Using EdSurvey to Analyze NAEP Data With and Without Accommodations

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Background

Prior to 1996, the National Assessment of Educational Progress (NAEP) did not allow accommodations for students with disabilities (SDs) and English language learners (ELLs). Since 2002, the NAEP has provided accommodations for all students who need them. In the transition period, student samples in each NAEP cycle were split between two test settings in which accommodations were either allowed or not allowed in the assessment, with the purposes of maintaining data trends to the past, studying the impact of accommodations on NAEP results, and beginning new trend baselines with accommodations.

These samples in the two test settings were combined into one dataset for selected years. This vignette explains how such datasets can be analyzed using the `EdSurvey` package.

Overview

The National Center for Education Statistics (NCES) provides an overview of the Inclusion of Special-Needs Students in the NAEP:

> Accommodations in the testing environment or administration procedures are provided for SD and ELL students. Examples of accommodations permitted by NAEP are extra time, testing in small-group or one-on-one sessions, reading aloud to a student, and scribing a student's responses. Examples of testing accommodations not allowed are giving the reading assessment in a language other than English or reading the reading passages aloud to the student. (NCES, 2014)

In the development of stand-alone assessments, the NAEP used a split-sample design to measure the impact of accommodations for students with special needs. Based on the split-sample design, essentially two separate samples were based on the settings for testing accommodations. In some sampled schools, accommodations were not permitted for SDs and ELLs; in other sampled schools, accommodations were permitted for SDs and ELLs. In the years listed in Table 1, each assessment consists of two assessment samples: one with accommodations permitted and the other with accommodations not permitted. As a result, there may be two separate datasets for reporting assessment results based on whether accommodations were permitted. The data for assessments with no accommodations permitted include students from both samples in the two test settings who were not identified as SDs and ELLs plus SDs and ELLs students assessed without accommodations. The data for assessments with accommodations permitted include students from both samples in the two test settings who were not identified as SDs and ELLs and those SDs and ELLs assessed with accommodations. The two reporting samples usually are combined into one dataset, with two separate sets of key variables, such as weights and plausible values for reporting accommodations-not-permitted and accommodations-permitted assessment results, respectively.

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Table 1: Data With Split-Sample Design for Accommodations, by Year, Grade, and Subject

Subject	Grade(s)	Split-Sample Design Year(s)
Geography	4, 8, 12	2001
History	4, 8, 12	2001
Mathematics	4, 8, 12	1996, 2000
Reading	4	1998, 2000
Reading	8, 12	1998
Science	4, 8, 12	1996, 2000

Note. Adapted from U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress, NAEP Data Explorer.

Using the EdSurvey Package to Analyze Data With Accommodations

For those years with both samples, `RPTSAMP==1` indicates the sample for the assessment in which accommodations were not permitted, and `ARPTSMP==1` indicates the sample for the assessment in which accommodations were permitted. When both `RPTSAMP` and `ARPTSMP` are available, the default behavior for `EdSurvey` is to use the sample with accommodations not permitted (i.e., `RPTSAMP==1`).

To use the sample with accommodations permitted with `EdSurvey` functions (e.g., `lm.sdf`, `cor.sdf`, `achievementLevels`), you may want to follow these steps:

1. Subset the data with condition `ARPTSMP==1` before conducting your analysis.
2. Please make sure to set `defaultConditions = FALSE` because `defaultConditions` subsets data to `RPTSMP==1` by default.
3. Specify the weight for accommodations-permitted data: `weightVar="aorigwt"`.
4. Use `composite_ap` for analysis with plausible values. The `composite_ap` argument represents the variables for the composite plausible values for the accommodation-permitted assessment reporting sample.

In the following examples, the dataset `math4` is subset where `ARPTSMP==1`. This new subsample of the dataset (saved as `math4a`) is then used to calculate achievement levels with accommodation-permitted data.

```
# read in the example data
math4 <- readNAEP(filepath = '//.../2000 NAEP Mathematics/Grade 4/data/M31NT2AT.dat')
math4a  <- subset(math4, arptsmp==1)

# cumulative achievement Levels
achievementLevels(achievementVars = "composite_ap", aggregateBy = NULL, data=math4a,
                  defaultConditions = FALSE, weightVar = "aorigwt",
                  returnCumulative = TRUE)
```

Reference

National Center for Education Statistics. (2014). *Inclusion of special-needs students.* Washington, DC: Author. Retrieved from https://nces.ed.gov/nationsreportcard/about/inclusion.aspx