

Context Effects for Census Measures of Race and Hispanic Origin

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ABSTRACT

This paper reports on the results of a split-ballot experiment conducted in 1987 to test alternative versions of the decennial census long form. Two forms were randomly assigned and self-administered in group sessions involving a total of 515 respondents. The order of race and Hispanic origin items was experimentally manipulated. The standard long form asks race, then Hispanic origin. The experimental form reversed the order of the items in order to reduce perceived redundancy, and to create a more restricted frame of reference for the race item. The objectives of the context manipulation were (1) to reduce item nonresponse for the Hispanic origin item, and (2) to reduce reporting of "Other race" by Hispanics in the race item. Objective (1) was met. Objective (2) was met for Hispanics born in a U. S. State, but not for immigrants. The results are interpreted as reflecting a process of acculturation which affects how Hispanic respondents apply U. S. racial categories "White" and "Black" in the census.

The survey methodology literature contains much evidence of the effect of question sequencing on response to questions. This work has, in large part, involved attitude items (see Schuman and Presser, 1981; Turner and Martin, 1984). The effect of question order may derive from the context invoked by prior questions, which may influence respondents' frame of reference or suggest differing interpretations of the question.

Context effects can also operate on quasi-factual and factual items, but research in this area has been limited. The potential for this type of effect is especially pronounced when the concept being measured is somewhat unclear, and the respondent really isn't sure what is being asked. In this paper, we explore the effect of question sequence on responses to two potentially ambiguous items on the decennial census questionnaire: race and Hispanic origin.

The Measurement of Race

Despite its familiarity, the concept of race is not a simple one. Racial classifications, both popular and scientific, are based on a mixture of principles and criteria, including national origin, tribal membership, religion, language, minority status, physical characteristics, and behavior. The criteria and categories for racial classification vary among cultures and over time. In the United States, we are accustomed to think in terms of two major races: Black and White.

In this country, we tend to treat race as an objective, fixed characteristic of a person which is biologically inherited. This meaning of race is so ingrained that it may come as a surprise to learn that other cultures have very different conceptions of race (Marshall, 1968; Harris, 1968). For example, the racial categories recognized in Brazil are not the

same as those used in the United States, even though its population also includes components with White European and Black African origins. According to Harris (1968), numerous racial categories are combined to create hundreds of different racial terms, based primarily on physical characteristics. Racial descent is not the rule; full siblings whose appearance differs are of different races. In addition, race is not a fixed characteristic of a person, and it changes when a person achieves wealth, for example, which is one of the criteria for race.

Cultures in Central and South America use different racial categories and criteria from those used in the United States. This difference in racial classifications implies that "White" and "Black" are not natural categories of race for most Spanish-speaking people. This fact has implications for the consistency and meaningfulness of the answers Spanish-speaking immigrants may give to the census race question.

Even within the United States, there have been significant shifts in how Americans understand and categorize race, which have been reflected in changes in the race categories used in the census.

Race was first measured as a separate item in the 1850 census, using the categories, "White," "Black," and "Mulatto," which were also used in 1860. In the 1870 and 1880 censuses, categories for "Chinese" and "Indian" were added, and in 1890, "Japanese" was added. The interpretation of race as a biological (yet observable) characteristic in these early censuses is clear. Enumerators were instructed in 1870 to code race through observation and to, "Be particularly careful in reporting the class Mulatto. The word here is generic, and includes quadroons, octoroons, and all persons having any perceptible trace of African blood. Important scientific results depend upon the correct determination of this class" (U.S. Bureau of the Census, 1979:18). The 1890 census saw an elaboration of the "Mulatto" category, with separate categories for mulattoes, quadroons, and octoroons. In 1900, the

attempt to distinguish mixed Black and White categories was abandoned but taken up again in 1910, when "Mulatto" was again listed as a category. In 1930, "Mulatto" was dropped permanently, and "A person of mixed White and Negro blood was to be returned as Negro, no matter how small the percentage of Negro blood" (U.S. Bureau of the Census, 1979:52).

There were also changes in the census racial classification of Spanish-speaking persons, such as Mexicans. Enumerators in 1930 were instructed that the race of "all persons born in Mexico, or having parents born in Mexico, who were not definitely White, Negro, Indian, Chinese, or Japanese, would be returned as Mexicans" (U.S. Bureau of the Census, 1979:52). In 1940, this rule was changed, and Mexicans and other persons of "Latin descent" were to be classified as "White" unless they were definitely of some race other than White. The rule was changed again in 1980, and Hispanic entries, such as Puerto Rican and Mexican, were left in the "Other race" category.

Finally, there were additions to the Asian categories. In 1960, categories were added for Filipino, Hawaiian, Part Hawaiian, Aleut, and Eskimo (Alaska and Hawaii had become states in 1959). Eskimo and Aleut were dropped in 1970 but restored in 1980, by which time there were 9 separate Asian and Pacific Islander categories, including Asian Indian, Guamanian, Samoan, and Vietnamese.

Since we think of race as a stable, enduring characteristic, it is fascinating to find that no single set of racial categories has been used in more than two censuses, and most were only used once. The changes partly reflect real change in the composition of the U.S. population due to migration from Asia and Central and South America, and expansion of U.S. territory to include new groups. Undoubtedly, political considerations and pressures played a part as well in the decisions to create and combine categories.

The fluctuations in census race categories also suggest the difficulty of devising a meaningful, objective classification of race. Marshall (1968)

argues that all racial classifications are arbitrary and artificial to some extent, whether they are based on "scientific" or popular criteria. Problems arise when respondents do not share the race categories used by the Census Bureau. Evidence suggests this is the case for many Spanish-speaking persons.

In 1970, the Census Bureau began conducting the census by self-enumeration rather than personal visit enumeration. Personal enumeration was conducted only for households that did not mail back a form. The change in census-taking procedure meant that, after 1970, race was based mainly on self-identification¹ rather than enumerator observation.

In conjunction with the change in procedure, dramatic changes in the racial characteristics of the population were observed. The number of Hispanic origin persons classified as "Other race" rose from 700,000 in 1970 to 5.8 million in 1980 (U. S. Bureau of the Census, 1987a:100). The transition to self-enumeration contributed to this increase and the decline in "White" race reporting among people of Hispanic origin. In addition, in 1980 persons of Hispanic origin were no longer recoded as "White" if they reported themselves as "Other race," as had been done in the 1970 census.

Additional evidence links self-enumeration with higher "Other race" reporting by Hispanics. In 1980, 35 percent of Hispanics were identified as "Other race" in census questionnaires, but only 10 percent were reported as "Other race" in personal visit reinterviews conducted after the census (McKenney, Fernandez, and Masamura, 1985). A possible reason for the inconsistency is respondent confusion with the 1980 census race question (U.S. Bureau of the Census, 1987a:100), which did not explicitly ask for race. Many persons filled in the circle for "Other race" and wrote in a nationality from Central or South America. Another possible cause is interviewer behavior in the reinterview study. Race was to be self-reported by respondents using a flashcard listing the race categories. Possibly, interviewers changed "Other race" responses to "White" for respondents who "looked White." Or, possibly

Hispanic respondents gave different answers in a personal interview (quite probably conducted by a White interviewer) than they gave on the census questionnaire.

The Measurement of Hispanic Origin

The Hispanic origin item was included in the census for the first time in 1970. In 1970, the item appeared only on the long form (a more detailed and extensive set of questions that goes to one in six households), but in 1980 it was asked of everyone as a 100-percent item. Placement near the race item on the questionnaire in 1980 may have affected reporting for both items.

Hispanic origin had the highest nonresponse rate of any 100-percent item in 1980. The computer allocation rate was 4.2 percent for short forms and 2.3 percent for long forms (U.S. Bureau of the Census, 1986: 32). The item may have appeared redundant to respondents who had just reported "Other race" and written in a Hispanic nationality. Many non-Hispanic persons may have left the item blank because they didn't understand it, or because they did not find a category that fit them.

Evidence from the 1970 and 1980 censuses suggests lack of understanding of the question. Siegel and Passel (1979) and Passel and Word (1987) document extensive misreporting in 1970 in the "Central or South American" category by persons living in the central and southern United States. In 1980, fairly substantial numbers of people (particularly Blacks in the South, Northeast, and Midwest) provided false positive reports of Mexican-American origin (U. S. Bureau of the Census, 1982). Respondents apparently wanted to indicate that they were American, and the Mexican-American response category was the only one that contained the word "American" (Passel and Word, 1987).

Some Hispanics also were confused by the question. A pattern of inconsistent reporting of "Other Hispanic" origin was observed between the 1980 census and the Content Reinterview Study (U.S. Bureau of the Census, 1986; McKenney, Fernandez and Masamura, 1985). While reporting by Puerto

Ricans, Mexicans, and Cubans was fairly consistent (that is, the census agreed with the reinterview for 85 percent or more of the persons in the reinterview sample), only 55 percent of persons reported as "Other Hispanic" in the reinterview had been similarly classified in the census; the others had been reported mostly as Mexican (11 percent) and as non-Hispanic (31 percent).

Fernandez and Cresce (1986) found inconsistent reporting of Hispanic origin and Hispanic ancestry in the 1980 census. Many persons reported Hispanic origin but not Hispanic ancestry (e.g., 30 percent reported as Puerto Rican in origin did not report Puerto Rican ancestry). There were also over a half million reports of Hispanic ancestry in the census by persons who did not report Hispanic origin. The inconsistency may be evidence of the part-whole contrast effect described in the survey methodology literature (Schuman and Presser, 1981). This occurs when respondents "subtract out" their response to a previous question when answering a subsequent, more general one. Respondents to the ancestry question had already reported their Hispanic origin; when faced with a very similar question, they may have reinterpreted it to be non-redundant: "Besides what you already told me about, what is your ancestry?" Thus, these seemingly inconsistent reports may be evidence of respondents' attempts to make sense of the questions and provide non-redundant information.

Additional support for this interpretation is provided by an experiment which varied the contiguity of the race and Hispanic origin items (see McKenney, Cresce and Johnson, 1988; U.S. Bureau of the Census, 1987b). The Hispanic origin item nonresponse rates ranged from 20 to 30 percent when placed immediately after race, compared to 13 to 17 percent when placed three items after race. This suggests that, with consecutive sequencing, the race item sets a frame of reference for the Hispanic origin item which accentuates the perceived redundancy of the latter item.

Hypotheses

We hypothesized that the high nonresponse for the Hispanic origin question and the reporting of "Other" in the race question both may result from context effects. The item that comes first may create a frame of reference that affects interpretation of the second item. The abundance of national origin groups listed as categories for race may encourage write-in entries of other nationality groups in that item. The Hispanic origin item then appears redundant, leading respondents to leave it blank (see figures 1 and 2).

INSERT FIG. 1 AND 2 HERE

We reasoned that the Hispanic origin item is less redundant if it precedes race. People who think their answer to the Hispanic origin question can be inferred from their response to the race question would be less likely to leave the Hispanic origin question blank if they answer it first. By reversing the order of the two items, we hoped to decrease item nonresponse for Hispanic origin.

The reporting of "Other" in the race item may also be affected by the order of the two items. The majority of "Other" races written in are Hispanic nationalities. We thought that giving Hispanics a chance to report their Hispanic origin first would create a more restricted frame of reference for the race item, and reduce their reporting of "Other race." However, if Hispanics reject the categories "White" and "Black," then their reporting of "Other" race may be insensitive to the order in which the items are asked. (See DeMaio and Martin, 1987, for a statement of the hypotheses on which our revisions to the census form were based.)

Methodology

This study was conducted as part of a program of research to improve the design of the decennial census long form questionnaire. In this redesign effort, typographic and other layout changes were made to increase the consistency of the form's appearance, clearer instructions were provided on how to complete the census form, questions were reworded to simplify and

clarify concepts, and questions were reordered to improve the flow and coherence of the census form (see DeMaio, Martin, and Sigman, 1987; Bates and DeMaio, 1989, for further discussion of the goals and methods of the research).

Figures 1 and 2 contain facsimiles of the race and Hispanic origin items for the revised form and the 1986 test census form, which was used as a control. As can be seen, several changes were made to these items, the principal one being that the items were reversed to test the hypotheses discussed above. In both forms, race and Hispanic origin were separated by other items (age in the revised form; age and marital status in the 1986 form). Other revisions were also made. Response categories for the Hispanic origin item were reordered, as they were throughout the revised form, so that "Yes" preceded "No." An instruction to fill in the "No" circle if the person was not Hispanic was added. There were also differences in response categories in the revised form, which reflected the thinking within the Census Bureau at the time regarding the content of these items in 1990. In the 1986 form, detailed Hispanic (for Hispanic origin) and Asian (for race) categories were listed separately. In the revised form, categories were combined, with an instruction to write in each person's specific group.

The revised and 1986 forms were compared in a series of split-panel experiments conducted in April 1987 in 33 group sessions organized by the Census Bureau Regional Offices in Boston, Dallas, Chicago and Philadelphia. Participants in the sessions were volunteers recruited by Regional Office outreach staff through their contacts with community groups. Recruiting was focused on minority racial and ethnic groups, and people with relatively little education. Among the volunteers who appeared for the sessions, there were a total of 9 nonrespondents who did not attempt to fill out census forms (3 refusals, 2 persons with visual impairments, 2 with language problems, and 2 late arrivals). A total of 515 people filled out forms for themselves and

members of their households, providing data on 1,446 persons. Participants included people aged 18 to 80, members of different racial and ethnic groups, and people with various levels of education. (See Parsley, et al., 1989, for a detailed report of the results of this research.)

Each session lasted an hour and a half, with 55 minutes allotted to fill out the census long form. (Forty-five minutes is the Census Bureau's official estimate of the time it takes an average household to fill out this form.) During each session, half of the participants were randomly assigned the 1986 form and the other half were assigned the revised form. Even though these respondents do not represent a probability sample, the randomization by form type permits us to make statistical comparisons between forms. We tested for statistically significant form differences using chi-square tests that take into account the clustering of persons within group sessions and within households (Fay, 1989). In the tables that follow, the chi-square values labelled X^2 are Pearson chi-squares, calculated on the assumption of simple random sampling; the J's refer to jack-knife statistics that take into account clustering in the data and thus represent a more conservative test. Likelihood ratio chi-squares (identified as L^2 in the tables) were used to test the fit of alternative log-linear models.

Results

Form Differences in Distributions of Race and Hispanic Origin: Despite revisions to the race question and response categories, race distributions are very similar for the two forms. As shown in the first panel of Table 1, each form identified about the same percentage of individuals in the categories of White, Black, Asian or Pacific Islander, and Other race. The revised form, however, identified a significantly larger percentage of American Indians. This result is due to sampling variability and is not a form effect.²

INSERT TABLE 1 HERE

The second panel of Table 1 contains the distribution of responses to the

Hispanic origin item, collapsed into the categories on the revised form for comparability. Again, the two forms obtained similar levels of reporting of Hispanic origin. Although based on small numbers, this result is encouraging because it suggests that the increased response to the item in the revised form (as reported below) did not alter the distribution.

Item Nonresponse: Results in Table 2 support our hypothesis concerning item nonresponse to the Hispanic origin item. When Hispanic origin is asked first, item nonresponse drops to 9 percent, compared to 18 percent on the 1986 form. Nonresponse for the race item was not affected by the change in order, with a rate of 3 percent for the 1986 form and 4 percent for the revised form.

INSERT TABLE 2 HERE

Because of the number of changes made to the form, we cannot be sure that the reversed order is the cause of the better response rate for Hispanic origin in the revised form. However, the pattern of missing data by race leads us to believe that the sequence of the items and the additional instruction to fill in the "No" circle were responsible. Results for the 1986 form (see the first panel of Table 3) show that persons who reported their race as "Black" or "Asian/Pacific Islander" were far more likely to leave the Hispanic origin item blank than persons reported as "White" or "Other race". On the revised form, however, all race groups were equally likely to leave the Hispanic origin item blank (see second panel of Table 3).

INSERT TABLE 3 HERE

A loglinear model confirms the presence of a three-way interaction (Nonresponse to Hispanic origin X Race X Type of form). This finding supports our hypothesis that the race item conditions respondents' understanding of the intent of the Hispanic origin item. Our interpretation is that Blacks and Asians are especially likely to think their response ("No") can be inferred from their response to the race item, and hence they leave Hispanic origin blank. When Hispanic origin is first and there is an explicit instruction to

fill in the "No" circle for persons who are not Hispanic, persons of all races are likely to give a response.

Content Differences--Race: Our second major hypothesis concerned the level of reporting of "Other race" by persons of Hispanic origin. For both questionnaire versions, the vast majority of write-in entries in "Other race" were Hispanic (over 90 percent for both forms). This finding is consistent with prior evidence.

The results suggest that the form of the questionnaire did affect Hispanic individuals' responses to the race item. As shown in Table 4, persons who reported Hispanic origin were more likely to report their race as "White" in the revised form (39 percent) than in the 1986 form (25 percent) although this difference is not quite statistically significant with the more conservative test ($p=.12$). However, the extent of reporting "Other race" write-ins by Hispanics was substantial on both forms (61 percent for the revised form vs. 75 percent for the 1986 form). Thus, our goal of reducing reporting of "Other race" by Hispanics was only partially successful. These data suggest that most of the persons of Hispanic origin who participated in our test did not identify with any of the race categories listed in the census questionnaire.

INSERT TABLE 4 HERE

Further analysis shows that the effect of context was restricted to Hispanics who were born in the United States. Table 5 presents responses to the race item, separately for people born in a U. S. State or outside the United States (i.e., in a foreign country or U.S. territory); the table includes data for persons of Hispanic origin only, and excludes those for whom information on place of birth is missing. The first panel shows that race reporting for Hispanics who were not born in a U. S. State is unaffected by the version of the questionnaire. For this group, race is reported as "Other" and an Hispanic nationality is written in for over three-quarters of the cases on both forms. However, there is a very large context effect on race

reporting for Hispanic persons who were born in a U. S. State. For U. S.-born Hispanics, race was significantly more likely to be reported as "White" in the revised form (74 percent) than in the 1986 form (22 percent). (The three-way interaction between form, place of birth, and race is marginally significant.)

INSERT TABLE 5 HERE

This result suggests that most Hispanic immigrants simply do not apply the categories "White" or "Black" to themselves, regardless of whether or not they have first reported their Hispanic origin. Race reporting for U. S.-born Hispanics, in contrast, appears more contextual. Results for this group are consistent with our initial hypothesis that giving Hispanic respondents a chance to report Hispanic origin before asking race would reduce the extent of "Other race" reporting.

These differences in race reporting for U. S.-born and migrant Hispanics may reflect a process of acculturation. Our statistical results (namely, the interaction effect between place of birth, form type, and reported race for persons of Hispanic origin) imply that Hispanic respondents' assimilation and use of the U. S. race category "White" are complex, and depend both on context and on the category of person being described.³ When Hispanic identity has already been acknowledged (in the revised form, by the prior question about Hispanic origin) then Hispanics (especially those born in the United States) are more likely to report their race as "White." We should emphasize that we offer these substantive interpretations quite tentatively; further testing on larger and more representative samples is needed before they can be considered more than hypotheses.

If they are replicated, our results imply that the measurement properties of census items about race and Hispanic origin are affected by context effects, and that the measurement properties of these items vary systematically over the population. This result is consistent with Johnson's (1987) finding that the measurement properties of different indicators of

Hispanicity are not constant, but vary between first or second generation Hispanic immigrants versus others.

Discussion and Conclusions

Overall, these findings suggest that the revisions to the form tested in these experiments could result in improvements in data quality. We increased the response rate to the Hispanic origin item, which was one of the major hypotheses guiding this research on question sequence. This was done without affecting the substantive distribution, and without affecting the response rate for the race item.

One limitation of the current study is the number of experimental manipulations introduced in our revised questionnaire. Three experimental manipulations could affect the results reported here: the order of the Hispanic origin and race items, the added instruction to fill in the "No" circle for Hispanic origin, and the variations in response categories for race and Hispanic origin. A second limitation is the fact that results are based on small and purposively selected "samples." We are presently planning and conducting questionnaire experiments based on larger, randomly selected samples, including a questionnaire experiment planned as an integral part of the 1990 census.

Despite the limitations, our findings support some general conclusions about questionnaire design. The first is that redundancy is a problem from the point of view of respondents. Respondents apparently try to interpret questions so as not to provide redundant information. When questionnaire items really are partially or wholly redundant, a substantial amount of error and missing data can result.

A second conclusion is that our results call into question the naive assumptions about "error" with which we began our research. We aimed to improve data quality by, among other things, reducing reporting by persons of Hispanic origin in the "Other" category of the race item. As we analyzed our

data we came to the point of view that the patterns of reporting reflect real differences in the interpretation of the meaning of race. We believe that the reporting of Hispanics in the "Other" race category is not an error, but a real perception by these respondents of their "correct" place in the racial classification structure--neither "White" nor "Black." We agree with the point of view stated by Lieberman (1985:160):

...some of the difficulties that researchers and census takers experience in using data on racial and ethnic groups are due not to problems of instrumentation or execution, pure and simple--such as might occur if a question was constructed incorrectly through, say, some vagueness or ambiguity of meaning. Rather some of the difficulties and inconsistencies reflect the processes of ethnic and racial change themselves; the 'errors' are telling us something about the flux in the concepts and identifications themselves.

Our findings concerning context effects on race reporting by Hispanics may tell us something about the complex process of assimilation of U. S. racial categories. Our speculation is that Hispanic respondents may have their own "rules" for reporting race in the census for themselves and members of their households, which do not conform to the Census Bureau's rules or the common understanding of race. The rule (roughly stated) might be: apply the U. S. racial category "White" to describe Hispanic persons with more "roots" in the United States, but only after acknowledging Hispanic identity. If there is such a rule, it has important implications for the meaning and the measurement of race in the census and in general, which we plan to explore in our future research on this subject.

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FIGURE 1

Race and Hispanic Origin Items on the 1986 Form

FIGURE 2

Hispanic Origin and Race Items on the Revised Form

CONTEXT EFFECTS FOR CENSUS MEASURES
OF RACE AND HISPANIC ORIGIN

by

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This paper reports the results of research undertaken by Census Bureau staff. A previous version was presented at the 1988 Annual Meetings of the American Statistical Association. The views expressed are attributable to the authors and do not necessarily reflect those of the Census Bureau. The authors gratefully acknowledge the statistical assistance of Robert Fay and helpful comments by Robert Johnson and Irwin Schreiner. Any errors are the authors'.

ENDNOTES

1. Strictly speaking, it is not quite accurate to say that race is based on self-identification, since one respondent fills out the form for all household members. This means that for most of the population, race (and all other census information) is based on proxy reports. Nevertheless, it is the intent of the Census Bureau to measure each person's racial self-identification, and

the 1990 form includes a printed instruction to "Fill ONE circle for the race that the person considers himself/herself to be."

2. Three American Indian respondents, each with large families, were randomly assigned to receive the revised form, whereas only one Indian respondent, living alone, was assigned to receive the 1986 form.

3. The reader may wonder how proxy vs. self reports of race are affected by the form experiment. We do not have the data to examine this question directly. However, in order to shed light on possible proxy effects, we examined race-reporting in 38 Hispanic households in which one or both parents and their children were living (nonrelatives and other relatives in the household were ignored). In 92 percent of these cases, race was reported consistently for the entire nuclear family, which suggests there are not large proxy effects on race reporting.

