

# Evaluation Report Covering Residence 1 Year Ago (Migration)

FINAL REPORT

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U S C E N S U S B U R E A U  
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# EXECUTIVE SUMMARY

## Test Objective

- In January through March of 2006, the American Community Survey (ACS) conducted the first test of new and modified content since the ACS reached full implementation levels of data collection. The results of that testing will determine the content for the 2008 ACS.
- The primary objectives of the 2006 ACS Content Test work on Residence 1 Year Ago (Migration) were (1) to collect complete and appropriate address information for recent movers within the United States and (2) to collect complete and appropriate previous residence information for movers to the United States from Puerto Rico.

## Methodology

- The 2006 ACS Content Test compared two versions of the residence one year ago (migration) question set. The Control version replicated the current ACS question. The Test version modified the migration question by including the address (structure number and street name), collecting geographic information down to the place level within Puerto Rico for persons living in the U.S. at the time of the survey whose previous residence was Puerto Rico. Primarily because of space constraints and concern for increased respondent burden, the city limits indicator in the question was eliminated from the Test version. Facsimiles of these questions appear in the Appendices of this document, “Content Test Information Pages for Residence 1 Year Ago (Migration).”

## Research Questions and Results

- **Research question 1. Can we collect complete migration information (within the U.S. and from Puerto Rico into the U.S.) using a city style address?** *Note: The Control version does not include a “number and street name” field and does not collect information below the state / foreign country for respondents from Puerto Rico.* For the Test version, the percentage of U.S. cases which could be geocoded to the block level was 81.2 %, allowing for much greater confidence in the geographic codes at the upper levels. The Test version and the Control version had equivalent percentages of geocodable addresses at the state, county, and place levels. There was also an equivalent percentage of ungeocodable addresses on each version.

**Research question 2. Does having a separate write-in space for street address information result in a lower nonresponse rate?** The Test version and the Control version had equivalent percentages of completed migration write-in fields necessary to do geocoding at the place level and above that. We did find statistically different missing data rates for place name, county name, state name, and ZIP code. All were in favor of the Control version with the exception of ZIP code. However, an important point is that,

despite individual items missing at a higher rate on the Test than on the Control, the percentage of comparable items geocoded for each of the address fields and address field combinations on the Test version was not statistically different from the Control version.

**Research question 3. Does having a separate write-in space for street address information allow for geocoding at smaller geographic levels (e.g., census block level)?** The percentage of responses which could be geocoded to the block level was 81.2 %. The collection of the actual street address allows us to geocode the previous residence information at a fine geographic level and roll the geography up to highly accurate geography, regardless of the place or county boundaries that existed at the time of the survey response.

**Research question 4. Can the ACS provide estimates of the population moving between the U.S. and Puerto Rico for comparable levels of geography?** The results were inconclusive. The sample design of the Content Test reduced the number of persons who migrated in the last year from Puerto Rico, thus limiting Puerto Rico comparisons. The lack of Test and Control cases rendered comparisons ineffective, due in part to volatile estimates and large margins of errors.

**Research question 5. Do respondents follow the skip patterns correctly? Are missing items directly attributed to people following the patterns or getting confused?** This selection criterion was not met. Indications were that there was a higher percentage of skip errors on the Test version than on the Control version. Although not desirable, a review of the data shows that many of these skip errors were caused by mail respondents giving us more information than necessary, rather than less than required.

**Research question 6. Do the autocoding / clerical geocoding rates for address level meet or exceed the expectation of those currently found in place-of-work address level geocoding?** The results of address-level geocoding of the migration items on the Test Version were very encouraging. We were able to code 81.2% of the migration responses to the block level using all geocoding methods, 74.6% of the responses using the autocoding system and an additional 6.7% using clerical. The 2005 ACS shows that we were able to code 76.3 % of the place-of-work responses to the block level using all geocoding methods, 53.0% of the responses using the autocoding system and an additional 23.3% using clerical. It was necessary to use 2005 ACS as reference for place-of-work block coding since we didn't perform clerical coding on the 2006 ACS NCT for place of work due to budget and time constraints. All autocoding and clerical coding rates are based on unweighted data and relate to responses that contain 2 or more characters in 1 or more response fields. Statistical testing was not performed.

**Research question 7. Do the autocoding / clerical geocoding rates for the migration place level meet or exceed the expectation of those currently found in place-of-work place level geocoding?** The results of place-level coding of the migration items on the Test Version were very encouraging. We were able to code 99.8% of the migration responses to the place level using all methods, 98.0% of the responses using the autocoding system and an additional 1.9 % using clerical. Comparable questions and

methodology are found in the 2005 ACS for the place of work items but not for migration. The 2005 ACS shows that we were able to code 99.7 % of the place-of-work responses to the place level using all methods, 97.7 % of the responses using the autocoding system and an additional 2.1% using clerical. It was necessary to use 2005 ACS for reference for place-of-work place coding since we didn't perform clerical coding on the 2006 ACS NCT for place of work due to budget and time constraints. All autocoding and clerical coding rates are based on unweighted data and relate to responses that contain 2 or more characters in 1 or more response fields. Statistical testing was not performed.

**Research question 8. Does the distribution of movers by geographic type (e.g., moved within county, different county same state, etc.) remain stable with the introduction of these changes?** No statistical difference was found between the Control and Test versions for either the mobility status (under 1 year old, same house, different house in the United States, abroad, or “missing”) or the distribution of movers using the standard categorization (same house, different house in same county, different county in same state, etc.) For the latter of these distributions, the chi-square statistic was run and indicates that the distributions of Test and Control are the same.

- Based on the empirical results per the selection criteria, the Test version of the residence one-year ago question performed better than the Control version. The Test version did not meet all criteria and some criteria were met weakly, with just equivalent results on Test versus Control. However, the Test version met the minimum criteria for selection. In addition, the Test version led to coding 81.2% of the migration responses to the block level. This block-level coding is not possible with the Control version. The ability to code to the block level using TIGERLine ID and Side allows higher quality and relatively bias-free data on the Test version. Block-level coding also allows the ACS staff to convert previously-collected data to current boundaries in a much more accurate basis than currently available. Boundary changes, name changes, and code changes at the place and county level are ongoing and become even more problematic when combining multi-year estimates.

# **1. BACKGROUND**

## **1.1 Motivation for the 2006 ACS Content Test**

In January through March of 2006, the American Community Survey (ACS) conducted the first test of new and modified content since the ACS reached full implementation levels of data collection. The results of that testing will determine the content for the 2008 ACS. The year 2008 marks the first year of a three-year aggregated data product that includes data from the same year as the 2010 decennial census (2008 - 2010). Similarly, 2008 is the midpoint year for the first five-year data product that includes data from 2010 (2006-2010). Given the significance of the year 2008, the ACS committed to a research program during 2006 that will result in final content determination in time for the 2008 ACS. This research is the 2006 ACS Content Test.

Through the Office of Management and Budget (OMB) Interagency Committee on the ACS, the Census Bureau included subject matter experts and key data users from other federal agencies in identifying questions for inclusion in the Content Test. In general the Content Test evaluated alternatives for questions which showed some indication of a problem, for example, high missing data rates, estimates which differed systematically from other sources of the same information, or high simple response variance as measured in the Census 2000 Content Reinterview survey. In addition, the Content Test also included testing of three new topics proposed by other federal agencies for inclusion in the ACS.

To meet the primary objective of the 2006 ACS Content Test, analysts evaluated changes to question wording, response categories, instructions, or examples relative to the current version of the questions. Additionally, the Content Test design reflected two secondary objectives. One of the secondary objectives addressed form design alternatives for the basic demographic section of the form. The second addressed the content of the questionnaire mailing package. Results indicated no interaction between either of the two secondary objectives and the first objective addressing changes made to questions. Thus, this report will only address testing specific to the first objective - testing of alternative questions, response categories, etc.. Specifically, this report discusses testing of questions related to residence 1 year ago (migration).

## **1.2 Previous Testing or Analysis for Residence 1 Year Ago (Migration)**

Address (structure number and street name) response to be added. (This relates particularly to research questions 1 through 3, and 5 through 8 below.) It is known that the data on place of residence one year ago is influenced by the ability of the respondent to report the county and place of residence one year ago. Because of the recall problem, the data can provide a biased picture of migration. Some respondents may not remember the actual official place name that they lived in one year earlier or where the county boundaries were located. In order to make full use of the data from the ACS in the estimates modeling programs within the Census Bureau, it is essential that the data on migration be of the highest quality and be bias free. In an attempt to develop this bias-free data, we request that the ACS test a migration question that asks respondents to provide their previous address. We believe that responding with an actual

physical address may actually be easier for the respondent (less respondent burden) to recall than determining what “place” and “county” the address was located in. The collection of the actual address would allow us to geocode the previous residence information at a fine geographic level and roll the geography up to highly accurate geography, regardless of the place or county boundaries that existed. Addresses within Puerto Rico require an additional line for the development or condominium name.

A decision memo was issued by the American Community Survey Office (ACSO), U.S. Census Bureau, which states that all tabulations should be released using "current geography." This is not particularly problematic for current residence geography as long as there is a crosswalk between the individual Master Address File Identifications (MAF IDs) for units in sample at the time of the survey and "current" geography. Recent meetings with the ACSO staff and the Geography Division, U.S. Census Bureau, have increased our concern about our ability to tabulate the migration and place-of-work data for geography consistent for 1-, 3-, and 5-year rolling averages. Being able to code to the block level using TIGERLine ID and Side would allow higher quality and relatively bias-free data. It would also allow the ACS staff to convert previously-collected data to current boundaries in a much more accurate basis than currently available. Boundary changes, name changes, and code changes at the place and county level are ongoing and become even more problematic when combining multi-year data. Storing TIGERLine ID, Side and partition data for migration at the time of geocoding would allow much more flexibility and accuracy in creating tabulations using the most recently available geographic units.

Testing the collection of street address information was performed during the 1996 National Content Survey (Test Version DS-2C). Results were encouraging even though this asked respondents to recall information from five years earlier for the decennial census. The advantages to geocoding and respondent ease in answering this complex, multi-part question outweighed possible minor differences in the frequency distribution. Many of the aspects that were a part of this test were adopted. The inclusion of the street address was not, due to space and budgetary reasons rather than data quality. (See “Summary Results of 1996 National Content Survey for Migration,” by Kristin A. Hansen in the Results Memorandum series.)

The basic layout of the question which includes the street address information has been successfully employed in the “place-of-work” question since the 1970 census.

Collecting detailed migration information for persons whose previous residence was in Puerto Rico. (This relates particularly to research questions 4 and 5 below.) A substantial amount of migration occurs between U.S. locations and those in Puerto Rico. In order for Puerto Rico to be fully integrated into the ACS and treated as a state, we must allow the full geographic set of origins to destinations possible between the U.S. residence locations and those in Puerto Rico. To do this, we must begin to collect geographic information down to the place level within Puerto Rico for persons living in the U.S. at the time of the survey whose previous residence was Puerto Rico. At the same time, we need to make sure that we do not compromise the high quality of data that we have come to expect from the current stateside formulations of the questions in the interest of including Puerto Rico as if it was a state.

Testing the collection of more detailed previous residence information for persons moving within and between the U.S. and Puerto Rico has been successfully implemented in the Census 2000 for Puerto Rico and currently is included in the 2005 Puerto Rico Community Survey. Both the Census 2000 in Puerto Rico and the 2005 Puerto Rico Community Survey ask for migration information down to the place level for movers within Puerto Rico and between the U.S. and Puerto Rico.

Removal of the city limits indicator in the residence one year ago question. (This relates particularly to research question 6, 7, and 8 below.) We suspect that this item has some reporting errors because the respondent may be unable to accurately say whether the residence is inside or outside the limits of the city, town, or postal area. This item has typically had a relatively high nonresponse rate -- about 3 percent of the movers within the U.S. do not respond to this item. We know that we currently tend to over-code to inside a place, due to over-reporting to place by respondents. In the case where the respondent does not report inside / outside city limits, we tend to bias coding toward inside a place. However, we currently do not know whether our bias will increase or decrease if we don't have that item to break coding ties. Elimination of this item would lessen respondent burden and save space which can be better utilized for a street address entry.

This item is used strictly within geocoding the other response items as a "tie breaker." We are fully aware that over-coding to within places occurs if we are only able to ask "city, town, or post office" name. The additional information from the ZIP code allows us more geographic specificity. The city limits item is used in conjunction with the other responses to determine whether the person actually lived within the city boundaries. The use of street address is a much more accurate way to determine the actual location of the residence. We believe that street address information in conjunction with city name, state, and ZIP code is easier and more accurately reported than is city name, state, county, and ZIP code and city limits indicator.

## **2. RESEARCH QUESTIONS AND SELECTION CRITERIA**

The following information provides the research questions and selection criteria that were used in this test. Section 5.0 provides the results.

Minimum criteria for selecting the Test version:

- (1) The percentage of geocoded addresses is higher than the Control version at equivalent levels of geography, OR
- (2) The percentage of geocoded addresses is the same between Test and Control at equivalent levels of geography but the Test version also allows successful geocoding at lower geographic levels.

### **2.1 Research Question 1**

Can we collect complete migration information (within the U.S. and from Puerto Rico into the U.S.) using a city style address? *Note: The Control version does not include a “number and street name” field and does not collect information below the state / foreign country for respondents from Puerto Rico.*

Selection Criterion – Percentage of geocoded addresses is equivalent or better than the Control version (at the levels of geography in the Control version)

### **2.2 Research Question 2**

Does having a separate write-in space for street address information result in a lower nonresponse rate?

Selection Criterion – Item nonresponse rates for the address fields are equal or less than the Control version.

### **2.3 Research Question 3**

Does having a separate write-in space for street address information allow for geocoding at smaller geographic levels (e.g., census block level)

Selection Criterion – Collecting number and street name information allows geocoding to smaller geographic levels.

## **2.4 Research Question 4**

Can the ACS provide estimates of the population moving between the U.S. and Puerto Rico for comparable levels of geography?

Selection Criterion – Collecting previous residence information for respondents moving from Puerto Rico allows for Puerto Rico migration estimates.

## **2.5 Research Question 5**

Do respondents follow the skip patterns correctly? Are missing items directly attributed to people following the patterns or getting confused?

Selection Criterion – The proportion of skip errors remains stable or is reduced.

## **2.6 Research Question 6**

Do the autocoding / clerical geocoding rates for migration address-level meet or exceed the expectation of those currently found in place-of-work address-level geocoding?

Selection Criterion – Clerical geocoding workloads do not exceed those experienced when geocoding place-of-work address information.

## **2.7 Research Question 7**

Do the autocoding / clerical geocoding rates for the migration place-level meet or exceed the expectation of those currently found in place-of-work place-level geocoding?

Selection Criterion – Clerical geocoding workloads do not exceed those experienced when geocoding place-of-work address information. (same as criterion for selection based on research question 6 above.)

## **2.8 Research Question 8**

Does the distribution of movers by geographic type (e.g., moved within county, different county same state, etc.) remain stable with the introduction of these changes?

Selection Criterion – The distribution of movers by geographic type remains stable.

## 3. METHODOLOGY

### 3.1 Data Collection Methods

#### *3.1.1 The 2006 ACS Content Test Data Collection*

The 2006 ACS Content Test consisted of a national sample of approximately 62,900 residential addresses in the contiguous United States. (The sample universe did not include Puerto Rico, Alaska and Hawaii). To meet the primary test objective of evaluating question wording changes, approximately half of the sample addresses were assigned to a test group (31,450) and the other half to a control group (31,450). For the topics already covered in the ACS, the test group included the proposed alternative versions of the questions, and the control group included the current version of the questions as asked on the ACS. Both the test and control questionnaires included three new topics not currently on the ACS. Both test and control included the three new topics to keep context and questionnaire length consistent between the two versions.

The ACS Content Test used a similar data collection methodology as the current ACS, though cost and time constraints resulted in some deviations. Initially, the ACS collects data by mail from sampled households, following a mailing strategy geared at maximizing mail response (i.e., a pre-notice letter, an initial questionnaire packet, a reminder postcard, and a replacement questionnaire packet). The Content Test implemented the same methodology, mailing each piece on the same dates as the corresponding panel in the ACS. However, the Content Test did not provide a toll-free number on the printed questionnaires for respondents to call if they had questions, as the ACS does. The decision to exclude this service in the Content Test primarily reflects resource issues in developing the materials needed to train and implement the operation for a one-time test. However, excluding this telephone assistance allows us to collect data that reflects the respondent's interpretation and response without the aid of a trained Census Bureau interviewer.

The ACS follows-up with mail nonrespondents first by Computer Assisted Telephone Interviewing (CATI) if a phone number is available, or by Computer Assisted Personal-visit Interviewing (CAPI) if the unit cannot be reached by mail or phone. For cost purposes, the ACS subsamples the mail and telephone nonrespondents for CAPI interviewing. In comparison, the Content Test went directly to CAPI data collection for mail nonrespondents, dropping the CATI data collection phase in an effort to address competing time and resource constraints for the field data collection staff. While skipping the CATI phase changes the data collection methods as compared to the ACS, eliminating CATI allowed us to meet the field data collection constraints while also maintaining the entire mail nonrespondent universe for possible CAPI follow-up. Using CATI alone for follow-up would have excluded households for whom we do not have a phone number.

The ACS also implements an edit procedure on returned mail questionnaires, identifying units for follow-up who provided incomplete information on the form, or who reported more than five people living at the address. (The ACS questionnaire only has space to collect data for five people.) This is called the Failed Edit Follow-Up operation (FEFU). The ACS calls all households identified as part of the FEFU edit to collect the remaining information via a CATI

operation. The Content Test excluded this follow-up operation in favor of a content reinterview, called the Content Follow-Up (CFU). The CFU also contacts households via CATI but the CFU serves as a method to measure response error, providing critical evaluative information. The CFU operation included all households who responded by mail or CAPI and for whom we had a phone number. More information about the CFU operation follows below.

The Content Test mailed questionnaires to sampled households around December 28, 2005, coinciding with the mailing for the ACS January 2006 panel. The Content Test used an English-only mail form but the automated instruments (both CAPI and CFU) included both English and Spanish translations. Beginning February 2006, a sample of households that did not respond by mail was visited by Census Bureau field representatives in attempt to collect the data. The CAPI operations ended March 2, 2006.

### *3.1.2 Content Follow-Up Data Collection*

The CFU reinterview, conducted by the Census Bureau's three telephone centers, provided a method for measuring response error. About 2 weeks after receiving the returned questionnaire or completed CAPI interview, the responding unit entered the CFU operation. Telephone staff completed the CFU interviews between January 17 and March 17, 2006. At the first contact with a household, interviewers asked to speak with the original respondent. If that person was not available, interviewers scheduled a callback at a time when the household member was expected to be home. If at the second contact we could not reach the original respondent, interviewers completed the interview with another adult household member.

The CFU reinterview did not replicate the full ACS interview. Rather, the CFU used the roster and basic demographic information from the original interview and only asked questions specific to the analytical needs of the Content Test. Reinterview questions were of two general formats: the same question as asked in the original interview (in some cases, modified slightly for a CATI interview), or a different set of questions providing more detail than the question(s) asked in the original interview for the same topic. For topics in which the CFU asked the same question as the original interview, the CFU asked the test or control version of the question based on the original treatment. For these cases, the goal was to measure the reliability of the answers – how often we obtained the same answer in the CFU as we did in the original mail or CAPI data collection. For topics using a different question or set of questions than the original interview, we asked the same detailed series of questions regardless of the original treatment condition. Generally, these questions were more numerous than what we could ask in the ACS. In some cases the questions came from another existing survey, for example, for labor force, we asked the labor force questions from the Current Population Survey questions. In other cases the CFU asked additional probing questions based on prior testing results, such as for health insurance. For these topics, the goal was to measure how close the original answers were to the more detailed CFU answers.

## **3.2 Sample Design**

The sample design for the ACS Content Test consisted of a multi-stage design, with the first stage following the Census 2000 Supplementary Survey (C2SS) design for the selection of Primary Selection Units (PSUs) defined as counties or groups of counties. The first stage selection of PSUs resulted in 413 PSUs or approximately 900 counties being selected.

Within sampled PSUs, households were stratified into high and low response strata based on tract-level mail response rates to the Census 2000 long form and a stratified systematic sample of households was selected. The strata were defined such that the high response stratum contained 75 percent of the housing units that reside in tracts with the highest mail response rate. The balance of the tracts was assigned to the low response stratum. To achieve similar expected number of mail returns for the high and low response strata, 55 percent of the sample was allocated to the low response strata and 45 percent to the high response strata.

A two-stage sampling technique was used to help contain field costs for CAPI data collection. The initial sample of PSUs was sorted by percentage of foreign-born population since the majority of that target population responds via CAPI. At least one item undergoing testing in the content test required an adequate sample of this population. The 20 PSUs with the highest percentage of foreign-born population were included with certainty and the remaining PSUs were sampled at a rate of 1 in 3. For the second stage, mail nonresponding households were sampled at a rate of 1 in 2 within the top 20 PSUs and at a sampling rate of 2 in 3 within the remaining PSUs. The final design designated 151 PSUs be included in the CAPI workload.

In the majority of PSUs, we assigned cases to both the control and test groups. To maintain field data collection costs and efficiencies, PSUs with an expected CAPI workload of less than 10 sampled addresses had all of their work assigned to only one treatment (either control or test). The PSUs were allocated to the two groups such that the aggregated PSU characteristics between the two groups are similar for employment, foreign born, high school graduates, disabled, poverty status, tenure, and Hispanic origin. For more information on the 2006 ACS Content Test sample design, see Asiala (2006).

There was no sampling for CFU. A CFU interview was attempted for all responding households to the Content Test for which we had a phone number.

The National Content Test of the Residence 1 Year Ago (Migration) did not have a CFU interview component because there was no evidence of reliability or bias issues with the questions as they are now. The primary objective of changes to the questions on migration were to gain the ability to code at a lower level of geography.

## **3.3 Methodology Specific to the Research Questions**

The 2006 ACS Content Test compared two versions of the residence one year ago (migration) question set. The Control version replicated the current ACS question. The Test version modified the migration question by including the address (structure number and street name),

collecting geographic information down to the place level within Puerto Rico for persons living in the U.S. at the time of the survey whose previous residence was Puerto Rico. Primarily because of space constraints and concern for respondent burden, the city limits indicator in the question was eliminated from the Test version.

The coding of the residence 1 year ago (migration) items on the NCT took two paths. The responses to the Control version, because of its lack of the street address item, were geocoded using the migration place-coding system currently in place for the production ACS. Both automated and clerical geocoding used the standard procedures. The responses to the Test version were sent through the coding system twice, once for migration place-level coding using the current production systems and then through the place-of-work address-level coding system. The use of this dual path allowed us to directly compare the differences between Control and Test for place-level as well to approximate our ability to geocode migration at the block-level.

## 4. LIMITATIONS

### 4.1 General Content Test and Content Follow-Up Limitations

As noted in section 3.1, Data Collection Methods, the Content Test maintained the same general mail data collection methodology as the ACS, but differed in the mail nonresponse follow-up operations. In general the deviations did not impact the validity of the results, and in many cases increased the effectiveness of the testing. However, some aspects of the Content Test implementation should be considered in evaluating the data.

- As noted, the Content Test did not include CATI data collection in order to meet field data collection constraints. While the design of the Content Test allowed all sampled housing units an opportunity to participate even without CATI, questions administered differently over the phone did not get the benefit of a full CATI operation (though some of the CAPI interviews actually do occur by phone). However, since only ten percent of ACS data is collected by CATI and CATI interviewers are trained to help respondents understand question intent and response categories, overall ACS data quality should not suffer when questions are implemented using CATI.
- Though the test design required that field interviewers work only control or only test cases, interviewers in both conditions worked regular ACS production interviews at the same time they completed the Content Test cases. By design the control instrument very closely replicated the ACS production instrument, only differing in the addition of the three newly proposed topics. As a result, interviewers in the test condition had to learn and use two very different instruments, while control interviewers used basically the same instrument between their Content Test cases and ACS production. Thus, test interviewers experienced more challenges in completing their overall caseload. Interviewer debriefing suggested that test interviewers had some difficulty dealing with the two very different instruments simultaneously which may have some impact on the administration of the test version.
- On the first day of CFU interviewing, we discovered a usability problem with the CFU instrument. Left unaddressed, the usability problem could have potentially impacted comparisons between the Content Test and CFU responses when looking specifically at gross difference rate or simple response variance calculations. However, we immediately implemented two steps to mitigate any data problems -- a special instruction sheet to remind interviewers about how to avoid the potential problem and a procedure to report any problems to headquarters for repair. Interviewers followed the instructions and reported 90 cases to us. Post-collection processing corrected all reported errors, though it is possible that some cases went unreported.
- The CFU universe did not include non-telephone households and vacant housing units. This only affects those question topics included in the CFU study that are related to the non-telephone household or vacant universes.

## 4.2 Limitations Specific to Residence 1 Year Ago (Migration)

- Geographic mobility during the past year is a relatively rare event. The mobility rate of people 1 year old and over in the 2005 ACS (the most recently available) was 16.1% while movers from abroad, including Puerto Rico was at 0.6%. The sample design of the 2006 ACS National Content Test sample was a limiting factor for comparisons of movers from Puerto Rico to the United States. There were few cases of movers from abroad or movers from Puerto Rico into the United States in the sample.
- Due to cost and time constraints on the NCT processing, we did not have a geocoding system designed specifically for the residence 1 year ago question. Instead, we utilized the currently available system that the production ACS uses for place-of-work geocoding. That system uses a combination of complete street address and employer name matching. If we implement address coding of the residence 1 year ago item into production ACS, revisions would be desirable to incorporate all relevant data items, including that for current residence.
- Due to cost and time constraints on the NCT processing of the place-of-work questions, we did not perform clerical coding of these items. Thus, we could not directly compare 2006 ACS NCT results from the address and place level geocoding of the residence 1 year ago Test items with that from place of work. Thus, comparisons have been done between 2006 ACS NCT residence 1 year ago processing with that of the 2005 ACS production coding of place of work.
- The Test version of the residence 1 year ago (migration) items allow for the possibility of address-level coding in Puerto Rico. However, address range coverage in the TIGER system is not sufficient to make this feasible, at this time. Therefore, geocoding at the address level was only attempted within the United States.

## 5. RESULTS

### 5.1 Response to the Content Test and Content Follow-Up

Control and test treatments groups obtained equivalent response rates overall, and for each mode of collection. Similarly, response to the Content Test is comparable to response for the production ACS.

The table below gives the weighted response rates for each data collection operation and a test of differences between the control and test groups. The overall response rate reflects the final response to the initial data collection (mail and CAPI only). There were no significant differences between response rates for the control and test groups. Note that the denominator for each calculation included only eligible cases for each mode.

**Table 1. Content Test Response Rates, Control vs. Test**

Response Rate	Total (%)	Control (%)	Test (%)	Difference (%)	Margin of Error (%)	Significant
Overall response rate	95.7	95.8	95.5	-0.3	± 0.9	No
Mail response rate	51.3	51.5	51.2	-0.3	± 2.2	No
CAPI response rate	92.4	92.6	92.1	-0.4	± 1.7	No
CFU response rate	76.2	75.9	76.4	0.5	± 1.6	No

### 5.2 Research Question 1 – Can we collect complete migration information (within the U.S. and from Puerto Rico into the U.S.) using a city style address? *Note: The Control version does not include a “number and street name” field and does not collect information below the state / foreign country for respondents from Puerto Rico.*

As shown in Appendix table B-1, 85.3 % of movers provided “complete” street address information. For the Test version this was either State / Place / Address / ZIP code OR State / County / Place / Address / ZIP code. Other combinations of Street Address and other geography may be used to geocode to block with less certainty. Appendix table B-2 shows the various combinations of entries that occurred on both the Control and Test versions. Overall, 80.7% of movers provided information that ultimately resulted in state / county / MCD / place / tract / block codes (see Appendix table B-4 for address-level geocoding information)

The percentage of items geocoded for each of the address fields and address field combinations included on the Test version were not statistically different from that on the Control version. In the United States, 98.5% of the responses were geocoded to at least the place level on the Test version, not statistically different from the 99.1% on the Control version. This was true under the place-level geocoding scenario as well as the address-level scenario, described in section 3.3 above. The real advantage of the address (Test) version was that 80.7% of the responses were coded to the block level, allowing much more accurate upper level geocoding. (See Appendices

table B-3 for place-level coding methodology and table B-4 for address-level coding methodology.)

### **5.3 Research Question 2 – Does having a separate write-in space for street address information result in a lower nonresponse rate? Were the item nonresponse rates for the address fields equal to or less than those on the Control version?**

Individual item missing data rates are shown in Appendix table B-1. Statistically different rates were indicated for place name, county name, state name, and ZIP code. All are in favor of the Control version with the exception of ZIP code. However, that is an important distinction. If the respondent gives us ONLY a street address and an accurate ZIP code, it is reasonable that none of the other pieces of geography is needed. Only 8.9% of the Test version respondents failed to give us a street address. Please note that, as shown in Research Question 1 above, that the percentage of items geocoded for each of the address fields and address field combinations on the Test version were not statistically different from than on the Control version. So, despite individual items being missing at a higher rate on the Test than the Control, the outcome was statistically not different.

### **5.4 Research Question 3 – Does having a separate write-in space for street address information allow for geocoding at smaller geographic levels (e.g., census block level)? Did the collection of number and street name information allow geocoding to smaller geographic levels?**

As seen in Appendix table B-4, 80.7% of movers within the U.S. reported an address response which was coded to the smallest level of geography possible, the block level.

### **5.5 Research Question 4 – Can the ACS provide estimates of the population moving between the U.S. and Puerto Rico for comparable levels of geography? Did collecting previous residence information for respondents moving from Puerto Rico allow for Puerto Rico migration estimates at a sub-state level?**

Testing the collection of more detailed previous residence information for persons moving within and between the U.S. and Puerto Rico has been successfully implemented in the Census 2000 for Puerto Rico and currently is included in the 2005 Puerto Rico Community Survey.

However, due to sample constraints and the relatively rare occurrence of people moving from Puerto Rico to the United States during the previous year, very little data was collected on this topic from the NCT, and is not considered reliable for purposes of this study. It does not appear that there were any systematic problems with its inclusion on the Test version, merely that so few cases were encountered to render findings statistically and analytically unreliable. For both Control and Test, the percentage of persons living in the U.S. whose previous residence was in Puerto Rico was 0.0%. Appendix table B-8 includes raw counts of the 9 persons collected on the Control version and the 19 persons collected on the Test Version who indicated that they had moved to the United States from Puerto Rico in the past year. These are for informational

purposes only. The weighted counts for the 9 Control persons is 36,231 while that of the 19 Test persons is 63,565.

**5.6 Research Question 5 – Do respondents follow the skip patterns correctly? Are missing items directly attributed to people following the patterns or getting confused? Did the proportion of skip errors remain stable or is it reduced?**

Appendix table B-5 shows that the proportion of persons who were coded to a different geography than was expected, based on response to part A of the question, was 1.5 % on the Control version as compared to 2.7 % on the Test version. Although this is a statistically significant difference, a review of the data shows that many of these skip errors were caused by mail respondents giving us more information than necessary, rather than less. Skip errors are possible on the mail responses only, since skips between items are programmed into the CAPI instrument itself.

**5.7 Research Question 6 – Do the autocoding / clerical geocoding rates for migration *address level* meet or exceed the expectation of those currently found in place-of-work address level geocoding? Do the clerical geocoding workloads exceed those experienced when geocoding place-of-work address information (they should not)?**

The 2006 ACS NCT Test Version shows that we were able to code 81.2% of the migration responses to the block level using all geocoding methods, 74.6% of the responses using the autocoding system and an additional 6.7% using clerical. The 2005 ACS shows that we were able to code 76.3 % of the place-of-work responses to the block level using all geocoding methods, 53.0% of the responses using the autocoding system and an additional 23.3% using clerical. It was necessary to use 2005 ACS for reference for place-of-work block coding since we didn't perform clerical coding on the 2006 ACS NCT for place of work due to budget and time constraints. It also should be noted that the place-of-work production coding rates include address and employer name matching, so they are not strictly comparable. All autocoding and clerical coding rates are based on unweighted data and relate to responses that contain 2 or more characters in 1 or more response fields. Statistical testing was not performed between the 2005 ACS and the 2006 ACS NCT. (See also Appendix B, table B-9 for details.)

**5.8 Research Question 7 – Do the autocoding / clerical geocoding rates for the migration *place level* meet or exceed the expectation of those currently found in place-of-work place level geocoding? Do the clerical geocoding workloads exceed those experienced when geocoding place-of-work address information (they should not)? (same as criterion for selection based on research question 6 above.)**

The 2006 ACS NCT Test Version shows that we were able to code 99.8% of the migration responses to the place level using all methods, 98.0% of the responses using the autocoding system and an additional 1.9 % using clerical. Comparable questions and methodology are

found in the 2005 ACS for the place of work items but not for migration. The 2005 ACS shows that we were able to code 99.7 % of the place-of-work responses to the place level using all methods, 97.7 % of the responses using the autocoding system and an additional 2.1% using clerical. It was necessary to use 2005 ACS for reference for place-of-work place coding since we didn't perform clerical coding on the 2006 ACS NCT for place of work due to budget and time constraints. All autocoding and clerical coding rates are based on unweighted data and relate to responses that contain 2 or more characters in 1 or more response fields. Statistical testing was not performed between the 2005 ACS and 2006 ACS NCT. (See also Appendix B, table B-10 for details.)

**5.9 Research Question 8 – Does the distribution of movers by geographic type (e.g., moved within county, different county same state, etc.) remain stable with the introduction of these changes? (research question and selection criterion are the same.)**

The mobility status distributions for the Control versus Test are shown in Appendix table B-6. The distributions of movers by type of move for the Control versus Test are shown in Appendix table B-7. No statistical difference was found between the Control and Test versions for either the mobility status (under 1 year old, same house, different house in the United States, abroad, or “missing”) or for the distribution of movers using the standard categorization (same house, different house in same county, different county in same state, etc.) For the latter of the distributions the chi-square statistic was run and indicates that the distributions for Test and Control are the same.

## **6. SUMMARY OF EMPIRICAL RESULTS**

Based on the empirical results per the selection criteria, the Test version of the residence one-year ago question performed better than the Control version. The Test version did not meet all criteria and some criteria were met weakly, with just equivalent results on Test versus Control. However, the Test version met the minimum criteria for selection. In addition, the Test version led to coding 81.2% of the migration responses to the block level. This block-level coding is not possible with the Control version. The ability to code to the block level using TIGERLine ID and Side allows higher quality and relatively bias-free data on the Test version. Block-level coding also allows the ACS staff to convert previously-collected data to current boundaries in a much more accurate basis than currently available. Boundary changes, name changes, and code changes at the place and county level are ongoing and become even more problematic when combining multi-year estimates.

## References

Asiala M. and Navarro A. (2006). "Experimental Design for the 2006 American Community Survey Content Test," American Statistical Association 2006 Proceedings of the Section on Survey Research Methods [CD-ROM].

Hansen, Kristin A. (1998). "Summary Results of 1996 National Content Survey for Migration," U.S. Census Bureau Results Memorandum Series.

## APPENDIX A: Information Pages for Residence 1 Year Ago (Migration)

### Question Wording:

Current ACS Wording	Content Test Wording
<p><b>a. Did this person live in this house or apartment 1 year ago?</b></p> <p><input type="checkbox"/> Person is under 1 year old → <i>SKIP to the questions for Person 2 on page 10.</i></p> <p><input type="checkbox"/> Yes, this house → <i>SKIP to F</i></p> <p><input type="checkbox"/> No, outside the United States –<i>Print name of foreign country, or Puerto Rico, Guam, etc. below; then SKIP to F</i></p> <p>_____</p> <p><input type="checkbox"/> No, different house in the United States</p> <p><b>b. Where did this person live 1 year ago?</b></p> <p><b>Name of city, town, or post office</b></p> <p>_____</p> <p><b>Did this person live inside the limits of the city or town?</b></p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No, outside the city/town limits</p> <p><b>Name of county</b></p> <p>_____</p> <p><b>Name of state</b>                      <b>ZIP Code</b></p> <p>_____                                  _____</p>	<p><b>a. Did this person live in this house or apartment 1 year ago?</b></p> <p><input type="checkbox"/> Person is under 1 year old → <i>SKIP to the questions for Person 2 on page 10.</i></p> <p><input type="checkbox"/> Yes, this house → <i>SKIP to question 15a</i></p> <p><input type="checkbox"/> No, outside the United States and Puerto Rico – <i>Print name of foreign country, or U.S. Virgin Islands, Guam, etc. below; then SKIP to question 15a</i></p> <p>_____</p> <p><input type="checkbox"/> No, different house in the United States or Puerto Rico</p> <p><b>b. Where did this person live 1 year ago?</b></p> <p><b>Address (Number and street name)</b></p> <p>_____</p> <p>_____</p> <p><b>Name of city, town, or post office</b></p> <p>_____</p> <p><b>Name of U.S. county or municipio in Puerto Rico</b></p> <p>_____</p> <p><b>Name of U.S. state or Puerto Rico</b></p> <p>_____</p> <p><b>ZIP Code</b></p> <p>_____</p>

### Research Questions & Evaluation Measures:

No	Research Questions	Evaluation Measures
1	Can we collect complete migration information (with the U.S. and from Puerto Rico into the U.S.) using a city style address? <i>Note: The Control version does not include a “number and street name” field and does not collect information below the state / foreign country for respondents from Puerto Rico.</i>	Compare percentage of items geocoded for each of the address fields and address field combinations included on the Test version (number and street name; name of city, town or post office; U.S. county or municipio in Puerto Rico; name of U.S. state or Puerto Rico; and ZIP code) to those included on the Control version (name of city, town, or post office; name of county; name of state; and ZIP code).
2	Does having a separate write-in space for street address information result in a lower nonresponse rate?	Compare item nonresponse rates for the equivalent address fields between the Control and Test versions.
3	Does having a separate write-in space for street address information allow for geocoding at smaller geographic levels (e.g., census block level)	Report geocoding results for the migration information collected on the Test version at the smaller geographic levels.
4	Can the ACS provide estimates of the population moving between the U.S. and Puerto Rico for comparable levels of geography?	Compare geocoding results between stateside respondents reporting moving within the U.S. and those who reported moving from Puerto Rico into the U.S.
5	Do respondents follow the skip patterns correctly? Are missing items directly attributed to people following the patterns or getting confused?	For each response category, compare the proportion of cases identified as a skip error between Test and Control (i.e., skip instructions ignored, or skipped next item when no skip instructions are present).
6	Do the autocoding / clerical geocoding rates for address level meet or exceed the expectation of those currently found in place-of-work address level geocoding?	Report the proportion of cases in the Test panel requiring clerical geocoding when geocoding at the address level.
7	Do the autocoding / clerical geocoding rates for the migration place level meet or exceed the expectation of those currently found in place-of-work place level geocoding?	Report the proportion of cases in the Test panel requiring clerical geocoding when geocoding at the place level.
8	Does the distribution of movers by geographic type (e.g., moved within county, different county same state, etc.) remain stable with the introduction of these changes?	Compare the distributions between the Control and Test versions.

**Selection Criteria:**

Q	Criteria
1	Percentage of geocoded addresses is equivalent or better than the Control version (at the levels of geography in the Control version)
2	Item nonresponse rates for the address fields are equal or less than the Control version.
3	Collecting number and street name information allows geocoding to smaller geographic levels.
4	Collecting previous residence information for respondents moving from Puerto Rico into the U.S. allows for Puerto Rico migration estimates.
5	The proportion of skip errors remains stable or is reduced.
6,7	Clerical geocoding workloads do not exceed those experienced when geocoding place-of-work address information.
8	The distribution of movers by geographic type remains stable.

**Minimum criteria for selecting the Test version:**

- Percentage of geocoded addresses is higher than the Control version at equivalent levels of geography,
- or
- Percentage of geocoded addresses is the same between Test and Control at equivalent levels of geography but the Test version also allows successful geocoding at lower geographic levels.

## APPENDIX B: Detailed Tables

**Table B-1. Residence 1 Year Ago -- Item Missing Data Rates, Control Version versus Test Version**

	Control Version	Test Version	Difference	MOE	Significant?
<b>Migration – Absence of Write-In Responses:</b>					
Street address missing	N/A	8.9 %	N/A	± 1.8 % 1/	N/A
Place name missing	<b>1.6 %</b>	<b>3.2 %</b>	<b>1.6 %</b>	<b>± 1.1 %</b>	<b>Yes</b>
City limits indicator missing	1.7 %	N/A	N/A	± 0.5 % 1/	N/A
County name missing	<b>6.1 %</b>	<b>12.9 %</b>	<b>6.8 %</b>	<b>± 2.2 %</b>	<b>Yes</b>
State name missing	<b>1.6 %</b>	<b>2.4 %</b>	<b>0.7 %</b>	<b>± 0.5 %</b>	<b>Yes</b>
ZIP Code missing	<b>14.3 %</b>	<b>10.3 %</b>	<b>-4.0 %</b>	<b>± 3.3 %</b>	<b>Yes</b>
Foreign country missing, when required	25.7 %	32.7 %	7.0 %	± 14.5 %	No
<b>Migration – Summary Measures:</b>					
“Complete enough” for geocoding	83.4% 2/	85.3% 3/	1.9%	±3.5 %	No
Missing all write-in parts	<b>0.4 %</b>	<b>1.2 %</b>	<b>0.7 %</b>	<b>± 0.3 %</b>	<b>Yes</b>
Completely uncodable entries	0.2 %	0.4 %	0.2 %	± 0.3 %	No

1/ Margin of Errors are on the individual point estimates for the data rows.

2/ Control version write-in responses indicated as “complete enough” for coding are conservatively defined as having responses for State/County/Place/City Limits/ZIP

3/ Test version write-in responses indicated as “complete enough” for coding are conservatively defined as having responses for State/Place/Address/ZIP or State/County/Place/Address/ZIP

**Table B-2. Completeness of Write-In Response, Control Version Versus Test Version**

Item Description	Control Version	Test Version
<b>Migration – Items Present</b>	N = 100.00 %	N = 100.00 %
Missing all parts	0.5 %	1.2 %
State	0.2 %	0.5 %
State/county	0.0 %	0.2 %
State/county/ZIP	0.0 %	0.2 %
City limits	0.2 %	N/A
City limits/ZIP	0.0 %	N/A
State/city limits	0.1 %	N/A
State/city limits/ZIP	0.0 %	N/A
County/city limits	0.0 %	N/A
County/city limits/ZIP	0.0 %	N/A
State/county/city limits	0.0 %	N/A
State/county/city limits/ZIP	0.5 %	N/A
Place	0.2 %	0.0 %
State/place	0.2 %	1.2 %
State/place/ZIP	0.1 %	0.2 %
State/county/place	0.2 %	2.4 %
State/county/place/ZIP	0.3 %	2.9 %
Place/city limits	0.7 %	N/A
Place/city limits/ZIP	0.1 %	N/A
State/place/city limits	2.7 %	N/A
State/place/city limits/ZIP	1.1 %	N/A
County/place/city limits	0.0 %	N/A
County/place/city limits/ZIP	0.0 %	N/A
State/county/place/city limits	9.4 %	N/A
State/county/place/city limits/ZIP	83.4 %	N/A
Address	N/A	0.4 %
Address/ZIP	N/A	0.0 %
State/address	N/A	0.0 %
State/address/ZIP	N/A	0.0 %
County/address	N/A	0.0 %
County/address/ZIP	N/A	0.0 %
State/county/address	N/A	0.0 %
State/county/address/ZIP	N/A	0.6 %
Place/address	N/A	0.1 %
Place/address/ZIP	N/A	0.2 %
State/place/address	N/A	0.9 %
State/place/address/ZIP	N/A	8.1 %
County/place/address	N/A	0.1 %
County/place/address/ZIP	N/A	0.2 %
State/county/place/address	N/A	3.3 %
State/county/place/address/ZIP	N/A	77.4 %

**Table B-3. Results of Place-Level Coding Methodology, Control Version Versus Test Version**

(Population based on responses to the migration screener question.)

	Control Version	Test Version	Difference	MOE	Significant?
Not codable	0.2 %	0.6 %	0.4 %	± 0.5 %	No
<b>In the United States:</b>					
At least to state level	99.8 %	99.6%	- 0.2 %	± 0.3 %	No
At least to county level	99.3 %	98.7 %	-0.6 %	± 0.6 %	No
At least to place level	99.1 %	98.5 %	-0.6%	± 0.7 %	No
<b>In Puerto Rico:</b> Please see Appendix B, table B-8 for details related to Puerto Rico geocoding					
<b>Foreign Country:</b>					
Missing all write-in parts	10.3 %	15.3 %	5.0 %	± 6.8 %	No
Completely uncodable entries	1.6 %	5.7 %	4.1 %	± 8.0 %	No

**Table B-4. Results of Address-Level Coding Methodology, Control Version versus Test Version**

(Population based on responses to the migration screener question.)

	Control Version	Test Version	Difference	MOE	Significant?
Not codable	0.2 %	0.6 %	0.4 %	± 0.5 %	No
<b>In the United States:</b>					
At least to state level	99.8 %	99.6 %	-0.2 %	± 0.3 %	No
At least to county level	99.3 %	98.7 %	-0.6 %	± 0.6 %	No
At least to place level	99.1%	98.5 %	-0.6 %	± 0.7 %	No
Fully geocoded (block level and above)	N/A	80.7 %			
<b>In Puerto Rico:</b> Please see Appendix B, table B-8 for details related to Puerto Rico geocoding					
<b>Foreign Country:</b>					
Missing all write-in parts	10.3 %	15.3 %	5.0 %	± 6.8 %	No
Completely uncodable entries	1.6 %	5.7 %	4.1 %	± 8.0 %	No

**Table B-5. Proportion Who Were Coded to Different Geography than Expected Based on Response to Migration Screener (Part A): Mail Responses Only**

	Control Version	Test Version	Difference	MOE	Significant?
United States	1.5 %	2.7 %	1.2%	± 0.6%	Yes
Puerto Rico 1/	0.0 %	5.2 %	– %	– %	Yes/No
Foreign country 2/	0.0 %	2.0 %	– %	– %	Yes/No

Note: This table was produced for mail responses only, since CAPI skip patterns are built into the instrument.

1/ For Puerto Rico responses, the Control version had 0 out of 7 cases with skip errors while the Test version had 2 out of 18 cases with skip errors.

2/ For foreign country responses, the Control version had 0 out of 118 cases with skip errors while the Test version had 4 out of 135 cases with skip errors.

**Table B-6. Mobility Status Distribution, Control Version versus Test Version**

	Control Version	Test Version	Difference	MOE	Significant?
Person under 1 year old	1.7 %	1.7 %	0.0 %	± 0.3 %	No
Yes, this house	79.9 %	79.4 %	-0.6 %	± 1.6 %	No
No, outside the United States*	0.6 %	0.7 %	0.0 %	± 0.4 %	No
No, different house in the United States*	13.4 %	13.5 %	0.1 %	± 1.5 %	No
Missing / Don't Know / Refused / Not Usable	4.3 %	4.8 %	0.4 %	± 0.5 %	No

\*For the Test version, the response categories read “in the United States or Puerto Rico”

For multiple responses, the first category was selected, as is done in production processing.

Chi-Square statistic 0.99 ( $p = .912$ ) RS2, indicating that the distributions of the Test version and the Control version are the same.

**Table B-7. Distribution of Movers by Type of Move, Control Version Versus Test Version**

(Population based on those reporting age as 1 year old and over)

	Control Version	Test Version	Difference	MOE	Significant?
Same house	81.2 %	80.6 %	-0.6 %	± 1.5 %	No
Different house, same county	8.4 %	8.5 %	0.0 %	± 1.2 %	No
Different county, same state 1/	2.7 %	2.4 %	-0.3 %	± 0.7 %	No
Different state 1/	2.3 %	2.8 %	0.5 %	± 0.6 %	No
Puerto Rico 1/	0.0 %	0.0 %	0.0 %	± 0.0 %	No
Elsewhere 1 year ago (foreign movers into the U.S.)	0.6 %	0.7 %	0.1 %	± 0.4 %	No
Not reported	3.9 %	4.0 %	0.2 %	± 0.5 %	No
Age/Migration Inconsistency	0.7 %	0.6 %	-0.1 %	± 0.1 %	No
Other MIG Distribution Error 2/	0.2 %	0.4 %	0.2 %	± 0.1 %	No

Chi-Square statistic 8.58 ( $p = .3789$ ) RS2, indicating that the distributions of the Test version and the Control version are the same.

- 1/ Includes persons who answered the migration screener question (part A) that they were outside the U.S. 1 year ago (checkbox 3) BUT then the migration write-in categories led to a U.S. mover.
- 2/ This is included as a final catchall category. These are mostly people who reported that they were one year of age in the age question who then subsequently reported that they were under the age of one by marking the first checkbox in the migration screener question (part A).

**Table B-8. Puerto Rico Geocoded Persons for the Migration Series of Questions, Control Version Versus Test Version**

Category	Control Version	Test Version
Total Persons	9	19
Households	5	10
Mail/CAPI cases	7mail/2 CAPI	18 mail/1 CAPI

**The Migration Screener Question (Part A) –  
(Which check box?)**

No check boxes marked or multiple check-boxes marked	0	4 (3 due to multiple check boxes, all which by regular keyer rules would be category 3)
Person is under 1 year of age	0	4 (none of these people are under age 1)
Nonmover (yes, this house)	0	0
Mover, outside U.S. and Puerto Rico	9 (correct)	3
Mover, different house in U.S. or Puerto Rico	0	8 (correct)

**Write-In Responses Present?**

Name of U.S. Island Area or Foreign Country	8	1
Structure number and street name address	N/A	18
Name of city, town, or village (Place)	3	17
Inside/outside city limits?	5	N/A
Name of U.S. county or municipio in Puerto Rico	5	13
Name of U.S. state or Puerto Rico	5	17
ZIP Code	1	14

Skip Errors occurring for Puerto Rico 1/	0 out of 7 mail cases	2 out of 18 mail cases
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1/ Really added information provided in a write-in area that they didn't need to fill.

**Table B-9. Proportion of Cases Which Were Geocoded to the Address (Block) Level:  
2006 ACS NCT Migration Test Version Versus 2005 ACS Place of Work Production**

	2006 ACS NCT Migration Test Version	2005 ACS Place of Work
All geocoding methods	81.2 %	76.3 %
Autocoding method	74.6%	53.0 %
Clerical coding method	6.7 %	23.3 %

Note: This table was produced for all migration responses to the detailed migration items which indicated that they were in the U.S., regardless of response to the migration screener.

**Table B-10. Proportion of Cases Which Were Geocoded to the Place Level:  
2006 ACS NCT Migration Test Version Versus 2005 ACS Place of Work Production**

	2006 ACS NCT Migration Test Version	2005 ACS Place of Work
All geocoding methods	99.8 %	99.7 %
Autocoding method	98.0 %	97.7 %
Clerical coding method	1.9 %	2.1 %

Note: This table was produced for all migration responses to the detailed migration items which indicated that they were in the U.S., regardless of response to the migration screener.

