Issue Brief

January 2008

Technical Appendix: Recent Participation in Formal Learning Among Working-Age Adults With Different Levels of Education

The data used in this analysis are from the Adult Education Survey of the 2001 and 2005 National Household Education Surveys Program (AE-NHES:2001 and AE-NHES:2005). Data from the 2001 and 2005 administrations of this survey were merged into a single dataset in order to provide sufficient observations to generate reliable estimates for the subpopulations of interest—individuals who have no high school credential and individuals whose highest level of education is a General Educational Development (GED) credential. The two NHES samples were weighted to reflect national totals of the U.S. civilian, noninstitutionalized population living in both telephone and nontelephone households in the year before the survey (2000 for AE-NHES:2001 and 2004 for AE-NHES:2005). The pooled sample of 15,679 observations—8,881 from AE-NHES:2001 and 6,798 from AE-NHES:2005—represents individuals ages 16–64 years old in the early 2000s.

Before combining the 2001 and 2005 samples, the two cohorts were compared on selected demographic characteristics (age, sex, and race/ethnicity) and highest educational background. There were a few statistically significant differences between the cohorts. First, the percentage of non-Hispanic White adults was lower in the 2005 sample than in the 2001 sample (68 vs. 70 percent, respectively). Second, adults in the 2005 sample were older than adults in the 2001 sample (40.2 vs. 39.6 years of age, respectively). Finally, the percentage of adults with a high school diploma as their highest level of attainment was lower in the 2005 sample than in the 2001 sample (25.1 vs. 27.4, respectively). None of these differences was determined to be a substantive barrier to pooling the samples.

Like most NCES surveys, AE-NHES employs a complex sample design. The impact of the complex sample design on the standard errors can be approximated for the pooled data estimates by applying a root design effect (DEFT) adjustment to the simple random sample standard error estimates. DEFT is the ratio of the standard error of the estimate computed using a jackknife replication (JK1) method to the standard error of the estimate under the assumptions of simple random sampling. An average DEFT is computed by estimating the DEFT for a number of subsamples and then averaging across the subsamples. See table B-1 in Hagedorn et al. (2006) for examples of the types of subsamples considered and their corresponding DEFTs. For this analysis, the average DEFTs from AE-NHES:2001 and AE-NHES:2005—1.3 and 1.6, respectively—were used.

Although alternative approaches are possible, the procedure described below was recommended by Hagedorn et al. (2006). First, the original final weight (FAWT) from both AE-NHES:2001 and AE-NHES:2005 was adjusted to reflect the design effect for each survey before the parameter estimates were calculated. To do this, the values of the final weights for the sample of interest were summed. This sum was then divided by the total number of unweighted cases in the sample to generate an overall average final weight (AVGFWT). Next, AVGFWT was multiplied by the square of the DEFT. Finally, FAWT was divided by this product, and the quotient (NEWWGT) was the new final weight:

$$\text{NEWWGT}_{it} = \text{FAWT}_{it} / [(\text{DEFT}_t)^2 * \text{AVGFWT}_t]$$

where i corresponds to each respondent and t equals the survey year.

These new weights generate standard errors that approximate the standard errors correctly adjusted for design effects and thus allow for proper statistical testing.

Reference

Hagedorn, M., Montaquila, J., Carver, P., O'Donnell, K., and Chapman, C. (2006). *National Household Education Surveys Program of 2005: Public-Use Data File User's Manual, Volume I, Study Overview and Methodology* (NCES 2006-078). U.S. Department of Education. Washington, DC: National Center for Education Statistics.