Final Report of Results From Item Nonresponse Analysis for the Spanish Language Forms Availability Test

by

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Background

This is our final report on item nonresponse analysis of the Spanish Forms Availability Test or SFAT (also known as the 1993 National Census Test III). In an earlier report we provided preliminary results from item nonresponse analysis. In that report we examined overall item nonresponse rates for demographic and housing questions by panel. The first panel is the control panel and consists of an English language census form. The second panel is the dual forms panel and contains an English language census form, identical to the one in the first panel and a Spanish language census form. The third panel is the bilingual forms panel and it contains forms identical to those in the second panel but the English and Spanish language census forms were converted into a back to back version. We then examined item nonresponse rates by stratum, and by language of census form (de la Puente and Wobus 1994).[1] Each stratum consisted of roughly equal half of the test universe. There were two strata: 1) areas with between 15 and 30 percent linguistically isolated households and 2) areas with 30 percent or more linguistically isolated households.

We concluded that in order to provide more definitive statements concerning the desirability of mailing out Spanish language census forms to areas containing high concentrations of linguistically isolated households, additional information on the item nonresponse rates of Hispanics versus non-Hispanics taking into account language of form, panel and strata is required. This final report provides this information.

Overview of Report

First, we examine differences in item nonresponse rates between Hispanics and non-Hispanics while controlling for strata and panel. Second, we introduce census form language in the item nonresponse analysis and focus on Hispanics in order to determine if language of form plays a role in the item nonresponse of Hispanics regardless of strata and panel. And third, we test log-linear models to test for interaction effects between form language, panel and item nonresponse.

Executive Summary

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[1]   See Table 1 for completion rates by stratum and panel.

Overall

● Nationwide, panel assignment (control, dual or bilingual) does not significantly alter item nonresponse rates for non-Hispanics. However, for Hispanics, it has a significant effect on item nonresponse for the marital status, race, type of structure, number of rooms and tenure questions.

Comparison of Item Nonresponse Rates between Hispanics and non-Hispanics, by Panel and Strata

● In stratum 1, the control panel provides more complete information by Hispanic respondents on both the population and housing questions than the dual and bilingual panel forms. Among non-Hispanics there were no meaningful differences by panel for population or housing questions on item nonresponse rates.

● In stratum 2, panel assignment has no sizeable impact on item nonresponse rates among Hispanics for the population questions but it yields significant reduction in item nonresponse rates for selected housing questions in the control panel. Among non-Hispanics in stratum 2, panel type has a significant effect on item nonresponse rates for all but one demographic question but no significant effect on housing question response rates.

Comparison of Item Nonresponse Rates Among Hispanics by Language of Census Form and Strata

● Hispanics who responded using an English language census form (ignoring panel assignment) overall have significantly lower item nonresponse rates than those who responded in Spanish.

● With the exception of a few census items, differences in item nonresponse rates between stratum 1 and stratum 2 are generally not significant when census form language is held constant. In other words, item nonresponse rates in stratum 1 and stratum 2 were compared for forms completed in the same language.

● For Hispanics residing in stratum 2, language of form resulted in significantly lower item nonresponse. Specifically, the item nonresponse rates of those who responded in English was significantly lower than for those who responded in Spanish.

Results From Log Linear Analysis

- We tested for a three-way interaction among panel assignment, language of census form and item nonresponse for three of the six population questions. No three-way interaction between panel assignment and language of census form was identified for either population or housing questions. This means that, controlling for language of census form, item nonresponse is not affected by panel assignment.

Conclusions and Recommendations

- Our analysis of the SFAT sample shows that mailout/mailback techniques alone will not provide the Census Bureau with good quality data from Hispanics residing in areas where Spanish is the dominant language. Although completion rates in stratum 2 are significantly increased (2 to 6 percentage points) our analysis reveals that Hispanics in these areas who fill out and return Spanish language census forms omit a significant amount of information when compared to Hispanics who fill out and return English language census forms. Therefore we recommend that in addition to mailing out Spanish language census forms to areas with high concentrations of linguistically isolated Spanish speaking households the Census Bureau also provide bilingual assistance centers at community based organizations in these areas. Because implementation of this strategy can be costly, we recommend that implementation take place in carefully selected areas.

Item Nonresponse For Hispanics and Non-Hispanics

Table 3A-1 displays overall estimates of item nonresponse and standard errors for all population questions on the SFAT census form by Hispanic or non-Hispanic origin and by panel. This table shows that overall item nonresponse rates for non-Hispanics are not significantly different by panel, whereas, for Hispanics, significant differences between panels exist for question 2 (marital status) and question 6 (race). Table 3A-2 presents national estimates of item nonresponse for all housing questions for Hispanics and non-Hispanics by panel. Like Table 3A-1, Table 3A-2 shows that for non-Hispanics, the level of missing information does not vary significantly by panel. However for Hispanics the item nonresponse rates for question 1 (type of structure), question 3 (number of rooms) and question 4 (tenure) vary significantly by panel (they are lower in panel 1).

The information displayed in these tables mean that, overall, the experimental treatments (dual or bilingual questionnaires) did not significantly alter item nonresponse rates for non-Hispanics. For Hispanics, however, they had a significant

effect on the item nonresponse for the marital status, race, type of structure, number of rooms and tenure questions.

Comparison of Item Nonresponse Rates Between Hispanics and Non-Hispanics by Panel, Controlling for Stratum

We compared Hispanics with non-Hispanics controlling for strata to determine whether significant differences in item nonresponse rates occur by panel. Tables 3B-1 and 3B-2 displays this information for population and housing questions for stratum 1 and Tables 3C-1 and 3C-2 presents comparable information for stratum 2.

Stratum 1: 15% to 30% Linguistically Isolated Households

Tables 3B-1 and 3B-2 show that, in stratum 1, Hispanics have significantly higher rates of missing data, on some population and housing questions, than non-Hispanics. Moreover, these differences occur within all three panels. This means that, even after controlling for panel assignment, in stratum 1 Hispanics have significantly higher overall item nonresponse rates than non-Hispanics.

The higher rates of missing data for Hispanics compared to non-Hispanics shown in Table 3B-1 were statistically significant only for question 2 (marital status) and question 6 (race). These are the same questions that have been particularly challenging for Hispanics, according to two qualitative studies sponsored by the Census Bureau (Kissam et al. 1993 and Elias-Olivares and Farr 1992).

For the housing questions (Table 3B-2) we find that the item nonresponse rates in the experimental panels were higher among Hispanics than non-Hispanics. In the dual and bilingual panels, item nonresponse rates for Hispanics compared to non-Hispanics were higher for 6 and 5 questions, respectively, compared to 4 in the control panel.

Respondents with little or no knowledge of English (and semi literate in Spanish) may have found the questionnaires difficult to complete. However, relatively more households in the experimental panels, compared to the control panel, responded perhaps because they were provided with the option to do so either in English or Spanish (see Table I).

Stratum 2: Over 30% Linguistically Isolated Households

Tables 3C-1 and 3C-2 present information comparable to that displayed in

Tables 3B-1 and 3B-2 but for areas where over 30% of the households are linguistically isolated. As was the case in stratum 1, Hispanics continue to show higher nonresponse rates than non-Hispanics for population questions 2 (marital status) and 6 (race). Additionally, in the control panel, significant differences are also present for question 4 (relationship) and question 1 (sex) and question 3 (date of birth) in the dual forms panel. However, in the bilingual panel, question 3 (date of birth) shows a lower item nonresponse rate for Hispanics versus non-Hispanics but question 6 (race) continues to register a significantly higher nonresponse rate among Hispanics.

Stratum 2 item nonresponse rate differences between Hispanics and non-Hispanics for housing questions displayed in Table 3C-2 are very similar to results for stratum 1 (Table 3B-2). There are however, some differences. Unlike stratum 1, stratum 2 within panel differences in non-response for Hispanics and non-Hispanics for question 5b (meals) are not significant. Also, significant differences between Hispanics and non-Hispanics are present for questions 2a (acreage) within the control panel and 2b (commercial property) within the bilingual panel.

Generally, in stratum 2, for any of the three panels, item nonresponse rates are greater for Hispanics than for non-Hispanics (Tables 3C-1 and 3C-2). This pattern is also present but to a lesser extent in stratum 1 (see Tables 3B-1 and 3B-2) but more population and housing questions were left unanswered by Hispanics in stratum 2.

Comparisons across panels in Table 3C-1 show that, for Hispanics in stratum 2, panel assignment has little impact on item nonresponse rates for the population questions. Only question 3 (date of birth) shows a significant difference in the level of missing information between the control panel and bilingual panels. In summary, after controlling for stratum and panel assignment, proportionately more Hispanics than non-Hispanics leave questions on the census form unanswered.

Focussing on item nonresponse rates displayed in Table 3C-2 for the housing questions, and comparing Hispanics with non-Hispanics separately across panel we see a pattern that is opposite to that found in Table 3C-1 for the population questions. That is, for the housing questions panel assignment has virtually no effect on item nonresponse for non-Hispanics but a significant effect on item nonresponse for Hispanics. For this latter group, in general the control panel yields significantly lower item nonresponse rates.

Comparison of Item Nonresponse Rates for Hispanics by Language of Form and Stratum

As discussed above, we identified significant differences in item nonresponse rates between stratum 1 and stratum 2 and between Hispanics and non-Hispanics

within these strata. We also found that, for some census items, the control panel yielded lower item nonresponse than the dual and bilingual panels. The next step in our analysis is to determine what role, if any, language of census form returned has on item nonresponse rates. The analyses presented in this section focus solely on Hispanics and compare the item nonresponse rates for population and housing questions by language of census form and stratum. This information is presented in Tables 4A, 4B-1 and 4B-2 and is discussed below.

Overall Percent Item Nonresponse by Form Language

Table 4A displays national estimates of item nonresponse and standard errors of population and housing questions for Hispanics by language of form. Part I of the table shows that the differences in item nonresponse between the English and Spanish language census forms for the population questions are significant only for marital status and race. These are the same census items with significantly different nonresponse rates for Hispanics when the control and experimental panels are compared (see Table 3A-1). This indicates that, among Hispanics, overall item nonresponse rates for population questions 2 (marital status) and 6 (race), are affected in two ways. First, panel assignment plays a significant role. Hispanics in the control panel have significantly lower item nonresponse rates than those assigned to the dual forms or bilingual forms panels. And second, when form language is considered (but not panel assignment), Hispanics who responded using an English language form have overall significantly lower item nonresponse rates for population questions 2 and 6.

Table 4A, part II displays national estimates of item nonresponse rates among Hispanics for the housing questions. Here we see that for all but two housing questions nonresponse rates are significantly lower in the English language census form than in the Spanish language census form. Recall that only housing questions 1 (type of structure), 3 (number of rooms) and 4 (tenure) showed statistically significant differences by panel in item nonresponse among Hispanics (see Table 3A-2). These findings indicate that, with the exception of housing questions 1, 3 and 4, panel assignment per se does not influence item nonresponse rates of housing questions for Hispanics. However, we do find lower item nonresponse rates in the English forms than in the Spanish language forms.

Tables 4B-1 and Table 4B-2 display item-by-item nonresponse rates for population and housing questions by form language and by stratum. First we discuss significant differences in item nonresponse across strata and then we cover significant differences in item nonresponse rates across form language.

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Differences in Item Nonresponse Across Strata

Tables 4B-1 and 4B-2 show relatively few significant differences in item nonresponse rates between strata when form language is held constant. Of the population questions, only item nonresponse differences in question 6 (race) for English language census forms and question 3 (date of birth) for Spanish language census forms are significant. In both cases, item nonresponse is <u>higher</u> in stratum 1 than in stratum 2. The same comparison using information displayed in Table 4B-2 shows that on the English language census form, item nonresponse rates are significantly lower in stratum 1 than in stratum 2 for housing questions 3 (number of rooms), 4 (tenure) and 6 (property value). In the Spanish language census form only question 2a (acreage) shows a significant difference in item nonresponse between stratum 1 and stratum 2.

Taken together, these findings indicate that, with the exception of questions 6 (race) and 3 (date of birth), there are relatively few significant differences in item nonresponse rates between stratum 1 and stratum 2 for Hispanics when census form language is held constant.

Differences in Item Nonresponse Across Form Language

Tables 4B-1 and 4B-2 show there are significant differences in item nonresponse between English language and Spanish language census forms, especially for the housing questions, in both stratum 1 and stratum 2. Concerning the population questions, Table 4B-1 shows that question 2 (marital status) and question 6 (race) in both strata 1 and 2, have significantly lower levels of missing information on the English than on the Spanish language census forms. The one exception is question 3 (date of birth) in stratum 2, where the nonresponse rate is lower in the Spanish than in the English language census form, however the observed difference is less than one percentage point.

Table 4B-2 reveals that in both strata 1 and 2, all housing questions, except questions 5a (rent) and 6 (property value), show significantly lower item nonresponse rates on the English than the Spanish language census forms. Only question 6 (property value) has a significantly lower item nonresponse rate on the Spanish language census form.

Log Linear Analysis of Item Nonresponse

Since we found that panel assignment and language of census form were among the key variables to influence item nonresponse we fit log-linear models to determine

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the significance of interactions between panel assignment, language of census form and item nonresponse for each of the demographic and housing questions on the census form.

Table 5 reports our results for the demographic census items and Table 6 for the housing census items. We fit four models treating the demographic and housing variables as response variables. The response variables were coded 0 if the demographic or housing item under consideration had no response (nonresponse) or coded 1 if the demographic or housing item under consideration had a response (response). The other variables in the models are panel assignment (control, dual forms or bilingual panel) denoted by "T" and language (Spanish or English) of the census form returned by mail to the Census Bureau, denoted by "L".

The results of log-linear analysis reported in Table 5 and Table 6 were derived using the software package CPLX (Fay 1989). This software program adjusts for the complex sample design of the SFAT by using a jackknife estimation method. The entries in the cells of the aforementioned tables are the p-values generated by the jackknife test. P-values greater than .05 indicate a model fits the data, meaning that the expected cell frequencies do not significantly differ from the observed cell frequencies.

Our approach was to fit models by introducing distinctive interaction terms between the response variable (R), panel assignment (T) and form language (L). Through this process we were able to eliminate models did not fit the data and identify the most parsimonious models that did.

Demographic Census Items: Results Presented in Table 5

Model 1 includes the interaction between the response variable and panel assignment {RT}, panel assignment and language of census form {TL} and the response variable and language of census form {RL} for population questions.

As shown in Table 5, model 2 is similar to model 1, however, it excludes the interaction response by panel assignment term {RT}. This model does not provide a fit of the data for the marital status and date of birth variables. In model three the interaction term response by language of census form {RL} is omitted. This model only fits the data for two of the six demographic census items (date of birth and relationship). Finally, the results for model 4 are shown which are virtually the same as for model 3.

Thus we conclude that item nonresponse does not differ by panel assignment jointly with language of census form.

Housing Census Items: Results Presented in Table 6

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Using the same rationale, four similar models were estimated for the housing data. The results are shown in Table 6. The p-values for model 1 indicate that it fits the data for most of the housing variables.

Model 2 is more parsimonious than model 1 because it excludes the interaction term response by panel assignment {RT}. Models 3 and 4 are a poor fit of the data for all the variables except rent and property value.

Thus we conclude that a three-way interaction of response by panel assignment and language of census form and a two way interaction of response by panel assignment is insignificant.

Log-Linear Analysis: Conclusion

The log-linear analysis just presented reveals that, for both demographic and housing items, no three-way interaction of response by panel assignment by language of census form was detected. The response by treatment effect was insignificant for all housing and most demographic variables. Consequently, item nonresponse does not differ by panel assignment controlling for language of census form. This finding supports our item nonresponse analysis which revealed that there are no significant differences in item nonresponse between the dual and bilingual panels but there are significant differences in item nonresponse between the Spanish and English language census forms. The English language census forms had lower item nonresponse rates than the Spanish language census form regardless of panel assignment. The implication of our finding for the Census Bureau is that, in terms of item nonresponse, it does not matter if the Census Bureau mails out a dual or bilingual census form, what does matter, however, is the language of the census form.

Conclusions and Recommendations

Our analyses reveal that data quality, expressed as item nonresponse rates, exhibit the following patterns in the SFAT sample. In our first cut of the data we examined nonresponse rates by panel assignment and strata. We found that, in general, item nonresponse rates in the second stratum where higher than in the first stratum. We also determined that generally speaking, the control forms panel yielded lower item nonresponse rates than the dual and bilingual forms panels. We believe that this occurred because persons who speak little or no English who would not have otherwise responded to the census did so because they were offered a choice between an English language and a Spanish language census form. In fact, the inclusion of a Spanish language census form in addition to the English form significantly improved the completion rate in stratum 2 by two to six percentage points. No significant differences in completion rates were found in stratum 1 (Corteville 1994).

We found that there are significant and large differences in item nonresponse rates between English language forms and Spanish language forms, regardless of panel assignment. The latter had higher item nonresponse rates.

Next, we divided the SFAT sample into Hispanics and non-Hispanics and found that there are few statistically meaningful differences in the item nonresponse of non-Hispanics. In contrast, the item nonresponse rates of Hispanics were affected by panel assignment and language of census form. For Hispanics, the control panel performed better than the dual or bilingual forms panels and the English language census form (not considering panel assignment) had significantly lower item nonresponse rates than the Spanish language form.

Lastly, we tested log linear models in order to test for interaction effects between form language, panel and item nonresponse to the population and housing questions. We found item nonresponse does not differ by panel assignment controlling for language of census form and that there are no significant differences in item nonresponse between the dual and bilingual panels but there are significant differences in item nonresponse between the Spanish and English language census forms.

A recent Census Bureau sponsored study revealed that Hispanics with less than a 6th grade education found it very difficult to complete the 1990 Spanish language census form without assistance (Kissam, et al. 1993).[2] Additionally, this study noted that lack of "forms literacy" among Hispanics with low levels of schooling also presented difficulties for respondents. A separate Census Bureau sponsored study of Mexicans and Mexican-Americans in the Chicago area found that respondents had problems with many vocabulary items and technical concepts in the Spanish language census form (Elias-Olivares and Farr 1992). Given these findings it is likely that Hispanics, especially those with low levels of education, experienced similar problems with the census form used in the SFAT.

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[2] The findings reported in the Kissam et al (1993) study are based on 60 in-depth interviews and eight focus groups with Hispanics residing in the Washington, D.C. metropolitan area and in cities around the San Francisco, CA metropolitan area.

Given our results, we offer the following recommendations for consideration. Most of our recommendations are currently being implemented while others are under consideration.

Mailout/mailback techniques alone will not provide the Census Bureau with good quality data from Hispanics living in areas where Spanish is the dominant language. Although it has been established that, in the SFAT sample, mailing out Spanish language census forms in addition to English language census forms significantly improves the completion rate by about 2 to 6 percent in stratum 2, our analysis shows that Hispanics who fill out the Spanish language census form and return it by mail omit a significant amount of information compared to Hispanics who fill out the English language census form. We therefore recommend that in addition to mailing out Spanish language census forms to areas with high concentrations of linguistically isolated Spanish speaking households the Census Bureau provide bilingual assistance centers at community based organizations in these areas. Because implementation of this strategy can be costly, we recommend that implementation take place in carefully selected areas.

Additionally, mailout/mailback enumeration can result in better quality data if the difficulties with the Spanish language census form are addressed. As we mentioned earlier, there is evidence from Census Bureau sponsored research that the Spanish language census form provides an often insurmountable challenge for some Hispanics, especially those with no or little knowledge of English and with less than high school education (Kissam et al. 1993). Using proven translation techniques (Marin and VanOss-Marrin 1991) and cognitive interviews with Hispanics of different national origins the Census Bureau developed a Spanish language census form for the 1995 Census Test. This translation addressed the difficulties with the Spanish language census form identified in the Kissam et al (1993) and the Elias-Olivares and Farr (1992) studies. This newly translated Spanish langauge census form will be used in the 1995 Census Test.

Regarding which of the two Spanish/English census forms (dual forms or bilingual forms) provide better data, our findings indicate that there is no statistically meaningful difference between the two. What is important, however, is the language of the form since item nonresponse rates are generally significantly higher on the Spanish language form than on the English language form.

REFERENCE

Courteville, S. (1994). Spanish Forms Availability Test Completion Rate Evaluation.
DSSD 2000 Census Memorandum Series #D-8. May 16, 1994.

de la Puente, Manuel and Peter Wobus (1994) Preliminary Report of the Results
From Item Nonresponse Analysis for the Spanish Language Forms Availability
Test. U.S. Census Bureau, Center for Survey Methods Research, February 25,
1994.

Elias-Olivares, Lucia and Marcia Farr (1992). Sociolinguistic Analysis of Mexican-
American Patterns of Non-Response to Census Questionnaires. Final Report,
JSA 88-25 with the University of Illinois at Chicago.

Kissam, Edward, Enrique Herrera and Jorge M. Nakamoto (1993). Hispanic
Response to Census Enumeration Forms and Procedures. Report submitted to
Bureau of the Census, Center for Survey Methods Research. Contract No. 50-
YABC-2-66027, Task Order No. 46-YABC-2-0001, March 1993.

Marin, Gerardo, Barbara VanOss-Marin (1991). Research with Hispanic
Populations. Applied Social Research Methods Series, Volume 23. Newbury
Park, CA: Sage Publications, Inc.

Table 1[3]

Spanish Form Availability Test (SFAT) Final Completion Rates

Treatment	National	Stratum 1 (Low LI Areas)	Stratum 2 (High LI Areas)
Control	40.4 (.59)	41.6 (.80)	38.0 (.79)
Dual	42.9 (.60)	43.0 (.80)	42.6 (.80)
Bilingual	42.2 (.59)	42.4 (.80)	41.7 (.80)

[3]   Source: Courteville, Jeffrey S. (1994). Spanish Forms Availability Test Completion Rate Evaluation.
       DSSD 2000 Census Memorandum Series #D-8. May 16, 1994.

Table 3A-1

Overall Percent Item
Nonresponse by Hispanic Origin
and Panel: Demographic Characteristics

(Standard Errors in Parenthesis)

Hispanic Origin			
CENSUS QUESTIONS: POPULATION	Control Panel (N =5462)	Dual Panel (N =6185)	Bilingual Panel (N =6285)
Q.1: Sex	.39 (.11)	.59 (.14)	.70 (.14)
Q.2: Marital Status	3.2 (.37)	3.6 (.35)	4.9 (.44)
Q.3: Date of Birth	1.4 (.19)	.93 (.15)	1.4 (.23)
Q.4: Relationship	1.2 (.17)	1.4 (.20)	1.3 (.23)
Q.6: Race	9.6 (.81)	12.3 (.86)	12.1 (.84)
Non-Hispanic Origin			
CENSUS QUESTIONS: POPULATION	Control Panel (N =2535)	Dual Panel (N =2510)	Dual Panel (N =2509)
Q.1: Sex	.55 (.17)	.29 (.12)	.68 (.20)
Q.2: Marital Status	1.6 (.37)	1.6 (3.6)	2.2 (.43)
Q.3: Date of Birth	1.8 (.44)	.92 (.26)	1.4 (.32)
Q.4: Relationship	.58 (.16)	1.2 (.22)	1.3 (.36)
Q.6: Race	.94 (.29)	.56 (.15)	1.2 (.33)

Table 3A-2

Overall Percent Item
Nonresponse by Hispanic Origin
and Panel: Housing Characteristics

(Standard Errors in Parenthesis)

Hispanic Origin			
CENSUS QUESTIONS: HOUSING	Control Panel (N =1698)	Dual Panel (N =1886)	Bilingual Panel (N =1869)
Q.1: Type of Structure	9.9 (.78)	14.8 (.86)	12.7 (.80)
Q.2a: Acreage	6.1 (.87)	7.8 (.95)	6.8 (.90)
Q.2b: Commercial Property	3.3 (.64)	5.1 (.80)	3.9 (.66)
Q.3: Number of Rooms	7.3 (.66)	12.2 (.79)	11.0 (.75)
Q.4: Tenure	14.8 (.90)	20.6 (.97)	18.8 (.94)
Q.5a: Rent	.87 (.34)	1.2 (.41)	1.5 (.47)
Q.5b: Meals	7.0 (1.0)	7.8 (1.0)	9.7 (1.0)
Q.6: Property Value	8.7 (1.1)	7.5 (1.0)	6.9 (1.0)
Non-Hispanic Origin			
CENSUS QUESTIONS: HOUSING	Control Panel (N =1057)	Dual Panel (N =1038)	Dual Panel (N =1024)
Q.1: Type of Structure	5.3 (.72)	5.4 (.71)	6.2 (.79)
Q.2a: Acreage	3.4 (.89)	2.0 (.69)	2.7 (8.0)
Q.2b: Commercial Property	3.0 (.79)	2.0 (.69)	2.7 (.79)
Q.3: Number of Rooms	4.0 (.62)	4.9 (.69)	5.7 (.76)
Q.4: Tenure	9.1 (.92)	9.8 (.95)	10.5 (1.0)
Q.5a: Rent	2.0 (.68)	2.1 (.69)	2.5 (.79)
Q.5b: Meals	4.1 (.97)	4.4 (.98)	5.1 (1.1)
Q.6: Property Value	8.6 (1.3)	8.7 (1.3)	9.4 (1.4)

Table 3B-1

Percent Item Nonresponse by Hispanic Origin and
Panel for Stratum Containing Between 15% to 30% Linguistically
Isolated Household: Demographic Characteristics

(Standard Errors in Parenthesis)

Hispanic Origin: 15% to 30% Linguistically Isolated Households			
CENSUS QUESTIONS	Control Panel (N = 2481)	Dual Panel (N = 2676)	Bilingual Panel (N = 2726)
Q.1: Sex	.28 (.12)	.49 (.17)	.66 (.21)
Q.2: Marital Status	3.1 (.53)	3.1 (.47)	5.5 (.66)
Q.3: Date of Birth	1.3 (.27)	.74 (.18)	1.8 (.38)
Q.4: Relationship	1.0 (.22)	1.3 (.27)	1.4 (.34)
Q.6: Race	10.0 (1.2)	13.4 (1.3)	12.7 (1.2)
Non-Hispanic Origin: 15% to 30% Linguistically Isolated Households			
CENSUS QUESTIONS	Control Panel (N = 1609)	Dual Panel (N = 1619)	Bilingual Panel (N = 1610)
Q.1: Sex	.62 (.21)	.37 (.15)	.74 (.25)
Q.2: Marital Status	1.7 (.47)	1.7 (.44)	2.1 (.50)
Q.3: Date of Birth	1.7 (.52)	1.1 (.33)	1.2 (.39)
Q.4: Relationship	.68 (.20)	.93 (.24)	1.2 (.42)
Q.6: Race	.99 (.37)	.49 (.17)	.93 (.34)

Table 3B-2

Percent Item Nonresponse by Hispanic Origin and
Panel for Stratum Containing Between 15% to 30% Linguistically
Isolated Households: Housing Characteristics

(Standard Errors in Parenthesis)

Hispanic Origin: 15% to 30% Linguistically Isolated Households			
CENSUS QUESTIONS	Control Panel (N = 756)	Dual Panel (N = 790)	Bilingual Panel (N = 781)
Q.1: Type of Structure	10.4 (1.1)	14.6 (1.3)	11.9 (1.2)
Q.2a: Acreage	5.0 (1.2)	6.4 (1.3)	6.2 (1.3)
Q.2b: Commercial Property	2.5 (.83)	5.3 (1.2)	2.8 (.88)
Q.3: Number of Rooms	7.0 (.93)	11.9 (1.2)	10.4 (1.1)
Q.4: Tenure	13.8 (1.3)	19.5 (1.4)	18.1 (1.4)
Q.5a: Rent	.62 (.44)	1.2 (.61)	1.6 (.69)
Q.5b: Meals	7.4 (1.5)	7.9 (1.5)	9.7 (1.7)
Q.6: Property Value	7.2 (1.5)	6.5 (1.5)	6.6 (1.4)
Non-Hispanic Origin: 15% to 30% Linguistically Isolated Households			
CENSUS QUESTIONS	Control Panel (N = 666)	Dual Panel (N = 663)	Bilingual Panel (N = 658)
Q.1: Type of Structure	5.6 (.89)	5.0 (.84)	6.5 (.96)
Q.2a: Acreage	3.8 (1.1)	2.2 (.84)	3.2 (1.0)
Q.2b: Commercial Property	2.6 (.89)	2.3 (.84)	2.9 (.95)
Q.3: Number of Rooms	3.9 (.75)	4.7 (.82)	6.1 (.93)
Q.4: Tenure	9.0 (1.1)	9.7 (1.2)	10.8 (1.2)
Q.5a: Rent	1.9 (.83)	1.8 (.82)	2.6 (.97)
Q.5b: Meals	3.8 (1.2)	3.7 (1.2)	4.8 (1.3)
Q.6: Property Value	8.7 (1.6)	8.3 (1.6)	9.2 (1.7)

Table 3C-1

Percent Item Nonresponse by Hispanic Origin and
Panel for Stratum Containing Over 30% Linguistically
Isolated Household: Demographic Characteristics

(Standard Errors in Parenthesis)

Hispanic Origin: Over 30% Linguistically Isolated Households			
CENSUS QUESTIONS	Control Panel (N = 2981)	Dual Panel (N = 3509)	Bilingual Panel (N = 3559)
Q.1: Sex	.57 (.20)	.74 (.25)	.76 (.15)
Q.2: Marital Status	3.2 (.50)	4.3 (.52)	4.0 (.48)
Q.3: Date of Birth	1.5 (.25)	1.2 (.25)	.76 (.16)
Q.4: Relationship	1.5 (.26)	1.5 (.30)	1.3 (.26)
Q.6: Race	8.9 (.96)	10.7 (.98)	11.2 (1.0)
Non-Hispanic Origin: Over 30% Linguistically Isolated Households			
CENSUS QUESTIONS	Control Panel (N = 926)	Dual Panel (N = 891)	Bilingual Panel (N = 899)
Q.1: Sex	.32 (.19)	0.0 (0.0)	.45 (.22)
Q.2: Marital Status	.97 (.39)	1.3 (.47)	2.6 (.79)
Q.3: Date of Birth	1.9 (.83)	.45 (.22)	1.9 (.54)
Q.4: Relationship	.22 (.15)	1.9 (.51)	1.6 (.66)
Q.6: Race	.76 (.29)	.79 (.33)	2.1 (.86)

Table 3C-2

Percent Item Nonresponse by Hispanic Origin and
Panel for Stratum Containing Over 30% Linguistically
Isolated Households: Housing Characteristics

(Standard Errors in Parenthesis)

Hispanic Origin: Over 30% Linguistically Isolated Households			
CENSUS QUESTIONS	Control Panel (N = 942)	Dual Panel (N = 1096)	Bilingual Panel (N = 1088)
Q.1: Type of Structure	9.1 (.94)	15.2 (1.1)	13.8 (1.1)
Q.2a: Acreage	7.9 (1.3)	9.8 (1.4)	7.6 (1.2)
Q.2b: Commercial Property	4.7 (1.0)	4.8 (.98)	5.3 (1.0)
Q.3: Number of Rooms	7.8 (.87)	12.7 (1.0)	11.8 (.98)
Q.4: Tenure	16.4 (1.2)	22.2 (1.3)	19.8 (1.2)
Q.5a: Rent	1.2 (.55)	1.1 (.51)	1.5 (.58)
Q.5b: Meals	6.5 (1.2)	7.7 (1.3)	9.7 (1.4)
Q.6: Property Value	11.0 (1.6)	8.8 (1.4)	7.2 (1.3)
Non-Hispanic Origin: Over 30% Linguistically Isolated Households			
CENSUS QUESTIONS	Control Panel (N = 391)	Dual Panel (N = 375)	Bilingual Panel (N = 366)
Q.1: Type of Structure	4.6 (1.1)	6.7 (1.3)	4.9 (1.1)
Q.2a: Acreage	1.9 (1.1)	1.2 (.87)	.65 (.66)
Q.2b: Commercial Property	4.4 (1.7)	1.2 (.88)	2.0 (1.1)
Q.3: Number of Rooms	4.1 (1.0)	5.6 (1.2)	4.4 (1.1)
Q.4: Tenure	9.5 (1.5)	10.1 (1.6)	9.3 (1.5)
Q.5a: Rent	2.3 (1.2)	3.0 (1.3)	2.0 (1.1)
Q.5b: Meals	5.2 (1.7)	6.5 (1.9)	6.0 (2.0)
Q.6: Property Value	8.5 (2.1)	10.2 (2.4)	10.2 (2.3)

Table 4A

Overall Percent Item Nonresponse For Hispanics by Form Language: Demographic and Housing Characteristics

(Standard Errors in Parenthesis)

PART I: POPULATION QUESTIONS	English Language Census Form (N = 12365)	Spanish Language Census Form (N = 5567)
Q.1: Sex	.47 (.07)	.80 (.19)
Q.2: Marital Status	2.8 (.23)	6.4 (.52)
Q.3: Date of Birth	1.3 (.14)	1.1 (.19)
Q.4: Relationship	1.2 (.13)	1.6 (.25)
Q.6: Race	10.6 (.57)	13.2 (.93)
PART II: HOUSING QUESTIONS	English Language Census Form (N = 3825)	Spanish Language Census Form (N = 1628)
Q.1: Type of Structure	10.2 (.53)	18.3 (1.0)
Q.2a: Acreage	5.5 (.55)	12.1 (1.4)
Q.2b: Commercial Property	3.2 (.41)	7.4 (1.2)
Q.3: Number of Rooms	7.8 (.46)	16.3 (.97)
Q.4: Tenure	14.7 (.61)	26.6 (1.2)
Q.5a: Rent	1.3 (.30)	.97 (.38)
Q.5b: Meals	6.4 (.67)	12.0 (1.3)
Q.6: Property Value	8.1 (.68)	5.83 (1.22)

Table 4B-1

Percent Item Nonresponse For Hispanics by Form Language
and by Stratum : Demographic Characteristics

(Standard Errors in Parenthesis)

Stratum 1: 15% to 30% Linguistically Isolated Households		
PART I: POPULATION QUESTIONS	English Language Census Form (N = 5669)	Spanish Language Census Form (N = 2214)
Q.1: Sex	.39 (.09)	.72 (.27)
Q.2: Marital Status	2.7 (.33)	7.0 (.80)
Q.3: Date of Birth	1.2 (.20)	1.4 (.32)
Q.4: Relationship	1.1 (.17)	1.6 (.39)
Q.6: Race	11.3 (.82)	14.1 (1.5)
Stratum 2: Over 30% Linguistically Isolated Households		
PART II: POPULATION QUESTIONS	English Language Census Form (N = 6696)	Spanish Language Census Form (N = 3353)
Q.1: Sex	.60 (.12)	.90 (.25)
Q.2: Marital Status	3.0 (.32)	5.6 (.60)
Q.3: Date of Birth	1.3 (.18)	.75 (.16)
Q.4: Relationship	1.3 (.19)	1.5 (.29)
Q.6: Race	9.5 (.69)	12.1 (1.1)

Table 4B-2

Percent Item Nonresponse For Hispanics by Form Language
and by Stratum: Housing Characteristics

(Standard Errors in Parenthesis)

Stratum 1: 15% to 30% Linguistically Isolated Households		
PART I: POPULATION QUESTIONS	English Language Census Form (N = 1722)	Spanish Language Census Form (N = 605)
Q.1: Type of Structure	9.7 (.75)	19.7 (1.6)
Q.2a: Acreage	5.1 (.75)	9.2 (2.1)
Q.2b: Commercial Property	2.9 (.56)	6.6 (1.8)
Q.3: Number of Rooms	7.1 (.65)	17.5 (1.5)
Q.4: Tenure	13.8 (.86)	27.0 (1.8)
Q5a: Rent	1.2 (.40)	1.1 (.62)
Q.5b: Meals	6.5 (.95)	12.9 (2.0)
Q.6: Property Values	7.0 (.93)	6.0 (1.9)
Stratum 2: Over 30% Linguistically Isolated Households		
PART II: POPULATION QUESTIONS	English Language Census Form (N = 2103)	Spanish Language Census Form (N = 1023)
Q.1: Type of Structure	11.0 (.69)	16.8 (1.2)
Q.2a: Acreage	6.1 (.76)	15.2 (1.9)
Q.2b: Commercial Property	3.8 (.61)	8.3 (1.4)
Q.3: Number of Rooms	8.9 (.62)	15.0 (1.1)
Q.4: Tenure	16.3 (.81)	26.4 (1.4)
Q.5a: Rent	1.6 (.44)	.84 (.42)
Q.5b: Meals	6.3 (.84)	11.0 (1.4)
Q.6: Property	9.9 (.98)	5.7 (1.4)

Table 5

Results of Log-Linear Analysis
For Demographic Census Questions

(p-values)*

Demographic Response Variables

Model	Sex	Marital Status	DOB	Relation-ship	Hisp Origin	Race
1 {RT}{TL}{RL}	.32	.21	>.5	.48	>.5	.5
2 {TL}{RL}	.18	.04	.03	>.5	>.5	>.5
3 {RT}{TL}	.02	.00	>.5	.2	.00	.00
4 {R} {TL}	.03	.00	.04	.2	.00	.00

* = P-values greater than .05 means that the model fits the data.

R =   The "response variable", that is, the demographic variable indicated by the columns in the table.

T =   The "treatment", that is, the dual forms or bilingual forms panel.

L =   Language (Spanish or English) of the census form returned to the Census Bureau.

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Table 6
Results of Log-Linear Analysis
For Housing Census Questions

(p-values)*

Housing Response Variables

Model	Structure	Acres	Commercial Property	Rooms	Tenure	Rent	Meals	Property Value
1 {RT}{TL}{RL}	>.5	.41	>.5	>.5	>.5	.36	>.5	.28
2 {TL}{RL}	>.5	.50	>.5	>.5	>.5	>.32	>.5	>.5
3 {RT}{TL}	.00	.00	.00	.00	.00	.2	.00	.10
4 {R} {TL}	.00	.00	.00	.00	.00	.45	.00	.38

* = P-values greater than .05 means that the model fits the data.

R =   The "response variable", that is, the housing variable indicated by the columns in the table.

T =   The "treatment", that is, the dual forms or bilingual forms panel.

L =   Language (Spanish or English) of the census form returned to the Census Bureau.