a significant increase from Wave 1 to Wave 3 in the negative attitudes that they held.

# Appendix C: Additional Exposure Tables

This appendix supplements data on self-reported exposure to the 2010 ICC as summarized in Chapter 4. Tables C-1 through C-6 provide detailed information on paid media exposure. Tables C-7 through C-13 elaborate on partnership exposure. Tables C-14 through C-19 pertain to the specifics of reported earned media exposure.

## Table C-1. Exposure to Television by Sample Type, by Wave

| | Exposure to Subcomponent of Paid Media: Television | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 184 | 5.1 | 78.7 (6.7) | 290 | 8.6 | 86.0 (6.6) | 463 | 10.2 | 94.8$^{G}$ (1.3) |
| Non-Hispanic African American | 105 | 3.4 | 81.2 (6.4) | 269 | 8.5 | 93.4$^{G}$ (2.5) | 435 | 10.0 | 90.1 (3.2) |
| Non-Hispanic White | 120 | 24.4 | 72.1 (5.3) | 251 | 62.0 | 77.6$^{G}$ (2.4) | 370 | 67.8 | 83.9$^{G}$ (2.7) |
| **National Estimate** | 409 | 32.9 | 74.1$^{G}$ (4.0) | 810 | 79.2 | 80.2 (2.0) | 1268 | 88.0 | 85.9 (2.1) |
| American Indian | 144 | 0.2 | 64.2 (6.2) | 270 | 0.6 | 86.0$^{g}$ (2.2) | 387 | 0.6 | 84.7 (4.3) |
| Asian | 124 | 1.0 | 48.4$^{G}$ (6.4) | 276 | 2.9 | 78.5 (2.4) | 420 | 3.0 | 80.3 (3.7) |
| Native Hawaiian | 92 | 0.0 | 59 (10.2) | 205 | 0.1 | 79.5 (4.8) | 371 | 0.1 | 87.5 (1.8) |
| Heavy-up –Treatment | 306 | 0.9 | 66.5 (2.3) | N/A | N/A | N/A | 783 | 2.4 | 89.9 (0.8) |
| Heavy-up – Control | 339 | 1.1 | 70.0 (3.8) | N/A | N/A | N/A | 814 | 2.3 | 90.6 (1.1) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-2. Exposure to Radio by Sample Type, by Wave

| | Exposure to Subcomponent of Paid Media: Radio | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 184 | 5.1 | 22.5 (9.7) | 290 | 8.6 | 58.0 (8.9) | 463 | 10.2 | 63.5 (6.3) |
| Non-Hispanic African American | 105 | 3.4 | 51.3$^{g}$ (11.0) | 269 | 8.5 | 56.5$^{g}$ (7.8) | 435 | 10.0 | 60.9 (6.7) |
| Non-Hispanic White | 120 | 24.4 | 28.8 (7.3) | 251 | 62.0 | 38.7$^{g}$ (4.9) | 370 | 67.8 | 55.9 (4.3) |
| **National Estimate** | **409** | **32.9** | **30.2 (5.6)** | **810** | **79.2** | **42.7 (4.1)** | **1268** | **88.0** | **57.4$^{G}$ (3.8)** |
| American Indian | 144 | 0.2 | 32.1 (4.4) | 270 | 0.6 | 56.1$^{g}$ (3.6) | 387 | 0.6 | 45.7$^{g}$ (5.7) |
| Asian | 124 | 1.0 | 30.4 (5.8) | 276 | 2.9 | 45.0 (6.7) | 420 | 3.0 | 42.7$^{G}$ (4.1) |
| Native Hawaiian | 92 | 0.0 | 21.2 (6.0) | 205 | 0.1 | 40.6 (5.8) | 371 | 0.1 | 50.6 (4.0) |
| Heavy-up –Treatment | 306 | 0.9 | 25.0$^{G}$ (1.9) | N/A | N/A | N/A | 783 | 2.4 | 52.9 (1.8) |
| Heavy-up – Control | 339 | 1.1 | 33.7 (3.2) | N/A | N/A | N/A | 814 | 2.3 | 49.3 (2.8) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-3. Exposure to Magazines by Sample Type, by Wave

| | Exposure to Subcomponent of Paid Media: Magazines | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 184 | 5.1 | 11.4$^{G}$ (1.8) | 290 | 8.6 | 25.7$^{G}$ (6.2) | 463 | 10.2 | 37.7$^{G}$ (5.0) |
| Non-Hispanic African American | 105 | 3.4 | 14.5 (9.9) | 269 | 8.5 | 20.2 (3.9) | 435 | 10.0 | 27.3 (4.5) |
| Non-Hispanic White | 120 | 24.4 | 18.7 (4.3) | 251 | 62.0 | 16.0 (3.0) | 370 | 67.8 | 20.8$^{G}$ (3.3) |
| **National Estimate** | 409 | 32.9 | 17.1 (3.5) | 810 | 79.2 | 17.5$^{G}$ (2.7) | 1268 | 88.0 | 23.5 (2.4) |
| American Indian | 144 | 0.2 | 18.9 (6.6) | 270 | 0.6 | 26.9$^{G}$ (4.1) | 387 | 0.6 | 23.1 (5.3) |
| Asian | 124 | 1.0 | 18.5 (5.5) | 276 | 2.9 | 32.9$^{G}$ (8.4) | 420 | 3.0 | 19.2 (4.4) |
| Native Hawaiian | 92 | 0.0 | 32.8$^{G}$ (6.3) | 205 | 0.1 | 12.4 (2.9) | 371 | 0.1 | 18.9 (3.6) |
| Heavy-up –Treatment | 306 | 0.9 | 22.5$^{G}$ (2.9) | N/A | N/A | N/A | 783 | 2.4 | 15.8$^{G}$ (1.7) |
| Heavy-up – Control | 339 | 1.1 | 14.1 (2.5) | N/A | N/A | N/A | 814 | 2.3 | 19.9 (1.8) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African-Americans + non-Hispanic Whites; non-Hispanic African-Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African-Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-4. Exposure to Newspapers by Sample Type, by Wave

| | Exposure to Subcomponent of Paid Media: Newspapers | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 184 | 5.1 | 31.7[G] (4.6) | 290 | 8.6 | 37.0 (8.9) | 463 | 10.2 | 46.2[g] (6.1) |
| Non-Hispanic African American | 105 | 3.4 | 38.5 (11.4) | 269 | 8.5 | 42.6 (7.9) | 435 | 10.0 | 43.3 (3.8) |
| Non-Hispanic White | 120 | 24.4 | 46.8 (7.9) | 251 | 62.0 | 37.3 (4.7) | 370 | 67.8 | 32.4[G] (4.4) |
| **National Estimate** | 409 | 32.9 | 43.6 (6.5) | 810 | 79.2 | 37.8 (4.1) | 1,268 | 88.0 | 35.3 (3.5) |
| American Indian | 144 | 0.2 | 43.3 (8.1) | 270 | 0.6 | 47.9 (4.5) | 387 | 0.6 | 41.7 (6.9) |
| Asian | 124 | 1.0 | 43.1 (5.2) | 276 | 2.9 | 50.5 (8.2) | 420 | 3.0 | 35.1 (5.4) |
| Native Hawaiian | 92 | 0.0 | 65.6[G] (6.9) | 205 | 0.1 | 40.5 (6.1) | 371 | 0.1 | 51.9[g] (8.3) |
| Heavy-up –Treatment | 306 | 0.9 | 50.9 (4.8) | N/A | N/A | N/A | 783 | 2.4 | 37.4[G] (1.9) |
| Heavy-up – Control | 339 | 1.1 | 48.3 (1.7) | N/A | N/A | N/A | 814 | 2.3 | 44.6 (2.3) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-5. Exposure to Internet by Sample Type, by Wave

| | Exposure to Subcomponent of Paid Media: Internet | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| Sample Type | # Unweighted | # Weighted (Millions) | % (s.e.) | # Unweighted | # Weighted (Millions) | % (s.e.) | # Unweighted | # Weighted (Millions) | % (s.e.) |
| Hispanic | 184 | 5.1 | 21.9 (6.6) | 290 | 8.6 | 38.2 (4.2) | 463 | 10.2 | 28.5 (7.2) |
| Non-Hispanic African American | 105 | 3.4 | 46.8$^{g}$ (11.7) | 269 | 8.5 | 45.5$^{g}$ (8.2) | 435 | 10.0 | 34.7 (6.7) |
| Non-Hispanic White | 120 | 24.4 | 29.7 (4.8) | 251 | 62.0 | 32.4 (4.7) | 370 | 67.8 | 32.5 (4.6) |
| **National Estimate** | 409 | 32.9 | 30.3$^{G}$ (3.9) | 810 | 79.2 | 34.5 (4.5) | 1,268 | 88.0 | 32.3 (3.6) |
| American Indian | 144 | 0.2 | 39.2 (4.4) | 270 | 0.6 | 37.1 (5.6) | 387 | 0.6 | 27.6 (4.6) |
| Asian | 124 | 1.0 | 52.4$^{G}$ (5.4) | 276 | 2.9 | 40.7 (7.1) | 420 | 3.0 | 31.3 (3.1) |
| Native Hawaiian | 92 | 0.0 | 31.0 (11.0) | 205 | 0.1 | 21.8$^{G}$ (2.0) | 371 | 0.1 | 22.8$^{G}$ (1.5) |
| Heavy-up –Treatment | 306 | 0.9 | 36.0 (2.5) | N/A | N/A | N/A | 783 | 2.4 | 23.0$^{G}$ (1.7) |
| Heavy-up – Control | 339 | 1.1 | 38.8 (2.4) | N/A | N/A | N/A | 814 | 2.3 | 31.7 (1.8) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-6. Exposure to Paid Media Advertising in Public Places by Sample Type, by Wave

| | Exposure to Subcomponent of Paid Media: Public Places | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 184 | 5.1 | 7.8 (3.8) | 290 | 8.6 | 33.8$^{g}$ (7.1) | 463 | 10.2 | 51.1$^{G}$ (6.8) |
| Non-Hispanic African American | 105 | 3.4 | 17.2 (11.1) | 269 | 8.5 | 39.7$^{G}$ (5.3) | 435 | 10.0 | 51.2$^{G}$ (5.3) |
| Non-Hispanic White | 120 | 24.4 | 10.8 (3.0) | 251 | 62.0 | 19.0$^{G}$ (2.8) | 370 | 67.8 | 35.3$^{G}$ (4.3) |
| **National Estimate** | 409 | 32.9 | 11.0 (3.0) | 810 | 79.2 | 22.8 (2.7) | 1,268 | 88.0 | 38.9 (3.8) |
| American Indian | 144 | 0.2 | 34.2$^{G}$ (4.3) | 270 | 0.6 | 28.7 (2.8) | 387 | 0.6 | 40.1 (2.6) |
| Asian | 124 | 1.0 | 15.7 (5.0) | 276 | 2.9 | 27.2 (3.2) | 420 | 3.0 | 44.3 (4.5) |
| Native Hawaiian | 92 | 0.0 | 20.8 (7.8) | 205 | 0.1 | 20.9 (2.4) | 371 | 0.1 | 24.1$^{G}$ (3.9) |
| Heavy-up –Treatment | 306 | 0.9 | 15.5 (2.4) | N/A | N/A | N/A | 783 | 2.4 | 36.5$^{G}$ (3.7) |
| Heavy-up – Control | 339 | 1.1 | 15.4 (1.9) | N/A | N/A | N/A | 814 | 2.3 | 46.3 (2.6) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-7. Exposure to Meetings of a Religious Group by Sample Type, by Wave

| | Subcomponents of Exposure to Partnership Activities: Religious Group | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| Sample Type | # Unweighted | # Weighted (Millions) | % (s.e.) | # Unweighted | # Weighted (Millions) | % (s.e.) | # Unweighted | # Weighted (Millions) | % (s.e.) |
| Hispanic | 69 | 1.3 | 41.3$^{G}$ (7.0) | 140 | 3.7 | 23.8 (9.1) | 298 | 5.9 | 31.7$^{G}$ (9.0) |
| Non-Hispanic African American | 71 | 2.2 | 25.7 (11.8) | 166 | 5.3 | 24.5 (6.6) | 326 | 7.4 | 31.5$^{G}$ (6.0) |
| Non-Hispanic White | 50 | 10.2 | 12.4$^{G}$ (6.2) | 96 | 19.7 | 17.4 (4.6) | 214 | 42.6 | 11.2$^{G}$ (4.1) |
| **National Estimate** | 190 | 13.7 | 17.2 (6.0) | 402 | 28.7 | 19.5 (3.9) | 838 | 55.9 | 16.0$^{g}$ (4.0) |
| American Indian | 87 | 0.1 | 7.6 (5.2) | 150 | 0.3 | 5.4$^{G}$ (1.6) | 258 | 0.4 | 23.1 (8.4) |
| Asian | 47 | 0.3 | 19.6 (6.4) | 104 | 1.1 | 13.6 (4.8) | 235 | 1.6 | 24.1 (4.4) |
| Native Hawaiian | 54 | 0.0 | 24.1 (5.2) | 98 | 0.0 | 30.5 (11.8) | 244 | 0.1 | 20.5 (5.5) |
| Heavy-up –Treatment | 140 | 0.4 | 14.5 (1.7) | N/A | N/A | N/A | 448 | 1.1 | 26.4 (3.1) |
| Heavy-up – Control | 153 | 0.4 | 21.7 (5.4) | N/A | N/A | N/A | 542 | 1.3 | 24.4 (3.8) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-8. Exposure to Activities of a Community Organization by Sample Type, by Wave

| | Subcomponents of Exposure to Partnership Activities: Community Organization | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 69 | 1.3 | 24.1[g] (8.4) | 140 | 3.7 | 43.0 (8.3) | 298 | 5.9 | 50.9[G] (7.5) |
| Non-Hispanic African American | 71 | 2.2 | 52.1 (17.6) | 166 | 5.3 | 28.5 (7.1) | 326 | 7.4 | 50.0[G] (9.4) |
| Non-Hispanic White | 50 | 10.2 | 48.2 (9.5) | 96 | 19.7 | 38.6 (8.1) | 214 | 42.6 | 24.1[G] (4.4) |
| **National Estimate** | 190 | 13.7 | 46.5 (8.3) | 402 | 28.7 | 37.3 (6.4) | 838 | 55.9 | 30.3 (4.2) |
| American Indian | 87 | 0.1 | 28.3 (7.1) | 150 | 0.3 | 33.7 (4.1) | 258 | 0.4 | 42.8 (7.4) |
| Asian | 47 | 0.3 | 49.1 (9.6) | 104 | 1.1 | 41.2 (9.3) | 235 | 1.6 | 35.0 (5.7) |
| Native Hawaiian | 54 | 0.0 | 43.1 (4.3) | 98 | 0.0 | 44.3 (7.4) | 244 | 0.1 | 32.8 (9.3) |
| Heavy-up –Treatment | 140 | 0.4 | 30.6[G] (2.9) | N/A | N/A | N/A | 448 | 1.3 | 27.3 (2.7) |
| Heavy-up – Control | 153 | 0.5 | 38.8 (2.5) | N/A | N/A | N/A | 542 | 1.5 | 29.0 (3.4) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-9. Exposure to Meetings or Gatherings by a Tribal, State or Local Government by Sample Type, by Wave

| | Subcomponents of Exposure to Partnership Activities: Tribal/State/Local Government | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 69 | 1.3 | 9.1 (4.2) | 140 | 3.7 | 13.9 (8.3) | 298 | 5.9 | 15.1 (4.7) |
| Non-Hispanic African American | 71 | 2.2 | 22.6 (12.2) | 166 | 5.3 | 15.3 (4.4) | 326 | 7.4 | 17.4 (3.1) |
| Non-Hispanic White | 50 | 10.2 | 17.6 (6.0) | 96 | 19.7 | 15.9 (4.3) | 214 | 42.6 | 11.2 (2.3) |
| **National Estimate** | 190 | 13.7 | 17.6 (4.4) | 402 | 28.7 | 15.5$^{G}$ (3.3) | 838 | 55.9 | 12.4$^{G}$ (1.8) |
| American Indian | 87 | 0.1 | 37.4$^{G}$ (4.7) | 150 | 0.3 | 30.0$^{g}$ (8.4) | 258 | 0.4 | 41.0$^{G}$ (6.9) |
| Asian | 47 | 0.3 | 22.2 (6.6) | 104 | 1.1 | 31.6$^{G}$ (5.5) | 235 | 1.6 | 23.2$^{G}$ (6.2) |
| Native Hawaiian | 54 | 0.0 | 10.6 (7.1) | 98 | 0.0 | 32.4$^{G}$ (6.0) | 244 | 0.1 | 19.9$^{G}$ (2.7) |
| Heavy-up –Treatment | 140 | 0.4 | 12.7$^{G}$ (4) | N/A | N/A | N/A | 448 | 1.3 | 14.1 (2.6) |
| Heavy-up – Control | 153 | 0.5 | 19.3 (3.2) | N/A | N/A | N/A | 542 | 1.5 | 16.0 (2.6) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-10. Exposure to Speeches Made by a Local Leader by Sample Type, by Wave

| | Subcomponents of Exposure to Partnership Activities: Speech by Local Leader | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 69 | 1.3 | 19.6 (3.8) | 140 | 3.7 | 9.8$^{G}$ (1.5) | 298 | 5.9 | 16.7 (3.6) |
| Non-Hispanic African American | 71 | 2.2 | 18.2 (11.4) | 166 | 5.3 | 25.2 (7.0) | 326 | 7.4 | 21.5 (6.4) |
| Non-Hispanic White | 50 | 10.2 | 12.4 (4.6) | 96 | 19.7 | 17.6 (3.8) | 214 | 42.6 | 18.2 (2.5) |
| **National Estimate** | 190 | 13.7 | 14.0$^{G}$ (3.6) | 402 | 28.7 | 18.0$^{g}$ (3.0) | 838 | 55.9 | 18.5$^{g}$ (2.1) |
| American Indian | 87 | 0.1 | 22.8 (5.0) | 150 | 0.3 | 15.8 (5.3) | 258 | 0.4 | 26.2 (8.3) |
| Asian | 47 | 0.3 | 19.8 (6.6) | 104 | 1.1 | 27.6$^{G}$ (3.6) | 235 | 1.6 | 24.7 (5.3) |
| Native Hawaiian | 54 | 0.0 | 23.9 (6.2) | 98 | 0.0 | 46.4$^{G}$ (7.9) | 244 | 0.1 | 30.7$^{G}$ (3.7) |
| Heavy-up –Treatment | 140 | 0.4 | 23.7 (2.9) | N/A | N/A | N/A | 448 | 1.3 | 23.1 (2.7) |
| Heavy-up – Control | 153 | 0.5 | 27.5 (3.1) | N/A | N/A | N/A | 542 | 1.5 | 23.0 (2.2) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-11. Exposure to Local Events by Sample Type, by Wave

| | Subcomponents of Exposure to Partnership Activities: Local Event | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 69 | 1.3 | 42.3 (10.9) | 140 | 3.7 | 18.5 (10.0) | 298 | 5.9 | 27.1 (8.0) |
| Non-Hispanic African American | 71 | 2.2 | 17.8 (4.1) | 166 | 5.3 | 22.9 (9.3) | 326 | 7.4 | 26.8 (6.9) |
| Non-Hispanic White | 50 | 10.2 | 31.3 (10.4) | 96 | 19.7 | 32.7 (6.2) | 214 | 42.6 | 19.5 (3.8) |
| **National Estimate** | 190 | 13.7 | 30.2 (7.7) | 402 | 28.7 | 29.1 (5.2) | 838 | 55.9 | 21.3 (3.1) |
| American Indian | 87 | 0.1 | 36.9 (10.1) | 150 | 0.3 | 19.5 (5.1) | 258 | 0.4 | 34.7$^{G}$ (5.6) |
| Asian | 47 | 0.3 | 32.5 (7.8) | 104 | 1.1 | 31.6 (3.9) | 235 | 1.6 | 26.0 (4.3) |
| Native Hawaiian | 54 | 0.0 | 24.3 (4.6) | 98 | 0.0 | 40.7 (8.1) | 244 | 0.1 | 28.8 (4.7) |
| Heavy-up –Treatment | 140 | 0.4 | 22.7$^{G}$ (2.6) | N/A | N/A | N/A | 448 | 1.3 | 20.6 (3.7) |
| Heavy-up – Control | 153 | 0.5 | 15.4 (4.4) | N/A | N/A | N/A | 542 | 1.5 | 21.4 (3.0) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-12. Exposure to Signs, Posters, or Meeting Exhibits by Sample Type, by Wave

| | Subcomponents of Exposure to Partnership Activities: Signs, Posters or Exhibits | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 69 | 1.3 | 42.3 (12.1) | 140 | 3.7 | 71.0 (10.1) | 298 | 5.9 | 68.7 (2.7) |
| Non-Hispanic African American | 71 | 2.2 | 34.9 (19.4) | 166 | 5.3 | 61.1 (11.2) | 326 | 7.4 | 85.3[g] (4.9) |
| Non-Hispanic White | 50 | 10.2 | 30.4 (9.3) | 96 | 19.7 | 62.9 (7.0) | 214 | 42.6 | 72.9 (5.1) |
| **National Estimate** | 190 | 13.7 | 32.2 (7.0) | 402 | 28.7 | 63.6 (6.6) | 838 | 55.9 | 74.1 (3.8) |
| American Indian | 87 | 0.1 | 59.3[G] (5.0) | 150 | 0.3 | 75.8[g] (3.1) | 258 | 0.4 | 83.3[g] (3.7) |
| Asian | 47 | 0.3 | 36 (6) | 104 | 1.1 | 64.1 (5.8) | 235 | 1.6 | 75.4 (3.5) |
| Native Hawaiian | 54 | 0.0 | 30.9 (5.6) | 98 | 0.0 | 51.7 (8.5) | 244 | 0.1 | 75.9 (6.8) |
| Heavy-up –Treatment | 140 | 0.4 | 46.2 (7.8) | N/A | N/A | N/A | 448 | 1.3 | 70.7[G] (4.8) |
| Heavy-up – Control | 153 | 0.5 | 50.0 (3.8) | N/A | N/A | N/A | 542 | 1.5 | 79.3 (3.9) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-13. Exposure to Paystub or Utility Bill Insert by Sample Type, by Wave

| | Subcomponents of Exposure to Partnership Activities: Paystub or Utility Bill Insert | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 69 | 1.3 | 5.3$^{G}$ (2.2) | 140 | 3.7 | 20.1$^{G}$ (10.2) | 298 | 5.9 | 46.1 (8.6) |
| Non-Hispanic African American | 71 | 2.2 | 33.6 (20.4) | 166 | 5.3 | 45.8 (8.6) | 326 | 7.4 | 31.5 (7.2) |
| Non-Hispanic White | 50 | 10.2 | 18.2 (6.0) | 96 | 19.7 | 44.0 (6.5) | 214 | 42.6 | 30.1 (7.0) |
| **National Estimate** | 190 | 13.7 | 19.4 (3.7) | 402 | 28.7 | 41.3 (5.5) | 838 | 55.9 | 32.0 (5.3) |
| American Indian | 87 | 0.1 | 32.4 (8.5) | 150 | 0.3 | 28.5 (7.2) | 258 | 0.4 | 31.9 (7.6) |
| Asian | 47 | 0.3 | 23.3 (5.6) | 104 | 1.1 | 37.1 (6.8) | 235 | 1.6 | 33.4 (4.7) |
| Native Hawaiian | 54 | 0.0 | 32.1$^{G}$ (4.3) | 98 | 0.0 | 8.3$^{G}$ (4.7) | 244 | 0.1 | 25.8 (2.8) |
| Heavy-up –Treatment | 140 | 0.4 | 26.5 (4.3) | N/A | N/A | N/A | 448 | 1.3 | 36.3 (1.5) |
| Heavy-up – Control | 153 | 0.5 | 21.4 (2.1) | N/A | N/A | N/A | 542 | 1.5 | 35.1 (4.0) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-14. Exposure to Newspaper or Magazine Articles by Sample Type, by Wave

| | Subcomponents of Exposed to Earned Media at Least Once: Newspaper or Magazine Articles | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 135 | 3.6 | 24.2$^{G}$ (5.8) | 230 | 6.3 | 38.2 (9.4) | 348 | 7.2 | 53.5 (5.8) |
| Non-Hispanic African American | 85 | 2.6 | 43.0 (10.8) | 207 | 6.2 | 23.4$^{G}$ (5.9) | 318 | 6.9 | 44.0 (4.6) |
| Non-Hispanic White | 107 | 20.7 | 46.9$^{G}$ (6.6) | 202 | 44.7 | 43.5$^{g}$ (5.3) | 276 | 47.3 | 48.6 (6.3) |
| **National Estimate** | 327 | 26.8 | 43.5 (6.2) | 639 | 57.2 | 40.7 (4.6) | 942 | 61.4 | 48.7 (5.0) |
| American Indian | 112 | 0.2 | 39.5 (6.8) | 226 | 0.5 | 47.9 (6.8) | 302 | 0.5 | 47.1 (7.4) |
| Asian | 103 | 0.8 | 44.1 (5.2) | 198 | 2.1 | 32.3 (5.0) | 294 | 1.9 | 51.3 (4.0) |
| Native Hawaiian | 71 | 0.0 | 65.3$^{g}$ (8.8) | 148 | 0.0 | 46.9 (7.9) | 284 | 0.1 | 68.7$^{G}$ (3.3) |
| Heavy-up –Treatment | 276 | 0.8 | 54.3$^{G}$ (5.4) | N/A | N/A | N/A | 521 | 1.3 | 53.3 (1.2) |
| Heavy-up – Control | 281 | 0.9 | 41.8 (3.7) | N/A | N/A | N/A | 624 | 1.7 | 56.0 (2.8) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-15. Exposure to Stories or Features on Television or Radio by Sample Type, by Wave

| | Subcomponents of Exposed to Earned Media at Least Once: Television or Radio | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 135 | 3.6 | 90.3$^{G}$ (5.9) | 230 | 6.3 | 79.5 (8.7) | 348 | 7.2 | 96.9$^{G}$ (0.8) |
| Non-Hispanic African American | 85 | 2.6 | 79.2 (5.7) | 207 | 6.2 | 91.5$^{G}$ (3.4) | 318 | 6.9 | 91.7 (3.3) |
| Non-Hispanic White | 107 | 20.7 | 69.7$^{G}$ (5.0) | 202 | 44.7 | 64.8$^{G}$ (5.2) | 276 | 47.3 | 90.7 (1.9) |
| **National Estimates** | 327 | 26.8 | 73.4$^{G}$ (4.3) | 639 | 57.2 | 69.3 (4.8) | 942 | 61.4 | 91.5$^{G}$ (1.5) |
| American Indian | 112 | 0.2 | 69.3 (5.2) | 226 | 0.5 | 77.6 (2.6) | 302 | 0.5 | 88.8 (2.7) |
| Asian | 103 | 0.8 | 49.2$^{G}$ (5.8) | 198 | 2.1 | 57.5 (6.8) | 294 | 1.9 | 82.0$^{G}$ (4.3) |
| Native Hawaiian | 71 | 0.0 | 52.3$^{G}$ (6.0) | 148 | 0.0 | 73.7 (7.0) | 284 | 0.1 | 88.1 (3.3) |
| Heavy-up –Treatment | 276 | 0.8 | 69.0 (3.4) | N/A | N/A | N/A | 521 | 1.3 | 83.4 (3.2) |
| Heavy-up – Control | 281 | 0.9 | 64.5 (6.3) | N/A | N/A | N/A | 624 | 1.5 | 87.7 (2.2) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-16. Exposure to Stories or Features on the Internet by Sample Type, by Wave

| | Subcomponents of Exposed to Earned Media at Least Once: Internet | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 135 | 3.6 | 24.2 (6.9) | 230 | 6.3 | 30.7 (4.9) | 348 | 7.2 | 28.9 (9.4) |
| Non-Hispanic African American | 85 | 2.6 | 65.8$^{G}$ (7.2) | 207 | 6.2 | 41.7$^{g}$ (8.2) | 318 | 6.9 | 41.3$^{G}$ (7.7) |
| Non-Hispanic White | 107 | 20.7 | 33.6 (5.0) | 202 | 44.7 | 30.4 (4.2) | 276 | 47.3 | 24.1 (5.1) |
| **National Estimate** | 327 | 26.8 | 35.4 (4.2) | 639 | 57.2 | 31.7 (3.9) | 942 | 61.4 | 26.6 (4.6) |
| American Indian | 112 | 0.2 | 33.6 (8.1) | 226 | 0.5 | 28.0 (7.0) | 302 | 0.5 | 30.4 (5.6) |
| Asian | 103 | 0.8 | 50.8$^{G}$ (3.2) | 198 | 2.1 | 35.9 (8.1) | 294 | 1.9 | 40.0$^{G}$ (5.1) |
| Native Hawaiian | 71 | 0.0 | 27.7 (8.1) | 148 | 0.0 | 17.3$^{G}$ (1.7) | 284 | 0.1 | 24.9 (2.5) |
| Heavy-up –Treatment | 276 | 0.8 | 34.3 (3.7) | N/A | N/A | N/A | 521 | 1.3 | 24.9$^{g}$ (1.7) |
| Heavy-up – Control | 281 | 0.9 | 33.9 (4.8) | N/A | N/A | N/A | 624 | 1.7 | 31.5 (2.1) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-17. Exposure to Stories or Features on Internet Blogs by Sample Type, by Wave

| | Subcomponents of Exposed to Earned Media at Least Once: Internet Blogs | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 135 | 3.6 | 3.0 (1.7) | 230 | 6.3 | 14.7 (3.5) | 348 | 7.2 | 6.8 (3.2) |
| Non-Hispanic African American | 85 | 2.6 | 4.2 (2.4) | 207 | 6.2 | 11.1 (4.9) | 318 | 6.9 | 14.8$^{G}$ (5.2) |
| Non-Hispanic White | 107 | 20.7 | 4.5 (2.5) | 202 | 44.7 | 11.6 (4.5) | 276 | 47.3 | 4.5$^{G}$ (1.2) |
| **National Estimate** | 327 | 26.8 | 4.2 (2.0) | 639 | 57.2 | 11.9 (3.5) | 942 | 61.4 | 5.9$^{G}$ (1.1) |
| American Indian | 112 | 0.2 | 3.9 (2.0) | 226 | 0.5 | 6.6 (2.6) | 302 | 0.5 | 9.4 (5.2) |
| Asian | 103 | 0.8 | 7.5 (4.9) | 198 | 2.1 | 7.2 (1.9) | 294 | 1.9 | 18.1$^{G}$ (4.6) |
| Native Hawaiian | 71 | 0.0 | 10.8 (6.0) | 148 | 0.0 | 3.9$^{G}$ (1.5) | 284 | 0.1 | 7.9 (3.9) |
| Heavy-up –Treatment | 276 | 0.8 | 6.1 (1.8) | N/A | N/A | N/A | 521 | 1.3 | 8.7 (1.7) |
| Heavy-up – Control | 281 | 0.9 | 9.8 (1.9) | N/A | N/A | N/A | 624 | 1.7 | 7.4 (0.8) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-18. Exposure to Stories or Features on Social Networking Sites by Sample Type, by Wave

| | Subcomponents of Exposed to Earned Media at Least Once: Social Networking Sites | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 135 | 3.6 | 7.9 (4.5) | 230 | 6.3 | 15.1 (8.0) | 348 | 7.2 | 9.2 (3.6) |
| Non-Hispanic African American | 85 | 2.6 | 30.3$^{G}$ (12.1) | 207 | 6.2 | 26.8$^{G}$ (7.5) | 318 | 6.9 | 24.9$^{G}$ (6.8) |
| Non-Hispanic White | 107 | 20.7 | 8.7$^{g}$ (3.5) | 202 | 44.7 | 8.1$^{G}$ (3.4) | 276 | 47.3 | 8.3$^{g}$ (2.6) |
| **National Estimate** | 327 | 26.8 | 10.6 (3.7) | 639 | 57.2 | 10.9 (3.1) | 942 | 61.4 | 10.3 (2.5) |
| American Indian | 112 | 0.2 | 9.1 (5.2) | 226 | 0.5 | 12.4 (3.1) | 302 | 0.5 | 16.4 (5.2) |
| Asian | 103 | 0.8 | 7.8 (4.2) | 198 | 2.1 | 10.2 (4.0) | 294 | 1.9 | 17.6$^{g}$ (3.4) |
| Native Hawaiian | 71 | 0.0 | 11.2 (4.1) | 148 | 0.0 | 4.2$^{g}$ (2.0) | 284 | 0.1 | 9.2 (1.4) |
| Heavy-up –Treatment | 276 | 0.7 | 9.3 (2.3) | N/A | N/A | N/A | 521 | 1.2 | 8.8 (1.9) |
| Heavy-up – Control | 281 | 0.8 | 12.7 (1.9) | N/A | N/A | N/A | 624 | 1.5 | 12.8 (2.2) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

## Table C-19. Exposure to Stories or Features on Regular Web Sites by Sample Type, by Wave

| | Subcomponents of Exposed to Earned Media at Least Once: Regular Websites | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | W1 | | | W2 | | | W3 | | |
| **Sample Type** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** | **# Unweighted** | **# Weighted (Millions)** | **% (s.e.)** |
| Hispanic | 135 | 3.6 | 22.4 (7.1) | 230 | 6.3 | 24.4 (4.3) | 348 | 7.2 | 25.9 (9.2) |
| Non-Hispanic African American | 85 | 2.6 | 47.9$^{g}$ (13.3) | 207 | 6.2 | 29.6 (5.6) | 318 | 6.9 | 30.5 (7.9) |
| Non-Hispanic White | 107 | 20.7 | 28.4 (5.4) | 202 | 44.7 | 25.1 (4.1) | 276 | 47.3 | 22.2 (5.0) |
| **National Estimate** | 327 | 26.8 | 29.5 (4.7) | 639 | 57.2 | 25.5 (3.5) | 942 | 61.4 | 23.5 (4.4) |
| American Indian | 112 | 0.2 | 31.2 (6.5) | 226 | 0.5 | 22.9 (5.1) | 302 | 0.5 | 25.8 (5.3) |
| Asian | 103 | 0.8 | 46.5$^{G}$ (3.6) | 198 | 2.1 | 27.1 (6.7) | 294 | 1.9 | 31.4 (3.8) |
| Native Hawaiian | 71 | 0.02 | 16.5$^{g}$ (5.4) | 148 | 0.05 | 14.6$^{G}$ (3.1) | 284 | 0.07 | 19.9 (3.3) |
| Heavy-up –Treatment | 276 | 0.8 | 31.7 (4.4) | N/A | N/A | N/A | 521 | 1.3 | 18.9$^{G}$ (1.9) |
| Heavy-up – Control | 281 | 0.9 | 28.0 (4.5) | N/A | N/A | N/A | 624 | 1.7 | 27.3 (2.5) |

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Note: Standard errors were properly adjusted for the complex survey design. For comparisons across groups, the letter "G" (uppercase) indicates $p< 0.05$ while the letter "g" (lowercase) indicates $p<0.10$ (but $p>0.05$). The significance testing conducted compares each subgroup with a reference category as follows: Hispanics vs. non-Hispanic African Americans + non-Hispanic Whites; non-Hispanic African Americans vs. Hispanics + non-Hispanic Whites; non-Hispanic Whites vs. non-Hispanic African Americans+ Hispanics; American Indians vs. the National Estimate, Asians vs. the National Estimate; Native Hawaiians vs. the National Estimate; and Heavy-up Treatment vs. Heavy-up Control. The significance tests were not adjusted for multiple comparisons.

Note: No significance testing completed on this table for comparisons across waves (time).

# Appendix D: Multiple Regression Results by Subgroup for Message Receptivity Analysis

The tables below elaborate on the regressions reported in Tables 6-12 and 6-13 with separate tabulations reported by sample type and, where appropriate, language spoken in the household. For model explanation, please see the discussion accompanying Table 6-12 (for Tables D-1 through D-4) and Table 6-13 (for Table D-5) in Section 6.3 above.

**Table D-1.** Multivariate Regressions by Subgroups: Predicting Knowledge Scores Using Message Receptivity Index

| Respondent Pool | All Hispanics | | Hispanics exposed to at least one ad | | All Non-English speaking Hispanics | | Non-English speaking Hispanics exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 530 | | 328 | | 481 | | 300 | |
| R Square | 0.25 | | 0.19 | | 0.16 | | 0.04 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.18**** | <0.01 | **0.11**** | <0.01 | **0.15**** | <0.01 | 0.04 | 0.26 |

| Respondent Pool | All Blacks | | Blacks exposed to at least one ad | | All Whites | | Whites exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 511 | | 305 | | 465 | | 217 | |
| R Square | 0.18 | | 0.22 | | 0.24 | | 0.13 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.12**** | 0.03 | **0.17*** | 0.07 | **0.15**** | <0.01 | **0.11*** | 0.08 |

| Respondent Pool | All AIANs | | AIANs exposed to at least one ad | | All NHOPIs | | NHOPIs exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 521 | | 272 | | 487 | | 293 | |
| R Square | 0.17 | | 0.21 | | 0.24 | | 0.17 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.09**** | 0.04 | **0.11**** | 0.01 | **0.20**** | 0.01 | **0.13**** | 0.03 |

| Respondent Pool | All Asians | | Asians Exposed to at least one ad | | All Non-English speaking Asians | | Non-English speaking Asians exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 541 | | 247 | | 401 | | 181 | |
| R Square | 0.23 | | 0.14 | | 0.24 | | 0.13 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.11**** | 0.02 | **-0.10**** | <0.01 | **0.10**** | 0.01 | **-0.09**** | 0.02 |

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Note: Logistic regressions for actual Census form return. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

**Table D-2.** Multivariate Regressions by Subgroups: Predicting Positive Attitudes Using Message Receptivity Index

| Respondent Pool | All Hispanics | | Hispanics exposed to at least one ad | | All Non-English speaking Hispanics | | Non-English speaking Hispanics exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 441 | | 279 | | 400 | | 253 | |
| R Square | 0.1 | | 0.07 | | 0.04 | | 0.02 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.04**** | 0.01 | **0.04**** | 0.04 | **0.02**** | 0.02 | 0.01 | 0.78 |

| Respondent Pool | All Blacks | | Blacks exposed to at least one ad | | All Whites | | Whites exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 382 | | 236 | | 366 | | 180 | |
| R Square | 0.12 | | 0.11 | | 0.07 | | 0.16 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.05**** | <0.01 | 0.03 | 0.19 | **0.01**** | <0.01 | 0.01 | 0.50 |

| Respondent Pool | All AIANs | | AIANs exposed to at least one ad | | All NHOPIs | | NHOPIs exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 382 | | 214 | | 370 | | 242 | |
| R Square | 0.15 | | 0.24 | | 0.09 | | 0.04 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.03**** | 0.04 | **0.04**** | <0.01 | **0.04**** | 0.00 | 0.02 | 0.12 |

| Respondent Pool | All Asians | | Asians Exposed to at least one ad | | All Non-English speaking Asians | | Non-English speaking Asians exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 389 | | 195 | | 279 | | 140 | |
| R Square | 0.04 | | 0.02 | | 0.05 | | 0.02 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | 0.01 | 0.20 | 0.00 | 0.75 | 0.01 | 0.23 | 0.00 | 0.91 |

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Note: Logistic regressions for actual Census form return. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

**Table D-3.** Multivariate Regressions by Subgroups: Predicting Self-report of Census Return Using Message Receptivity Index

| Respondent Pool | All Hispanics | | Hispanics exposed to at least one ad | | All Non-English speaking Hispanics | | Non-English speaking Hispanics exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 530 | | 328 | | 481 | | 300 | |
| R Square | 0.10 | | 0.16 | | 0.04 | | 0.09 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.22**** | <0.01 | **0.53**** | <0.01 | **0.23**** | 0.02 | **0.49**** | <0.01 |

| Respondent Pool | All Blacks | | Blacks exposed to at least one ad | | All Whites | | Whites exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 511 | | 305 | | 465 | | 217 | |
| R Square | 0.06 | | 0.13 | | 0.31 | | 0.27 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | -0.03 | 0.80 | 0.03 | 0.76 | 0.10 | 0.43 | 0.14 | 0.54 |

| Respondent Pool | All AIANs | | AIANs exposed to at least one ad | | All NHOPIs | | NHOPIs exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 521 | | 272 | | 487 | | 293 | |
| R Square | 0.003 | | 0.01 | | 0.001 | | 0.001 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | -0.06 | 0.42 | -0.09 | 0.33 | **0.19**** | 0.02 | **0.16**** | 0.03 |

| Respondent Pool | All Asians | | Asians Exposed to at least one ad | | All Non-English speaking Asians | | Non-English speaking Asians exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 541 | | 247 | | 401 | | 181 | |
| R Square | 0.03 | | 0.03 | | 0.05 | | 0.04 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.28**** | 0.01 | **0.25**** | 0.03 | **0.31**** | 0.01 | 0.27 | 0.12 |

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Note: Logistic regressions for actual Census form return. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

**Table D-4.** Multivariate Regressions by Subgroups: Predicting Wave 2 Intent to Return Census Using Message Receptivity Index

| Respondent Pool | All Hispanics | | Hispanics exposed to at least one ad | | All Non-English speaking Hispanics | | Non-English speaking Hispanics exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 172 | | 107 | | 154 | | 97 | |
| R Square | 0.13 | | 0.21 | | 0.13 | | 0.14 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | 0.02 | 0.26 | 0.01 | 0.58 | 0.02 | 0.26 | 0.00 | 0.98 |

| Respondent Pool | All Blacks | | Blacks exposed to at least one ad | | All Whites | | Whites exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 194 | | 139 | | 189 | | 96 | |
| R Square | 0.32 | | 0.49 | | 0.06 | | 0.16 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.06**** | 0.01 | **0.06**** | 0.04 | 0.02 | 0.53 | 0.02 | 0.66 |

| Respondent Pool | All AIANs | | AIANs exposed to at least one ad | | All NHOPIs | | NHOPIs exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 209 | | 121 | | 164 | | 113 | |
| R Square | 0.09 | | 0.06 | | 0.12 | | 0.08 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | 0.00 | 0.81 | -0.01 | 0.72 | **0.06*** | 0.05 | 0.05 | 0.15 |

| Respondent Pool | All Asians | | Asians Exposed to at least one ad | | All Non-English speaking Asians | | Non-English speaking Asians exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 205 | | 101 | | 127 | | 61 | |
| R Square | 0.21 | | 0.32 | | 0.18 | | 0.40 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **-0.05**** | 0.01 | **-0.06**** | 0.02 | **-0.06**** | 0.03 | **-0.05*** | 0.07 |

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Note: Logistic regressions for actual Census form return. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level

**Table D-5.** Multivariate Regressions by Subgroups: Pre-NRFU Mail Return Using Message Receptivity Index

| Respondent Pool | All Hispanics | | Hispanics exposed to at least one ad | | All Non-English speaking Hispanics | | Non-English speaking Hispanics exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 505 | | 310 | | 450 | | 284 | |
| R Square | 0.03 | | 0.08 | | 0.03 | | 0.04 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | 0.06 | 0.14 | **0.16**** | <0.01 | **0.14**** | 0.02 | **0.21**** | <0.01 |

| Respondent Pool | All Blacks | | Blacks exposed to at least one ad | | All Whites | | Whites exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 485 | | 287 | | 437 | | 203 | |
| R Square | 0.08 | | 0.08 | | 0.21 | | 0.18 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | 0.13 | 0.26 | 0.10 | 0.43 | 0.00 | 0.99 | -0.06 | 0.66 |

| Respondent Pool | All AIANs | | AIANs exposed to at least one ad | | All NHOPIs | | NHOPIs exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 327 | | 169 | | 456 | | 278 | |
| R Square | 0.01 | | 0.01 | | 0.001 | | 0.00 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | **0.21**** | 0.02 | **0.22**** | 0.02 | 0.08 | 0.18 | **0.18**** | 0.01 |

| Respondent Pool | All Asians | | Asians Exposed to at least one ad | | All Non-English speaking Asians | | Non-English speaking Asians exposed to at least one ad | |
|---|---|---|---|---|---|---|---|---|
| n | 521 | | 241 | | 385 | | 176 | |
| R Square | 0.01 | | 0.02 | | 0.01 | | 0.02 | |
| | Estimates | p-value | Estimates | p-value | Estimates | p-value | Estimates | p-value |
| Message Receptivity Index | 0.04 | 0.19 | 0.05 | 0.41 | 0.05 | 0.17 | 0.04 | 0.62 |

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Note: Logistic regressions for actual Census form return. Wave 3 cases, with weights, Heavy up excluded. Standard errors corrected for complex survey design. * indicates significance at 0.1 level, ** indicates significance at .05 level.

# Appendix E: Fact Checking Protocol for Reported Results

The CICPE project team at NORC employed quality control procedures to ensure the accuracy of this document (including numbers reported in tables throughout the report, as well as accompanying annotations or footnotes, when applicable). The fact checking process for this report involved three steps as follows:

1) Data processing and statistical analyses were created, documented, and reviewed in the Statistical Application System (SAS) software by the statistical team. Supplementary statistical analyses were also created, documented, and reviewed in STATA, when SAS did not have a readily available statistical routine (for example, a routine to estimate standard errors for marginal effects after regression models). A second researcher independently re-created the statistical tabulations and compared and resolved the first and second set of outputs.
2) Tables in the report were populated using information from computer-generated outputs. Once tables were populated by a first person, they were verified by a second person using the original outputs. Tables with several pieces of information (for example, point estimates, standard errors, significance testing across subgroups, across waves, or across decennial censuses) were reviewed by more than two persons to ensure that the data entry was done correctly.
3) The numbers described in the text were verified to achieve congruency between analytic discussion and reported tables.