

# Analysis of Changes to the Educational Attainment Question in the 2006 ACS Content Test<sup>1</sup>

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## 1. Introduction

The U.S. Census Bureau designed the American Community Survey (ACS) to replace the decennial census long form. Testing of the ACS began in 1996 with full implementation starting in 2005. In January through March of 2006, the ACS conducted the first test of new and modified content since the program reached full implementation levels of data collection. The results of that testing helped determine the content for the 2008 ACS. The significance of the year 2008 is that it 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 these factors, 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.

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.

The research reported in this paper focuses on changes made to the educational attainment question in the ACS. The changes included: 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; and emphasizing 'credit' in the two some college categories.

This paper answers the following research questions:

- What is the impact of the changes to the educational attainment question on the distribution of responses?
- Do the changes improve the accuracy of reporting level of attainment, especially for high school graduate categories, and for the two some college categories?
- Can people reliably and accurately report the distinction between high school diploma and GED?
- What is the impact of the changes to the educational attainment question on the item nonresponse?

Selection criteria were set in place to aid in determining whether to accept the changed (test) version of the educational attainment question or revert back to the old (control) version. The selection criteria included:

- For distribution of responses: grade level distribution in test version should not differ from the control version.
- For accuracy in attainment level reporting: the net difference rate in the test version should be the same or lower when compared to the control version, and simple response variance should be the same or lower in the test version.

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<sup>1</sup> This report is released to inform interested parties of research and to encourage discussion. Any views expressed are those of the authors and not necessarily those of the U.S. Census Bureau.

- For reliability of high school diploma and GED: the response variance for both answer categories should be low to moderate.
- For item nonresponse: the test version should have the same or lower missing data rates than the control version.

## 2. Background

### 2.1 Design of the ACS

The ACS is conducted as a series of 12 independent monthly samples, or panels, of addresses each year. The ACS samples about 250,000 address each month in every one of the nation's 3,141 counties. This allows for the Census Bureau to produce annual estimates for any area with 65,000 or more people, as well as three- and five-year averages for every geographic entity down to the census tract and block group level.

The ACS uses three modes of data collection. For each panel, in the first month, the Census Bureau attempts to collect the data via mailout-mailback methods including multiple mailings of questionnaires and reminder notices. Initial mail nonrespondents receive a replacement form in the mail. If the mail questionnaire is not returned, the Census Bureau uses a computer-assisted telephone interview (CATI) system to collect the data if a phone number is available. If there is still no response, in the third month, the Census Bureau sends a sample of remaining households to a computer-assisted personal interview (CAPI) operation.<sup>2</sup>

### 2.2 Previous research for Education Attainment

There is some anecdotal evidence from previous ACS work that the some college categories were 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," could confuse respondents on the concepts of credit hours and seat time. Past tests had 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 had 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 Kaufmann (2004) 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.

The design of the write-in was taken from the educational attainment question used for the 1996-1998 ACS. Many of the proposed changes to the ACS questionnaire emerged from 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.

The two versions of the educational attainment question are presented in Appendix A. Control version represents the current ACS question. Test version represents the ACS question with the proposed changes to improve data quality.

## 3. Methodology

### 3.1 Sample Design of the Content Test

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<sup>2</sup> About four percent of the sample consists of cases which the Census Bureau does not have a mailable address. A two-in-three sample of these cases is taken, and data for the selected cases is collected via CAPI. Mail and CATI nonrespondents are sampled at differing rates for CAPI based on Census 2000 tract-level response rates for the majority of areas taking a one-in-three sample of cases.

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.

The ACS Content Test consisted 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 test objective of evaluating question wording changes, 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.

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 a similar number of expected 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).

### 3.2 Content Test data collection

The ACS Content Test used a similar data collection methodology as the current ACS, though cost and time constraints resulted in some deviations. The Content Test implemented the same mailout methodology as ACS, 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 allowed us to collect data that reflects the respondent's interpretation and response without the aid of a trained Census Bureau interviewer.

The ACS usually follows-up with mail nonrespondents first by CATI (if a phone number is available), or by 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. Further, CATI cases make up the smallest proportion of completed ACS

interviews when compared to mail and CAPI. Thus any effects seen via CATI would have the least impact on overall ACS estimates.

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 FEFU 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 on the CFU data collection follows in section 3.3 below.

The Content Test mailed questionnaires to sampled households 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.

### 3.3 Content Follow-Up data collection

The CFU interview, 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. 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 interview did not replicate the full ACS Content Test 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. In other cases the CFU asked additional probing questions based on prior testing results. For these topics, the goal was to measure how close the original answers were to the more detailed CFU answers.

### 3.4 Methodology specific to Educational Attainment

The Content Test was evaluated by comparing the results from the control panel with the test panel, comparing results from both panels to CFU results, and comparing results of both panels to data collected from other sources on educational attainment.

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 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 categories of high school graduation and receipt of GED for comparison to the control question.

The CFU 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. So the CFU interview first was a re-ask of the original question version the respondent received with follow-up measures to get at the true state of educational attainment.

A limitation to this 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 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.

## 4. Results

### 4.1 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.

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

### 4.2 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 version and control version. Table 1a displays the distribution for the population age 3 and above, while Table 1b displays the distribution for age 18 and above (see

Appendix B for tables). Each table presents a difference of the estimates between control and test versions, along with a margin of error associated with those differences. Tables 1a and 1b 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). For each age group, there were significant differences in the following categories: 7<sup>th</sup> or 8<sup>th</sup> grade; 12<sup>th</sup> 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<sup>th</sup> grade and 11<sup>th</sup> 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 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.

### 4.3 Level of Reliability for Education Attainment

The second research question addresses the degree of consistency in reported educational attainment between test and control. Tables 2a and 2b display the net difference rate and simple response variance between the test and control. The net difference rate provides an approximate measure of bias in the content test estimates when we assume that the CFU, through the use of the additional questions, provides a measure of “truth.” The simple response variance is a measure of the average variability of responses to the same question over repeated trials across population members.

In both age groups (3 and older, 18 and older), differences in the absolute values of the net difference rates were mostly not significant despite the difference in the overall distribution between the two versions shown in Tables 1a and 1b. However, there was evidence of different levels of systematic error for some attainment categories. The net difference rates were significantly lower in the test version for two categories: high school graduate, and some college (specifically more than 1 year, no degree). In the analysis for the age 18 and over universe 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 age 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. The simple response variance was significantly lower in the test version for both age groups in the 7<sup>th</sup> or 8<sup>th</sup> grade and 12<sup>th</sup> grade, no diploma categories. There was also significantly lower simple response variance for 10<sup>th</sup> grade attainment 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. However, the simple response variance remained relatively low in these two categories.

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 CFU 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 that there were significant differences in the distribution of attainment. Most notably in Table 1b, 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.

#### 4.4 Level of Reliability for High School Completion

The third research question addresses the level of reliability for the two types of high school completion collected in the text question: GED or equivalent and high school diploma. Table 3 in Appendix B displays the index of inconsistency for both GED and regular high school diploma. The index of inconsistency provides an estimate of the magnitude of response variability for a given item. 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.

#### 4.5 Item Nonresponse for Education 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 4 in Appendix B). This result supports the selection criterion – the test version has the same or lower missing data rates.

### 5. Conclusions

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 were more reliable in the test version. The results met the 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.

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 (GED or diploma). Because of these benefits, as well as evidence of improved reliability for several attainment categories, we recommended adopting the test version of the educational attainment questions in future ACS data collection.

### 6. References

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## Appendix A: Educational Attainment Question

### Control Version

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 to 4th grade
- 5th grade or 6th grade
- 7th grade or 8th grade
- 9th grade
- 10th grade
- 11th grade
- 12th grade – NO DIPLOMA
- HIGH SCHOOL GRADUATE – high school DIPLOMA or the equivalent (for example: GED)
- Some college credit, but less than 1 year
- 1 or more years of college, no degree
- Associate degree (for example: AA, AS)
- Bachelor's degree (for example: BA, AB, BS)
- Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)
- Professional degree (for example: MD, DDS, DVM, LLB, JD)
- Doctorate degree (for example: PhD, EdD)

### Test Version

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

- No schooling completed
- NURSERY OR PRESCHOOL THROUGH GRADE 12**
- Nursery school
- Kindergarten
- Grade 1 through 11 – Specify grade 1–11 →

- 12th grade – NO DIPLOMA

#### HIGH SCHOOL GRADUATE

- Regular high school diploma
- GED or alternative credential

#### COLLEGE OR SOME 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)

## Appendix B: Tables

**Table 1a. Distribution of Highest Grade Attained-Control Vs. Test, Age  $\geq 3$**

	Control	Test	Diff	ME	Significant
No schooling completed	4.1%	4.4%	0.4%	$\pm 0.5$	No
Nursery school to 4 <sup>th</sup> grade	<b>8.5%</b>	<b>9.4%</b>	<b>0.8%</b>	$\pm 0.8\%$	<b>Yes</b>
5 <sup>th</sup> grade or 6 <sup>th</sup> grade	4.0%	4.0%	0.0%	$\pm 0.5\%$	No
7 <sup>th</sup> grade or 8 <sup>th</sup> grade	<b>5.2%</b>	<b>4.4%</b>	<b>-0.8%</b>	$\pm 0.6\%$	<b>Yes</b>
9 <sup>th</sup> grade	3.1%	2.8%	-0.3%	$\pm 0.3\%$	No
10 <sup>th</sup> grade	3.5%	3.4%	-0.1%	$\pm 0.5\%$	No
11 <sup>th</sup> grade	<b>3.7%</b>	<b>3.2%</b>	<b>-0.5%</b>	$\pm 0.4\%$	<b>Yes</b>
12 <sup>th</sup> grade, no diploma	<b>2.2%</b>	<b>1.5%</b>	<b>-0.6%</b>	$\pm 0.3\%$	<b>Yes</b>
High school Graduate	<b>23.5%</b>	<b>21.8%</b>	<b>-1.7%</b>	$\pm 1.3\%$	<b>Yes</b>
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%	$\pm 0.5\%$	No
More than 1 year college, no degree	<b>11.2%</b>	<b>12.7%</b>	<b>1.5%</b>	$\pm 0.8\%$	<b>Yes</b>
Associate degree	5.9%	5.6%	-0.2%	$\pm 0.5\%$	No
Bachelor's degree	<b>12.0%</b>	<b>13.0%</b>	<b>1.0%</b>	$\pm 0.9\%$	<b>Yes</b>
Master's degree	5.2%	5.5%	0.3%	$\pm 0.6\%$	No
Professional degree	1.4%	1.7%	0.2%	$\pm 0.3\%$	No
Doctorate degree	0.8%	0.8%	0.0%	$\pm 0.2\%$	No

**Note: Statistically significant differences are in bold**  
**ME = margin of error (confidence interval for the difference)**  
 Overall  $\chi^2 = 43.8$  ( $\rho = .0001$ )

**Table 1b. Distribution of Highest Grade Attained-Control Vs. Test, Age ≥ 18**

	Control	Test	Diff	ME	Significant
No schooling completed	<b>0.7%</b>	<b>1.2%</b>	<b>0.5%</b>	± 0.3%	<b>Yes</b>
Nursery school to 4 <sup>th</sup> grade	0.8%	0.8%	0.0%	± 0.2%	No
5 <sup>th</sup> grade or 6 <sup>th</sup> grade	1.7%	1.5%	-0.1%	± 0.4%	No
7 <sup>th</sup> grade or 8 <sup>th</sup> grade	<b>2.7%</b>	<b>1.9%</b>	<b>-0.7%</b>	± 0.5%	<b>Yes</b>
9 <sup>th</sup> grade	1.9%	1.6%	-0.3%	± 0.3%	No
10 <sup>th</sup> grade	2.8%	2.8%	0.0%	± 0.5%	No
11 <sup>th</sup> grade	3.5%	3.2%	-0.3%	± 0.5%	No
12 <sup>th</sup> grade, no diploma	<b>2.6%</b>	<b>1.9%</b>	<b>-0.8%</b>	± 0.3%	<b>Yes</b>
High school Graduate	<b>29.8%</b>	<b>27.8%</b>	<b>-2.0%</b>	± 1.5%	<b>Yes</b>
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	<b>14.3%</b>	<b>16.3%</b>	<b>2.0%</b>	± 1.1%	<b>Yes</b>
Associate degree	7.5%	7.2%	-0.3%	± 0.7%	No
Bachelor's degree	<b>15.3%</b>	<b>16.6%</b>	<b>1.3%</b>	± 1.2%	<b>Yes</b>
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**  
**ME = margin of error (confidence interval for the difference)**  
 Overall  $\chi^2 = 46.8$  ( $\rho = .0000$ )

**Table 2a. Educational Attainment Statistical Comparison, Control Vs. Test, Age  $\geq 3$**

	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 4 <sup>th</sup> grade	-0.3%	-0.2%	-0.1%	± 0.5%	No	2.4%	2.2%	-0.2%	± 0.4%	No
5 <sup>th</sup> grade or 6 <sup>th</sup> grade	0.1%	-0.2%	0.1%	± 0.3%	No	1.4%	1.2%	-0.2%	± 0.2%	No
7 <sup>th</sup> grade or 8 <sup>th</sup> grade	0.2%	-0.4%	0.2%	± 0.4%	No	<b>1.9%</b>	<b>1.6%</b>	<b>-0.4%</b>	<b>± 0.3%</b>	<b>Yes</b>
9 <sup>th</sup> grade	-0.3%	-0.3%	0.0%	± 0.5%	No	1.8%	1.5%	-0.3%	± 0.4%	No
10 <sup>th</sup> grade	-0.2%	0.0%	-0.2%	± 0.4%	No	<b>1.9%</b>	<b>1.6%</b>	<b>-0.3%</b>	<b>± 0.3%</b>	<b>Yes</b>
11 <sup>th</sup> grade	-0.1%	-0.4%	0.3%	± 0.4%	No	1.9%	1.7%	-0.2%	± 0.3%	No
12 <sup>th</sup> grade, no diploma	1.2%	1.0%	-0.2%	± 0.4%	No	<b>1.7%</b>	<b>1.3%</b>	<b>-0.4%</b>	<b>± 0.3%</b>	<b>Yes</b>
High school graduate	<b>1.1%</b>	<b>-0.1%</b>	<b>-1.0%</b>	<b>± 0.8%</b>	<b>Yes</b>	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	<b>-1.7%</b>	<b>-0.2%</b>	<b>-1.5%</b>	<b>± 0.8%</b>	<b>Yes</b>	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	<b>-2.0%</b>	<b>-0.7%</b>	<b>-1.3%</b>	<b>± 0.8%</b>	<b>Yes</b>	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	<b>0.8%</b>	<b>1.1%</b>	<b>0.3%</b>	<b>± 0.2%</b>	<b>Yes</b>
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 2b. 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	<b>0.3%</b>	<b>0.6%</b>	<b>0.2%</b>	<b>± 0.2%</b>	<b>Yes</b>	<b>0.4%</b>	<b>0.7%</b>	<b>0.3%</b>	<b>± 0.2%</b>	<b>Yes</b>
Nursery school to 4 <sup>th</sup> grade	-0.1%	-0.1%	0.0%	± 0.2%	No	0.4%	0.5%	0.1%	± 0.2%	No
5 <sup>th</sup> grade or 6 <sup>th</sup> grade	0.2%	-0.1%	-0.1%	± 0.3%	No	1.0%	0.8%	-0.2%	± 0.2%	No
7 <sup>th</sup> grade or 8 <sup>th</sup> grade	0.1%	-0.3%	0.2%	± 0.4%	No	<b>1.5%</b>	<b>1.1%</b>	<b>-0.3%</b>	<b>± 0.3%</b>	<b>Yes</b>
9 <sup>th</sup> grade	-0.3%	-0.2%	0.1%	± 0.6%	No	1.4%	1.2%	-0.3%	± 0.3%	No
10 <sup>th</sup> grade	-0.1%	0.0%	-0.1%	± 0.4%	No	1.8%	1.5%	-0.3%	± 0.3%	No
11 <sup>th</sup> grade	-0.4%	-0.6%	0.2%	± 0.5%	No	2.0%	1.8%	-0.2%	± 0.4%	No
12 <sup>th</sup> grade, no diploma	1.4%	1.2%	-0.2%	± 0.5%	No	<b>2.0%</b>	<b>1.6%</b>	<b>-0.5%</b>	<b>± 0.4%</b>	<b>Yes</b>
High school graduate	<b>1.3%</b>	<b>-0.2%</b>	<b>-1.1%</b>	<b>± 1.0%</b>	<b>Yes</b>	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	<b>-2.2%</b>	<b>-0.3%</b>	<b>-1.9%</b>	<b>± 1.0%</b>	<b>Yes</b>	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	<b>-2.5%</b>	<b>-0.9%</b>	<b>-1.6%</b>	<b>± 1.0%</b>	<b>Yes</b>	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	<b>1.0%</b>	<b>1.4%</b>	<b>0.3%</b>	<b>± 0.3%</b>	<b>Yes</b>
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 3. Index of Inconsistency: GED and High School Diploma**

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

**Table 4. Item Nonresponse Rates, Control Vs. Test**

	Control	Test	Diff	ME	Significant
Attainment (Age $\geq$ 3)	4.5%	4.8%	0.3%	$\pm$ 0.6%	No
Attainment (Age $\geq$ 18)	4.7%	4.5%	-0.2%	$\pm$ 0.7%	No

**Note: Statistically significant differences are in bold**

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