



A-F Data:
Process and Inquiries

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Agenda



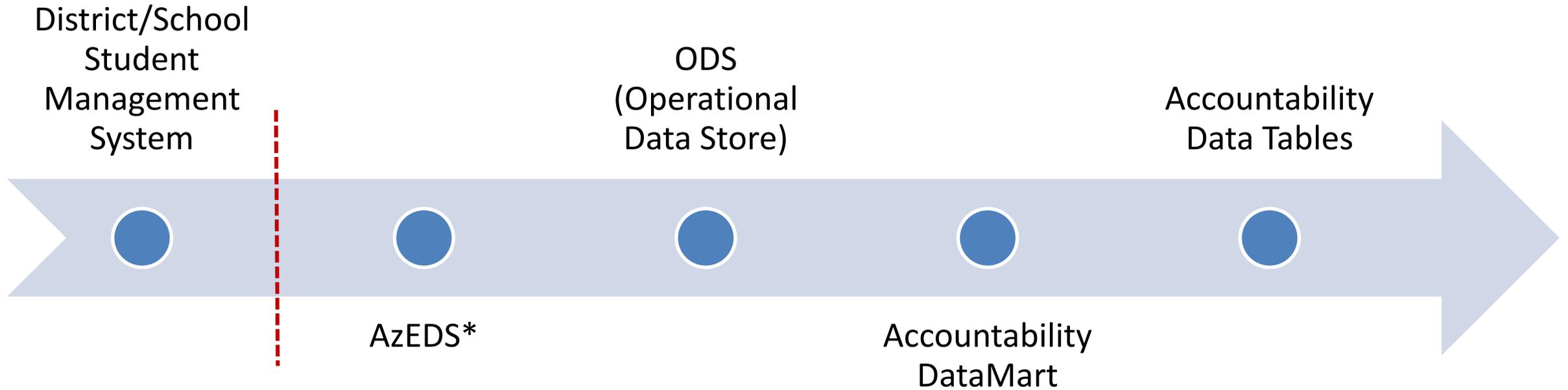
- General Data Information
- IT and Accountability Data Process
- Accountability A-F Data Process
- A-F Accountability Data Validation Process
- Conclusions about Data
- A-F Data Inquiries

General Data Information



- Data changes
 - Schools can submit current year data daily
 - Schools can open a 15-915 to change data from the prior three years
- Data is only as good as it is submitted
 - ADE does not own data – it is the district and schools'
 - Data should accurately reflect reality for each student, e.g., entry date, exit date, ethnicity, etc.
- Data is entered manually and then goes through quite a few systems – aka, there are places for human and technology error

IT and Accountability IT Data Process



*AzEDS started in FY17, prior to that SAIS was the system of record. FY16 SAIS was the system of record, but both SAIS and AzEDS were running.

District/School Student Management System



- Districts and schools submit finite details regarding each student including but not limited to:
 - Entry date
 - Exit date
 - First, middle, and last name
 - Date of birth
 - Ethnicity
 - Program enrollment – ELL, Special Education, etc.
 - Gender

AzEDS



- All data from the district/school student management system is submitted to ADE through AzEDS
 - Data is collected and then run through integrity checks
 - Reports are generated that inform districts and schools if students passed the integrity check, if not and what's the reason for the error
 - If data does not pass integrity, districts and schools should correct the data and resubmit
- Data can be submitted to AzEDS daily
- FY17 was first year for AzEDS

ODS (Operational Data Store)



- From AzEDS the student-level data goes into the ODS
 - The ODS is intended to be the one source of truth
 - It houses all data that districts and schools submit exactly as they have submitted it – aka raw data

Accountability DataMart



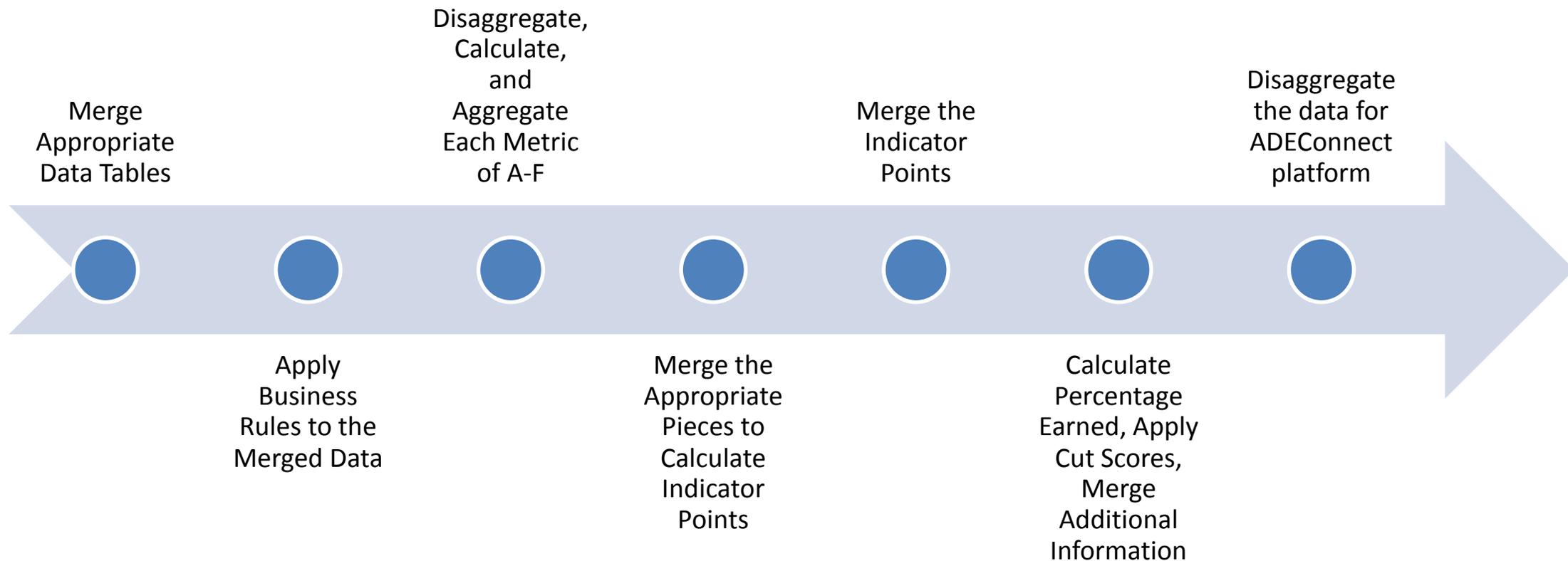
- Data is pushed from the ODS into our Accountability DataMart
 - Most program areas who use data have their own datamarts with the necessary data they use
- The Accountability DataMart contains all student-level data that is needed for state and federal accountability and reporting
- Business rules are applied to this data
 - For example, accountability only includes students who pass integrity

Accountability Data Tables



- Data from the Accountability DataMart is connected to particular tables that we use where even more business rules and calculations are applied
 - Enrollment data tables
 - Every enrollment record a student has is included in the table – in FY17 there were 1.6 million records
 - FAY indicator is in this table
 - Includes all demographics – subgroups
 - Assessment data tables – AzMERIT, AIMS/AIMS A, MSAA, AZELLA
 - Every assessment record a student has is included in this table – in FY17 there were 2.0 million records
 - Graduation rate table
 - Calculates graduation rate for schools and districts using coded rules

Accountability A-F Data Process



All work is done using statistical software programs such as SPSS and SAS

Merge Appropriate Data Tables



- The accountability team merges the required student level data:
 - Enrollment – determines FAY and which school is accountable
 - Assessment – AzMERIT, MSAA, AIMS, AIMS A, AZELLA
 - Subgroups – SPED, ELL, Economic Disadvantage, Ethnicity
 - Chronic Absenteeism
 - Growth Scores
 - Demographics – Grade Enrolled
 - Graduation Rate – exit/year-end codes
- It seems simple, but we're merging millions of records and need to ensure that:
 - Students are correctly matched with their assessment scores
 - Students may have no assessment results, AzMERIT or MSAA ELA and/or Math, AZELLA, and/or AIMS or AIMS A science
 - The right school is affiliated with the right student
 - Complicated for accelerating students (grades 5-8) because some students test at their K-8 school, others at a nearby 9-12 school. Need the right school to receive credit for these students.
 - The merge results in what we call a base file – in FY17 there were 7.9 million records in the base file
 - Every student's enrollment record, a new record is generated each time they enroll, multiplied by every subject assessment that was taken – ELA, Math, AZELLA, Science

Apply Business Rules to the Merged Data



- We take the base file and apply particular business rules to create what we call the static file
 - Calculate K-8 stability FAY
 - Exclude particular school types – juvenile facilities, etc.
- The static file is what is used to calculate letter grades, with the exception of graduation rate because that data is lagged a year and utilizes a different subset of students
- Each district/school's static file is also shared with them via ADEConnect
- The static file contains 3.1 million records

Disaggregate, Calculate, and Aggregate Each Metric of A-F



- Once we merge the enrollment and assessment data, we then have to disaggregate the student-level data for each metric and then aggregate it to school-level to do the calculation
 - Each indicator has its own business rules which means we have to pull out the students necessary for each indicator and then conduct the calculations. A few examples below:
 - Proficiency, growth, ELL require FAY only students
 - Proficiency requires applying the weights (MP = 0, PP = .6, P = 1.0, HP = 1.3) before calculating percentages, and for the K-8 model requires doing it two ways – stability and FAY
 - Growth requires creating the 3 SGP categories and 3 SGT categories for each student, then aggregating to school-level and applying weights to each of the 12 categorical options
 - For the K-8 schools proficiency uses grades 3-8 students but excludes RALEPs for ELA (not Math), growth uses grades 4-8 students, ELL uses K-8; etc., but the grades increase to 9 for the K-9 model
 - Acceleration Readiness requires we create base file and static file for current year and prior year
 - Subgroups have to be separated by group and subject
 - Every calculation for A-F has to be done separately and for proficiency, growth, ELL, and bonus points 4 different ways – K-8, K-9, 8-12, 9-12

Merge the Appropriate Pieces to Calculate Indicator Points



- Once all the metrics and indicators are calculated, we then merge the appropriate pieces
 - Merge the two K-8 stability calculations in order to compare and determine which one is higher and should be utilized
 - Merge all the acceleration readiness calculations to determine total points earned for that indicator
 - Merge the EL proficiency and EL growth calculations
 - Merge graduation rate and graduation rate improvement

Merge the Indicator Points



- After each indicator is calculated, we merge proficiency, growth, EL, bonus and then for K-8 acceleration readiness and for 9-12 graduation rate and CCRI points to determine total points eligible and total points earned

Calculate Percentage Earned, Apply Cut Scores, Merge Additional Information



- Once all the indicator points are merged and total points eligible and total points earned are calculated, we calculate percentage earned, apply the cut scores, and merge in additional information such as school names, charter, FRL indicator, district id, etc.
 - Between the team members working on A-F, the code that was written to run all of A-F including the data for ADEConnect was **over 200 pages** long

Disaggregate the data for ADEConnect platform



- The work does not end there!
- Now that we've put all the pieces together, we have to go take them apart again to display in the ADEConnect platform
- It's imperative that we disaggregate the data by grade so that schools can see the data displayed in different ways and validate that letter grades were calculated correctly
- The A-F Letter Grade platform on ADEConnect shows the following displays:
 - Summary pages for overall letter grade
 - Detail pages for:
 - EL data
 - Proficiency disaggregated by grade, assessment and subject
 - Growth disaggregated by grade, SGP/SGT, and subject

A-F Accountability Data Validation Process



- Growth data is evaluated and certified by Dr. Damian Betebenner at the request of the department
- Several volunteers from LEAs reviewed their respective student data prior to the releases in June and September specific to enrollment data
- All schools in the state have access to their static file to validate their data that is used in the letter grade calculations
 - Data must be cleaned by the schools prior to the end of the school year, which in FY17 was July 14th, 2017

Conclusions



- This presentation described our final process, but any time a change is requested it impacts the work flow and can, on occasion, require us to go all the way back to the beginning of the Accountability A-F process.
 - We had to recreate the static file several times this past year due to unique circumstances, such as grades 5-8 students taking EOCs, needing to add non-FAY students due to the chronic absenteeism calculation
 - Adding an additional SGT category and adjusting the SGP/SGT weightings required redoing Steps 3-7
 - Changing cut scores required redoing Steps 6-7
- In addition, when major changes are made that were not originally decided, my IT team has to change the ADEConnect platform.

Conclusions



- Statewide data is not a simple process. It requires many teams of people at ADE as well as constant collaboration from the field.
- ADE does not “own” the data; the data is that of the schools and districts and only they know if it is right. Accountability uses the data to implement letter grades. While there are many processes the data goes through, ADE is not changing the data so if the underlying data is “wrong,” then it’s “wrong” through the entire process.
- When running letter grades on millions of records, it is very challenging to know if something is off.
 - We check frequencies and make sure numbers are within the correct values (e.g., 0 to 30 points for proficiency) but outside of that it’s difficult for us to know if the underlying data is exactly as it should be because we don’t know every student.
- It is imperative that schools and districts validate their data for A-F, but also consistently check their AzEDS Reports throughout the year to ensure the data submitted to ADE accurately reflects the reality of students enrolled in their schools.

A-F Data Inquiries



- 169 appeals regarding data (most of which asked about 3-5 items)
- General themes:
 - Individual student data questions (FAY, SPED, ethnicity, etc.) (30%)
 - Assessment questions (23%)
 - Business rule questions/concerns (18%)
 - Growth questions (7%)
 - Graduation rate questions (7%)
 - FRL data questions (6%)
 - CCRI questions (6%)
 - Grades 5-8 EOCs (2%)
 - Miscellaneous (1%)

A-F Data Inquiries



- Individual student data questions (FAY, SPED, ethnicity, etc.) (30%)
 - Question:
 - Questions specific to individual students, such as FAY, SPED, ethnicity
 - Response:
 - ADE checked each student one-by-one in our data tables, cross-referenced to AzEDS data, and when necessary reached out to the school submitting the question. Many of the concerns relate to the underlying data the school submitted.
 - If the data submitted by the school is inaccurate, the school must open a 15-915 to correct the data.
 - In some cases students were failing integrity. This also needs to be resolved by the school using a 15-915.
 - If the issue was an ADE one, we resolved it, though these cases were rare otherwise it would have been a statewide issue.

A-F Data Inquiries



- Assessment questions (23%)
 - Question:
 - Students not having FY17 assessment data
 - Response:
 - School needs to correct data in the AzMERIT corrections application
 - ADE Assessment IT team is checking student data to ensure all results were loaded into Accountability Datamart
 - ADE working on multiple SAIS ID issue

A-F Data Inquiries



- Business rule questions/concerns (18%)
 - Question:
 - N size concerns, use of a confidence interval for calculations, inclusion of grad rate for schools who are new or in their second or third year, inclusion of grad rate and/or CCRI for schools that don't meet the n size, CCRI cut scores, non-typical school configuration, A-F formula and weightings, etc.
 - Response:
 - SBE decision
 - ADE to clarify business rules for the following scenarios: graduation rate improvement – which cohorts are used for that calculation, chronic absenteeism calculation – how are partial absences included, and SPED students – what criteria must be met in order to be considered SPED

A-F Data Inquiries



- Growth questions (7%)
 - Question:
 - Missing SGP/SGT scores
 - Response:
 - Scores were included for students who had them
 - SGT scores will not exist for Grade 8 accelerating students or HS students who have completed the EOC sequence
 - Question:
 - SGT calculation
 - Response:
 - There was an error in the SGT calculation that occurred during the rush to add a third column
 - Question:
 - SGT correlation with proficiency
 - Response:
 - SBE decision needed

A-F Data Inquiries



- Graduation rate questions (7%)
 - Question:
 - Concern over cohort 2016 4-year rate and/or inability to validate rate
 - Response:
 - ADE updated the graduation rate report on ADEConnect for schools to verify student level data
 - If a school finds a student with an inaccurate exit/withdrawal code, they will need to open a 15-915 to correct the data

- FRL data questions (6%)
 - Question:
 - Missing FRL data
 - Response:
 - FRL data is collected by ADE for each student. If that data was not submitted, the school will have to open a 15-915 to correct the data

A-F Data Inquiries



- CCRI questions (6%)
 - Question:
 - Concerns over what was submitted – either didn't submit properly or didn't calculate points properly
 - Response:
 - SBE will need to decide if the window to submit should re-open
- Grades 5-8 EOCs (2%)
 - Question:
 - Grades 5-8 EOCs not attributed to K-8 school
 - Response:
 - This is an unusual circumstance as it only impacted a handful of schools and not the entire state. ADE is working to resolve for these schools.
- Miscellaneous (1%)