Using the EdSurvey Package 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 (SD) and English language learners (ELL). Since 2002, NAEP has provided accommodations for all students who need them. In the transition period, student samples in each NAEP assessment were split between two test settings in which accommodations were either allowed in the assessment or not allowed, 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 data set for selected years. This vignette explains how such data sets 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 include adminstering 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, NAEP used a split-sample design to measure the impact of accommodations for special-needs students. Based on the split-sample design, there were essentially two separate samples based on the settings for testing accommodations. In some of the sampled schools, accommodation were not permitted for students with SD and students classified as ELL; in other sampled schools, accommodations were permitted for SD and ELL students. In 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 data sets for reporting assessment results based on whether accommodations were permitted or not. The data for assessment with no accommodations permitted include the students from both samples in the two test settings who were not identified as SD and ELL and the SD and ELL students assessed with no accommodations. The data for assessment with accommodations permitted include the students from both samples in the two test settings who were not identified as SD and ELL and the SD and ELL students assessed with accommodations. The two reporting samples usually are combined into one data set, with two separate sets of key variables such as weights and plausible values for reporting accommodations-not-permitted and for accommodations-permitted assessment results, respectively.

Table 1. NAEP data with split-sample design for accommodations, by year, grade, and subject

Subject	Grade	Split-sample design year(s)
Geography	4	2001
Geography	8	2001
Geography	12	2001
History	4	2001
History	8	2001
History	12	2001
Mathematics	4	1996, 2000
Mathematics	8	1996, 2000
Mathematics	12	1996, 2000
Reading	4	1998, 2000
Reading	8	1998
Reading	12	1998
Science	4	1996, 2000
Science	8	1996, 2000
Science	12	1996, 2000

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), NAEP Data Explorer

Using the `EdSurvey` package to analyze data with accommodations

For these 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 (e.g., `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`, as `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 represent the variables for the composite plausible values for the accommodation-permitted assessment reporting sample.

In the example below, the data set `math4` is subset where `ARPTSMP==1`. This new subsample of the data set (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)
```

References

National Center for Education Statistics. (2014). *Inclusion of Special-Needs Students.* Washington, DC: Author. Retrieved November 28, 2016 from https://nces.ed.gov/nationsreportcard/about/inclusion.aspx.