Evaluation Report Covering Educational Attainment

FINAL REPORT

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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 2006 ACS content test examined the impact of several revisions motivated by a desire to improve the clarity of the question for respondents and to improve detail on grades of schooling and secondary credentials. The changes are intended to enable the Census Bureau and the National Center for Education Statistics to develop more detailed, relevant and accurate profiles of the educational attainment levels of the population.

Methodology

- Analyses compared responses of the current ACS working to the proposed question and relate these to respondents' answers on the follow-up interview. The control version replicated the current ACS question. The test version modified the response categories by including a series of five headings, separating kindergarten from nursery school, and including a write in for grades 1 through 11. The test version also included separate categories for type of high school completion (high school diploma versus GED and other alternative credentials). The test version specified categorization of some college based on credits rather than years, and included the qualifier "beyond a bachelor's degree" to the professional degree category. The Content Follow-Up attempted to get at response bias by asking more detailed questions about degrees earned and completed schooling.

Research Questions and Results

- The overall **distribution of educational attainment** differed between test and control and there were significant differences between the two versions for several attainment categories.
- The **reliability for educational attainment** in the test version was equal to or better than the control version for all categories except no schooling completed.
- The **reliability for high school completion** was within the acceptable range for both GED and high school diploma categories.
- **Misreporting of types of professional degrees** was similar in both test and control.
- **Item nonresponse for educational attainment** was not statistically different between test and control.
- The empirical results suggest that the control and test versions produce slightly different estimates of educational attainment, but that in many cases these estimates are more reliable in the test version. The test version also provides information on single year of attainment and type of high school completion.

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 educational attainment.

1.2 Previous Testing or Analysis for Educational Attainment

There is some evidence from previous ACS work that the some college categories are generating unstable estimates. In the current question, two of the response categories, "Some college credit, but less than 1 year" and "1 or more years of college, no degree," confuse the concepts of credit hours and seat time. Past tests have found that these two categories have lower levels of reliability than other educational attainment categories. Adding "credit" to the second alternative phrases both categories in terms of credit hours as opposed to seat time.

The Department of Education has examined the issue of high school equivalency in detail. The report "Dropout Rates in the United States" provides some examples of how National Center for Education Statistics (NCES) in the Department of Education uses educational attainment data collected by the Census Bureau and provides a short discussion of the challenges that exist around the collection of GED data (see references for more information). NCES is currently working on ways to improve the recording of high school completion in ways that separate out GED completion from traditional high school diplomas.

There is also concern that a large proportion of respondents who choose the "professional" education level work in occupations that do not require this level of degree. The education branch has noted that respondents choosing "professional" education levels work in occupations for which the designation "professional" may cause confusion, as with nursing and cosmetology.
The design of the write-in is taken from the educational attainment question used for the 1996-1998 American Community Survey. Many of the proposed changes to the ACS questionnaire emerge from our own experience in working with data from the existing questionnaires. There have also been several studies on reliability and systematic response error in similar versions of the educational attainment question in various Census Bureau surveys.

2. RESEARCH QUESTIONS AND SELECTION CRITERIA

2.1 Research Question 1: Distribution of Educational Attainment

Appendix A lists all research questions and evaluation measures. The first question addressed is what effect the changes to the attainment question have on the distribution of highest grade attained. We examine the overall distribution, with a focus on several aspects: the categories immediately following the added topical headings, the grade levels recorded in the write-in response, and the high school level of completion represented in the test version by two categories rather than one. We compare the distribution of educational attainment from the categorical control version to the test version by appropriately grouping the single grades of attainment for grades 1-11. Primary selection criterion: Grade level distribution in test version should not differ from the control.

2.2 Research Question 2: Level of reliability for Educational Attainment

A second question explored is the difference in the reliability of reported educational attainment between the test and control versions. We address this question by comparing the consistency of reported attainment with reports from the follow-up reinterview. Primary selection criterion: Net difference rate in the test version should be the same or lower compared to the control, and simple response variance should be the same or lower.

2.3 Research Question 3: Level of Reliability for High School Completion

We cannot directly compare the test questionnaire's new high school completion category to the control questionnaire, but we are interested in assessing whether it provides information that meets general Census Bureau standards. We address this question by measuring the consistency of reports of type of high school certification within the test version of the educational attainment question. Secondary selection criterion: The response variance for both the "high school diploma" and the "GED or equivalent" answer categories should be low to moderate.

2.4 Research Question 4: Misreporting of Types of Professional Degrees

The fourth question is whether adding the qualifier "beyond a bachelor's degree" to the professional degree category increases the association with types of degrees that reflect professional specializations (such as M.D. or J.D.) and decreases the association with less appropriate specializations. We address this question by comparing the type of professional degree specified in the follow-up for respondents who reported attaining a graduate or professional degree in the test and control versions. Secondary selection criterion: Test version should have fewer inconsistent specializations in the professional degree category compared to the control version.

2.5 Research Question 5: Item Nonresponse for Educational Attainment

The final question is what effect do the changes to the questionnaire, including the write-in for grades 1-11, have on the rate on nonresponse? We address this question by comparing the rates of nonresponse between test and control versions of the educational attainment question. Secondary selection criterion: Test version should have the same or lower missing data rates.

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 two 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.

3.3 Methodology Specific to the Research Questions

The Content Test was evaluated by comparing the results from the control panel with the test panel, comparing results from both panels to Content Follow-up Survey results, examining the effects of mode of collection across both panels, and comparing results of both panels to data collected on school enrollment.

Most analyses relied on tabulations of results from the test and control questions. We examine nonresponse rates and the distribution of responses across categories of the question. Examining the effect of grouped headings produce on the distribution of educational attainment involved testing effect(s) on categories immediately following the headings. To examine the effect of asking single grade of attainment, we collapsed these into categories of no school, nursery school to grade 4, grades 5 to 6, grades 7 to 8, grade 9, grade 10, grade 11, and grade 12 (no diploma) for comparison to control results. We also collapsed separate questions on high school graduation and receipt of GED for comparison to the control question.

The follow-up interview allows examination of various issues, not all of which are part of this formal evaluation. For GED or other alternative high school credential recipients we asked whether it was a GED or alternative credential. For the some college categories, we asked a follow-up question on the number of college courses taken. For those who reported earning credentials past a high school credential, we asked a question to

determine the type of institution that awarded the degree. For those who reported earning a professional degree, we followed-up with a question to determine the specific type of degree earned.

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 Educational Attainment

A limitation to research on educational attainment is that one proposed change – write-in of grade completed – only affected the mailout-mailback portion of the sample. CAPI (and CATI, not tested in the 2006 test) does not ask specifically for single grades, but, rather, offers them as potential answer categories for interviewers, unseen by respondents. In effect, then, the content test only affected a part of the sample for the purposes of this particular change. The test version of the CAPI questionnaire, like the mailout-mailback form, captured information on type of high school completion. In CAPI, this involved an additional prompt for respondents who reported high school as the highest level of educational attainment. The CAPI questionnaire also took a different approach to recording whether greater or less than one year of college was completed. Respondents whose highest level completed was high school were asked in the test version were asked if they had completed any college credits. They, along with those who completed "some college," were asked separately whether they had completed one year of credit. Some respondents who would have been classified at the "high school" level in the control version may have been shifted to one of the "some college" categories by this sequence of questions in the test version.

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 Distribution of Educational Attainment

The first research question addressed was whether there was a significant change in the distribution of educational attainment between the test and control. Table 2a displays the distribution for the population age 3 and above, while Table 2b displays the distribution for age 18 and above (see Appendix B for evaluation tables). Tables 2a and 2b each show that the grade distribution significantly varied between the test and control with significant values for the chi-square test of independence (chi-square values=43.8 (p=.0001) and 46.8 (p=.0000), respectively). In each case, there were significant differences in the following categories: 7^{th} or 8^{th} grade; 12^{th} grade, no diploma; high school graduate; and more than 1 year of college, no degree. In the age 3 and above distribution, nursery school to 4^{th} grade and 11^{th} grade were also significantly different between the test and control. In the age 18 and above distribution, there was also a significant difference in no schooling completed. These findings are inconsistent with the primary selection criterion that the distributions should be equal. The remaining research questions address whether this shift in distribution in the test reflects a more accurate estimate of educational attainment.

Although not specifically tested as part of the Content Test evaluation, there are also differences in estimates between the test and control versions for two important educational attainment benchmarks: high school and college completion rates. In both cases, the test version yields higher estimates. The percentage of the population age 18 and over with a high school degree (diploma or GED) is 85.2% in the test and 83.4% in the control. The percentage with a bachelor's degree is 26.7% in the test and 24.6% in the control. Although the control version of the question is identical to the item in the 2005 American Community Survey, the 2005 estimates (83.8% for high school completion, 25.0% for bachelor's degree) were slightly higher than the control. However, the test version yields higher estimates than the 2005 data, suggesting that implementing the test version may contribute to a larger increase between the 2007 and the 2008 estimates of these two indicators.

5.3 Level of Reliability for Educational Attainment

The second research question addresses the degree of consistency in reported educational attainment between test and control. Tables 3a and 3b display the net difference rate and simple response variance between the test and control. In both age groups (3 and older, 18 and older), differences in the absolute values of the net difference rates were mostly not significantly despite the difference in the overall distribution between the two versions shown in Tables 2a and 2b. However, there was evidence of different levels of systematic error for some attainment categories. At both age groups, the net difference rates were significantly lower in the test version for two categories: high school graduate, and some college (including more than 1 year, no degree). In the analysis for age 18 and over (but not age 3 and over) the net difference rate was higher in the test version than the control version for the category of no schooling completed. These net difference rates show that the distribution of educational attainment found in the follow-up interview matched the distribution in the test version at least as well as it did the distribution in the control with the exception of higher estimates of no schooling completed in the test version for respondents aged 18 and over.

The reliability of the test version responses, measured by simple response variance, was mostly equal to or higher than that of the control version responses. Significant differences in the simple response variance percentages were found for the 7^{th} or 8^{th} grade and 12^{th} grade, no diploma categories. The simple response variance was also significantly lower in the test version for both age groups in the 7^{th} or 8^{th} grade and 12^{th} grade, no diploma categories, as well as significantly lower for 10^{th} grade in the age 3 and over population. In the master's degree category, the simple response variance was significantly higher in the test version for both age groups and the test version was significantly higher for the no schooling completed category for the 18 and over population. In both these cases, the simple response variance remained relatively low.

Taken together, these results suggest that the test version of the attainment question performs at least as well as the control version relative to the follow-up responses. There is improved reliability in the test version for some of the educational attainment categories, although there are a few cases where the reliability is significantly better in the control version. These results also shed light on the finding from research question 1 that there were significant differences in the distribution of attainment. Most notably in Table 2b, the test version had a significantly higher proportion of age 18 and over respondents reporting no schooling completed (1.2% and 0.7%, respectively). In both versions, the positive net different rate suggests an overestimation of the no schooling completed, but the significant differences in rates indicates that this overestimation may be worse in the test version. However, the estimate of the proportion of the population with no schooling completed from each version is included in the range of estimates produced from other U.S. Census Bureau data (from .5% in the 2004 Current Population Survey to 1.4% in the 2000 Census). Despite this drawback of overestimating no schooling completed, the results overall suggest that the reliability of educational attainment estimates is at least as good and in some cases improved in the test version.

Therefore, these findings generally meet the second primary selection criterion of equal or improved reliability in the test version.

5.4 Level of Reliability for High School Completion

The third research question addresses the level of reliability for the two types of high school completion: GED or equivalent and high school diploma. Table 4 displays the index of inconsistency for both GED and regular high school diploma. The index was .37 for GED and .23 for high school diploma—both in the moderate (20-50) range. One of the main strengths of the proposed educational attainment question is the division of these two categories, and these results suggest that the test version is estimating these two categories with an acceptable level of consistency. This finding meets the first secondary selection criterion.

Although not a selection criterion, it is worth discussing the estimated proportion of the population age 18 and over with a regular high school diploma (24%) and a GED or alternative credential (3.8%). Out of the 27.8% of the population that is classified as a high school graduate in the test version, 86.3% obtained a high school diploma and 13.7% received a GED or alternative credential. Estimates of the proportion of high school graduates ages 18 and over that received a GED from other U.S. Census Bureau data range from 8.8% in the 2004 Current Population Survey to 14.5% in the 2004 Survey of Income and Program Participation.

5.5 Misreporting of Types of Professional Degrees

The fourth research question addresses the extent of misreporting of professional degree attainment. Table 5 displays the percentage of respondents who specify a degree consistent with professional degree attainment (such as M.D and J.D) in the CFU among those who report attaining a professional degree in the control and test. In both versions, the percent reporting a specialization consistent with a professional degree was above 80% (control=81%, test=83.4%). More importantly, there was no evidence in either version that a large number of respondents with vocational degrees were classifying their degrees as “professional”. The confusion seemed to be primarily for respondents with advanced nursing degrees, teaching certificates, and doctoral degrees, rather than from those with vocational degrees in specializations such as cosmetology. Although there was no improvement in the test version, this finding generally meets the second secondary selection criterion with similar levels of misreporting of professional degrees.

5.6 Item Nonresponse for Educational Attainment

The final research question addresses the difference in item nonresponse between the test and control versions of the educational attainment question. The nonresponse rates were not significantly different between the control and the test for either the age 3 and older or the age 18 and older populations (Table 6). This result supports the secondary selection criterion – the test version has the same or lower missing data rates.

6. SUMMARY OF EMPIRICAL RESULTS

The results from these analyses suggest that the test and control versions of the educational attainment question may provide slightly different estimates, but that in many cases these estimates are more reliable in the test version. The results met the primary selection criteria of similar or better reliability of the test version, which in part explains why the distributions between the two versions are significantly different. The results also met several of the secondary selection criteria, including reliable estimates of GEDs and high school diplomas, and similar misreporting of professional degree attainment.

One concern with the results from the test version is the overestimation of the "no schooling completed" category. A potential reason why the test version overestimates the proportion of the population with no schooling is due to the separate banner over the category. The item originally included in the cognitive testing of ACS Content Test items did not contain this banner. It was added to the test version because the results from this cognitive testing suggested that respondents had difficulty locating this category and that including a banner may reduce confusion. However, the finding of lower reliability and higher systematic error in the test versus control for this category may indicate that including the banner above this category does not improve estimates of no schooling completed.

The test version of the educational attainment question provides important additional information that the control version does not: single years of attainment for those with highest grade level of 1-11, and mode of high school completion. Because of these benefits, as well as evidence of improved reliability for several attainment categories, we recommend adopting the test version of the educational attainment questions. However, because the cognitive testing did not include a banner over the "no schooling completed" category, it is also possible to adopt the question without that banner, which may reduce some of the overestimation of the population with no school completed.

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Appendix A: Information Page

Question Wording:

Current ACS Wording (CONTROL)	Content Test Wording (TEST)
What is the highest degree or level of school this person has COMPLETED? *Mark (X) ONE box. If currently enrolled, mark the previous grade or highest degree received.* oNo schooling completed oNursery school to 4th grade o5th grade or 6th grade o7th grade or 8th grade o9th grade o10th grade o11th grade o12th grade-**NO DIPLOMA** o**HIGH SCHOOL GRADUATE**-high school DIPLOMA or the equivalent (*for example: GED*) oSome college credit, but less than 1 year o1 or more years of college, no degree oAssociate degree (*for example: AA, AS*) oBachelor's degree (*for example: BA, AB, BS*) oMaster's degree (*for example: MA, MS, MEng, MEd, MSW, MBA*) oProfessional degree (*for example: MD, DDS, DVM, LLB, JD*) oDoctorate degree (*for example: PhD, EdD*)	**What is the highest degree or level of school this person has COMPLETED? (*Mark (X) ONE box.*)** *If currently enrolled, mark the previous grade or highest degree received.* NO SCHOOLING COMPLETED oNo schooling completed NURSERY OR PRESCHOOL THROUGH GRADE 12 oNursery school o Kindergarten o Grade 1 through 11 –– *Specify grade1-11 –>* o12th grade-**NO DIPLOMA** HIGH SCHOOL GRADUATE oRegular high school diploma oGED or alternative credential COLLEGE OR SOME COLLEGE oSome college credit, but less than 1 year of college credit o1 or more years of college credit, no degree oAssociate degree (*for example: AA, AS*) oBachelor's degree (*for example: BA, BS*) AFTER BACHELOR'S DEGREE oMaster's degree (*for example: MA, MS, MEng, MEd, MSW, MBA*) oProfessional degree beyond a bachelor's degree (*for example: MD, DDS, DVM, LLB, JD*) oDoctorate degree (*for example: PhD, EdD*)

Research Questions & Evaluation Measures

No.	Research Questions	Evaluation Measures
1.	What impact do the following changes have on the distribution of educational attainment: –adding category headings to group response categories –adding a write-in to record single year of attainment –separating high school diploma and GED into 2 categories –emphasizing 'credit' in the two some college categories –further clarifying the professional degree category	–Compare the proportion of responses in the groupings from the control version to the test version (mimicking the same groups) –Compare the sum of the GED and high school diploma in the test version to the single category in the control version –Compare the relative proportion reporting in the 2 'some college but no degree' categories between the test and control –Compare the proportion of respondents in the 'professional degree' category between the test and control
2.	Do the changes to the educational attainment question increase the percentage of responses that are multiple responses?	Compare the rate of multiple responses for educational attainment between the control and test
3.	Do these changes improve the accuracy of reporting level of attainment, especially for high school graduate categories, for the two some college categories, and for the professional degree category?	Compare net difference rates between test and control versions
4.	What impact do these changes have on item nonresponse?	Compare item nonresponse rates between the test and control versions.
5.	Do the changes impact the differences in distributions currently observed across modes of collection?	Calculate distributions for each mode separately, and compare differences between modes, between test and control
6.	Can people reliably and accurately report the distinction between high school diploma and GED?	Calculate the Index of Inconsistency for the two high school graduate categories in the test version
7.	What proportion of people who report "GED or alternative credential" have alternative credentials besides the GED?	Examine responses to probes in the CFU.
8.	To what extent are college degrees being reported as being awarded by institutions such as vocational schools or two-year colleges?	Based on responses to probes in the CFU, examine the distribution of degrees by type of school awarding the degree.

Selection Criteria

Research Q	Criteria
1	The grade level distribution in the test version (write-in for grades 1 - 11) will not differ from the distribution of grades as grouped in the control version; the percentage of 12-grade- no diploma, and the combined percentage of 'regular high school diploma' and 'GED or alternative credential' will not differ from the single category in the control version.
3	Th net difference rate for the test version is equal to or lower than the net difference rate in the control group for high school graduate categories, for the two some college categories, and for the professional degree category
6	The index of inconsistency for the two high school graduate categories is in the test version should fall in the low to moderate range
4	The addition of the qualifier "beyond a bachelor's degree" to the professional degree category is supported if proportion of respondents with professional degrees reporting inconsistent fields of study such as nursing and personal services in the CFU is equal or less in the test version of the instrument.
2, 5, 7, 8	Not selection criteria. For informational purposes only.

Minimum criteria for selecting the test version:
- The distributions between the test version and the control version will not differ significantly, or
- The net difference rate for the some college categories and the professional degree categories is lower in the test version which may also correspond with a difference the percentage of responses falling those categories.

Appendix B: Tables

Table 2a. Distribution of Highest Grade Attained-Control Vs. Test, Age ≥ 3

	Control	Test	Diff	ME	Significant
No schooling completed	4.1%	4.4%	0.4%	± 0.5	No
Nursery school to 4th grade	**8.5%**	**9.4%**	**0.8%**	**± 0.8%**	**Yes**
5th grade or 6th grade	4.0%	4.0%	0.0%	± 0.5%	No
7th grade or 8th grade	**5.2%**	**4.4%**	**-0.8%**	**± 0.6%**	**Yes**
9th grade	3.1%	2.8%	-0.3%	± 0.3%	No
10th grade	3.5%	3.4%	-0.1%	± 0.5%	No
11th grade	**3.7%**	**3.2%**	**-0.5%**	**± 0.4%**	**Yes**
12th grade, no diploma	**2.2%**	**1.5%**	**-0.6%**	**± 0.3%**	**Yes**
High school Graduate	**23.5%**	**21.8%**	**-1.7%**	**± 1.3%**	**Yes**
Regular high school diploma	N/A	18.9%	N/A	N/A	N/A
GED or alternative credential	N/A	3.0%	N/A	N/A	N/A
Some college, less than 1 year	5.7%	5.7%	-0.0%	± 0.5%	No
More than 1 year college, no degree	**11.2%**	**12.7%**	**1.5%**	**± 0.8%**	**Yes**
Associate degree	5.9%	5.6%	-0.2%	± 0.5%	No
Bachelor's degree	12.0%	13.0%	1.0%	± 0.9%	Yes
Master's degree	5.2%	5.5%	0.3%	± 0.6%	No
Professional degree	1.4%	1.7%	0.2%	± 0.3%	No
Doctorate degree	0.8%	0.8%	0.0%	± 0.2%	No

Note: Statistically significant differences are in bold

Overall $\chi^2 = 43.8$ ($\rho = .0001$)

Table 2b. Distribution of Highest Grade Attained-Control Vs. Test, Age ≥ 18

	Control	Test	Diff	ME	Significant
No schooling completed	**0.7%**	**1.2%**	**0.5%**	**± 0.3%**	**Yes**
Nursery school to 4th grade	0.8%	0.8%	0.0%	± 0.2%	No
5th grade or 6th grade	1.7%	1.5%	-0.1%	± 0.4%	No
7th grade or 8th grade	**2.7%**	**1.9%**	**-0.7%**	**± 0.5%**	**Yes**
9th grade	1.9%	1.6%	-0.3%	± 0.3%	No
10th grade	2.8%	2.8%	0.0%	± 0.5%	No
11th grade	3.5%	3.2%	-0.3%	± 0.5%	No
12th grade, no diploma	**2.6%**	**1.9%**	**-0.8%**	**± 0.3%**	**Yes**
High school Graduate	**29.8%**	**27.8%**	**-2.0%**	**± 1.5%**	**Yes**
Regular high school diploma	N/A	24.0%	N/A	N/A	N/A
GED or alternative credential	N/A	3.8%	N/A	N/A	N/A
Some college, less than 1 year	7.2%	7.2%	0.0%	± 0.7%	No
More than 1 year college, no degree	**14.3%**	**16.3%**	**2.0%**	**± 1.1%**	**Yes**
Associate degree	7.5%	7.2%	-0.3%	± 0.7%	No
Bachelor's degree	15.3%	16.6%	1.3%	± 1.2%	Yes
Master's degree	6.5%	7.0%	0.4%	± 0.7%	No
Professional degree	1.8%	2.1%	0.3%	± 0.4%	No
Doctorate degree	1.0%	1.0%	0.0%	± 0.3%	No

Note: Statistically significant differences are in bold

Overall $\chi^2 = 46.8$ ($\rho = .0000$)

Table 3a. Educational Attainment Statistical Comparison, Control Vs. Test, Age ≥3

	Net Difference Rate					Simple Response Variance				
	Control vs CFU	Test vs CFU	Diff* |T| - |C|	Margin of Error	Signif	Control vs CFU	Test vs CFU	Diff	Margin of Error	Signif
No schooling completed	0.3%	0.7%	0.4%	± 0.4%	No	1.9%	1.9%	0.0%	± 0.4%	No
Nursery school to 4th grade	-0.3%	-0.2%	-0.1%	± 0.5%	No	2.4%	2.2%	-0.2%	± 0.4%	No
5th grade or 6th grade	0.1%	-0.2%	0.1%	± 0.3%	No	1.4%	1.2%	-0.2%	± 0.2%	No
7th grade or 8th grade	0.2%	-0.4%	0.2%	± 0.4%	No	**1.9%**	**1.6%**	**-0.4%**	**± 0.3%**	**Yes**
9th grade	-0.3%	-0.3%	0.0%	± 0.5%	No	1.8%	1.5%	-0.3%	± 0.4%	No
10th grade	-0.2%	0.0%	-0.2%	± 0.4%	No	**1.9%**	**1.6%**	**-0.3%**	**± 0.3%**	**Yes**
11th grade	-0.1%	-0.4%	0.3%	± 0.4%	No	1.9%	1.7%	-0.2%	± 0.3%	No
12th grade, no diploma	1.2%	1.0%	-0.2%	± 0.4%	No	**1.7%**	**1.3%**	**-0.4%**	**± 0.3%**	**Yes**
High school graduate	**1.1%**	**-0.1%**	**-1.0%**	**± 0.8%**	**Yes**	6.8%	6.4%	-0.4%	± 0.6%	No
High school diploma	N/A	-0.3%				N/A	6.0%			
GED	N/A	0.2%				N/A	1.8%			
Some College	**-1.7%**	**-0.2%**	**-1.5%**	**± 0.8%**	**Yes**	6.9%	6.5%	-0.4%	± 0.6%	No
Less than 1 year	0.3%	0.5%	0.2%	± 0.7%	No	4.9%	4.8%	-0.2%	± 0.4%	No
More than 1 year, no degree	**-2.0%**	**-0.7%**	**-1.3%**	**± 0.8%**	**Yes**	6.8%	6.4%	-0.4%	± 0.6%	No
Associate's Degree	0.3%	0.2%	-0.1%	± 0.5%	No	2.5%	2.4%	-0.1%	± 0.4%	No
Bachelor's Degree	-0.5%	-0.4%	-0.1%	± 0.4%	No	2.2%	2.4%	0.1%	± 0.4%	No
Master's Degree	-0.2%	0.1%	-0.1%	± 0.3%	No	**0.8%**	**1.1%**	**0.3%**	**± 0.2%**	**Yes**
Professional degree	0.5%	0.5%	0.1%	± 0.3%	No	0.9%	0.9%	0.0%	± 0.2%	No
Doctorate degree	-0.2%	-0.3%	0.1%	± 0.2%	No	0.4%	0.5%	0.1%	± 0.2%	No

Note: Statistically significant differences are in bold

* Difference of the absolute values of the test and control net difference rates

Table 3b. Educational Attainment Statistical Comparison, Control Vs. Test, Age ≥18

	Net Difference Rate					Simple Response Variance				
	Control vs CFU	Test vs CFU	Diff* |T| - |C|	Margin of Error	Signif	Control vs CFU	Test vs CFU	Diff	Margin of Error	Signif
No schooling completed	**0.3%**	**0.6%**	**0.2%**	**± 0.2%**	**Yes**	**0.4%**	**0.7%**	**0.3%**	**± 0.2%**	**Yes**
Nursery school to 4th grade	-0.1%	-0.1%	0.0%	± 0.2%	No	0.4%	0.5%	0.1%	± 0.2%	No
5th grade or 6th grade	0.2%	-0.1%	-0.1%	± 0.3%	No	1.0%	0.8%	-0.2%	± 0.2%	No
7th grade or 8th grade	0.1%	-0.3%	0.2%	± 0.4%	No	**1.5%**	**1.1%**	**-0.3%**	**± 0.3%**	**Yes**
9th grade	-0.3%	-0.2%	0.1%	± 0.6%	No	1.4%	1.2%	-0.3%	± 0.3%	No
10th grade	-0.1%	0.0%	-0.1%	± 0.4%	No	1.8%	1.5%	-0.3%	± 0.3%	No
11th grade	-0.4%	-0.6%	0.2%	± 0.5%	No	2.0%	1.8%	-0.2%	± 0.4%	No
12th grade, no diploma	1.4%	1.2%	-0.2%	± 0.5%	No	**2.0%**	**1.6%**	**-0.5%**	**± 0.4%**	**Yes**
High school graduate	**1.3%**	**-0.2%**	**-1.1%**	**± 1.0%**	**Yes**	8.4%	7.9%	-0.5%	± 0.7%	No
High school diploma	N/A	-0.3%				N/A	7.3%			
GED	N/A	0.1%				N/A	2.2%			
Some College	**-2.2%**	**-0.3%**	**-1.9%**	**± 1.0%**	**Yes**	8.6%	8.1%	-0.5%	± 0.8%	No
Less than 1 year	0.3%	0.6%	0.2%	± 0.9%	No	6.2%	5.9%	-0.3%	± 0.5%	No
More than 1 year, no degree	**-2.5%**	**-0.9%**	**-1.6%**	**± 1.0%**	**Yes**	8.4%	7.9%	-0.5%	± 0.7%	No
Associate's Degree	0.3%	0.2%	-0.1%	± 0.6%	No	3.2%	3.0%	-0.2%	± 0.5%	No
Bachelor's Degree	-0.6%	-0.5%	-0.1%	± 0.5%	No	2.8%	2.9%	0.1%	± 0.5%	No
Master's Degree	-0.3%	0.1%	-0.1%	± 0.4%	No	**1.0%**	**1.4%**	**0.3%**	**± 0.3%**	**Yes**
Professional degree	0.6%	0.7%	0.1%	± 0.3%	No	1.1%	1.1%	0.0%	± 0.2%	No
Doctorate degree	-0.3%	-0.4%	0.1%	± 0.2%	No	0.5%	0.6%	0.1%	± 0.2%	No

Note: Statistically significant differences are in bold

* Difference of the absolute values of the test and control net difference rates

Table 4. Index of Inconsistency: GED and High School Diploma

Type of High School Degree	Index of Inconsistency
GED	.37
High School Diploma	.23

Table 5. Specialization Reported in Follow-up for those Reporting Professional Degree in Test versus Control

Universe: Population reporting Professional Degree attainment	Control	Test
Professional specialization	81.0%	83.4%
Alternate specialization	19.0%	16.6%

Note: no statistical test performed

Table 6. Item Nonresponse Rates, Control Vs. Test

	Control	Test	Diff	ME	Significant
Attainment (Age≥3)	4.5%	4.8%	0.3%	± 0.6%	No
Attainment (Age≥18)	4.7%	4.5%	-0.2%	± 0.7%	No
Specific Grade (1-11)* (Ages 6-17)	N/A	0.4%	N/A	N/A	N/A
Specific Grade (1-11)* (Age ≥18)	N/A	1.0%	N/A	N/A	N/A

Note: Statistically significant differences are in bold

*Specific grade refers to those who check the box but do not write-in a specific grade

Cognitive Testing of Proposed Education Items for American Community Survey

Final Report

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APPENDICES

1. METHOD

We conducted cognitive interviews with 80 persons in the Washington, DC area. In this chapter we discuss the study design, process for recruiting study participants, and describe the participants and educational characteristics of their households. We also describe the ACS items of interest for the study and the interview procedures.

1.1 Study Design

The Census Bureau requested that we cognitive test the ACS items of interest in forms suitable for three different survey modes:

- Self-administered (paper and pencil)
- Administered in-person
- Administered by telephone

In addition, there were multiple versions of an item within each mode:

- Self-administered – includes two versions of the educational achievement item (Q11). One version groups the response categories under broader headings, while the other version does not.
- Administered in-person – this mode also includes two versions of the educational achievement item (Q11). The response categories are presented on a flashcard, with one version grouping the response categories under broader headings, while the other version does not.
- Administered by telephone – this mode includes two versions of the question assessing the grade or education level a person is currently attending. One version combines graduate school and professional school into one category, the other version presents these options as separate categories.

Appendix A presents each version of the ACS items we tested, by mode of interview. The table below shows how respondents were distributed across the modes and versions.

	Self-administered	Administered In-person	Administered by Telephone	Total
Version 1	15	15	10	40
Version 2	15	15	10	40
Total	30	30	20	**80**

1.2 Recruitment

We recruited participants for this project through a variety of means. We placed an ad for research volunteers in the *Gazette*, a weekly newspaper serving Montgomery, Prince George's, and Frederick counties of Maryland. We also placed an ad in the *Washington City Paper*. Additional recruiting was done over the Internet through ads posted to www.craigslist.com. Approximately 300 persons contacted Westat in response to these ads, and this group largely served as our pool of potential study participants. We also tried to recruit some persons with a GED through flyers posted at Montgomery College. A small number of persons were recruited by "word of mouth" referrals from Westat staff and study participants themselves. Westat employees were not eligible for participation.

In our recruiting, we targeted persons with a variety of specific educational characteristics, including parents of home-schooled children, parents of nursery and preschoolers, parents of children attending persons with technical school educations, persons with some college credit but no degree. Most respondents were recruited from households with two or more persons, so that the ACS education items would be asked with multiple persons.

Volunteers were screened for eligibility on an "as needed" basis prior to being scheduled for interviews. In order to ensure we obtained sufficient numbers of respondents with characteristics of interest for the study, a key screening item was designed to get potential participants to describe in their own words, with careful probing on the part of the recruiter, the educational backgrounds of people in their household. This was done so as to minimize potential influence of the recruitment screening on the participants' reactions to ACS items we were testing. The recruiting screener used for this study can be found in Appendix A.

The table below shows the number of households with at least one household member having a given educational characteristic of interest. We found it enormously difficult to recruit households containing someone with only a GED – although the recruiter did identify and schedule seven persons from these households, one did not show up for the interview, and in four others it turned out that the person with a GED had eventually earned at least some college credit.

Educational Characteristic	Number of households[#]
Children being home-schooled	19
Children attending nursery school	6
Children attending grades 1-12	17
Person with GED only	2
Person attending (or completed) technical/vocational school	16
Person left college before completing a full year of credit	18
Person has more than one year of college credit, no degree	10
Other/miscellaneous	31

[#] Some households were classified into more than one category.

The table below presents a demographic summary of the 80 study participants.

Demographic Characteristics	Number of Respondents
Gender	
Male	25
Female	55
Age	
18-25	10
26-35	23
36-45	26
46-55	14
56-65	6
Over 65	1
Race/Ethnicity	
White	41
Black/African-American	27
Hispanic	6
Asian	7

As noted above, most respondents were recruited from households containing multiple persons per household, so that the education items could be tested with more than one person per household. The table below shows the total number of household members addressed in the interviews, and the number of these persons reported to be currently attending school, by mode of interview. We were able to ask the items on current school attendance and highest level achieved for a total of 273 persons. A total of 96 persons were reported as currently attending school.

	Self-administered Mode (30 interviews)	In-person Mode (30 interviews)	Telephone Mode (20 interviews)
Total number of persons in Household	100	108	65
Number of person currently attending school	34	41	21

1.3 Interview Logistics and Procedures

The interviews were conducted by Westat staff and adhere to a semi-structured interview guide consisting of the following three elements:

- **Interview introduction**: Here we explained the purpose of the project and assured participants that all information they share will be treated as confidential. Participants were also informed that the interviews were to be audio-taped, and (if applicable) that Census Bureau staff wee observing behind a one-way mirror. Participants were also asked to sign consent forms.

- **Administration of the ACS**: All participants were be asked to respond to demographic Questions 1-13 of the ACS for each member of their household. The intervening ACS questions on housing characteristics were not included in the interview. Participants were asked to respond to these questions through one of three survey modes:

    - **Self-administered**. These participants were provided a paper-and-pencil copy of the ACS specially prepared for the cognitive interviews. They were given a pen and asked to fill it out at their own pace, but reading along and "thinking aloud" as they did so. The cognitive interviewer closely observed and took notes of any apparent difficulties experienced by the respondent.
    - **"In-Person" administered**. The cognitive interviewer read the ACS questions as much as possible the way a Census Bureau field interviewer would read the questions. That is, the Westat staff interviewers were instructed to read the questions, as worded, in the ACS. Flashcards presenting the response choices to the participant were used, as appropriate.
    - **Telephone administered**. The cognitive interviewer entered the room behind the one-way mirror and called into the room where the participant sat. The participant answered a phone placed on the table upon hearing it ring. The interviewer then administered the ACS items in much the same way as a Census telephone interviewer would (reading the questions, as worded).

- **Cognitive debriefing:** Here, the Westat interviewer followed up on any observed confusion or difficulties that participants may have experienced when answering the key ACS items of interest. For example, verbal cues such as hesitation or changing one's answer, as well as nonverbal cues such as eye rolling can suggest evidence of respondents' difficulty in understanding a question. The interviewer will also probe as to how he or she interpreted the key questions. A substantial amount of probing was done concurrently with administration of a questionnaire. But in all interviews, much of the probing was done after completed administration of the ACS items. To obtain additional data on how respondents interpreted the ACS items, the probing

included presenting respondents with a series of hypothetical scenarios, and asking them how they would respond to an ACS item if the situation applied to them.

The majority of the cognitive interviews were conducted onsite at Westat's headquarters in Rockville, MD. These interviews were conducted in a qualitative interviewing suite equipped with a one-way mirror for observation purposes. Census Bureau staff observe many of the interviews. Some interviews were conducted at a downtown Washington, DC hotel conference room. Interviews typically lasted 35 to 50 minutes. Participants received an incentive payment of $40.

2. FINDINGS

2.1 Reporting Current School Attendance.

In this section we discuss the cognitive interview findings for the ACS items on current school attendance. We discuss the accuracy with which participants answered these items, as well as difficulties observed with respect to comprehending the intent of these items. When applicable, we differentiate between mode of administration for the ACS questionnaire (in-person, self-administered, or telephone). Finally, we discuss the two version of these items administered within the telephone mode.

2.1.1. Response errors in reporting current school attendance. Across the 80 interviews, the items on current school attendance were asked for a total of 273 persons. Through probing, we were able to determine that incorrect reporting occurred in nine interviews, and for nine persons. The incorrect reporting appeared to be unrelated to interview mode, as three cases were in the in-person mode, three were in the self-administered mode, while three were in the telephone mode. Most of these response errors were "false positives" – reporting that someone has been attending school or college, yet the attendance is not consistent with the Census Bureau's definition since it does not involve seeking a degree. In addition, two cases involved parents being unable to place their home-schooled child into a grade-level category. These nine cases are described below:

- A respondent answered that his wife had attended college in the past three months, yet probing revealed that she was taking a class for "personal edification and fun." She clearly was not working towards a college degree (in-person mode).

- Someone reported that a housemate had attended college in the past three months. But later during probing he recalled the housemate had dropped out of college more than three months ago (in-person mode).

- One participant who home-schools her son could not place him into a single grade level, describing him "*all over the board*." Apparently he is currently in 4^{th}, 5^{th}, and 6^{th} grades, depending on the subject area.

- Another participant answered that he had attended college in the past three months, but later remembered that he had graduated and received his degree just over three months ago (self-administered mode).

- A respondent reported that a housemate had attended nursing school at a public college (Montgomery College). It turned out the housemate had obtained her nursing degree years ago and recently had only taken a short class to earn Continuing Education credit (self-administered mode).

- Another respondent reported that her three children are being home-schooled. One of the children is four years old, and was reported to be attending "Nursery school, preschool." But the respondent noted that this schooling was strictly "informal," and is not recognized by the home schooling program which regularly reviews the work of her other two (older) children (self-administered mode).

- An elderly respondent, for who English is a second language, reported that she had been attending school, but it was merely a class at a senior center on how to use computers and the internet. She clearly was not seeking any type of degree, but was either unwilling or unable to attend to the instruction contained in question 10a (telephone mode).

- After reporting that her 17-year-old son had been attending school, a respondent could not place her son into a category at question 10b. Her son is home-schooled but also takes a class at Montgomery College (a public school), for which he will obtain both high school and college credit. The interviewer in this case perhaps could have done more to encourage the respondent to select a category, since later the respondent noted that if she had to pick one category, she would place her son in the "Private school…..home school" category. But it's worth noting that when shown the self-administered version of the survey, she said that she would have marked both of the available categories for this question and returned it to the Census Bureau (telephone mode).

- One person reported that his roommate was not currently attending school, even though he knows that she is attending the University of Maryland and understands her to be working toward a master's degree. It turned out he misinterpreted the question as asking if the person was attending college "for the first time" – he had answered "no" because his roommate had graduated from college years ago, but recently returned to school to improve her career prospects (telephone mode).

In addition, there were three cases where we are unsure as to whether a participant reported correctly for current school attendance. In each case, it was somewhat ambiguous as to whether a person's school attendance involved seeking a college degree:

- A respondent reported that he is currently attending college. Probing revealed that he is taking classes at Montgomery College to become certified in automotive electronics. He further suggested that he may decide to get an Associate's degree. According to information found on the Montgomery College website, the program does allow students completing the necessary classes for certification to continue working toward an A.S. degree in automotive technology. The ambiguity seems due to the respondent's own unclear intentions (in-person mode).

- Another person reported that her husband is attending college. He is taking classes related to computer networking security at Strayer College. Although she

knows he will attend the school for about two years, she is not sure whether he is seeking a degree, or what type of degree it might be (in-person mode).

- A respondent reported that her daughter is attending college. When she experienced difficulty indicating the level of school she was attending, she explained her daughter has completed her Bachelor's degree and is now completing a two year certification program. This certification program involves actual undergraduate coursework, but the respondent readily acknowledged that the certificate her daughter is working towards "is not considered a degree." She ultimately chose to report that her daughter is attending the "College undergraduate years." The respondent was quite adamant that her daughter is attending college, since "*….she's attending the University of Maryland.…I'm paying for it!...She's not in limbo somewhere, she's still going to college, it's just not a degree*" (self-administered mode).

The above cases suggest that the most common response error with regard to the ACS items on current school attendance may be over-reporting, due to some persons' educational activities not being consistent with the Census Bureau's intent for these items. Another factor may be a tendency to report educational activities that ceased prior to the three month reference period. It should be noted that there were many cases among the interviews where respondents correctly disregarded educational endeavors in which they or another household member were participating. These encompassed a wide variety of classes and activities, including Continuing Education courses for maintaining professional certifications, language and computer software classes, music lessons, employer-sponsored training courses, and a math course sponsored by a social-welfare agency. Furthermore, the vast majority of the 19 parents of home-schooled children readily placed their children into a grade-level category, even though several of these children were completing a limited amount of coursework at a different level. Still, the observations noted above suggest that the instructions provided by the Census Bureau to "*include only nursery or preschool, kindergarten, elementary school, home school and schooling which leads to a high school diploma or college degree*" are sometimes overlooked or misinterpreted by respondents. This issue is discussed in the next section.

2.1.2 Difficulties comprehending the intent of the ACS items on current school attendance. There were numerous observations indicating that the instruction which serves to define "current school attendance" (in question 10a) for respondents is problematic due to its *length*. This was especially true in the in-person and telephone modes of administration, which requires interviewers to verbally provide the instruction to respondents immediately after asking if they have attended school or college in the past three months. Respondents often asked for part or all of the question and instruction to be repeated. For example, one telephone mode participant lost track of the reference period and asked the interviewer: "*For the last how many years, did you say?*" A few minutes later during probing, she noted: "*I sort of got lost in the question.*" Similar comments were made by several others:

"….it's lengthy and convoluted" (in-person mode)

"…to listen to all those options, I got confused." (in-person mode)

"It's a really long sentence….and it mixes a lot of things together." (in-person mode)

While the problematic length of the instruction was most noticeable in the in-person and telephone interviews, we also observed a few respondents in the self-administered mode reading only part of the instruction, or skipping it altogether. In the instrument, the question is printed in bold font, and the subsequent instruction on what to include is printed in italics. As one person put it:

"I wouldn't read that….to be honest with you. If it's not in bold, I don't read it."

The instruction provided by the item is designed to apply to any household member, of any age. As a result, the instruction refers to types of schooling which are unlikely to apply to any given household member. In other words, "…nursery or preschool, kindergarten, elementary school…" does not apply to adults. This appeared to distract respondents at times, compounding the length problem:

"It was like: 'I wonder if she's paying attention to how old I am?' I mean, nursery school?...It just seemed like a weird set of questions." (telephone mode)

"I just find it funny that they list preschool first for an adult male. But yeah, they have to cover everyone." (telephone mode)

"Bringing up kindergarten for a grown-up was sort of odd." (telephone mode)

"…the kindergarten or the nursery, I don't understand, why is this mentioned? It almost sounds as if you are asking me if they're trying to become a nurse or a kindergarten teacher."[1] *(telephone mode).*

As illustrated by the last comment above, the fact that the instruction mentions types of schooling that do not apply to a given household member made the question more difficult for some to interpret. In fact, a few participants wondered (at least briefly) if the question might be asking them about visits or volunteering activities that parents may engage in at their children's school:

"…it could mean that you signed up to take a course or visited a child's classroom." (telephone mode).

[1] English was a second language for this participant. He thought "nursery school" meant schooling to become a nurse.

A couple of participants pointed out that the word "attended" in the question is ambiguous to them. One discussed a friend who is seeking her college degree by taking classes online – this participant said she would not know how to answer the question for that person, since "attending" implies "*being physically present*" somewhere. Another person initially asked the interviewer if "attended" means "*walking into versus being a student at*," noting she volunteers and attends PTA meetings at her son's school. After considering the full instruction, however, this respondent realized these activities should not be counted as having attended school.

As noted in the Methods chapter, one way we examined respondent comprehension for these items was through the use of hypothetical scenarios. Scenarios can be useful since they allow cognitive interviewers to explore how survey respondents may interpret and apply the questions to a broader range of situations, thus offering additional insights into cognitive aspects of the survey response process. Extra caution must be taken when interpreting reactions to scenarios, since respondents are typically considering something rather abstract and may fill in details they perceive to be missing in the scenario. Also, scenarios often present respondents with concepts or experiences with which they have little familiarity. Participants were verbally presented with a scenario, and asked to respond to question 10a ("*At any time in the last three months, has [NAME] attended school or college?*") Most of the scenarios we presented to participants were somewhat difficult, and thus yielded a high degree of variability in the responses. In fact, quite a few participants in the in-person and telephone modes noted that they would qualify their answer by specifying the type of schooling it was, or ask the interviewer for clarification. Below we present each scenario, along with a summary of participant reactions.

- **Technical school.** Suppose someone in your household was currently attending a technical school, with the goal of becoming a licensed electrician - how would you have answered [question 10a] for that person? What about someone attending a cosmetology school to become a licensed beautician or hairstylist?

About three-quarters of the participants given this scenario said that they would not consider the person to be attending school (at least for purposes of question 10a), and thus would answer the question with "no." A few of these person initially said they would report "yes," and changed their answer to "no" only after rereading or being re-exposed to the instruction. Some persons noted they would answer "no" only because they perceived the question to be requiring them to do so, not because they feel it is the accurate answer. While most participants seemed to have no particular reaction on this matter, a few did comment that the question seems to unfairly overlook or ignore technical school educations:

"[the questions] are very white collar….there are a lot of people in the blue collar field…..I think this question eliminates the blue collar worker." (self-administer mode);

"I just feel like they're excluding a lot of people in that question." (in-person mode);

"…it's skewed…that whole branch of education is totally omitted." (self-administered mode).

Among respondents who said they would answer "yes" to question 10a in this scenario, most felt that their answer was consistent with the Census Bureau's intent. They noted that technical school "*is like a college*," and implies that a "curriculum" or "course of study" that is being followed. As one person put it:

"It doesn't say anything about licenses…I would go ahead and answer 'yes' because I think the point of the question is to see if someone is pursuing education, not that they're pursuing…only a college degree." (self-administered mode).

Some of the participants who told us they would answer "yes" at question 10a for the technical school scenario were asked how they would handle the follow-up item asking for the grade or level of school attendance (question 10b in the self-administered mode, question 10c in the telephone and in-person modes). The most common response was that they would classify the attendance as "College undergraduate years." Some admitted that the category wasn't quite correct, but that they were "*making it fit*," or choosing the next best category. But one said she would classify technical school as "Graduate or professional school," and one person in the self-administered mode said she would simply write in "technical school" on the questionnaire.

- **Software certification class.** Suppose someone had just graduated college, and was now taking classes to become certified in certain types of computer software. How do you think you would have answered (attending school or no

Participants generally viewed this scenario as being similar to the technical school scenario. About three-quarters of participants given the scenario said they would not count it as attending school or college - virtually all stated that a certification is not considered a college degree, and thus the instruction provided by question 10a rules this out. The other one-quarter of participants said they would count it as attending school, with a couple noting their answers are based on the assumption that the software certification is based on a course of study that occurs over some length of time, rather than a something like a 3-day training class. Furthermore, a few persons said they would report "Graduate or professional school beyond a bachelor's degree" as the level of

school attendance, since the scenario describes the individual as already possessing a bachelor's degree.

- **Internship.** In some fields, students have to work in an internship for a year or two before they are considered to have the proper credentials for their field (such as medical doctors and many psychologists). Suppose someone in your home was currently working in an internship – how do you think you would have answered (attending school or no?)

About two-thirds of participants given this scenario said they would consider working in an internship to be attending school. They usually pointed out that the internship is required in order to obtain the degree, and thus falls under the definition provided in the question 10a instruction. About one-third disagreed, however, noting that an internship is based in a "work setting," and thus is more like job training rather than formal schooling.

- **Post-baccalaureate certificate program.** In some fields, students often take a few additional classes beyond the bachelor's degree – it's often called a "post-baccalaureate certificate program" Suppose someone in your home was currently in that type of program at UMD – how do you think you would have answered (attending school or no?)

About two-thirds of participants presented with this scenario said they would count this as attending school. They pointed out that this individual is earning college credit, or that the certification to be obtained from the college "*is like a college degree*." Most of these participants said they would classify the level of attendance as "Graduate or professional school beyond a bachelor's degree." The other one-third of the participants said they would not count this as attending school or college, generally stating that the certification is not a degree.

- Suppose someone had completed their Bachelor's degree, and was now working on their Master's degree. How would you have answered for that person? (What is that?)

This scenario was inspired by a comment made by a participant in one of the early interviews. This person noted that if someone in the household were still in graduate school working toward a master's degree, she would not count this as attending school or college in response to question 10a. Her reasoning was that it doesn't meet the requirements contained in the instruction: to count only "*schooling…which leads to a college degree*." As she saw it, a college degree refers to a bachelor's degree. So we asked many other participants to imagine this scenario, but the vast majority replied that they would consider schoolwork toward the master's degree to be included in the

definition provided by the instruction. A few people did disagree, however. As one argued, the master's is "*an advanced, or post-college degree*."

2.1.3 Version 1 versus Version 2 for level of current school attendance. In interviews testing the telephone mode, we administered one of two versions of the item assessing level of current school attendance. Version 1 presented "Professional school beyond a bachelor's degree" and "Graduate school" as separate response categories, while Version 2 combined these levels into one category: "Graduate or professional school beyond a bachelor's degree." From our observations, it seems to make no difference which version is asked. Respondents almost always easily answered this question, regardless of the version administered. Thus, we detected no advantage for one version, relative to the other version.

2.2 Reporting Highest Level of School Completed.

In this section we discuss the findings for the ACS items on highest level of school completed. We discuss the apparent accuracy with which participants answered these items, as well as difficulties observed with respect to comprehending the intent of these items. When applicable, we differentiate between mode of administration for the ACS questionnaire (in-person, self-administered, or telephone).

2.2.1. Response errors in reporting highest level completed. Across the 80 interviews, we administered the items seeking to establish the highest level of school completed for a total of 273 persons. We determined that incorrect reporting occurred in 17 interviews, for a total of 22 persons: Eight cases were in the in-person mode, five were in the self-administered mode, while four were in the telephone mode. The causes of the errors had little or nothing to do the characteristics of data collection within a mode. A description of each of the response errors is discussed below:

- One participant reported that her daughter and son in-law had completed "1 or more years of college credit, no degree." He daughter had trained in ballet for a few years at a prestigious school in Venezuela, and though the training did not involve any academic coursework, the respondent felt it was comparable to a year or more college credit. The son in-law was placed in the same category based on his having taken construction classes at a technical college in Caracas. She had no knowledge of any additional classes he had completed (self-administered mode).

- Two respondents reported someone as having completed "1 or more years of college credit, no degree" although it appeared the person had actually completed less college credit. One explained that she put her husband into this category "*because he has more than 16 credit hours but he has no degree*." This participant estimated her husband completed six or seven classes while attending Montgomery College. The other participant said she had completed about 18 college credits, and admitted she didn't really know what the category "1 or more

years of college credit" means. She said she put herself in that category because she had attended college for more than a year. Based on the information provided by these respondents, we believe "Some college credit, but less than 1 year of college credit" would be the appropriate answer for both (self-administered mode).

- A participant had recently moved into a home with two new roommates whom he did not know very well. He had no knowledge at all of the schooling that they had completed. For one, he guessed "Regular high school diploma," and for the other he left the question blank. Presumably he could have asked the roommates for this information had he been filling out the questionnaire for the ACS (self-administered mode).

- One participant marked the "Grade 1 through 11" category for her first-grade son, and wrote "k" in the entry box for the specific grade in an attempt to communicate that her son had completed kindergarten. She said that having previously checked the "Grade 1 though 11" category for her two older children led to overlook the "Kindergarten" category (self-administered mode).

- Two participants could not correctly place their children currently attending preschool in a category consistent with the Census Bureau's intent. Both believed that the "No schooling completed" category did not apply, since the children had completed one or two years of preschool. One respondent placed her son in the "Nursery school, preschool" category, and explained: "*He completed a grade last year. There's a 2-year program, a 3-year program, there's a 4-year program. He completed the 2-year program.*" The other participant initially asked the interviewer to define the term "completed" in the question. She was unable to place her son into any category, stating that a category between "No schooling completed" and "Nursery school, preschool" was needed. (in-person mode).

- Two participants (one in the in-person mode, the other in the telephone mode), reported that their children had completed the same grade level that was previously reported for current level of attendance. Both participants chose the grade level since their children had completed part of the grade. One answered "grade 5" for his son, since: "*he's halfway through it….he'll complete grade 5 by the end of June.*" The other participant noted that he was trying to give as precise an answer as possible, trying to communicate that his son had completed the first two months of first grade. After some probing and hearing the question a second time, he acknowledged that "Kindergarten" is a more appropriate answer.

- Four participants reported that family members had completed a "Regular high school diploma," when in fact they had obtained some college credit. Two respondents in the in-person mode, when looking for a category to represent what they family member had completed, overlooked the categories applicable to those with some college credit. As one participant put it: "*I wasn't even looking for that, to be honest. I didn't realize you would [have a category] for someone who*

is attending school, working their way up, who hasn't gotten a degree yet." The second participant noted that the term "completed" in the question had led her to think immediately about credentials ("*pieces of paper*") earned. The other two participants were in the telephone mode, and the incorrect classification arose largely due to a structural limitation stemming from the instrument's skip patterns. Both respondents provided an answer at Q11a which was placed in the "Grade 12" category by the interviewer, and were thus asked the follow-up item: "Did NAME receive a regular high school diploma, a GED or alternative credential?" The skip pattern tested did not allow for follow-up items asking about college credit – however, in both cases we later learned that the target individuals had completed some college coursework.

- A participant placed her mother in the "Associate's Degree" category, because she had received a professional certification from a Massage Therapy school. The issue here did not seem to be one of comprehension – the respondent recognized that none of the categories applied to her mother's post-high school education, but also argued: "*She finished, she has a piece of paper that says she can practice what she's learned*." Regarding the "Regular high school diploma" category, this respondent said: "*I don't think that would be accurate, or giving her the credit she deserves*" (in-person mode).

- Three participants (all happened to be in the in-person mode) placed either themselves or other household members in the "Some college credit, but less than 1 year of college credit" category, even though these persons were in their first semester of college at the time of the interview. They stated that they were choosing the category that best applies to the person's situation. As one put it: *"….it's the closest to what she's completed*." Another pointed out that he is "*near the end of his first semester*." Each of these interviews took place in mid-November or later.

- A participant placed herself in the "Some college credit, but less than 1 year of college credit" category. She had completed a ten month program at Washington Business School, earning a certification as a legal secretary. She realized that it would not be correct to report that she had a college degree, yet believed that her certification reflected that she had completed some college credit (in-person mode).

- One person in the telephone mode initially answered that the highest level of schooling she had completed was "some college." So the follow-up question "Did you complete 1 or years of college credit?" was asked, which she heard incorrectly as asking if had *completed more than one credit.* She answered "yes," although it turned out she did not have this level of college credit. Probing revealed that she could understand the question well enough, but had not attended closely to it when it was presented by the interviewer.

There were two cases where we are unsure whether a response was accurate or not. In both cases, the participant claimed to have earned some college credit from an institution that clearly was not a college:

- One respondent acknowledged he wasn't certain what category he should place himself into. He had completed 64 semester hours at a technical school, from which he received a certification as an electronics technician. He ultimately chose to put himself into the "Some college credit, but less than 1 year of college credit" category. He stated that eight of his 64 credits counted as college credit, but we were unable to determine his basis for this. Also, the fact that this school has changed its name to a "College of Technology" since the time he graduated seemed to contribute to his decision (self-administered mode).

- Another participant was placed in the "1 or more years of college credit, no degree" category. She based this on her having completed some music classes at the Conservatory of the National Orchestra of Venezuela. She said that this is "considered some kind of college" in that the music classes she took there would be accepted as college credit at other universities in the country (telephone mode).

The erroneous cases discussed above suggest that comprehension problems and misclassifications surrounding the categories of "Regular high school diploma," "Some college, but less than 1 year of credit" and "1 or more years of college credit, no degree" may be the common types of response error in this question. It seems respondents can easily misreport technical training beyond high school as having completed at least some college credit.[2] Furthermore, it appears some persons who have earned some college credit overlook the category that applies to them, at least partly because the questions asks for the level of schooling they *completed* (this mistake was almost made by several other participants in the in-person and self-administered modes). Although one must be very cautious in drawing conclusions about mode differences from our small sample, there is reason to believe that the telephone mode may have an advantage in this regard, since it has follow-up items designed to probe educational backgrounds and differentiate between having completed high school, less than one year of college credit, and more than one year of college credit. These follow-up items tended to work quite well when used in the interviews. They would no doubt be even more effective if after differentiating between a high school diploma and the GED in question 11b, respondents were then asked question 11c ("Did you/NAME complete any college credit?), rather than being immediately skipped to question 12.

However, part of the problem also stems from difficulty many people have understanding the distinction between "Some college, but less than 1 year of credit" and "1 or more years of college credit, no degree." In fact, in some interviews we presented respondents with a scenario about someone having taken one class per semester for a year and a half, and asked them to tell us how they would classify this person. About one-

[2] Perhaps the findings overstate this. We are unsure of the extent to which technical school classes can be considered college credit.

third of these respondents incorrectly stated it would count as "1 or more years of college credit." Some viewed the category as being "*time-sensitive*," or pointed out the individual would have attended more than "*a physical year of college*." This miscomprehension of the categories was even observed among two recent college graduates.

2.2.2. Additional observations for reporting highest level of school attendance. Several other respondent reactions to question 11 are worth noting. These persons appeared to have answered the question correctly, but experienced some initial difficulty or raised compelling questions about the item or a category. For example, one participant wondered why the question refers to persons currently "enrolled," whereas the previous item refers to current "attendance." Since different terms were used, this made him hesitate and wonder if they had different meanings that he was supposed to take into account somehow. Another participant who had completed one year of graduate school initially commented that there did not seem to be a category for her level of education. Another person (in the telephone mode) initially stated that her 5th grade daughter had not completed any schooling yet – this respondents suggested that "grade" be included in the question wording, since it sounded to her as if it applies only to older children and adults. A couple of participants in the in-person mode answered question 11 by simply reading off the category number from the showcard. In both cases, the interviewer thought the person might be providing a grade level – thus, a person with an M.B.A was almost placed into the "Grade 12" category. Finally, a participant had difficulty placing herself into the "1 or more years of college credit, no degree" category. She had completed one year of college, and then attended a nursing school from which she earned a nursing degree. She felt the "no degree" terminology in the category did not apply to her.

2.2.3. Version 1 versus Version 2 for highest level of schooling completed. The in-person and self-administered modes both presented the 14 response categories for this question visually to respondents. Within each mode, we tested two versions varying how the response categories were displayed. In Version 1, headings were used to group response categories, whereas in Version 2 the categories were listed without headings. While administering the questions we observed virtually no difference in how respondents reacted to the categories. The only exception was a participant who initially commented that she did not see a category in which to place her young child, but she did find the "No schooling completed" category on her own.

In many interviews, we showed participants the version not used in the interview and asked them to compare the two versions. The vast majority of respondents preferred the Version 1 format with the headings, regardless of which version was used in their interview. This was true for both the in-person and self-administered modes. The primary reason given by respondents preferring Version 1 was that the headings made it easier and faster to locate the appropriate response category. As some put it:

"Because you don't have to go through all the items…it's more efficient."

"I can jump down to the right category without reading them all"

"It helps you zero in."

One respondent commented that the grouped responses made her realize that four categories were available for those who attended college and that she needed to read all four to make sure she answered correctly. Another said that if he had been using Version 2, he might have stopped looking at the list after seeing "high school diploma," not realizing there was a category for someone with "some college credit."

However, several respondents suggested some design changes for the Version 1 show cards used in the in-person interviews. They thought the format would be more effective if the headings were in bold type and the response options in regular type. A couple of respondents in this group commented that it is easy to overlook the first response option "No schooling completed," which appears before the first heading. Concern about respondents' overlooking the first option, particularly if the headings appear in bold type, might be eased if a generic label, such as "Response Choices," appeared at the beginning of the list of options.

3. CONCLUSIONS

In this chapter we discuss the major conclusions we believe can be drawn from this study. Of course, the usual cautions for interpreting cognitive interview results apply here. The participants were volunteers paid an incentive to respond and share their reactions to a part of the ACS instrument. Furthermore, many of the volunteers were recruited specifically because they or other household members had engaged in educational endeavors we expected to be difficult for the ACS items of interest to handle (especially, person with technical or other non-college training). Thus, the sample of volunteers over-represented persons with these characteristics. Although the research setting was artificial, the interview findings described in this report provide useful insights into potential respondent concerns and sources of confusion underlying response errors.

The conclusions we would derive from this study are as follows:

- The instruction ("Include only…..") that is presented with the question assessing current school attendance provides critically important information to respondents regarding the Census Bureau's intent. However, its purpose is often defeated by its length and the long list of schooling types that it mentions – many of which will not apply to a given respondent. It serves little purpose to instruct respondents to include nursery or preschool and kindergarten when answering for an adult. We recommend that that in the in-person and telephone modes, this instruction be somewhat tailored to the respondent's age. The potential for mode effects (vis-à-vis the self-administered instrument) is probably minimal, given that such an instruction is much easier for respondents to read than it is to listen to during verbal administration. Given the greater difficulty of processing the instruction in the in-person and telephone modes, the current standardization of the instruction across modes may actually contribute to (rather than minimize) mode effects.

- Although the extent to which current school attendance is over-reported (due to technical training and other educational activities inconsistent with the Census Bureau's intent being reported as current school attendance) cannot be estimated from these interviews, the findings suggest it does occur. Tailoring the instruction as suggested above may help to address this problem. But it also occurs because some respondents mistakenly consider technical certifications to be "like a college degree," or assume the Census Bureau does not mean for its intent to be so strictly interpreted. While appropriate interviewer training should help to minimize this over-reporting in the in-person and telephone modes, we see no practical way to address it in the self-administered mode.

- Respondents reporting on current school attendance for home-schooled children should report with much greater ease and accuracy for the version tested in these interviews, relative to the current ACS item. The current item makes no reference home-schooling, and thus is no doubt problematic for these persons. Although we did not explore their reactions to the current version, it is clear that they consider home schooling something apart from "private school" and thus would not place their home-schooled children in the "private school" category if it did not include a specific reference to home school. However, some states allow home-schooled children to attend public school part-time. Furthermore, it is fairly common for home-schooled high school seniors to begin college before completing high school. So reporting school attendance for this population may remain problematic.

- It is rather easy for respondents to misreport that they (or another household member) has completed only a high school education, when in fact they have completed either "some college credit, but less than 1 year of credit" or "1 or more years of college credit, no degree." Since the question is asking them to report the highest level of school completed, persons with this background may not realize that some college attendance (rather than completion of degree requirements) is of interest to the Census Bureau. This problem is especially likely in the in-person and self-administered modes, since the telephone mode includes a series of effective follow-up probes. The Census Bureau might consider including similar follow-up probes in the in-person mode. An effective way of addressing this problem in the self-administered instrument is not readily apparent. But perhaps it is worth considering printing an instruction out to the right side of the "High School Graduate" categories, such as: "*If any college credit, note categories below*."

- The interviews suggest that it may be quite common for person with technical school backgrounds and certifications to be reported in the categories representing college credit (those below a bachelor's degree) for highest level of schooling completed. There appears to be two distinct reasons for this: a) respondents believe that technical school educations do in fact reflect college credit, and b) respondents willingly misreport due to a motivation to give themselves or others credit for having obtained education beyond the high school level. This problem will be a very difficult one to solve. It is made even more difficult by the fact that many technical institutes refer to themselves as "colleges," and that college credit can be obtained at some technical schools.

- On a more encouraging note, our interviews suggest that errors surrounding the categories for high school graduates and persons with some college credit tend to be of a rather small magnitude for any given respondent – that is, a degree of one or two categories. It is worth noting that we had no instances of persons with a technical school background being reported as having a "Professional degree."

Appendix A

ACS Education Items Tested

Questions for cognitive testing:
PAPER

10a. At any time IN THE LAST 3 MONTHS has this person attended school or college? *Include only nursery or preschool, kindergarten, elementary school, home school and schooling which leads to a high school diploma or college degree.*

[ ] No, has not attended in the last 3 months – *skip to question 11*
[ ] Yes, public school, public college
[ ] Yes, private school, private college, home school

10b. What grade or level was this person attending? *Mark(X) one box.*

[ ] Nursery school, preschool
[ ] Kindergarten
[ ] Grade 1 through 12→ specify grade 1 - 12 _____
[ ] College undergraduate years (freshman to senior)
[ ] Graduate or professional school beyond a bachelor's degree (for example: MA, or PhD program or medical or law school)

VERSION 1
11. What is the highest degree or level of school this person has COMPLETED? *Mark (X) one box.* *If currently enrolled, mark the previous grade or highest degree received.*

[ ] No schooling completed
NURSERY OR PRESCHOOL THROUGH GRADE 12
[ ] Nursery school
[ ] Kindergarten
[ ] Grade 1 through 11 → specify grade 1 – 11 _____
[ ] 12 grade, NO DIPLOMA
HIGH SCHOOL GRADUATE
[ ] Regular high school diploma
[ ] GED or alternative credential
COLLEGE
[ ] Some college credit, but less than 1 year of college credit
[ ] 1 or more years of college credit, no degree
[ ] Associate degree (for example: AA, AS)
[ ] Bachelor's degree (for example: BA, BS)
AFTER BACHELOR'S DEGREE
[ ] Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)
[ ] Professional degree beyond a bachelor's degree (for example: MD, DDS, DVM, LLB, JD)
[ ] Doctorate degree (for example: PhD, EdD)

VERSION 2

11. What is the highest degree or level of school this person has COMPLETED? ***Mark (X) one box.*** *If currently enrolled, mark the previous grade or highest degree received.*

[ ] No schooling completed
[ ] Nursery school
[ ] Kindergarten
[ ] Grade 1 through 11 → specify grade 1 – 11 _____
[ ] 12 grade, NO DIPLOMA
[ ] Regular high school diploma
[ ] GED or alternative credential
[ ] Some college credit, but less than 1 year of college credit
[ ] 1 or more years of college credit, no degree
[ ] Associate degree (for example: AA, AS)
[ ] Bachelor's degree (for example: BA, BS)
[ ] Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)
[ ] Professional degree beyond a bachelor's degree (for example: MD, DDS, DVM, LLB, JD)
[ ] Doctorate degree (for example: PhD, EdD)

CATI

10A. At any time IN THE LAST 3 MONTHS, (has <Name>/ have you) attended school or college? Include only nursery or preschool, kindergarten, elementary school, home school and schooling which leads to a high school diploma or college degree.

[ ] No – *skip to 11*
[ ] Yes

10b. Was that a public school or college, a private school or college, or home school?

[ ] public school or public college
[ ] private school or private college, or home school

VERSION 1
10c. What grade or level (was <Name> / were you) attending?
< based on age, trim the list presented to phone respondents>

[ ] **Nursery school or preschool** – *skip to 11*
[ ] **Kindergarten** – *skip to 11*
[ ] **Grade 1 through 12** *- continue to 10d*
[ ] **College undergraduate years, that is a college freshman to senior** – *skip to 11*
[ ] **Professional school beyond a bachelor's degree, for example medical or law school**
[ ] **Graduate school, for example a Masters or PhD program** – *skip to 11*

10d. (*Ask or verify*) **What specific grade (was <Name> / were you) attending?**

Enter grade 1 – 12: _____

VERSION 2
10c. What grade or level (was <Name> / were you) attending?
< based on age, trim the list presented to phone respondents>

[ ] **Nursery school or preschool** – *skip to 11*
[ ] **Kindergarten** – *skip to 11*
[ ] **Grade 1 through 12** *- continue to 10d*
[ ] **College undergraduate years, that is a college freshman to senior** – *skip to 11*
[ ] **Graduate or professional school beyond a bachelor's degree, for example a Masters or PhD program, or medical or law school**

10d. (*Ask or verify*) **What specific grade (was <Name> / were you) attending?**

Enter grade 1 – 12: _____

11a. What is the highest degree or level of school (<Name> has/ you have) COMPLETED?
<Interviewers do not read these categories>

[ ] No schooling completed – *skip to 12*
[ ] Nursery school – *skip to 12*
[ ] Kindergarten – *skip to 12*
[ ] Grade 1 through 11 → ask for specific grade 1 – 11_____ *- continue to 11b if not currently attending school, else skip to 12*
[ ] Grade 12 – *continue to 11b*

[ ] Regular high school diploma – *skip to 11c*
[ ] GED or alternative credential – *skip to 11c*
[ ] vocational or technical license <DO NOT READ> – *skip to 11e*

[ ] Some college, no degree *- skip to 11d*
[ ] Associate degree (for example: AA, AS) – *skip to 12*
[ ] Bachelors degree (for example: BA, BS) – *skip to 12*

[ ] Masters degree (for example: MA, MS, MEng, MEd, MSW, MBA) – *skip to 12*
[ ] Professional degree beyond a bachelors degree (for example: MD, DDS, DVM, LLB, JD) – *skip to 12*
[ ] Doctorate degree (for example: PhD, EdD) – *skip to 12*

11b. Did (you/ <Name>) receive a regular high school diploma, a GED or alternative credential?

[ ] Regular high school diploma – *skip to 12*
[ ] GED or alternative credential – *skip to 12*
[ ] No diploma or GED – *skip to 12*

11c. Did (you / <Name>) complete any college credit?

[ ] No – *skip to 12*
[ ] Yes – *continue to 11d*

11d. Did (you / <Name>) complete 1 or more years of college credit?

[ ] No – *skip to 12*
[ ] Yes – *skip to 12*

11e. Other than the vocational or technical license, what is the highest degree or level of school (<Name> / you) completed?

[ ] No schooling completed – *skip to 12*
[ ] Nursery school – *skip to 12*
[ ] Kindergarten – *skip to 12*
[ ] Grade 1 through 11 → ask for specific grade 1 – 11_____ *- go to 11b if not currently attending school, else skip to 12*
[ ] Grade 12 – *go to 11b*

[ ] Regular high school diploma – *go to 11c*
[ ] GED or alternative credential – *go to 11c*

[ ] Some college, no degree *- go to 11d*
[ ] Associate degree (for example: AA, AS) – *skip to 12*
[ ] Bachelors degree (for example: BA, BS) – *skip to 12*

[ ] Masters degree (for example: MA, MS, MEng, MEd, MSW, MBA) – *skip to 12*
[ ] Professional degree beyond a bachelors degree (for example: MD, DDS, DVM, LLB, JD) – *skip to 12*
[ ] Doctorate degree (for example: PhD, EdD) – *skip to 12*

CAPI

10A. At any time IN THE LAST 3 MONTHS, (has <Name>/ have you) attended school or college? Include only nursery or preschool, kindergarten, elementary school, home school and schooling which leads to a high school diploma or college degree.

[ ] No – *skip to 11*
[ ] Yes

10b. Was that a public school or college, a private school or college, or home school?

[ ] public school or public college
[ ] private school or private college, or home school

10c. What grade or level (was <Name> / were you) attending? *Mark(X) one box.*
<Show flashcard>

[ ] Nursery school, preschool
[ ] Kindergarten
[ ] Grade 1 through 12→ specify grade 1 - 12 _____
[ ] College undergraduate years (freshman to senior)
[ ] Graduate or professional school beyond a bachelor's degree (for example: MA, or PhD program or medical or law school)

VERSION 1

11. What is the highest degree or level of school (you have / <NAME>has) COMPLETED? *Mark (X) one box. If currently enrolled, mark the previous grade or highest degree received.*

<Show flashcard>

[ ] No schooling completed

NURSERY OR PRESCHOOL THROUGH GRADE 12

[ ] Nursery school, preschool

[ ] Kindergarten

[ ] Grade 1 through 11 → specify grade 1 – 11 _____

[ ] 12 grade, NO DIPLOMA

HIGH SCHOOL GRADUATE

[ ] Regular high school diploma

[ ] GED or alternative credential

COLLEGE

[ ] Some college credit, but less than 1 year of college credit

[ ] 1 or more years of college credit, no degree

[ ] Associate degree (for example: AA, AS)

[ ] Bachelor's degree (for example: BA, BS)

AFTER BACHELOR'S DEGREE

[ ] Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)

[ ] Professional degree beyond a bachelor's degree (for example: MD, DDS, DVM, LLB, JD)

[ ] Doctorate degree (for example: PhD, EdD)

VERSION 2

11. What is the highest degree or level of school (you have / <NAME>has) COMPLETED? *Mark (X) one box. If currently enrolled, mark the previous grade or highest degree received.*

<Show flashcard>

[ ] No schooling completed
[ ] Nursery school, preschool
[ ] Kindergarten
[ ] Grade 1 through 11 → specify grade 1 – 11 _____
[ ] 12 grade, NO DIPLOMA
[ ] Regular high school diploma
[ ] GED or alternative credential
[ ] Some college credit, but less than 1 year of college credit
[ ] 1 or more years of college credit, no degree
[ ] Associate degree (for example: AA, AS)
[ ] Bachelor's degree (for example: BA, BS)
[ ] Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)
[ ] Professional degree beyond a bachelor's degree (for example: MD, DDS, DVM, LLB, JD)
[ ] Doctorate degree (for example: PhD, EdD)

CAPI FLASHCARDS

What grade or level was this person attending?

- Nursery School or Preschool
- Kindergarten
- Grade 1 through 12 → *say specific grade*
- College undergraduate years (freshman to senior)
- Graduate or professional school beyond a bachelors degree (for example: MA or PhD program, or medical or law school)

VERSION 1

What is the highest degree or level of school this person has COMPLETED?

(we need to work out the spacing/format for this card with forms design)

- No schooling completed

NURSERY OR PRESCHOOL THROUGH GRADE 12

- Nursery school
- Kindergarten
- Grade 1 through 11 → *say specific grade*
- 12th grade, NO DIPLOMA

HIGH SCHOOL GRADUATE

- Regular high school diploma
- GED or alternative credential

COLLEGE

- Some college credit, but less than 1 year of college credit
- 1 or more years of college credit, no degree
- Associate degree (for example: AA, AS)
- Bachelors degree (for example: BA, BS)

AFTER BACHELOR'S DEGREE

- Masters degree (for example: MA, MS, MEng, MEd, MSW, MBA)
- Professional degree beyond a bachelors degree (for example: MD, DDS, DVM, LLB, JD)
- Doctorate degree (for example: PhD, EdD)

VERSION 2

What is the highest degree or level of school this person has COMPLETED?

(we need to work out the spacing/format for this card with forms design)

- No schooling completed
- Nursery school
- Kindergarten
- Grade 1 through 11 → *say specific grade*
- 12th grade, NO DIPLOMA
- Regular high school diploma
- GED or alternative credential
- Some college credit, but less than 1 year of college credit
- 1 or more years of college credit, no degree
- Associate degree (for example: AA, AS)
- Bachelors degree (for example: BA, BS)
- Masters degree (for example: MA, MS, MEng, MEd, MSW, MBA)
- Professional degree beyond a bachelors degree (for example: MD, DDS, DVM, LLB, JD)
- Doctorate degree (for example: PhD, EdD)

Appendix B

Recruiting Screener

NHES Cognitive Interviews on Education Items
– Participant Screener –

Name:_____ **Phone:**_____
ID#_____

A few (days/weeks) ago, you called us in response to an advertisement for research volunteers. We are looking for people willing to meet with us (here at Westat or at a conference room near Gallery Place in downtown DC) for a study being conducted for the U.S. Census Bureau. It will take less than an hour, and we're paying people $40 for participating. We're scheduling interviews for Monday, Nov. 1st through Tues., Dec. 7th [DOWNTOWN DC DATES ARE: Friday, Nov. 12th and Thursday, Nov. 18th]

In order to find out if you are eligible to participate in this study, I need to ask you a few questions.

1. First, have you ever worked for Westat? (since 2002?)

   YES :___: [IF SINCE 2002, TERMINATE]
   NO :___:

2. Have you participated in any kind of interview study for Westat since January of this year?

   YES :___: [TERMINATE]
   NO :___:

3. What is your age?

   :_____: [IF UNDER 18, TERMINATE]

4. How many people live in your household (including yourself)? [IF SOME PERSONS LIVE MULTIPLE PLACES, ASK: How many people live there *most* of the time?]

   :_____: [IF UNDER 2, TERMINATE]

5. Can you tell me the ages of the others you live with?

   :_____: :_____: :_____: :_____: :_____:
   :_____:

6. RECORD GENDER. IF NOT OBVIOUS, ASK: Are you male or female?

   MALE :___:
   FEMALE :___:

7. What is your race or ethnic background?

WHITE	:___:
BLACK/AFRICAN AMER.	:___:
HISPANIC/LATINO	:___:
ASIAN	:___:
SOMETHING ELSE	:___:

8. What is your educational background?

PROBES:
What school was that?
Did you graduate?
Did you attend any school after (finishing/leaving) high school? What kind of school? How long/how much?
Are/Were you working toward a professional license of some kind?

9. Can you tell me about the educational background of the other persons in your household?

PROBES:
What school was/is that?
Did he/she graduate?
Did he/she attend any school after (finishing/leaving) high school? What kind of school? How long/how much?
Is/Was he/she working toward a professional license of some kind?

10. Are you employed? (What kind of work do you do?)

_____

11. In the interview, we may ask you to read and fill out a questionnaire - would you have any difficulty doing that?

YES :___: [EXPLAIN:_____]
NO :___:

CLASSIFY HOUSEHOLD INTO ONE OR MORE OF THE FOLLOWING CATEGORIES (NOT ELIGIBLE OTHERWISE):

:___: Children attending nursery or preschool

:___: Children attending grades 1-12

:___: Children being home schooled

:___: Person with GED only

:___: Person attending/completed vocation/tech school education toward a professional license

:___: Person left college before completing first year

DETERMINE WHETHER RESPONDENT IS NEEDED IN THIS ROUND…..

IF TERMINATED, ASK IF THEY WOULD LIKE TO BE CONSIDERED FOR SOME FUTURE STUDY. IF SO, TELL THEM WE WILL KEEP THEIR INFORMATION ON FILE AND CHECK HERE → :___:

APPOINTMENT

Thank you for answering my questions. I'd like to schedule an appointment for an interview at a time that's convenient for you. Let me read you some times I have available and you can choose the time that is best for you:

DAY	**TIME**					
Monday, Nov.1	4:00	5:15				
Tuesday, Nov.2	10:30	11:45	1:00	2:15		
Wed., Nov.3	3:45	5:00	6:15			
Thursday, Nov.4	12:00	1:15	2:30	5:00	6:15	
Friday, Nov.5	8:45	10:00	2:15	3:30		
Monday, Nov.8	10:00	11:00	12:00	4:30	5:30	6:30
Tuesday, Nov.9	8:30	9:30	10:30	4:30	5:30	
Wed., Nov.10	3:45	5:00	6:15			
Thursday, Nov.11	12:00	1:15	2:30	4:30		
Friday, Nov.12 **In DC**	10:00	11:15	12:30	2:15	3:30	4:30
Monday, Nov.15	2:00	3:00	4:00	5:00	6:15	
Tuesday, Nov.16	8:30	9:45	11:00	4:30	5:30	
Wed., Nov.17	3:30	5:00	6:00			
Thursday, Nov.18 **In DC**	10:30	11:30	12:30	2:30	3:45	5:00
Friday, Nov.,19	10:00	11:15	12:30			
Monday, Nov.22	10:30	11:45	1:00	2:15		
Tuesday, Nov.23	10:30	11:45				
Monday, Nov. 29	12:00	1:15	2:30			
Tuesday, Nov.30	10:00	11:00	12:00	1:15		
Wed., Dec.1	4:30	5:30	6:30			
Thursday, Dec. 2	12:00	1:00	5:00	6:00		
Friday, Dec. 3	10:00	11:00	12:00	1:00		
Monday, Dec. 6	2:15	3:15	4:15	5:15		
Tuesday, Dec.7	9:30	10:30	11:45	4:15	5:15	
Wed., Dec. 8	12:00	3:30				
Thursday, Dec. 9	2:30	3:45	5:00	6:00		
Friday, Dec. 10	10:30	11:45	1:00			
Monday, Dec. 13	12:00	3:15	4:30	5:30		

May I please have your full name and address? (We need your address so that we can send you directions on how to get [here/to the hotel and find the room.)

Name: _____

Address: _____ **ONLY <u>ONE</u> PER HOUSEHOLD**

_____

I will send the directions out to you shortly. It will include instructions on where to park. If you have to cancel your interview, please call back so that we can schedule someone in your place, OK?