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Subject: Weighting Change for the School Enrollment Supplement to the
Current Population Survey

Attached is the report *Weighting Change for the School Enrollment Supplement to the Current Population Survey*. If you have any questions or need additional information, please contact John Finamore at (301) 763-5993 or by email at john.m.finamore@census.gov or Amy Herron at (301) 763-5996 or by email at amy.b.herron@census.gov.

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Weighting Change for the School Enrollment Supplement to the Current Population Survey

Executive Summary

In reviewing the October 2006 Current Population Survey (CPS) School Enrollment Supplement data, representatives from the Housing and Household Economic Statistics Division (HHES) noticed the CPS estimate for the number of people receiving a high school diploma or General Education Diploma (GED) in the current survey year was lower than an administrative records estimate provided by the National Center for Education Statistics (NCES). The Housing and Household Economic Statistics Division (HHES), in conjunction with the Demographic Surveys Division (DSD) and the Demographic Statistical Methods Division (DSMD), believed the revised CPS weighting plan implemented in 2003 could have affected the high school completion estimate. The weighting plan implemented in 2003 included less detailed age group breakouts in the second-stage weighting adjustment.

To evaluate the effect this weighting change had on the high school completion estimate, DSD calculated October 2006 high school completion estimates using both the current weighting plan and a new weighting plan with an additional weighting step using detailed controls for 16-19 year olds. These estimates were then compared against each other and against the administrative records estimate provided by NCES. The new CPS weight variable resulted in an estimate of high school graduates in 2006 that was larger than the estimate produced by the current CPS weight variable. Despite this increase, the new estimate was still statistically smaller than the administrative records estimate from NCES. However, in looking carefully at the difference between the estimates, HHES determined that this change to the weighting plan was the only justifiable correction that would address this problem. The remainder of the difference between the NCES estimate and the CPS estimate using the new weighting plan may be the result of differences in either the data collection system, or of differences between the systems that are relatively subtle, but not "problems" per se. Representatives from DSD, DSMD, and HHES recommended that the new weighting adjustment should be included into the standard School Enrollment Supplement weighting process beginning in October 2007.

Statement of Problem

In reviewing the October 2006 Current Population Survey (CPS) School Enrollment Supplement data, representatives from the Housing and Household Economic Statistics Division (HHES) noticed the CPS estimate for the number of people receiving a high school diploma or General Education Diploma (GED) in the current survey year was lower than an administrative records estimate provided by the National Center for Education Statistics (NCES). Upon further investigation, HHES determined this high school completion difference between the CPS estimate and the administrative records estimate has been growing since 2001.

Analysis Proposal

In response to this issue, representatives from HHES, the Demographic Surveys Division (DSD), and the Demographic Statistical Methods Division (DSMD) met on February 20, 2007 to discuss possible reasons for this trend. The majority of the discussion focused on the revised CPS weighting plan implemented in 2003 and the effect this revised weighting plan could have on the high school completion estimate.

The revised weighting plan included less detailed age group breakouts in the second-stage weighting adjustment. As an example, prior to 2003, the white population had separate second-stage controls by gender for 16 year olds, 17 year olds, 18 year olds, and 19 year olds. Beginning in 2003, the white population had one second stage control for 16-19 year olds for each gender. Similarly, prior to 2003, the black population had separate second stage controls by gender for 16-17 year olds and 18-19 year olds. Beginning in 2003, the black population had one second-stage control for 16-19 years olds for each gender.

At the February 2007 meeting, the representatives from the three divisions decided to investigate whether an additional weighting step using detailed controls for 16-19 year olds would resolve this high school completion rate issue. The next section outlines the tasks and responsibilities associated with investigating this issue.

Tasks and Responsibilities

The investigation of whether an additional weighting step that uses more detailed controls for 16-19 year olds would resolve this high school completion rate issue required the completion of the following tasks:

Task #1 – Production of new School Enrollment Supplement weight

DSD produced new School Enrollment Supplement weights for 2006 by adding a weighting adjustment to the end of the weighting processing. This adjustment controlled the weights to population totals defined by the following cells:

Weighting Control Cells Used in the New Weighting Plan

Black Only		
AGES	MALE	FEMALE
0-15		
16-17		
18-19		
20+		

White Only		
AGES	MALE	FEMALE
0-15		
16		
17		
18		
19		
20+		

Residual Races		
AGES	MALE	FEMALE
0+		

After performing this adjustment, DSD added this new weight to the file containing response information and the current weight variable.

Task #2 – Review of new School Enrollment Supplement weight

DSMD reviewed the new weight variable to ensure the weighting adjustment documented in Task #1 was implemented correctly.

Task #3 – Analysis of new School Enrollment Supplement weight

HHES used the new weight variable to derive a revised CPS high school completion estimate for 2006. This estimate was compared with both the current CPS estimate and the estimate based on administrative records.

Findings

In July 2007, DSD produced a new October 2006 School Enrollment Supplement weight using the adjustment described in the "Tasks and Responsibilities" section of this document. The creation of the new weight variable was then confirmed by DSMD in August 2007. To evaluate the effect this weighting change had on the high school completion estimate, HHES calculated October 2006 high school completion estimates based on both the current weight and the new weight. They then compared the estimates against the administrative records provided by NCES.

	Using CURRENT CPS Weight	Using NEW CPS Weight	Using NCES Administrative Records
Estimate of High School Graduates in 2006	2,577,745	2,774,591	3,176,000

Even though the estimate using the new CPS weight was larger than the estimate using the current CPS weight, statistical testing showed that the estimate using the new CPS weight was still significantly smaller than the administrative records estimate from NCES.

A breakdown of the estimates shows how the additional weighting step used in the new CPS weight that includes more detailed controls for 16-19 year olds helps the high school completion estimate issue. The tables below present the breakdown in terms of percent change in the estimate of high school graduates from the current CPS weight to the new CPS weight. In looking at the breakdown in terms of percent change, it is easy to see that the overall increase in the high school completion estimate using the new CPS weights was driven by increased number of 18 and 19 year old graduates. This increase in the high school completion estimate is consistent with the fact that most young adults graduate high school at 18 or 19 years old.

Percent Change in High School Completion from Current Weights to New Weights

Black Only

AGES	MALE	FEMALE
0-15	0.00%	0.00%
16-17	-12.17%	-6.95%
18-19	18.60%	8.77%
20+	0.00%	0.00%

White Only

AGES	MALE	FEMALE
0-15	0.00%	0.00%
16	-0.95%	-9.42%
17	-9.01%	-12.30%
18	9.80%	15.01%
19	2.32%	13.87%
20+	0.00%	0.00%

Residual Races

AGES	MALE	FEMALE
0+	0.00%	0.00%

Conclusions and Recommendations

The new CPS weight variable resulted in an estimate of high school graduates in 2006 that was larger than the estimate produced by the current CPS weight variable. The larger estimate was driven by a weighting adjustment that increased the weighted number of 18 and 19 year old graduates. Despite this increase, the new estimate was still statistically smaller than the administrative records estimate from NCES. However, in looking carefully at the difference between the estimates, the current change to the weighting was the only justifiable correction that would address this problem. The remainder of the difference between the NCES estimate and the CPS estimate using the new weights may be due to differences in either the data collection system, or to differences between the systems that are relatively subtle, but not "problems" per se. After reviewing the available data, analysts from HHES determined the

correction to the weights as reflected in the new weight gives the best estimate of high school completion possible with these data.

Based on the information presented in this paper, representatives from DSD, DSMD, and HHES recommended that the weighting adjustment described in the “Tasks and Responsibilities” section of this document should be included into the standard School Enrollment Supplement weighting process beginning in October 2007. This recommendation was presented to the School Enrollment Supplement survey sponsor, the Bureau of Labor Statistics, and was approved.