

**SAMPLE MATERIAL: Reliability of Outcome Measures and Data Sources**

Purpose: You may find this excerpt from an evaluation design a useful reference for:

- 1) ensuring the validity of your outcome evaluation instruments; and
- 2) providing your evaluator with contextual information to inform understanding of existing data on schools, teachers, and students.

The “Outcome measures” section of the sample document illustrates an evaluator’s thorough approach to assuring district staff of the reliability of all measures used in the outcome evaluation. The “Data sources” section provides a detailed description of sources and means the evaluator will use to collect existing data at the school, teacher, and student levels. It also outlines how evaluators will regularly interact with district staff to confirm the accuracy of data, and secure contextual information needed to interpret these data.

Note: The language used in this example is technical, and evaluators may want to make the information more accessible for a broader audience. Evaluators should, however, explain the reliability data clearly and completely to the program director.

Source: The Education Alliance at Brown University. (2008). “Outcome measures and data sources.” In *2008 revised rigorous evaluation design plan for the evaluation of the Guilford County Magnet School Program*, with review by Institute of Education Sciences staff.

Note: In this sample of an evaluation design document, the reliability of the tests has already been established—and published—by the state. In fact, the evaluator selected the tests because they are used in all schools and have acceptable reliability. The section included here focuses on the reliability of the tests used to assess student outcomes, the North Carolina End of Grade (NC EOG) tests for reading and mathematics.

Outcome Measures and Data Sources



Outcome measures

The North Carolina End of Grade (NC EOG) tests for reading and mathematics will be the primary data collection instruments for elementary and middle schools. The NC EOG tests include assessments in reading comprehension and mathematics for grades 3 through 8 and are used to measure growth in student performance against state-level accountability standards. The North Carolina Testing Program provides information on a given student's test performance in percentiles, developmental scale scores (horizontally and vertically aligned), and achievement levels, allowing for comparisons of individual students from one grade to the next. The Alliance will use developmental scale scores to measure students' academic performance.

The North Carolina Reading Comprehension testing program has a range of reliability coefficients from 0.82 to 0.94. Standard error of measurement is 2-3 points for students with scores within two standard deviations from the mean; and 4-6 points for students with scores that fall outside of two standard deviations from the mean. Within-grade reliability coefficients for NC EOG mathematics tests range from 0.94 to .96, with standard errors of measurement ranging from 2 to 5 points for third grade, to 2 to 6 points for grades 4 through 8.

For the North Carolina EOG tests, evidence of validity is provided through content relevance, response processes, and relationship of scores with other external variables. In the development phases of test construction, items that showed no bias due to gender or ethnicity/race were identified and subsequently included in the tests.

Data sources

The NC EOG reading and mathematics assessment data will be obtained from the Test Development Section of the North Carolina Department of Public Instruction in collaboration with the school district's data director and staff. Additional student-level data required for disaggregation will be obtained from the Guilford County Schools and will include demographic data such as ethnicity, gender, free/reduced lunch status, and English language proficiency. Education Alliance evaluators will work in conjunction with district data directors to specify the data needed.

As available, teacher-level data will be obtained and include teacher tenure, level of certification, and related teacher quality/experience variables as available. School-level data would include principal tenure, previous school-level performance on state achievement tests, school-level race/ethnic makeup and free/reduced lunch or Title 1 status, and teacher quality indicators (given the lack/accessibility of individual level teacher data).

Alliance evaluators will routinely correspond and, as necessary and appropriate, meet face-to-face with the director of magnet programs for Guilford County Schools. The goal of these meetings will be to clarify the types of statistical analyses being conducted as well as the benefits and limitations of each approach. Evaluators will also continue to learn about the districts' context for each magnet program, which will inform evaluator interpretation of statistical output. Regular communication with the district's data director will also be important to understanding the structures, intricacies, and limitations of the

district's data systems. Collaboration with the district data director assures timely and efficient access to student-level assessment data as well as a variety of other descriptive data on students, teachers, and schools included in the evaluation sites.

School-level variables will be collected from National Center for Education Statistics' (NCES) Common Core of Data (CCD); North Carolina Department of Public Instruction and Guilford County Public Schools web sites; and direct communication with MSAP grantees. The CCD contains most data required for pre-conversion school-level comparisons, such as school type, enrollment size and composition, student/teacher ratio, and grade span.

Once received by The Education Alliance, all data will be extensively reviewed in consultation with district personnel and verified for accuracy. After initial processing, Alliance data analysts will merge data files and prepare them for use in various data analysis programs (e.g., SPSS). This extensive process will be conducted concurrently with a secure data management process, including documentation of all data received and careful organization of district files on a secure server housed at The Alliance.