Authorizer accountability metrics

Authorizer aggregation business rules

> *Conventions: As this is a business rules document, every attempt has been made to describe the process used in an implementation-agnostic way. To assist the reader, in cases where the exact database column or table name is used, it is enclosed in square brackets, like this: [AuthorizerIdCode]. These descriptions are only valid at the time the document was produces and may change over time. They are intended to communicate implementation details and not to take the place of the business description.*

The goal of the authorizer aggregation process documented herein is to produce an Aggregate Top To Bottom Ranking (ATTB), which is based on the existing Michigan Department of Education school Top To Bottom (TTB) ranking process. In determining an ATTB ranking for charter school authorizers, it is necessary to include students in any school authorized by that entity. Once the students are properly attributed, it is possible to run the regular TTB process, substituting the authorizer for the charter schools that would normal appear in the ranking. As such, these rules will make sense only in the context of the existing TTB business rules.

The process is as follows: using Education Entity Master (EEM) data, each authorizer is identified and assigned a fictive entity code used to place it in the ranking. All Public School Academy (PSA) schools (a synonym for charter schools) authorized by the given authorizer are identified. Next, the OESRA student-level accountability data is modified so that each student who has a charter school identified as a feeder school is mapped to the correct authorizer as a feeder instead. Once the student population of each authorizer is identified, the students are ranked by Z-score and the top 30% and bottom 30% groups are identified.

Similarly, graduation rate data is determined for each authorizer by combining student-level cohort data for each building into an overall graduation dataset for the authorizer.

These processes correspond to the processes currently used in the TTB ranking system. As with the TTB process, any building that was active in the prior year (feeder year) will be included in the rankings. Buildings that are inactive as of the time of reporting will not be included in reports.

Following this determination, the ATTB process bifurcates as there are two approaches used in ranking authorizers. One process ranks authorizers only against other authorizers; the second ranks authorizers in comparison with all traditional public schools (also known as LEA schools). In this second ranking, the authorizer is treated as though it were a single school.

Detailed steps:

1. Identify authorizers and associate each PSA school with its authorizer
   a. Using the EEM database, identify all buildings that have a PSA type (PSA School, PSA Unique Education Provider, etc). The [EntityTypeId] field, joined to the [EntityType] table, can be used for this.

b. Identify the parent organizations of these buildings using the chartering agency data element [CharteringAgencyEntityId]. These will be ISD Districts, LEA Districts, or higher education institutions.

c. Generate a list identifying, for each PSA school, which authorizer authorized it, as well as an identifying code for each authorizer that will take the place of the building code.

2. Associate students with authorizers

a. For each student under consideration (please see TTB business rules for a complete description – students should be Full Academic Year, have a valid test score, etc.), use the feeder school field [meapBCodeFeeder] and the list generated above to identify the authorizer associated with that student.

b. Replace the feeder school value [meapBCodeFeeder] with the authorizer entity code determined above.

3. Recalculate achievement gap base metrics

a. Please see the TTB business rules for a complete description of how students are sorted into the Top 30% and Bottom 30% groups (called NTile for short). In summary, students are ranked within their school; within their school and grade grouping; and within the school and elementary-middle/high school grouping, and then assigned to the NTile based on this ranking.

b. Students will be ranked using the same approach, but using the new feeder codes identified above. In other words, students will be sorted into an NTile within the authorizer, rather than within a building.

c. The values that need to be updated are the building NTile [NTileBCode], the building/grade grouping NTile [NTileGR], and the building/elementary-middle/high school grouping NTile [NTileEM].

4. Recalculate graduation rate metrics

a. Please see the TTB business rules for a complete description of how graduation rates are used in the TTB process. In summary, each building will have two-year average graduation rates calculated for a four-year, five-year, and six-year cohort (if available). Then multi-year improvement slopes are calculated for the cohort with the best rate and an overall grad rate index is created.

b. Graduation rates will be calculated using the same approach, but using the new building codes identified above. In other words, all graduates will be counted within an authorizer, rather than within a building.

c. Using the student cohort file obtained from CEPI, calculate the rate for each authorizer by including all students listed under authorizer schools within that authorizer.

d. In keeping with the normal TTB grad rate rules, include only students who:

    i. Do not have a status of "Exempt" ([Status])

    ii. Are not S2E2 students ([S2E2Indicator])

    iii. Have been in the same building for two or more count days ([CountDaysInBuilding])

    iv. Are not in a court-ordered facility ([CourtOrderedFacility])

      e. Only students who have a status of On-Track Graduated will be considered graduated for this calculation. This number is divided by the total number of students identified above to get a percentage. Only buildings that have 30 or more students total will be assigned a grad rate.

      f. The values that need to be updated are in the [AuthAggregateGraduationData] table. The authorizer rates generated above can be plugged in as normal building grad rates to complete these calculations.

5. Imitate the rest of the TTB process

      a. The normal TTB process will be executed from this point onward. By substituting the feeder codes for individual students, the rest of the TTB code does not need to be altered to accommodate the new authorizer pseudo-buildings. Please see the TTB business rules for a complete description of this process, but in summary:

      b. Aggregate student records [AggregateFeederTTB]

      c. Aggregate basic subject-level data [AggregateTopToBottomData]

      d. Aggregate subject-level indices, combine and calculate building-level z-scores [AggregateSchoolPerformanceData]

      e. Combine subject-level indices, grad rates, and create overall rankings [SchoolAccreditation]

      f. Note that in contrast to the usual TTB process, the steps from 4c onward will be run twice in the ATTB process: once using only the authorizers, and once including authorizers and LEA schools. This is accomplished by limiting the records under consideration to either: only the authorizer entity codes created above; or all entity codes [BCode] column.

      g. To create the rankings by authorizers only, the composite scores are translated into a frequency distribution that assumes 100 percentile ranks. The authorizers only take the needed ranks; the rest are essentially blank. In the authorizer and LEA ranking, those percentile ranks are completely populated.

Authorizer Beating The Odds business rules

Conventions: As this is a business rules document, every attempt has been made to describe the process used in an implementation-agnostic way. To assist the reader, in cases where the exact database column or table name is used, it is enclosed in square brackets, like this: [AuthorizerIdCode]. These descriptions are only valid at the time the document was produces and may change over time. They are intended to communicate implementation details and not to take the place of the business description.

The goal of the authorizer Beating The Odds (ABTO) process documented herein is to use the results of the Authorizer Top To Bottom Ranking (ATTB) to evaluate which authorizers are Beating The Odds. The methodology is based on the existing Michigan Department of Education BTO process. As such, these rules will make sense only in the context of the existing BTO business rules.

The process is as follows:

Data extracted from the ATTB run which includes rankings for authorizers and LEA schools is used to feed the ABTO process. Headcount data, which are a necessary factor in BTO, are aggregated by authorizer. State foundation allowance, another factor, is calculated for each authorizer using a weighted averaging technique. Grade spans are calculated for the authorizer by combining the grade span data for each individual school within the authorizer. Once the source data is configured correctly to support the authorizers, the ABTO process mimics the BTO process exactly.

Detailed steps:

1. Calculate grade spans for each authorizer
   a. Using the authorizer – school list generated during the ATTB process, identify the grades taught in the individual schools under each authorizer. This is found in the [ActualGradeListSearchable] column in [SecureSite.Main.EntityArchive] (This is currently done while building the [AuthAccreditation] table).
   b. Combine the grade lists so that the final authorizer grade list includes each of the grades offered in each school. Ensure that the list matches the format of the grade list used for buildings. Currently, this is [ActualGradeListSearchable] and [lists each grade once, separated by commas and listed in increasing order from K to 12].
2. Calculate the enrollment counts for each authorizer
   a. Using the School Headcount Data File downloaded from the CEPI website at [http://www.michigan.gov/cepi], sum the total headcount for each school ([tot_all] column) authorized by a given authorizer to arrive at the total headcount for that authorizer.
3. Calculate the state foundation allowance (SFA) for each authorizer
   a. SFA is determined at a district level. Since a single authorizer may have charters in multiple districts, a weighted average method is used to determine the foundation allowance for the authorizer.
   b. Using the Educational Entity Master (EEM) data, find the district associated with each school.
   c. Using the Foundation Allowance spreadsheet downloaded from the MDE website at [http://michigan.gov/mde/0,1607,7-140-6530_6605-21653--,00.html], find the SFA for each district.
   d. Using the headcount data referenced above, multiply the SFA for each district by the enrollment in the school. This value is the total grant amount for the school.
   e. Add the grant for each school in the authorizer to get the total grant for the authorizer.
   f. Divide the total grant for the authorizer by the total headcount calculated above to get the SFA for each student in the authorizer

This calculation is represented in the equation below, where:

FA_d is the allowance for each district d of each school s under authorizer a

E_s is the enrollment for school s

E_a is the enrollment for authorizer a

G_a is the total grant for authorizer a

And SFA_a is the state foundation allowance for authorizer a

$$\frac{\sum_{S_1}^{S_n}(SFA_d * E_s)}{E_a} = \frac{G_a}{E_a} = SFA_a$$

4. The existing BTO process can be run with these inputs substituted to produce the ABTO results.

Authorizer Accountability Report Business Rules

(from Bettie Menchik)

Improvement Ranking Business Rules

In the current Reward school calculation, there is a pathway to reward status by which schools are ranked by their growth/improvement rates only. This is the "High Progress" reward school designation. This replicates that calculation at the Authorizer level.

1. Growth data are used in grades 4-8, reading and mathematics—the grades and subjects in which we have individual-level student growth data available.
2. For the remaining grades and subjects, improvement in the aggregate standardized student level scale scores is used. This is calculated based on the four year slope of the aggregate standardized scale scores for a building—or in this case, authorizer.
3. Improvement/growth rates are calculated for each authorizer, in each subject. They are then combined into an improvement index, and ranked.

Participation Audit Check

Assessing all students is necessary to have fair accountability. If some authorizers manage portfolios of schools in which students are systematically not assessed, this is both a transparency and an academic issue. Therefore, we have also looked at participation rates.

To do this, we use the Accountability Scorecard.

- For each PSA **school**, determine whether or not they had one or more red participation cells in any subject in the all students category. This would mean that they assessed less than 95% of their students in any subject.
- Count the number of schools within each authorizer who have at least one red participation cell.