RESEARCH REPORT SERIES
(Survey Methodology #2007-34)

**Results of the 2003 National Census Test
of Race and Hispanic Questions**

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FINAL REPORT

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RESULTS OF 2003 NATIONAL CENSUS TEST OF RACE AND HISPANIC QUESTIONS

EXECUTIVE SUMMARY

As part of the Census Bureau's 2010 research and testing program on race and ethnicity, the Census Bureau during February through April 2003 conducted the 2003 National Census Test (NCT). The purpose was to evaluate alternative versions of the questions on Hispanic origin and race. The 2003 NCT was a sample of about 160,000 households in Census 2000 mailback areas only. It consisted of seven experimental panels and a Control panel. The Control panel was essentially the Census 2000 short form questionnaire.

The Census Bureau has as a broad goal reducing the number of race and Hispanic origin responses that are missing or do not fall into one or more of the five major race categories defined by the Office of Management and Budget (OMB)[1]. These responses must be imputed for all uses other than release of products from the census. A second goal is improved reporting of detailed Hispanic origins in the Hispanic origin question.

The Hispanic origin and race portions of the 2003 NCT addressed four questions:

1) Does adding the term "origin" and making other wording changes to the question on Hispanic origin result in more specific reporting of Hispanic ethnicities?
2) Does adding examples to the questions on Hispanic origin and race for the "Other Spanish, Hispanic, or Latino," "Other Asian," and "Other Pacific Islander" response categories in the respective questions result in greater reporting of specific ethnicities, especially among Hispanics?
3) Does dropping the "Some Other Race" (SOR) response category from the question on race result in Hispanics reporting in the specified race groups shown on the questionnaire?
4) Does modifying the instructions result in improved reporting in the specified race categories, especially by Hispanics?

Results from the 2003 NCT indicate that:

1) Adding the term "origin" and making other changes to the question on Hispanic origin reduced reporting of generic responses (such as "Hispanic", "Latino," or "Spanish") to the question on Hispanic origin without significantly affecting reporting in the question on race.

2) Adding examples showed mixed results, but tended to decrease the reporting of generic Hispanic origin and race responses.

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[1] The five single major race categories are White, Black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander.

3) Dropping the "Some Other Race" response category had mixed results. It reduced "Some Other Race" reporting by Hispanic respondents, but also increased their non-response to the question on race. However, the reduction of the proportion of Hispanics reporting as "Some Other Race" outweighed the increase in non-response to the question on race, resulting in a net increase in the fraction of Hispanics reporting in the main OMB categories.

4) Modifying the respondent instructions had mixed effects. It resulted in fewer Hispanics reporting as "Some Other Race", and reduced their item non-response to the question on race. However, it also increased non-response to the question on Hispanic origin and (for non-Hispanics) the question on race. Unexpectedly, it was associated with an increase in the fraction reporting as Native Hawaiian or Other Pacific Islander.

5) Results from the 2003 NCT show that Panel 3 (with wording changes to the Hispanic origin question and no "Some Other Race" response category) and Panel 4 (with wording changes to the Hispanic origin question, no "Some Other Race" response category, and examples added) achieved the greatest reductions in the <u>total number of imputations</u> among the experimental panels in the 2003 NCT. Compared with the control, both panels had a 23 percent reduction in the number of race and Hispanic origin responses that are missing or do not fall into one or more of the OMB official race categories and therefore must be imputed.

Based on the above findings, further research is needed to determine the best questions on Hispanic origin and race for the 2010 census.

1. INTRODUCTION

The 2003 National Census Test was conducted from February 2003 through April 2003 to evaluate possible changes to the questions on race and Hispanic origin for the 2010 census. Because the results are based on the responses from the households in a national sample that mailed back their questionnaire, the results do not represent the entire U. S. population. Additionally, the 2003 NCT sample was not designed to detect differences for small populations, such as American Indian or Alaska Native (AIAN), Native Hawaiian or Other Pacific Islander (NHOPI), and Two or More Races, or for AIAN tribes or detailed groups in the above mentioned categories or detailed Asian groups.

This report is one of two that analyzes the results of the experiment (see also Sheppard, Bentley, and Woltman, 2004). It describes the effects of the following treatments on how people reported race and Hispanic origin:

- Modifying the wording of the question on Hispanic origin.

- Dropping the "Some Other Race" (SOR) response category from the question on race.

- Adding examples to the "Yes, other Spanish, Hispanic or Latino," "Other Asian" and "Other Pacific Islander" response categories in the questions on Hispanic origin and race, respectively.

- Modifying instructions to respondents, as explained below.

2. BACKGROUND ON HISPANIC ORIGIN AND RACE ISSUES ADDRESSED IN THE 2003 NATIONAL CENSUS TEST

A. Wording Changes to the Question on Hispanic Origin

In Census 2000, about 12.4 million people or 4.4 percent of the population did not complete the question on Hispanic origin and a substantial number wrote in generic entries such as "Spanish," "Hispanic," or "Latino."[2] Results from Census 2000 show that 3.6 million or 10.3 percent of the responses to the question on Hispanic origin were generic responses. Another 2.5 million or 7.1 percent just checked the Other Hispanic response category or provided a write-in entry that could not be classified in a detailed origin category. The absence of examples along with other changes to the question between 1990 and 2000 may have affected reporting of detailed Hispanic groups such as Dominican and Salvadoran. Results from the 2003 National Census Test will

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[2] According to Census 2000, 3.4 million responses were substituted for both the questions on Hispanic origin and race. About 11.4 million responses were allocated to the question on race for an allocation rate of 4.1 percent, and 12.4 million responses were allocated to the question on Hispanic origin for an allocation rate of 4.4 percent. Hence about one million more responses were provided to the question on race compared with the question on Hispanic origin.

inform future research on this issue and the 2005 National Content Survey likely will address it as well.

The changes to the Hispanic origin question that were introduced in Census 2000 included 1) dropping the word "origin" from the question stem and "Other Spanish Hispanic" response category, 2) dropping examples, 3) adding the term "Latino," and 4) placing the question on Hispanic origin prior to the question on race. The resequencing was intended to reduce the perceived redundancy of the questions.

Based on Census 2000 results, the changes led to more complete responses to the question on Hispanic origin, but also may have had a negative effect on reporting of detailed Hispanic origins. Some researchers, such as Logan (2002) and others, argued that dropping the Hispanic examples led to less detailed reports of Hispanic origins, resulting in loss of information about groups such as Dominicans and Salvadorans. Logan used data from the 1998 and 2000 Annual Demographic File to the Current Population Survey to examine this claim.

A study conducted by Cresce and Ramirez (2003) also concluded that wording and formatting changes contributed to more generic responses in Census 2000. Cresce and Ramirez conducted a simulation analysis of Hispanic national-origin groups by comparing data on Hispanic origin with data from the Census 2000 sample questions on place of birth and ancestry. Of the estimated 5.7 million people who provided general Hispanic origin responses, the simulation identified a detailed Hispanic origin for an estimated 3.1 million people.

An experimental comparison of 2000-style and 1990-style questionnaires conducted during Census 2000 confirmed that the questionnaire changes were responsible for less detailed and more generic reports of Hispanic origins (Martin, 2002a). About 80 percent of Hispanics reported a specific Hispanic origin in 2000-style questionnaires compared with 92 percent in 1990-style questionnaires. The results suggested that the examples alone probably did not account for the effect, but that question wording differences probably contributed as well.

The 2003 NCT builds on this research by including panels to compare the Census 2000 wording of the question on Hispanic origin with revised wording modeled on the 1990-style question that had proven more effective in obtaining detailed Hispanic origins.[3]

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[3] The control (Census 2000) wording was:

Is Person 1 Spanish/Hispanic/Latino? Mark (X) the "**No**" box if **not** Spanish/Hispanic/Latino.

> **No,** not Spanish/Hispanic/Latino
> Yes, Mexican, Mexican Am., Chicano
> Yes, Puerto Rican
> Yes, Cuban
> Yes, other Spanish/Hispanic/Latino- *Print group*

The panel 1 (2003 NCT) wording was:

Is Person 1 of Spanish, Hispanic or Latino origin? Mark (X) **"No"** if **not** of Spanish, Hispanic or Latino origin.

> **No**, not of Spanish, Hispanic or Latino origin
> Yes, Mexican, Mexican Am., Chicano
> Yes, Puerto Rican
> Yes, Cuban
> Yes, another Spanish, Hispanic or Latino origin- *Print origin*

B. Adding Examples to the Questions on Hispanic Origin and Race

The research noted above pointed to the possible influence of examples on reporting of detailed Hispanic origins.   Additional evidence comes from past Census research on the question on ancestry. "English" appeared first in the list of examples following the ancestry question in 1980, but was dropped in 1990. There was a corresponding drop from 1980 to 1990 of about 17 million persons reporting English ancestry. There were also large increases in the numbers reporting German, Acadian/Cajun, or French-Canadian ancestry, apparently due to the listing of these ancestries as examples in 1990 but not 1980, or their greater prominence in the 1990 list. These effects of examples, and their order, may occur because respondents write in the first ancestry listed that applies to them (Scarr 1993). This kind of example effect can distort responses and is to be avoided.

Prior to Census 2000, the 1996 National Content Test experimented with different question formats that allowed multiple race reporting. The experiment included panels with and without examples, but did not provide direct evidence about their effects. Because there was no clear evidence to suggest that removing examples had an adverse affect on the reporting of Hispanic origin and race, the examples were dropped in an effort to make the Census 2000 questionnaire more user friendly.

The Census Bureau's Advisory Committee on the Hispanic Population has strongly advised restoring the examples to improve Hispanic reporting. The 2003 NCT was designed to evaluate the effects of examples in both the questions on Hispanic origin and race, apart from wording and other changes. The examples used were those from the 1990 census question[4].

C. Dropping the "Some Other Race" Response Category from the Question on Race

Since 1980, the number and proportion of the total population reporting as "Some Other Race" have consistently increased. According to the 1980 census, there were 6.8 million responses, or 3.1 percent of the total population in the Other race category. By 1990, this category had grown to 9.8 million, or 3.9 percent of the total population. Based on Census 2000 results, this number grew to 15.4 million, or 5.6 percent of the population of one race (Grieco and Cassidy, 2001).

The growth in the Other race population is due primarily to factors associated with the Hispanic population. These factors include, but are not limited to, the inclusion of the question on Hispanic origin on the census short form beginning with the 1980 census, an increasing tendency for people of Hispanic origin not to identify in any of the racial categories shown on the census questionnaire, and most particularly not to identify themselves as White, and the rapid growth in the Hispanic population (OMB, 1997). Based on Census 2000 results, 48 percent, or 16.9 million Hispanics reported their race as White and another 42 percent, or 14.9 million reported as

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[4] The examples added to the "Yes, another Spanish, Hispanic or Latino origin" category were Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard. The examples for the "Other Asian" category were Hmong, Laotian, Thai, Pakistani, Cambodian. The examples for the "Other Pacific Islander" category were Fijian and Tongan.

"Some Other Race." Of the 15.4 million people who only reported "Some Other Race," 97 percent, or 14.9 million were Hispanics (Grieco and Cassidy, 2001).

Prior research shows that Hispanic reporting as "Some Other Race" is influenced by methodological factors, including mode of data collection (Bennett and Griffin, 2002) and the sequence of the items. Fewer Hispanic respondents report as "Some Other Race" when Hispanic origin is asked before race, giving respondents a chance to report their Hispanic identity first (Bates et al., 1995).

Because other federal agencies do not have the "Some Other Race" category, data from decennial censuses are not directly comparable with data collected by other federal agencies. Additionally, data for the "Some Other Race" category are not collected in household surveys conducted by the Census Bureau. As a result, most users of decennial data use the version in which the "Some Other Race" responses have been assigned to one or more of the five major OMB race categories. The Census Bureau does not want to continue the practice of assigning responses in the "Some Other Race" category to one of the five major OMB race categories and the Two or More Races category, and would like to minimize the number of such imputations by increasing reporting in the major OMB race groups. Therefore, the Census Bureau is considering dropping the "Some Other Race" response category from the question on race.

Before doing so, the Bureau must ensure that dropping the category does not have adverse effects on the data or lead to a decline in census cooperation. Therefore, the 2003 NCT included panels to evaluate the effects of dropping the "Some Other Race" category.

D. Modifying Respondent Instructions

Results from cognitive research conducted during the 1990's (Kissam et al., 1993; Gerber et al., 1998) suggest that a number of people of Hispanic origin perceive the questions on race and Hispanic origin as redundant, which may lead them to skip the race item. While a majority of Hispanics can and do identify racially, others view themselves racially as Hispanic and do not identify with the specific racial categories offered in the questionnaire, or they find the question on race confusing (McKenney and Cresce, 1990, Davis, et al. 2002).

Bates et al. (1995) found that an instruction to "fill in the NO circle if not Spanish/Hispanic" reduced non-response to the question on Hispanic origin from 19 percent to 8 percent, in a questionnaire in which race preceded Hispanic origin. Based on this and other research, an instruction to "Please answer BOTH Questions 7 and 8" was included in the Census 2000 questionnaire. As noted, the result of this and other questionnaire changes was more complete race and Hispanic data in 2000-style questionnaires compared with 1990-style questionnaires (Martin, 2002b). Nonetheless, race item non-response is still very high for Hispanics.

In order to overcome an anticipated increase in the number of people who might skip the question on race when the "Some Other Race" category is dropped, and to further improve the completeness of reporting for both items, the Census Bureau revised the instruction to clarify for respondents that the items are distinct. The revised instruction preceded both items and stated, "Please answer BOTH Question 7 about Hispanic origin and Question 8 about race. In this

survey, Hispanic origin is considered different from race. Please give different responses to Questions 7 and 8." An explanatory note was added to the race item that said, "People of Hispanic origin may be of any race."

2. 2003 NATIONAL CENSUS TEST DESIGN AND METHODOLOGY

The 2003 NCT included seven short form panels to test changes to the questions on Hispanic origin and race. The Census 2000 short form questionnaire was used as the control.

The 2003 NCT sample of about 160,000 households was drawn from a universe of Census 2000 mailback areas and represented about 97 percent of the country. It is less representative of the American Indian and Alaska Native population since about 27 percent of this population lives in nonmailback areas. The sample was stratified into two groups: Low Response Areas (LRA) and High Response Areas (HRA) prior to sample selection. The LRA included areas with high proportions of Blacks and Hispanics and renter-occupied housing units, and the HRA contained the remainder of mail-out areas. Addresses in the LRA were over sampled to ensure representation of the racial and ethnic groups of interest.

Each panel has 20,000 housing units with equal numbers in both the LRAs and the HRAs. The results are based on about 107,200 households because there was about a 67 percent response rate for the test.[5] Since the sample excluded households outside of Census 2000 mailback areas, and there was no follow up to households that did not respond by mail, results from the 2003 NCT cannot be generalized to the entire population. However, the estimates from the sample have been weighted and represent about 100 million households. Distributions of characteristics of responding households in the 2003 NCT, including Hispanic origin and race, are not expected to be identical to Census 2000.

The seven experimental panels varied four different features of the questionnaire design: (1) wording changes (WC) to the Hispanic origin item, (2) dropping the "Some Other Race" category (SO), (3) modified instructions (IN), and (4) including examples in the race and Hispanic origin items (EX).

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[5] The response rate is a measure of whether respondents returned a questionnaire. It is defined as the number of census responses returned for a panel divided by the number of cases in the panel less the questionnaire packages returned by the United States Postal Service as "undeliverable as addressed."

Chart 1. Experimental Design

	4. EXAMPLES (EX)	
TREATMENT	Panels without examples	Panels with examples
2000 Short form	Control	▨
1. Minimal Hispanic origin changes (WC)	1	2
2. Drop "Some Other Race" (SO, WC)	3	4
3. New instructions (IN, SO, WC)	5	6
New instructions with SOR category (IN, WC)	▨	7

The core of the experiment consists of Panels 1-6, which comprise a 3 x 2 balanced, orthogonal design.   TREATMENT has three levels: (1) Wording changes, (2) dropping "Some Other Race", and (3) revised instructions. Each level includes the experimental questionnaire design features incorporated in lower levels, e.g. Panels 3 and 4 include wording changes as well as dropping "Some Other Race." TREATMENT is crossed with EXAMPLES (with two levels, with and without).

Two additional panels were also included. A control (Census 2000) form is included for comparison with Panel 1, to evaluate the effects of the wording changes. Panel 7 includes wording changes, a modified instruction, and retains the "Some Other Race" category, to determine if the benefits of a modified instruction apply to a race question with a SOR category.

Each panel was allocated 20,000 sample addresses. The response rates were very similar (about 67 percent) for all eight panels. Thus, none of the experimental treatments significantly affected cooperation.

See Sheppard, Bentley, and Woltman (2004) for a detailed description of the methods of the test.

3. FINDINGS

Below we report two different analyses of the results. Section A analyzes the main effects of the questionnaire design variables on six data quality measures of interest:

- The item non-response rate for the Hispanic origin item,
- The fraction of Hispanics providing a generic (e.g., "Hispanic," "Spanish," "Latino") rather than detailed origin response (or checking the "Other Hispanic" box without providing a write-in response),
- Item non-response rate for race
  - for Hispanics,
  - for non-Hispanics,

- The fraction of Hispanics providing a "Some Other Race" response,
- The fraction of Asian and Pacific Islander respondents providing a generic (e.g., "Asiatic" "Oriental" "Pacific Islander") rather than a specific race response (or checking "Other Asian" or "Other Pacific Islander" box without providing a write-in).

In addition, we assess whether there are significant differences between panels in the distributions by Hispanic origin and by race.

Section B reports comparisons among the specific panels, with the goal of identifying the panel(s) that achieved the greatest reductions in the total number of imputations. This analysis is consistent with the goal of reducing the number of Hispanic origin and race responses that are missing or do not fall into the OMB race categories.

A. Questionnaire Design Effects

Panels 1-6 were combined to calculate the main effects summarized in Tables 1-8 below.[6] Standard errors (shown in parentheses in the tables) and t-tests were calculated using stratified jackknife replication methods using VPLX (Fay, 1998). All differences reported are statistically significant at the .05 level unless otherwise stated.

What was the effect of revising the wording of the question on Hispanic origin on reporting of detailed Hispanic origins?

The wording changes to the Hispanic origin item yielded dramatic improvements in reporting of specific Hispanic groups (e.g., "Mexican," "Puerto Rican," "Dominican,") compared with the question asked in Census 2000. Reporting of generic Hispanic groups (such as "Hispanic", "Latino" or "Spanish") was cut almost in half, from 18.1 percent to 9.6 percent, as shown in Table 1. Other data quality measures and the fraction identifying as Hispanic were unaffected.

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[6]Combining across panels is standard procedure in an analysis of variance when calculating main effects in a balanced, orthogonal design with equal numbers of sample cases in each cell, such as panels 1-6. Panels 1-6 were analyzed using RASCHPLX (Fay and Turner, 1989). Log-linear models were fit to the three-way cross-classification of TREATMENT by EXAMPLES by each quality measure. (Results (not shown here) are available from the first author.) TREATMENT and EXAMPLES do not significantly interact in their effects on any of the dependent variables. Therefore, this report focuses on the main effects.

Table 1. Effect of Revised Question Wording on Reporting of Specific Hispanic Origins (Hispanics only)

	Control (Census 2000)	Wording revisions to Hispanic origin question (Panel 1)
Generic responses	18.1% (1.3)	9.6% (.9)
Specific Hispanic origins	81.9% (1.3)	90.4% (.9)
Total	100.0	100.0

What were the effects of dropping the "Some Other Race" category?

It was anticipated that dropping the category would have the obvious effect of reducing the number reporting as "Some Other Race"[7], but also might result in more Hispanics skipping the question on race because they did not find a category for themselves.

Both expectations were confirmed. As shown in Table 2, part a, dropping the category:
- reduced (by 14.7 percentage points) "Some Other Race" reporting by Hispanics, and
- increased (by 6.4 percentage points) race non-response for Hispanics.

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[7]Note that even though the category was dropped, respondents still might provide a response that was coded as "Some Other Race," e.g., by writing "Hispanic" in a write-in space. In all panels, write-in responses were coded and data were pre-edited using the same (Census 2000) procedures.

Table 2. Effects of Dropping the "Some Other Race" Category

a. Effects on Hispanic Race Reporting	Questionnaire Design Treatment			
Hispanics' race responses	With SOR category (Panels 1+2)	Without SOR category (Panels 3+4)	Effect of dropping SOR	t
1. Reported in an OMB race category (alone or in combination)	54.1% (1.46)	62.4% (1.43)	8.3	4.3*
2. Reported "**Some Other Race**" (alone)	25.5 (1.13)	10.8 (.85)	-14.7	11.3*
3. No answer	20.5 (1.08)	26.9 (1.27)	6.4	4.1*
Total	100.0%	100.0%		
b. Effects on Item Nonresponse				
Race item non-response (non-Hispanics)	1.9% (.09)	1.5% (.08)	-.4%	3.1*
Hispanic origin item non-response	3.7% (.14)	3.3% (.12)	-.4%	2.5*

*p<.05

Thus, the loss in race data for Hispanics (due to non-response) was more than offset by the gains from reduced reporting of SOR. There was a net gain of 8.3 percentage points in the fraction of Hispanics reporting in the major OMB race categories.

As shown in part b of Table 2, dropping SOR also led to
- more complete race data for non-Hispanics (item non-response declined from 1.9 to 1.5 percent), and
- more complete Hispanic origin data (item non-response declined from 3.7 to 3.3 percent).

These significant improvements in item completeness were unanticipated. They suggest that the items may be less confusing when the SOR category is removed, but more research is needed to understand the basis for the effect.

What is the effect of the modified instruction in a race question without a "Some Other Race" category?

The purpose of the modified instruction was to overcome an anticipated increase in the number of Hispanics who would leave the question on race blank when the SOR category was removed. The revised wording attempted to clarify the distinction between the two questions, and

instructed respondents to answer both questions and provide different answers to each. An explanatory note that "People of Hispanic origin may be of any race" was added to the race item.

The effects of the revised instruction were somewhat complex, with two positive effects and two negative ones. Compared with the old instruction, it improved race data for Hispanics, by obtaining more complete responses to the race item and by reducing the fraction reporting as SOR. The combined effect is <u>an additional 6.3 percent of Hispanics reporting in the major OMB race categories</u>.

On the other hand, it also led to more missing data for both the questions on Hispanic origin and (for non-Hispanics) on race. (See Table 3, part b.)

Table 3. Effects of Revised Instruction

a. **Effects on Hispanic Race Reporting**	**Questionnaire Design Treatment**			
Hispanics' race responses	Old instruction (Panels 3+4)	New instruction (Panels 5+6)	Effect of revising instruction	t
1. Reported in an OMB race category (alone or in combination)	62.4% (1.43)	68.7% (1.16)	6.3	3.4*
2. Reported "Some Other Race" (alone)	10.8 (.85)	8.8 (.73)	-2.0	1.7
3. No answer	26.9 (1.27)	22.5 (1.06)	-4.3	2.5*
Total	100.0%	100.0%		

b. **Effects on Item Nonresponse**				
Race item non-response (non-Hispanics)	1.5% (.08)	1.9% (.10)	.4	3.7*
Hispanic origin item non-response	3.3% (.12)	4.7% (.15)	1.4	7.5*

*$p < .05$

The results are promising for this first effort at a revised instruction. Further qualitative testing is needed to understand the reasons for its negative effects, and to refine and improve it for further field testing.

<u>What is the effect of the revised instruction in combination with a race question that includes SOR?</u>

It is possible that the modified instruction alone might achieve the desired reduction in SOR reporting by Hispanics, without dropping the category. Panel 7 was fielded to test this hypothesis. Except for the fact that it contains the new instruction, Panel 7 is otherwise identical to Panel 2; both contain the SOR category.

As shown in Table 4, the instruction led to nonsignificant reductions in the fraction of Hispanics reporting "Some Other Race," and the fraction leaving the item blank. The combined effect was a significant increase of 6.1 percentage points in the fraction of Hispanics responding in the OMB race categories, even when the SOR category is retained.

Table 4. Effect of Instruction on Hispanic Reporting in a Race Question Retaining the SOR Category

	Questionnaire Design Treatment			
Hispanics' race responses	Old instruction/ SOR kept (Panel 2)	New instruction /SOR kept (Panel 7)	Effect (7 - 2)	t
1. Reported in an OMB race category (alone or in combination)	56.1% (1.99)	62.2% (1.70)	6.1	2.4*
2. Reported "Some Other Race" (alone)	22.4 (1.60)	18.9 (1.40)	-3.5	1.6
3. No answer	21.5 (1.46)	18.9 (1.44)	-2.6	1.4
Total	100.0%	100.0%		

*$p < .05$

However, the instruction alone did not achieve the improvements in Hispanic race reporting achieved when the SOR category was also dropped. Panels 6 and 7 both contain the new instruction, but Panel 6 also drops SOR. As shown in Table 5, dropping SOR reduces "Some Other Race" reporting, but also increases missing data on race. Nonetheless, dropping SOR gains an additional 6.9 percentage points in the fraction of Hispanics reporting in the OMB categories, over and above the gain achieved by revising the instruction. (The fraction reporting in OMB categories was 56.1%, 62.2%, and 69.1%, respectively, in panels 2, 7, and 6.) Panel 7 also has a significantly higher rate of missing data for Hispanic origin (5.2 percent, compared with 4.6 percent for Panel 6). (Not shown.)

Table 5. Effects of a New Instruction on Hispanic Race Reporting, in Questions With and Without the SOR Category

Hispanics' race responses	New instruction/ SOR kept (Panel 7)	New instruction /SOR dropped (Panel 6)	Effect (6 – 7)	t
	Questionnaire Design Treatment			
1. Reported in an OMB race category (alone or in combination)	62.2% (1.70)	69.1% (1.67)	6.9	3.0*
2. Reported "Some Other Race" (alone)	18.9 (1.40)	8.2 (1.06)	-10.7	6.1*
3. No answer	18.9 (1.44)	22.7 (1.62)	3.8	1.8
Total	100.0%	100.0%		

*p < .05

What are the effects of examples on Hispanic origin and race reporting?

Results in Table 6 summarize two positive and one negative effect of examples on data quality. Examples resulted in:
- Fewer generic Hispanic origin responses
- Fewer "Some Other Race" reports by Hispanics
- More race item non-response for non-Hispanics

Table 6. Effects of Examples

	No examples (Panels 1+3+5)	Examples (Panels 2+4+6)	Effect (Ex. – No ex.)	t
	Questionnaire Design Treatment			
Percent of Hispanics giving generic responses in Hispanic origin	9.5% (.57)	6.9% (.51)	-2.6	3.2*
Percent of Hispanics reporting "Some Other Race" (alone)	16.4% (.73)	13.4% (.80)	-3.0	2.8*
Race item non-response (non-Hispanics)	1.6% (.08)	1.9% (.08)	.3	2.6*

*p<.05

One purpose for including examples was to improve reporting of detailed Hispanic origins. As shown in Table 6, they led to a reduction of 2.6 percentage points in Hispanics' giving generic Hispanic origin responses. (This is in addition to the reduction of nearly 9 percentage points in generic responses achieved by rewording the question.)

The examples also reduced "Some Other Race" reporting by Hispanics by 3 percentage points. On the negative side, race non-response is slightly, but significantly, elevated for non-Hispanics.

Examples also significantly improved the reporting of detailed Asian and Native Hawaiian or Other Pacific Islander (NHOPI) races, as shown in Table 7. Generic race reports declined by half, from 3.0 percent to 1.5 percent, due to an increase in reporting of specific races. The overall increase in specific reporting was not due solely to an increase in example group reporting. It appears that examples helped Asian and NHOPI respondents understand the intent of the question, rather than leading them to report in the particular example groups. Examples had no significant effect on the fraction reporting an Asian or NHOPI race, which was about 5.6 percent.

Table 7. Effects of Examples on Reporting of Specific Races (non-Hispanics)

	Questionnaire Design Treatment			
	No examples (Panels 1+3+5)	Examples (Panels 2+4+6)	Effect (Ex. – No ex.)	t
Percent reporting an example group (Hmong, Laotian, Thai, Pakistani, Cambodian, Fijian, Tongan)	6.3% (.8)	6.8% (.8)	.5	.5
Percent reporting another specific Asian or NHOPI race (e.g., Chinese, Hawaiian)	90.7 (.8)	91.7 (.9)	1.0	.8
Percent giving a generic response (e.g., "Asiatic" "Oriental" "Pacific Islander")	3.0 (.5)	1.5 (.3)	-1.5	2.9*
Total reporting as Asian or Native Hawaiian or Other Pacific Islander	100.0%	100.0%		

*$p<.05$

Thus, the effects of examples on detailed reporting are positive for both the Hispanic origin and race items.

The effects of examples are significant when controlling for the effects of treatment, and the effects of treatment and examples do not interact.

<u>What are the effects of the questionnaire revisions on the percentage identifying as Hispanic?</u>

In identifying questionnaire improvements for possible implementation in 2010, we wanted to ensure that we did not affect the fraction of the population identifying as Hispanic. In Panel 2, a significantly lower percentage of the sample identified as Hispanic than in other panels. (See

Appendix, Table A1.) None of the other panels, including the Census 2000 Control, vary significantly in the fraction identifying as Hispanic.

<u>What are the effects of the questionnaire revisions on the distribution by major race categories?</u>

The questionnaire modifications were intended to reduce reporting as "Some Other Race" by Hispanics, and the race distributions by panel (shown in Table A2 in the Appendix) show variations in the size of this category. Fluctuations in the fraction reporting as White (alone) and in the size of the Two or More Races category probably reflect the indirect effect of the experimental treatments on "Some Other Race" reporting.

The percentage reporting as Black is significantly lower in Panel 7 than in several other panels.

Table A2 also reveals significant (and unexpected) differences among panels in the percentage identifying as Native Hawaiian or Other Pacific Islander.   The control panel does not differ significantly from any of the experimental panels, but there is significant variation among several of the experimental panels. As shown in Table 8, the fraction reporting NHOPI (alone) is significantly higher with the modified instruction, compared with either of the other two treatments, which do not differ significantly.   Possibly, the modified instructions altered respondents' interpretations of the intent of the question on race. Further research is needed to understand the basis for this effect.

Table 8. Effects of Treatment on Percent Reporting as NHOPI

	Wording changes (Panels 1+2)	Drop SOR (Panels 3+4)	Instruction (Panels 5+6)
% NHOPI (alone)	.06% (.02)	.09% (.02)	.16% (.03)
All other race responses	99.94 (.02)	99.91 (.02)	99.84 (.03)
Total	100.00	100.00	100.00

Examples had no effect on percentage reporting as NHOPI.

B. Panel comparisons –

<u>Which panel does the most to increase the amount of respondent reported race and Hispanic origin data?</u>

This analysis identifies the panel(s) that achieved the greatest reductions in the <u>total number of imputations</u>. (More detail can be found in the full report of the analysis; see Sheppard, Bentley, and Woltman, 2004.)

We created one measure indicating how often respondents did not report race and Hispanic origin, causing us to impute these data. This measure should be thought of as the **percent of items requiring imputation**. For this measure, we considered only the questions on Hispanic origin and race and by imputed we mean that the data was not respondent reported and required imputation. A response was considered NOT to be respondent reported when any of the following occurred:

- Only "Some Other Race" was selected in response to the race question, and an OMB race category could not be determined from write-in responses to the questions on Hispanic origin or race.
- No response was given to the question on race and it could not be absolutely determined from responses written in to the question on Hispanic origin.
- No response was given to the question on Hispanic origin and it could not be absolutely determined from responses written in to the question on race.

A three-step process was used to determine which experimental panel(s) provided the greatest decrease in race and Hispanic origin imputation when compared with the control. The concept of a family was used when making these comparisons. A family is any collection of inferences for which it is meaningful to take into account some combined measure of error. The absence or presence of the SOR response category was the treatment criterion used to divide the experimental panels into two families. This criterion was chosen because we expected this treatment to have the greatest effect on imputations.

Family one included Panel 1, Panel 2, and Panel 7, all of which all had the SOR response category in the question on race. Family two included Panels 3 through 6, which did not have the SOR response category.

In step one, we compared the panels within each family to the control panel, to identify the panels that improved on the control. In step two, we compared, within each family, the panels that were better than the control with each other. Finally, in step three, we compared the panel(s) with the lowest percent of items that were not respondent reported from each family to each other.

Table 9 shows the total percentage of race and Hispanic origin items that were not respondent reported, requiring data to be imputed for those items. It also includes ratios of the imputation percentage for each experimental panel compared with the control.

Table 9. Percent of Race and Hispanic Origin Items that Were Not Respondent Reported in the 2003 NCT

	Control	RH1 WC	RH2 WC, EX	RH7 WC, EX, IN	RH3 WC, SO	RH4 WC, SO, EX	RH5 WC, SO, IN	RH6 WC, SO, EX, IN
Total percent of race or Hispanic origin items not respondent reported	5.33 (.18)	4.89 (.17)	4.79 (.17)	5.64 (.18)	4.13 (.17)	4.08 (.17)	4.71 (.18)	4.79 (.18)
Ratio of imputations Panel: control	100%	92%	90%	106%	77%	77%	88%	90%

WC= Wording changes to question on Hispanic origin.
EX= Added examples in the questions on race and Hispanic origin.
IN= Modified instructions to answer both questions.
SO= Removed '"Some Other Race"' response category.

Step one

In family one, Panel 1 (WC) and Panel 2 (WC, EX) were both found to have significantly lower percentages of items requiring imputation than the control. Panel 7 (WC, EX, IN) did not reduce imputations compared with the control. Therefore, Panels 1 and 2 were carried through to step two while Panel 7 did not go on to step two.

Each panel in family two was found to be significantly lower than the control.   Each panel that was significantly lower than the control for the percent of race and Hispanic origin items not respondent reported was carried through to step two. Therefore, in step one for family two, no panels were eliminated from consideration and all four went on to step two.

Step two

The analysis in step two was done within family. In family one, Panel 1 (WC) and Panel 2 (WC, EX) did not differ from each other. Both panels had similar percentages of items not respondent reported and both went on to step three.

Comparisons for family two, all without the "Some Other Race" category, involved Panels 3-6. Both Panel 3 (WC, SO) and Panel 4 (WC, SO, EX) were lower than both Panel 5 and Panel 6, while Panel 3 and Panel 4 were not different from each other. Therefore, both Panels 3 and 4 went on to step three.

Step three

The analysis in step three considered the four panels with the lowest imputation rates in step two: Panel 1 (WC) and Panel 2 (WC, EX) from family one and Panel 3 (WC, SO) and Panel 4 (WC, SO, EX) from family two. Both Panel 3 and Panel 4 were significantly lower than both Panel 1 and Panel 2. As stated earlier, Panels 3 and 4 were not different from each other.

We conclude that Panels 3 and 4 achieved the greatest reductions in the total number of imputations among the experimental panels in the 2003 NCT. Compared with the control, both panels had a 23 percent reduction in the number of race and Hispanic origin responses that were

missing or did not fall into one or more of the major OMB race categories and therefore had to be imputed.

4. CONCLUSIONS

The results of the 2003 NCT support several main conclusions:

- Wording changes to the question on Hispanic origin improved reporting of detailed Hispanic origins.
- Restoring examples had largely positive effects:
  - o   In the question on Hispanic origin, examples improved reporting of detailed Hispanic origins; improvements were modest compared with the effects of revising the question wording.
  - o   In the question on race, examples improved reporting of detailed Asian and Native Hawaiian or Other Pacific Islander races.
- Dropping the "Some Other Race" category resulted in a net gain in the fraction of Hispanics reporting in the OMB race categories.
  - o   An increase in non-response to the question on race was more than offset by reduced "Some Other Race" reporting
  - o   Dropping the "Some Other Race" category also led to more complete responses to both Hispanic origin and (for non-Hispanics) race.
- The modified instruction had positive effects on Hispanic race reporting, but had other negative effects; further developmental work and testing seem warranted.
- Panel 2 identified significantly fewer Hispanics than the other panels; otherwise, there were no significant differences among panels in the percentage identifying as Hispanic.
- For the most part, panel differences in the distribution by race were as expected. However, there was an unexpected increase in the percentage identifying as Native Hawaiian and Other Pacific Islander (alone) with the modified instruction.
- Panel 3 (WC, SO) and Panel 4 (WC, SO, EX) achieved the greatest improvements in reducing the total number of imputations of Hispanic origin and race.

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Appendix

Table A1. Distribution of Responses to the Hispanic Origin Question by Panel

	Control	Panel 1	Panel 2	Panel 3	Panel 4	Panel 5	Panel 6	Panel 7
Hispanic	9.56% (.39)	9.11% (.31)	8.36% (.30)	9.18% (.34)	9.03% (.33)	9.09% (.35)	9.04% (.34)	9.27% (.32)
Non-Hispanic	86.56 (.41)	87.27 (.37)	87.79 (.34)	87.56 (.38)	87.67 (.34)	86.06 (.39)	86.35 (.41)	85.52 (.36)
Missing data on Hispanic origin (FSPAN>3)	3.88 (.18)	3.62 (.20)	3.85 (.17)	3.26 (.16)	3.29 (.16)	4.85 (.22)	4.61 (.22)	5.21 (.21)
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A2. Percentage Distribution by Major Race Group, by Panel

	Control	Panel 1	2	3	4	5	6	7
White	78.35% (.45)	78.54% (.46)	79.12% (.42)	80.13% (.43)	80.38% (.43)	80.03% (.41)	79.89% (.47)	79.68% (.44)
Black	8.31 (.27)	8.46 (.28)	8.24 (.28)	8.68 (.28)	8.41 (.27)	8.64 (.27)	8.68 (.29)	7.97 (.25)
AIAN	.58 (.08)	.43 (.05)	.55 (.07)	.44 (.06)	.47 (.06)	.48 (.07)	.52 (.07)	.45 (.07)
Asian	4.03 (.24)	4.42 (.21)	4.48 (.23)	4.14 (.24)	4.19 (.24)	4.55 (.23)	4.30 (.25)	4.25 (.23)
NHOPI	.13 (.04)	.06 (.02)	.06 (.03)	.12 (.03)	.06 (.02)	.16 (.04)	.16 (.05)	.08 (.04)
SOR	2.89 (.21)	2.75 (.18)	2.06 (.16)	1.14 (.12)	1.00 (.12)	.96 (.11)	.85 (.11)	1.91 (.15)
Two or more	1.82 (.14)	1.93 (.15)	1.81 (.13)	1.50 (.11)	1.62 (.11)	1.57 (.13)	1.48 (.13)	1.50 (.11)
Missing race data (FRACE>3)	3.88 (.22)	3.41 (.22)	3.68 (.20)	3.86 (.23)	3.88 (.21)	3.61 (.21)	4.12 (.21)	4.16 (.21)
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A3a. Percentage Distribution by Major Race Group, by Panel: Hispanics

	Control	Panel 1	2	3	4	5	6	7
White	42.12% (1.82)	42.15% (1.84)	47.65% (1.99)	54.22% (2.07)	55.70% (2.08)	59.54% (1.82)	61.03% (1.94)	54.45% (1.80)
Black	1.14 (.25)	1.62 (.35)	1.32 (.30)	1.78 (.36)	1.93 (.42)	2.62 (.52)	2.72 (.44)	2.10 (.39)
AIAN	1.66 (.44)	1.34 (.33)	1.14 (.37)	1.50 (.40)	1.34 (.35)	2.04 (.54)	1.72 (.54)	1.37 (.46)
Asian	.24 (.10)	.60 (.26)	.18 (.10)	.66 (.21)	.73 (.32)	.42 (.17)	.30 (.14)	.73 (.33)
NHOPI	.07 (.05)	0	.02 (.02)	.20 (.16)	.06 (.06)	.21 (.11)	.10 (.07)	.02 (.02)
SOR	27.78 (1.70)	28.27 (1.63)	22.41 (1.60)	11.52 (1.19)	9.99 (1.17)	9.39 (1.00)	8.16 (1.06)	18.88 (1.40)
Two or more	5.00 (.67)	6.47 (.82)	5.78 (.79)	2.70 (.51)	3.94 (.58)	3.43 (.71)	3.26 (.54)	3.54 (.59)
Missing race data (FRACE>3)	21.98 (1.56)	19.55 (1.51)	21.49 (1.46)	27.42 (1.85)	26.31 (1.64)	22.36 (1.58)	22.70 (1.62)	18.90 (1.44)
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A3b. Percentage Distribution by Major Race Group, by Panel: Non-Hispanics

	Control	Panel 1	2	3	4	5	6	7
White	82.34% (.44)	82.30% (.42)	82.13% (.40)	82.84% (.40)	82.92% (.42)	82.18% (.39)	81.84% (.48)	82.37% (.43)
Black	9.10 (.29)	9.17 (.31)	8.91 (.30)	9.40 (.30)	9.08 (.30)	9.28 (.29)	9.29 (.31)	8.59 (.27)
AIAN	.47 (.07)	.34 (.05)	.49 (.07)	.33 (.05)	.38 (.06)	.32 (.06)	.39 (.05)	.35 (.06)
Asian	4.45 (.26)	4.82 (.23)	4.89 (.25)	4.51 (.26)	4.54 (.27)	4.98 (.25)	4.71 (.27)	4.63 (.25)
NHOPI	.13 (.05)	.06 (.02)	.07 (.03)	.11 (.03)	.06 (.02)	.15 (.04)	.17 (.05)	.09 (.04)
SOR	.15 (.04)	.11 (.03)	.11 (.03)	.05 (.02)	.07 (.03)	.08 (.03)	.09 (.04)	.10 (.03)
Two or more	1.47 (.13)	1.46 (.13)	1.43 (.12)	1.37 (.11)	1.38 (.10)	1.38 (.12)	1.30 (.13)	1.28 (.11)
Missing race data (FRACE>3)	1.89 (.12)	1.74 (.13)	1.98 (.14)	1.39 (.12)	1.57 (.12)	1.64 (.13)	2.19 (.14)	2.58 (.17)
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00