Project KIDS Technical Manual

School Years 2013–14 through 2018–19

Version 1.0

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OFFICE OF THE
STATE AUDITOR

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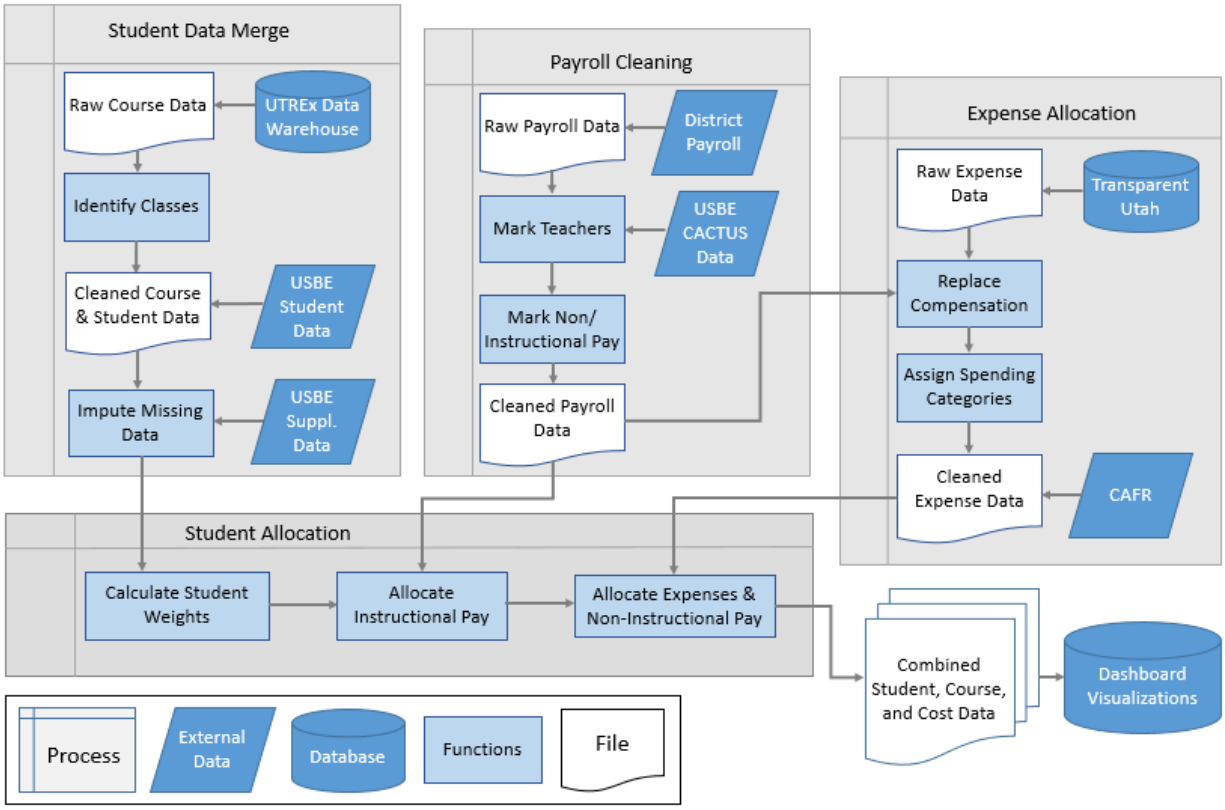
TABLE OF CONTENTS

1. PROCESS OVERVIEW

Project KIDS (Key Integrated Data Systems) integrates financial, operational, and performance data to improve data-driven decision-making in Utah K–12 public education. This report delves into the extensive methodology that Project KIDS developed (and continues to refine) to drill dollars down to the individual student level. The flow chart in **Figure 1** outlines the processes that clean and integrate the various data sources to create the student resource profiles.

This flow chart matches the detailed processes described in this technical manual and can be used as a roadmap to the document. This is also included at the beginning of each process section, with the relevant steps highlighted and a more detailed flow chart included.

Figure 1. Process Flow Chart



Some of these processes are performed at the statewide level, but most are performed separately for each individual local education agency (LEA). Processing each LEA independently ensures that the methodology captures unique characteristics at the LEA, school, or student level. The steps below summarize the process to curate individual student profiles and to build them up to produce detailed visualizations for each LEA.

Statewide Processes:

- **Data Collection.** Collect necessary education data.

- **Student Data Merge.** Clean student-level course data and define unique classes. Merge student-level data (including courses, demographics, and performance data) and export individual files for LEAs.
- **Data Imputation.** Impute missing nutrition and transportation student-level data.

LEA-level Processes:

- **Payroll Cleaning.** Clean payroll data by identifying the teachers in the data. Mark each transaction for these teachers as either instructional or non-instructional.
- **Expense Allocation.** Clean financial data and non-instructional payroll data by assigning expenditures to detailed spending categories based on transaction account codes.
- **Student Allocation.** Allocate teacher instructional compensation to their students through the classes they teach in the course data. Allocate expenses and non-instructional compensation to students who benefit from the assigned spending categories.
- **Dashboard Visualizations.** Create interactive visualizations for each LEA, aggregated at different levels of detail, but based on the student-level resource allocation.

These distinct processes can be explored in-depth in their respective sections. Additional context and a conceptual overview of the project can be found in *Section 2: Project Background*.

2. PROJECT BACKGROUND

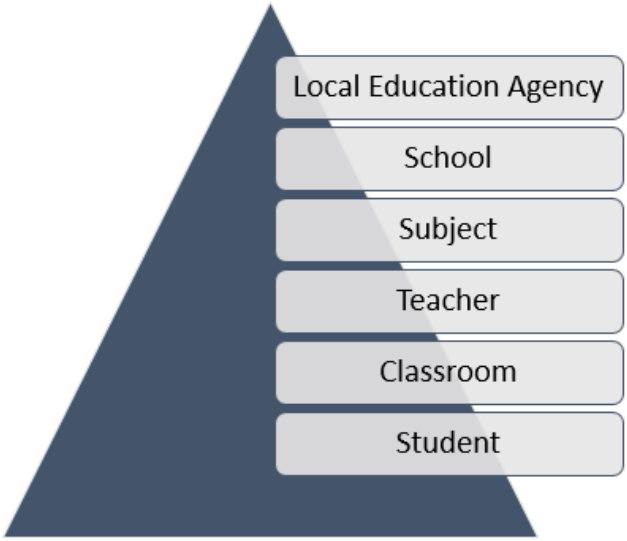
2.1 Project Purpose

Project KIDS is a special in-depth performance audit that integrates financial, operational, and performance data to create interactive visualizations that inform Utah stakeholders where the money goes in public education.

The data populating these visualizations are collected from the Utah State Board of Education (USBE), LEAs, and Transparent Utah. Project KIDS analyzes spending and performance data from these key systems at the student level and presents results in data dashboards.

These data dashboards enable users to analyze spending at several levels of granularity. Stakeholders can see spending at the LEA, school, subject, teacher, classroom, and even the individual student level.

Figure 2. Expense Allocation Levels of Detail



The purpose of this audit is to empower stakeholders at each level of education decision-making to make better data-driven financial allocation decisions, not to prescribe how money should be spent. Project KIDS works to integrate data from previously siloed data sources to make this information more easily accessible to public education stakeholders who also understand the goals and unique characteristics of their entities.

This performance audit answers the question: ***Where did the money go in public education?*** These non-normative visualizations then allow stakeholders to ask, with expert contextual knowledge: ***How well was the money spent?*** In summary, Project KIDS aims to empower public education stakeholders to more closely align financial resources with their strategic goals, with interactive visualizations tailored to support data-driven decision-making.

2.2 Project Motivation

In 2018, Utah spent 30% of its budget on K–12 public education, which totaled $6.7 billion.[1] While education spending consumes a high proportion of the overall state budget, resources are always limited. The limited nature of these resources, paired with the state's large school-age population, drives a need for education decision-makers to be strategic with education spending.

However, LEAs often struggle to track and assess where these billions of dollars flow. This lack of clarity is partially due to the fact that education spending is prescribed at multiple levels: by federal, state, and local government. Various formulas allocate money to the LEAs, but those allocations may be lost as money is spent on school-level activities. These vying priorities and earmarks muddle the answer to the question: how much does it costs to educate each student?

A similar problem occurred at the University of Utah Health Care Center. In 2015, Dr. Vivian Lee asked a seemingly radical question: *What do the goods and services provided by the hospital system actually cost?*[2] Costs at academic medical centers in the area increase on average by 2.9% per year. Meanwhile, the medical system transitions towards a reimbursement model where hospitals get a single payment for an entire course of treatment rather than individual payments for each service or test rendered. In other words, the hospital bears the cost of these runaway medical charges. This prompted Dr. Lee to question which services deliver high value and which contribute little to patient recovery.

To answer this question, Dr. Lee and her team designed a data system that tracks the costs of all goods and services provided by the hospital, like a minute in an MRI machine or an extra blood test. The system also monitors patient outcomes, like days in the hospital and readmissions. By integrating the costs and outcomes for each individual patient, the team could make more informed decisions about tradeoffs in care, thus resulting in lower costs and improved patient outcomes. In a field of ballooning costs, Dr. Lee managed to *decrease* the hospital's annual medical expenses by 0.5%.

Those in the field of public education encounter challenges similar to those faced by Dr. Lee. The cost of education continues to rise, but performance does not always follow.[3] Furthermore, many stakeholders lack the data systems that supports an analysis of effective resource allocation. Inspired by Dr. Lee's efforts, Project KIDS innovated a data system designed to bridge this gap. The interactive data dashboards allow stakeholders to understand where money flows. This paves the way for stakeholders to ask critical questions about aligning financial resources with their strategic objectives.

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[1] "FY2017 - FY2018 Utah Budget Quick Facts." *Utah State Legislature*, 9 Mar. 2017, www.le.utah.gov/interim/2017/pdf/00002061.pdf; "USBE Performance & Spending." *Office of the State Auditor*, www.auditor.utah.gov/kids/kidsperformancespending/. Accessed 4 Feb. 2021.
[2] Kolata, Gina. "What Are a Hospital's Costs? Utah System Is Trying to Learn." *The New York Times*, 7 Sept. 2015, http://nyti.ms/1KB0p65.
[3] Hanushek, Eric A. "Throwing Money at Schools." *Journal of Policy Analysis and Management*, vol. 1, no. 1, 1981, p. 20.

2.3 Project Summary

Project KIDS utilizes a bottom-up approach to calculate the costs of education rather than the top-down approach commonly used in education finance. The top-down approach (i.e., dividing costs over the total number of students) fails to differentiate between the various student needs and consequent spending. To truly establish reasonable estimates of student expenditures, education finance should be considered from the bottom-up, starting at the level of the individual student.

Project KIDS uses demographic factors, course-taking patterns, attendance levels, and other variables to determine which students consume which resources. The cost to educate a student varies depending on whether the student took elective or honors courses, enrolled in the special education program, rode the school bus, and so on. Project KIDS identifies these many factors in the student data.

Using this information, Project KIDS builds resource profiles for each individual student, which include approximately 200 spending categories with unique rules for allocation. These resource profiles effectively drive spending down to the student level. A simplified example of the student resource profiles is given in **Figure 3**, where each of the three fictitious students are allocated resources based on different characteristics. For example, only the student in the special education program receives special education spending allocation, and only students who are eligible to ride the bus receive transportation spending allocation.

Figure 3. Student Resource Profiles

Category	Amount
Teacher Pay	$ 5,530
Transportation	$ 0
District Administration	$ 1,100
English Language Learners	$ 0
Athletics	$ 500
Nutrition	$ 850
Instructional Support	$ 1,500
Special Education	$ 0
Dual Language Immersion	$ 0
Operational Expense	$ 2,300
Total	**$ 11,780**

Category	Amount
Teacher Pay	$ 3,550
Transportation	$ 800
District Administration	$ 1,100
English Language Learners	$ 0
Athletics	$ 0
Nutrition	$ 150
Instructional Support	$ 1,295
Special Education	$ 0
Dual Language Immersion	$ 1,250
Operational Expense	$ 2,300
Total	**$ 10,445**

Category	Amount
Teacher Pay	$ 7,100
Transportation	$ 800
District Administration	$ 1,100
English Language Learners	$ 0
Athletics	$ 0
Nutrition	$ 500
Instructional Support	$ 2,500
Special Education	$ 3,000
Dual Language Immersion	$ 0
Operational Expense	$ 2,300
Total	**$ 17,300**

The Project KIDS approach to resource allocation creates a distribution of spending per student, instead of simply reporting a single estimate of per-student spending. Visualizations are then created to show the resource allocation, as well as performance outcomes, for students

in different demographic groups, participating in different classes, paired with different teachers, attending different schools, and involved in different programs.

This allows for detailed inquiries regarding spending, such as: (1) how much an eighth grader enrolled in honors classes costs compared to other eighth graders or (2) what resources are reaching students "at-risk" and how those students are performing. This methodology that utilizes student-level data allows for easier access to, and better measurement of, the efficiency and effectiveness of school expenditures. It allows stakeholders to ask, and find the answer to, whether they are achieving specified learning goals and with what resources.

Researchers find that "there is no strong or systematic relationship between school expenditures and student performance,"[4] but that acquiring a fuller knowledge of *how* LEAs actually spend money does strengthen the linkage, making way for both better research and more effective allocations of scarce public funds.[5] In other words, higher spending does not necessarily equate to better student outcomes, but that is likely because most studies have ignored, or not had access to, the detailed accounting that indicates *how* the money was actually spent at the student level.

Though allocating dollar amounts to the student does not alone provide the answer to complex school spending decisions, it generates the information necessary to help stakeholders see what has been effective in the past, and work to improve productivity and efficiency with a data-driven approach. By linking resources to outcomes, the relationship between spending patterns and student academic success can be more fully explored. This helps narrow the focus to where money matters and where it has the largest impacts,[6] and stakeholders can then investigate where spending should be reallocated to improve student outcomes.

The level of detail in the Project KIDS visualizations can be invaluable for these types of investigations. They allow stakeholders to weigh the costs of interventions and programs against their targeted outcomes, and to evaluate whether interventions or programs are as effective as they intended or as they could be.[7] Stakeholders can use the information to make more informed decisions that will hopefully allow schools to improve efficiency, equity, and effectiveness.

Education researcher Marguerite Roza states: "A high-performing finance system is one where funds are deployed in ways that induce the best decisions about resource use, not necessarily one that dictates those decisions."[8] With the visualizations that Project KIDS creates, we hope to allow for improved data-driven questioning of spending patterns and increased efficiency in the use of public education expenditures. These dashboards are meant to arm LEAs and other stakeholders with the necessary information to allow for comprehensive, informed, and direct financial allocation decision-making.

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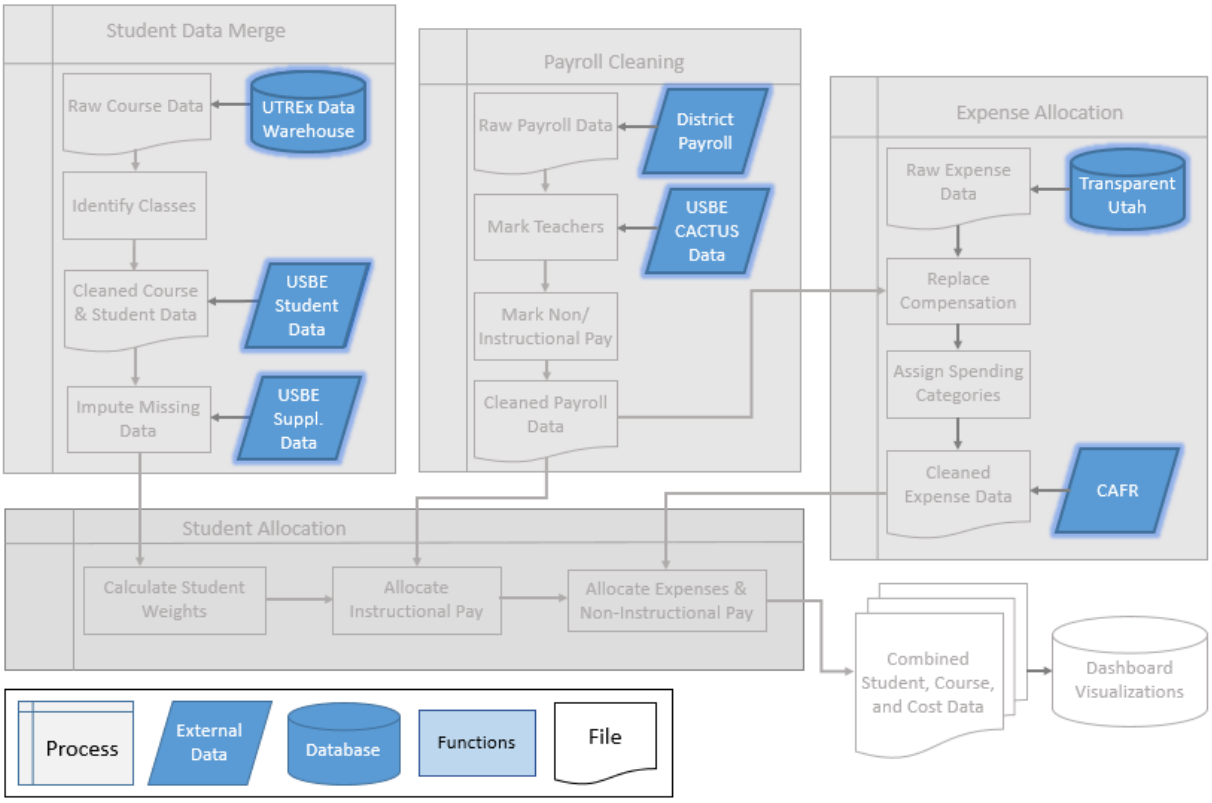
[4] Hanushek, Eric A. "Throwing Money at Schools." *Journal of Policy Analysis and Management*, vol. 1, no. 1, 1981, pp. 20.
[5] Cooper, Bruce S., et al. "Making Money Matter in Education:A Micro-Financial Model for Determining School-Level Allocations,Efficiency, and Productivity." Journal of Education Finance, vol. 20, no. 1, 1994, pp. 67–69.
[6] Speakman, Sheree T., et al. "The Three Rs of Education Finance Reform: Re-Thinking, Re-Tooling, and Re-Evaluating School-Site Information." *Journal of Education Finance*, vol. 22, no. 4, 1997, pp. 337–367.
[7] Levin, Henry M. "The Economics of Education." 30 May 2011, pp. 397.
[8] Roza, Marguerite. *Educational Economics: Where Do $school Funds Go?* Urban Institute Press, 2010, pp.90.

3. DATA COLLECTION

Figure 4. Process Flow Chart: Data Collection



Data is collected from multiple sources to create the finalized datasets for this project, which integrates financial, operational, and performance information. Financial data includes transaction-level expenditure and payroll information for each LEA, operational data includes detailed course enrollment and student-level demographic information, and performance data includes standardized test scores, AP scores, and student GPAs.

The earliest data collected and displayed in the dashboards are from the 2013–14 school year. These previously siloed data resources are cleaned and merged to create unified data sets for analysis. See **Figures 5** and **6** for visual representations of the main data collected and used for each school district and for each charter school in the Project KIDS methodology.

Figure 5. School District Data Collection and Sources

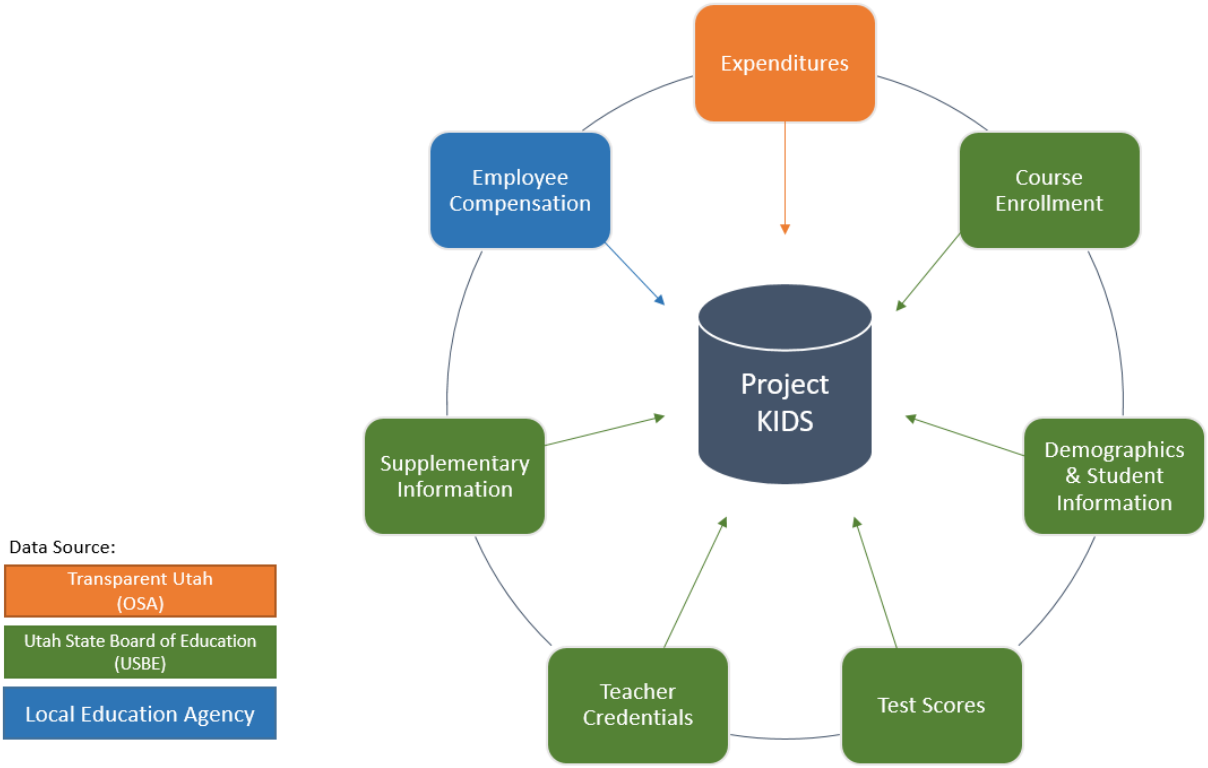
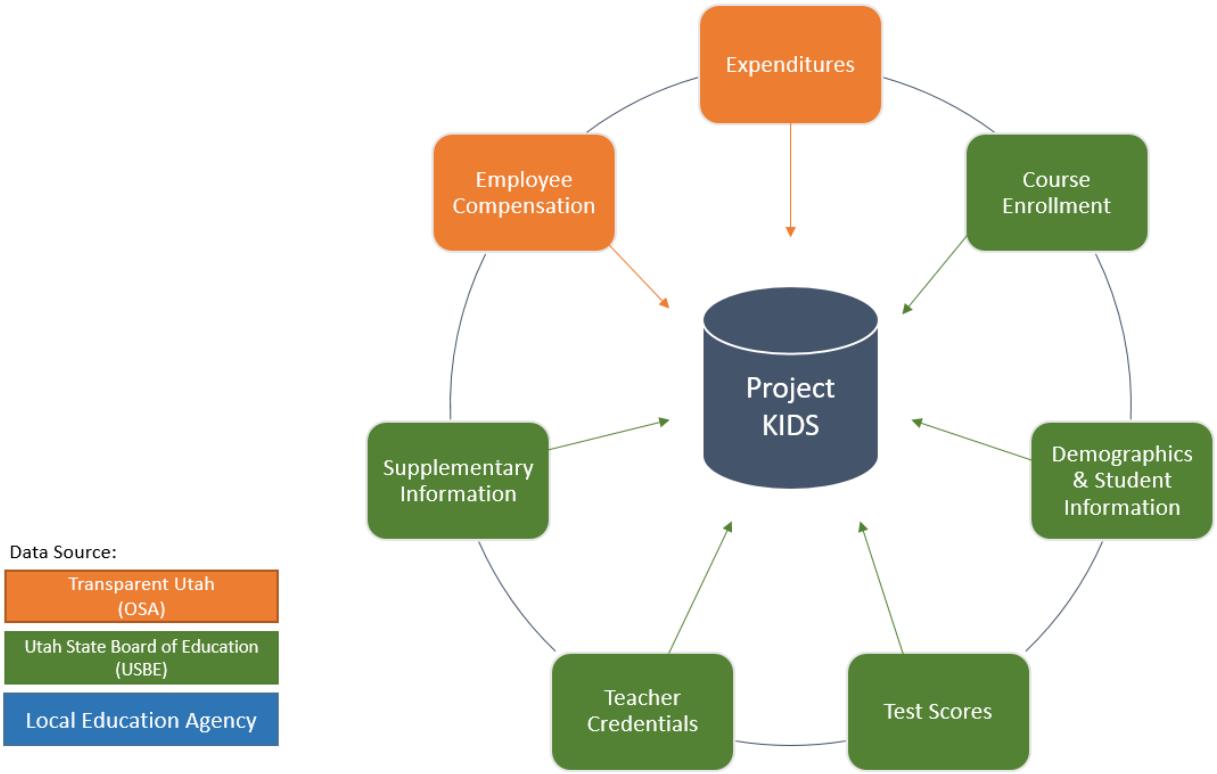


Figure 6. Charter School Data Collection and Sources



USBE provides the bulk of the data utilized by Project KIDS. The comprehensive list of data received from USBE for the 2013–14 through 2018–19 school years includes:

1. Course Enrollment
    a. **Course**. This data contains unique observations for each course each student participated in for each school year. The data contains detailed information regarding each student's courses, like start and end dates, teacher IDs, course titles, core codes, and class period.
    b. **Core Code Descriptions**. This data contains descriptions associated with all core codes in the course data.
2. Demographics and Student Information
    a. **Student Information**. This data contains student-specific information including student IDs.
    b. **Enrollment.** This data contains demographic and enrollment information for each student, such as low income status, race and ethnicity, grade level, total membership days, and total days attended.
    c. **SCRAM**. This data contains student special education membership and disability information.
3. Test Scores
    a. **Standardized Tests.** This data includes student testing scores, growth measures, and proficiency for the statewide RISE, Aspire, and SAGE tests.
    b. **ACT Tests.** This data contains both subject-specific and composite student ACT testing scores.
    c. **AP Tests.** This data contains student AP testing scores.
    d. **Acadience Tests.** This data contains student Acadience testing scores, proficiency levels, and benchmark measures.
4. Teacher Credentials
    a. **CACTUS (Comprehensive Administration of Credentials for Teachers in Utah Schools).** This data contains teacher information and credentials, such as IDs, names, degree levels, license levels, etc.
5. Supplementary Information
    a. **A1 Reports**. These reports contain yearly bus route information for to/from transportation for each LEA.
    b. **July 15 Reports**. These reports contain yearly information for transportation that is not to/from transportation, like field trip transportation.
    c. **National School Lunch Program (NSLP) Reports**. These reports contain yearly information regarding counts of free, reduced price, and paid lunches and breakfasts at each school.
    d. **Comparison Schools**. These reports contain information that identify peer schools, as defined by USBE.

Detailed financial expenditure data is obtained from Transparent Utah. Separate files are queried for each LEA, each year. This data includes account codes, descriptions, and amounts for each spending transaction made by LEAs.

Detailed information is also collected from individual school districts, if available. The data received from districts includes:

1. Employee compensation
2. Student grades (requested for 2013–14 through 2017–18 school years)
3. Student meal counts (requested for 2013–14 through 2017–18 school years)
4. Student bus eligibility (requested for 2013–14 through 2017–18 school years)

As the project scaled to include more LEAs, the requests have been rolled back to only the most necessary information. Project KIDS aims to reduce the burden that large data requests can place on LEA personnel, so the team only requests information that is essential to the methodology. Beginning in the 2018–19 school year, only employee compensation data is requested from school districts.

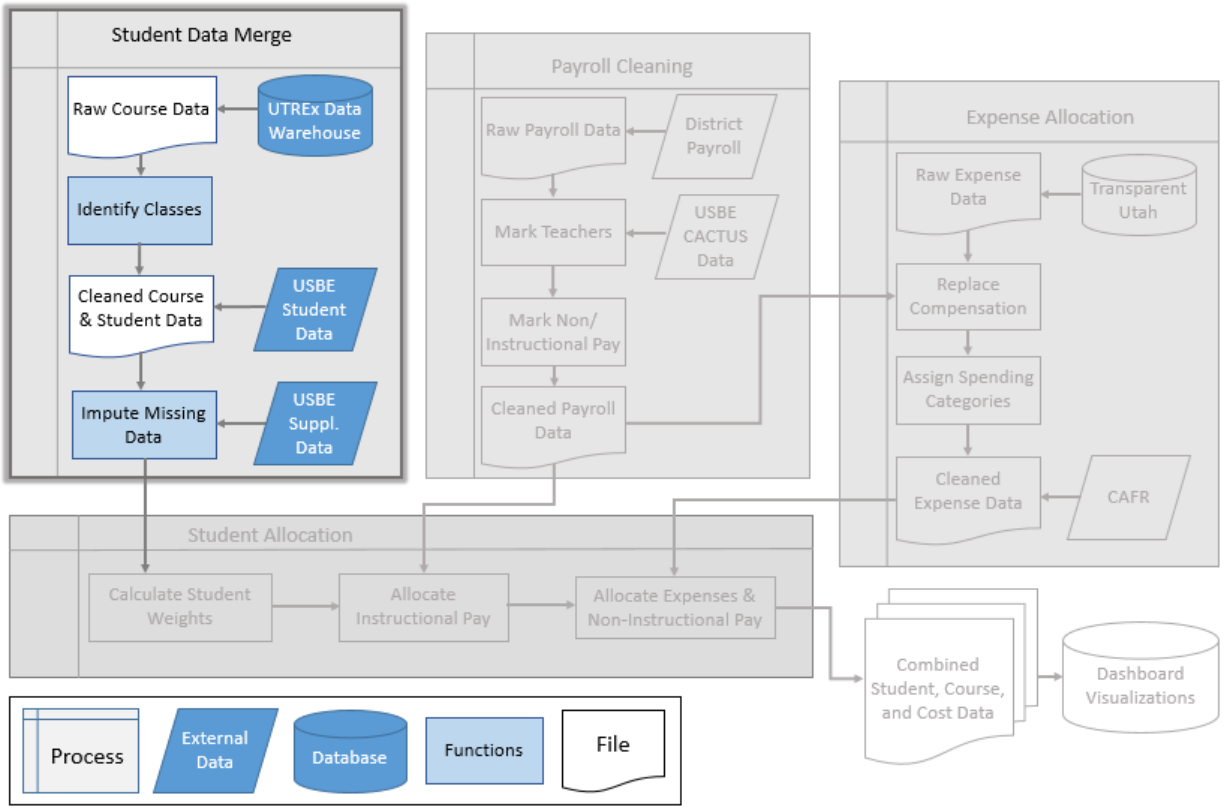
The large number of charter schools in the state makes this compensation data request highly time-consuming and burdensome for these smaller institutions, so Project KIDS instead uses Transparent Utah wage data for charter schools. The Transparent Utah wage data includes less detailed information than the payroll data requested from individual school districts (see *Section 10.3: Charter School Differences* for a full description of the distinctions between district and charter school compensation data).

Some data sets are unavailable for collection or the requests have been discontinued from individual districts. When these data are not received, statewide data are used to supplement, and sometimes impute, the missing values, reasonably estimating the proper allocation for all expenditures (see *Section 9.1: Nutrition Imputation* and *Section 9.2: Transportation Imputation* for detailed information on these imputation processes). For example, if districts do not keep accessible digital records of students' bus eligibility, we use information from transportation reports received from USBE (A1 Reports) to impute bus eligibility for students in that school district.

In some cases, an internal chart of accounts (COA) is also collected from individual LEAs to supplement information from USBE's standard COA. These internal COA are used to interpret both expense and payroll data, if account codes did not match over to the standard COA.

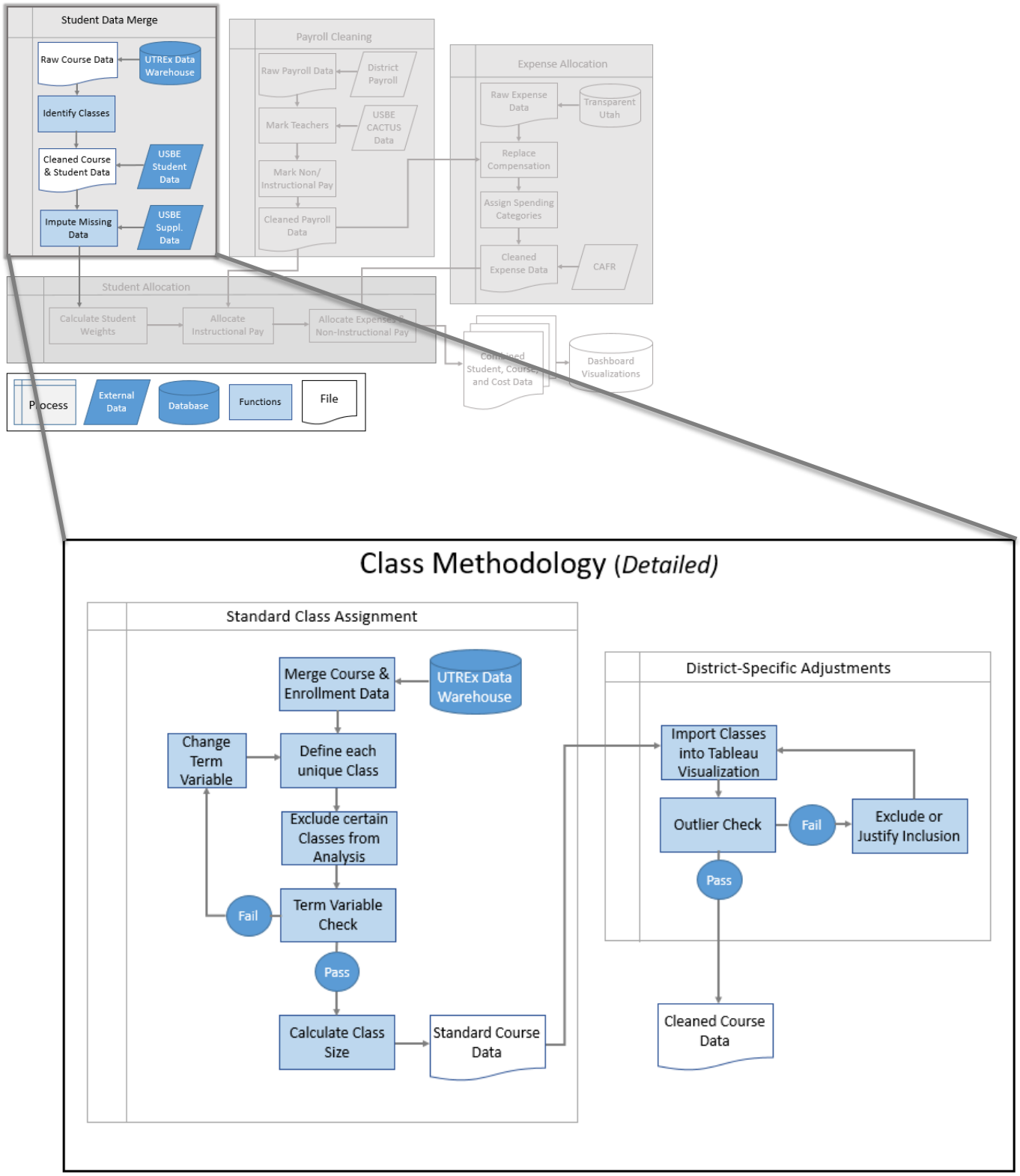
4. STUDENT DATA MERGE

Figure 7. Process Flow Chart: Student Data Merge



4.1 Class Methodology

Figure 8. Detailed Process Flow Chart: Class Methodology



Motivation

In the early stages of the project, the Project KIDS team surveyed multiple teachers in the state to ask: Do you feel you spend a more proportional amount of time between your courses or between your students? The overwhelming consensus was that time was spent more proportionally between classes than between students.

In order to allocate teacher compensation and other expenses based on course-taking patterns, and to analyze spending and performance at the classroom level, it is necessary to define what a class is.

Preliminary Calculations

Before classes are defined, some preliminary calculations are performed, and used later in the code to calculate class metrics. First, some school-level metrics are calculated from the course data, which can be found in **Key Formulas 4.1.1**.

Key Formulas 4.1.1

$$\textit{Start of School Year for School}_k = \text{mode}_{(i=1)\to I,\ (j=1)\to J}\ (Start\ of\ Class_j\ for\ Student_i),$$
only for class start dates before September 15th

$$\textit{End of School Year for School}_k = \text{mode}_{(i=1)\to I,\ (j=1)\to J}\ (End\ of\ Class_j\ for\ Student_i),$$
only for class end dates after May 1st

$$\textit{Number of School Days for School}_k = \#\ \text{weekdays between}(Start\ of\ School\ Year\ for\ School_k,\ End\ of\ School\ Year\ for\ School_k)$$

Student-by-class-level calculations are then generated, based on the school-level metrics, found in **Key Formulas 4.1.2**.

Key Formulas 4.1.2

$$\textit{Proportion of School Year Student}_i\ \textit{started Class}_j = \frac{\#\ \text{weekdays between}(Start\ of\ School\ Year\ for\ School_k, Start\ of\ Class_j\ for\ Student_i)}{Number\ of\ School\ Days\ for\ School_k}$$

$$\textit{Proportion of School Year Student}_i\ \textit{ended Class}_j = \frac{\#\ \text{weekdays between}(Start\ of\ School\ Year\ for\ School_k, End\ of\ Class_j\ for\ Student_i)}{Number\ of\ School\ Days\ for\ School_k}$$

$$\textit{Proportion of School Year Student}_i\ \textit{spent in Class}_j = Proportion\ of\ School\ Year\ Student_i\ ended\ Class_j - Proportion\ of\ School\ Year\ Student_i\ started\ Class_j$$

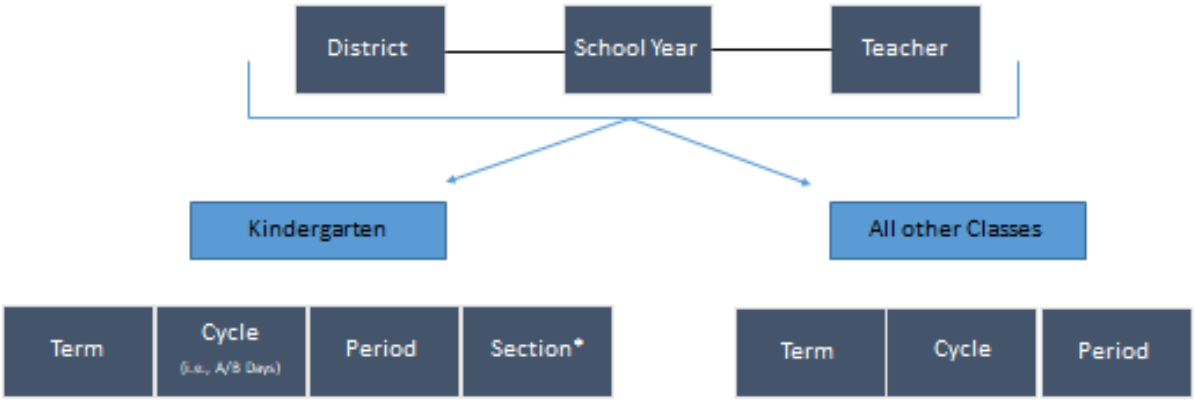
Defining a Class

In response to the feedback from surveyed teachers, Project KIDS developed a method to define classes from the available data, since no single variable exists to distinguish between unique classes. Project KIDS uses course and enrollment data from USBE's UTREx Data Warehouse to distinguish between each individual class (rather than using average student-to-teacher ratios).

The team designed an algorithm that defines a unique class, first grouped by school year and each unique teacher, then as a unique combination of term, cycle, period, and (sometimes) section. The chart in **Figure 9** shows the structure used to define each class in the data, and a unique class ID is assigned to each of these distinct combinations.

Kindergarten classes are defined by an extra variable: course section. Course section is not useful for defining most classes because it often separates students that should be in the same class. For example, the class aide will often have a different course section number than the rest of the students in that class. However, the course section becomes necessary only for kindergarten classes because it uniquely separates AM, PM, and full-day classes.

Figure 9. Unique Class Definition



Once unique classes are identified in the data, class-level variables are calculated from the school-level and student-by-class-level variables in the *Preliminary Calculations* section above. **Key Formulas 4.1.3** displays these class-level calculations.

Key Formulas 4.1.3

$$Start\ of\ Class_j = \min_{i=1 \to I}(Proportion\ of\ School\ Year\ Student_i\ started\ Class_j)$$

$$End\ of\ Class_j = \max_{i=1 \to I}(Proportion\ of\ School\ Year\ Student_i\ ended\ Class_j)$$

$$Proportion\ of\ School\ Year\ Class_j\ Lasted = End\ of\ Class_j - Start\ of\ Class_j$$

$$Number\ of\ School\ Days\ for\ Class_j = Proportion\ of\ School\ Year\ Class_j\ Lasted * Number\ of\ School\ Days\ for\ School_j$$

Teacher Compensation Class Allocation

The key purpose of defining unique classes for this methodology is to allocate teacher compensation proportionally among their classes. *Section 5: Payroll Cleaning* defines which compensation should be allocated to classes. That file is then matched with the course data so that an analyst can then proportionally allocate the identified compensation first among each teacher's classes, then to the individual students in each class.

Project KIDS does not allocate teacher compensation to classes where:

1. the teacher could not be identified,
2. the class did not appear to be tied to an actual teacher, or
3. the class required limited instruction time with the teacher.

These include:

- Classes that are not attached to a teacher ID
- Classes that are attached to a teacher ID that 1) does not appear in payroll, or 2) does not receive instructional compensation in payroll (see *Section 5: Payroll Cleaning*)
- Classes categorized as homeschooling
- Release time and Seminary classes
- Library, counseling, and office aide classes
- Internships, work experience, and apprenticeships
- Independent study classes
- Classes attached to a CACTUS ID associated with a college or university
- Work-study classes
- Aide and assistant classes with only one student enrolled

Term Boundaries

Project KIDS makes proportional compensation allocation between each teacher's classes by defining each unique class. However, some classes may be designated as year-long while others may only be semester-long.

To address these complexities, Project KIDS utilizes term boundaries (start and end dates) to change the class term to the smallest term type that each teacher teaches in a year. So, for

example, if a teacher taught some year-long and some semester-long classes in a single year, all classes will be split into semester-long classes. These adjustment achieve the following:

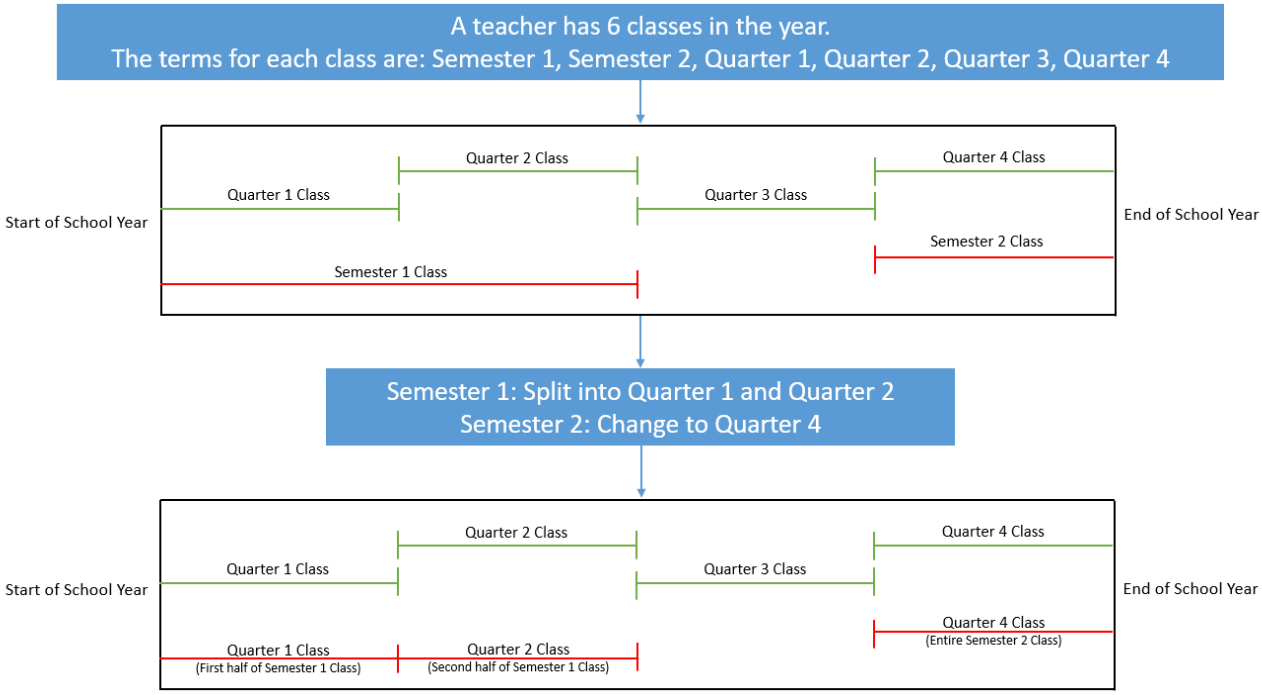
First, students who were previously separated from other students in the same class, due to different term levels, will now have the same term level and therefore appear in the same class. So, for example, if one student took a first-period (P1) biology class for a full year (YR) and the other student was only in that P1 class for the first semester (S1), the first student's biology course will now be separated into two classes: one for S1 and one for the second semester (S2). Then when unique class IDs are generated, the students will show up in the same S1 P1 biology class.

Second, teachers now have only one class at the same time. Sometimes teachers have students who take a course for longer than other students, so the schools code the terms differently even though the students were in the same class for at least a portion of the year. Using the previous example, the data could indicate that the teacher taught both a YR biology class and a S1 biology class for P1, when these are really the same class. By changing the class term to the smallest term type for each of the teacher's students, the data then generates a single unique class for each time period in a teacher's day.

Finally, this adjustment makes the proportional allocation of teacher's compensation among classes more representative of the actual time and resources spent on each class and each student. Continuing the example, if the YR class received the same compensation as the S1 compensation, that would be disproportionate to the amount of time the teacher spent with each of those students. By separating the YR class into S1 and S2, then allocating an equal amount between S1 and S2, the students who were in the class for the full year would receive double the compensation allocation compared to students who were only in the class for half the year. This more accurately represents the amount of time and resources that each student in those classes consumes.

The process of leveraging term boundaries also accounts for each student's entry and exit date for the class. So, for example, if a student in a YR class exited half-way through the year, they would only be recorded in the S1 class, not the S2 class. **Figure 10** gives a simplified visual example of how classes are adjusted so that each teacher has only one term type each year, taking into account these start and end dates.

Figure 10. Defining Term Boundaries: An Example



Once all previously listed adjustments have been made, teacher compensation can be proportionately distributed among their classes, more accurately representing the amount of resources consumed by each student. The compensation is then allocated to each student in those classes.

Class Size Calculation

Project KIDS takes a more detailed approach to calculating class size than simply counting the number of students in a given class. In order to make the class sizes comparable across different courses in an LEA, the methodology considers both the length of time that each student was in a class and the number of teachers teaching a single class.

For example, if two teachers are teaching a single dual language immersion class, each of the student weights is divided by 2 to account for the shared student count between the teachers. This is done because this makes the comparison more accurate between a 30-student class load with only one teacher and one with the same number of students and two teachers. This adjustment allows for better comparisons across different class structures.

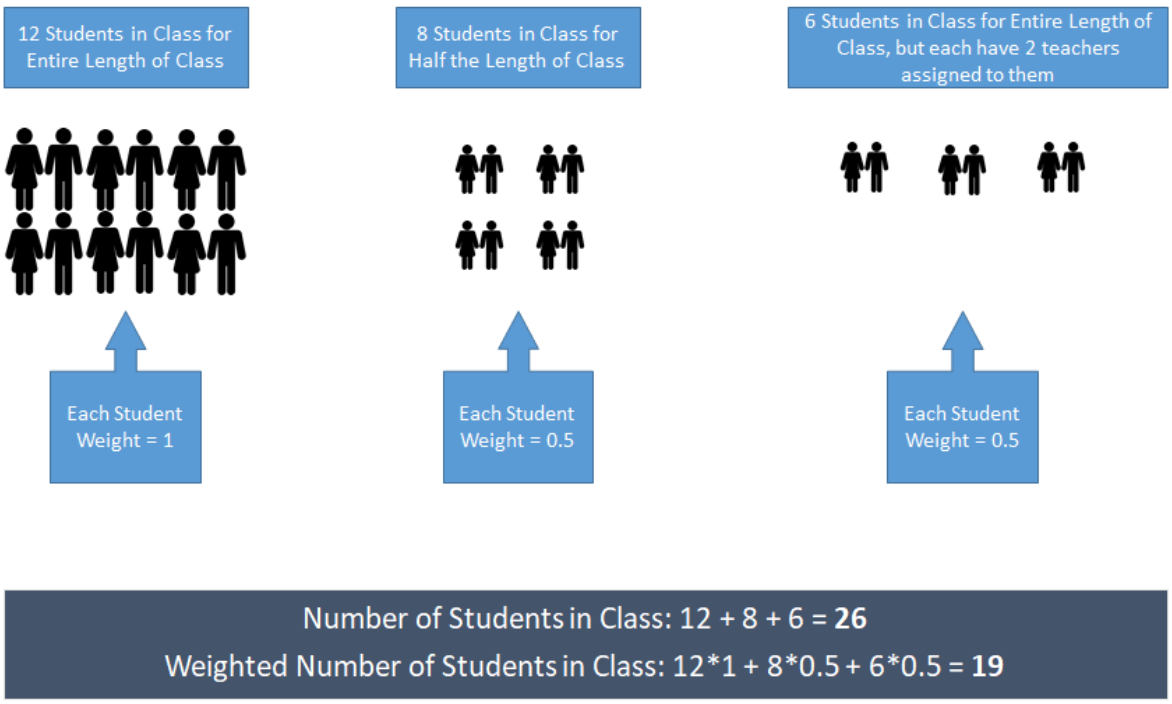
The methodology also accounts for the proportion of the class in which the student was enrolled to create a more accurate representation of the number of students the teacher taught. So, for example, if one student left half-way through the school year, they would only receive half of a weight for their count in the class. The formulas in **Key Formulas 4.1.4** shows the equations used to calculate both raw class size and weighted class size, and the graphic in **Figure 11** shows a simplified example of how the weighted class size is calculated, compared to the raw class size.

Key Formulas 4.1.4

$$\textit{Weighted Number of Students in Class}_j = \sum_{i=1}^{I} \frac{\textit{Proportion of School Year Student}_i \textit{ spent in Class}_j}{\textit{Total Number of Teachers Assigned to Student}_i \textit{ for Class}_j}$$

$$\textit{Number of Students in Class}_j = I$$

Figure 11. Calculating Class Size



These weighted class sizes achieve the following:

1. They allow for better comparisons between different class structures.
2. They give a more accurate representation of the "class load" each teacher has.
3. They allow for compensation allocation to each student in the class to be based on the proportion of the "class load" that each student contributed.

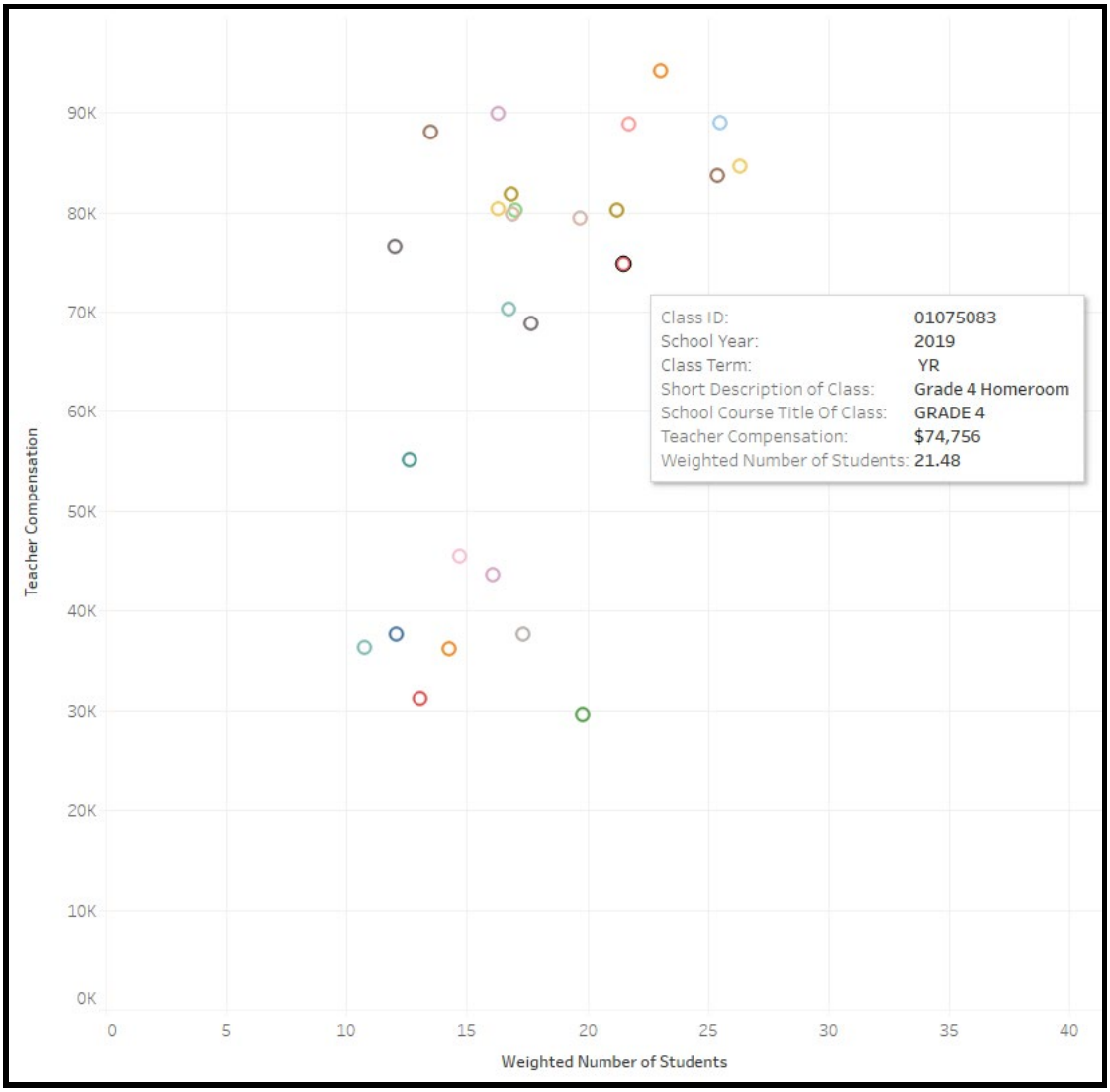
LEA-Specific Adjustments

While the standard methodology for defining a class applies generally across the state, LEA-specific adjustments to classes are also necessary in most instances. These LEA-specific adjustments address the idiosyncrasies in each LEA's course data.

The Project KIDS team carefully evaluates the individual classes using an interactive Tableau visualization, to look for outliers in the data. The visual inspection includes plotting the weighted number of students in each class against the teacher's instructional compensation that is allocated among those students in the class.

Figure 12 displays an example of the Tableau visualization, which an analyst will use to search for anomalies and check for unlikely classes and/or teachers. The interactive visualization allows the analyst to compare each class to the other classes in each school, hover over each class point to see detailed information regarding the class (like the text box displayed in **Figure 12**), and click into the class to see the full data behind each point in the plot.

Figure 12. Class Checks



Outliers in the visualization are closely inspected and one of the Project KIDS analysts decides between one of the following options for each outlier:

1. leaves the class as is because the analyst finds strong justification for why the class significantly differs from other classes,
2. makes adjustments to rules for assignment of teacher's instructional compensation or makes adjustments to the class assignment based on the differences identified, or
3. reallocates the teacher's compensation away from the class(es) to more accurately represent where the teacher spent their time, if they appear to be data entry errors or if they appear to inaccurately represent the teacher's compensation or classes.

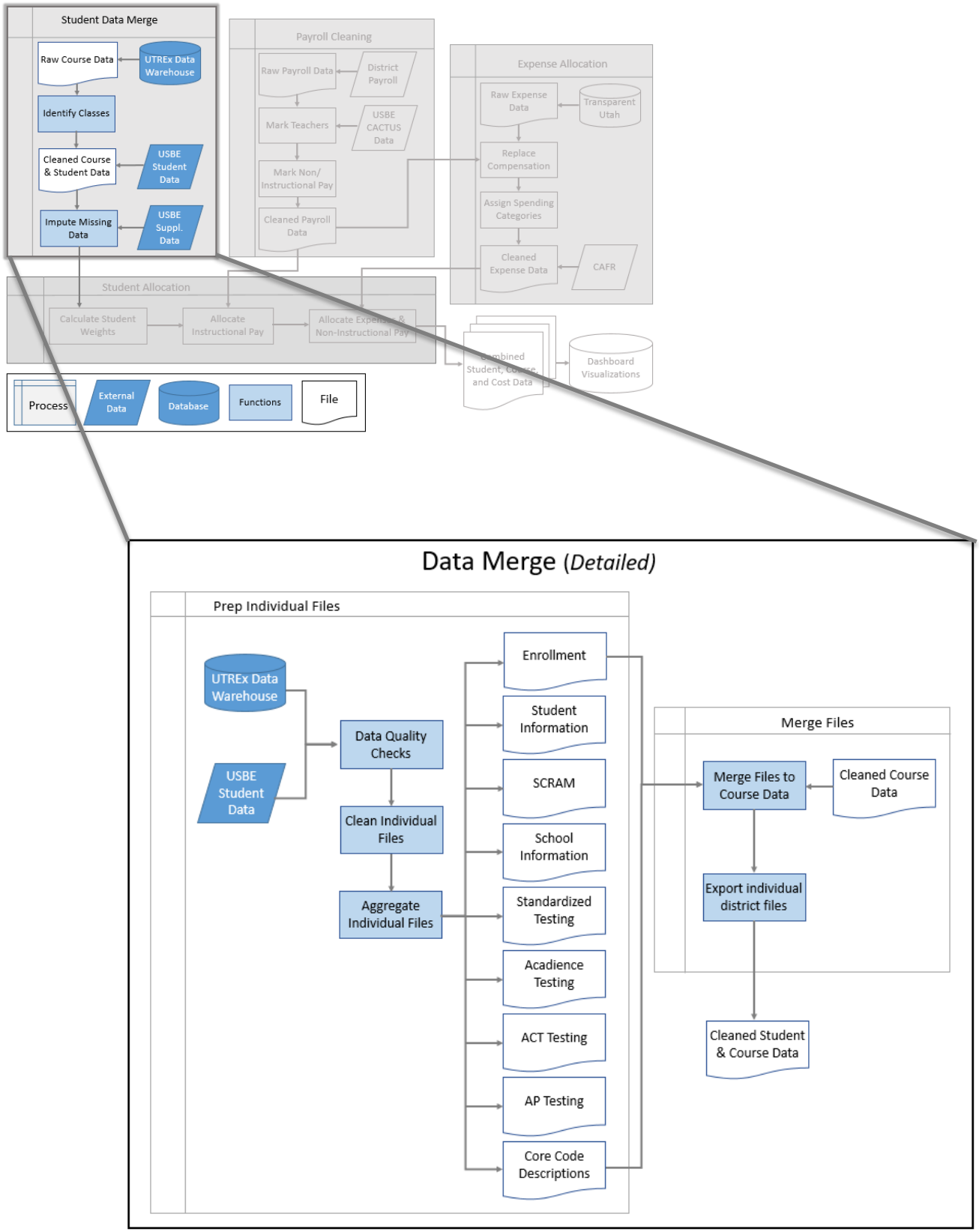
For example, in extreme cases, single students may be allocated tens of thousands of dollars for a single class because they are the only student listed as attending a well-compensated employee's only course for the entire year. Allocating this much money to a single student for a single course is often deemed as inaccurate. For example, the investigation process may reveal that the teacher is mostly being paid for teaching basketball courses, but the single class is a math course. This would indicate that the compensation was not meant for that individual student and the teacher's compensation would therefore be reallocated to students in basketball courses to more accurately represent that teacher's time and resource allocation. The analyst carefully looks for classes like this that could unreasonably and inaccurately overinflate per-student spending estimates.

Another common example includes checking for large classes in the data. Some courses are designed to accommodate a larger number of students than others, such as physical education or music classes. These classes are considered instructional and are therefore included in the final sums allocated to students. However, a large number of students are sometimes enrolled in courses that are not technically instructional, such as supervised study time. These outliers have not yet been incorporated into the system. Teacher resources are reallocated among their other classes, if found in the data. If not, the teacher's compensation is moved to the expense file and allocated to students through an alternative strategy (see *Section 6: Expense Allocation and Section 7.2 Non-Instructional Compensation and Expense Allocation*).

While the standard statewide class assignment and adjustments ensure that the basic methodology is consistently applied across LEAs and schools, these careful LEA-specific adjustments are necessary to address differences in the way the data is recorded across distinct institutions. These two processes, along with the payroll data preparation (see *Section 5: Payroll Cleaning*), allow the team to then more accurately allocate teacher compensation to the students in their classes (see *Section 7.1: Instructional Compensation Allocation*).

4.2 Data Merge

Figure 13. Detailed Process Flow Chart: Data Merge



Once the course adjustments are completed, relevant student data is merged into the course data. Variables are pulled and merged into the student course files from the following data from USBE:

1. Core Code Descriptions (descriptions associated with all core codes in course data)
2. Student Information (student names and IDs)
3. Enrollment (student demographic and enrollment information)
4. SCRAM (special education membership and disability information)
5. Standardized Tests (RISE, Aspire, and SAGE student testing scores, growth, and proficiency, by subject)
6. Acadience Tests (student testing scores, proficiency levels, and benchmark measures)
7. ACT Tests (student testing scores, by section and composite)
8. AP Tests (student testing scores)
9. School Information (school names and types)

When these files are first received, a Project KIDS analyst runs preliminary analysis to check the quality of the data. Each individual file is then cleaned separately. The cleaning process includes matching the most recent year to the variables, variable class, and values from previous years, aggregating each data file to the appropriate level, and correcting any data issues identified in the quality check step.

Table 1 lists the level that each of these files are aggregated to, which are the same variables used to merge each file to the course data.

Table 1. Student Data File Information

File	**Level of Aggregation / Variables used to Merge to Course file**
Enrollment	LEA ID, School ID, School Number, School Year, Student ID
Student Information	Student ID
School Information	LEA ID, School Number
SCRAM	LEA ID, School ID, School Year, Student ID
Standardized Testing	LEA ID, School ID, School Number, School Year, Student ID
Acadience	LEA ID, School ID, School Number, School Year, Student ID
ACT Tests	LEA ID, School Year, Student ID
AP Tests	LEA ID, School ID, School Number, School Year, Core Code, Student
Core Code Descriptions	Core Code

Once all files are merged together, student and class labels are created from key variables. **Key Formulas 4.2.1** displays these aggregations.

Key Formulas 4.2.1

$$\textit{Course Title of Class}_i = \text{mode}_{(i=1)\to I}(Course\ Title\ of\ Student_i\ in\ Class_j)$$

$$\textit{Core Code Description of Class}_i = \text{mode}_{(i=1)\to I}(Core\ Code\ Descriptionof\ Student_i\ in\ Class_j)$$

$$\textit{General Subject of Class}_i = \text{mode}_{(i=1)\to I}(General\ Subject\ of\ Student_i\ in\ Class_j)$$

$$\textit{Specific Subject of Class}_i = \text{mode}_{(i=1)\to I}(Specific\ Subject\ of\ Student_i\ in\ Class_j)$$

$$\textit{School Number of Class}_i = \text{mode}_{(i=1)\to I}(School\ Number\ of\ Student_i\ in\ Class_j)$$

$$\textit{School Name of Class}_i = \text{mode}_{(i=1)\to I}(School\ Name\ of\ Student_i\ in\ Class_j)$$

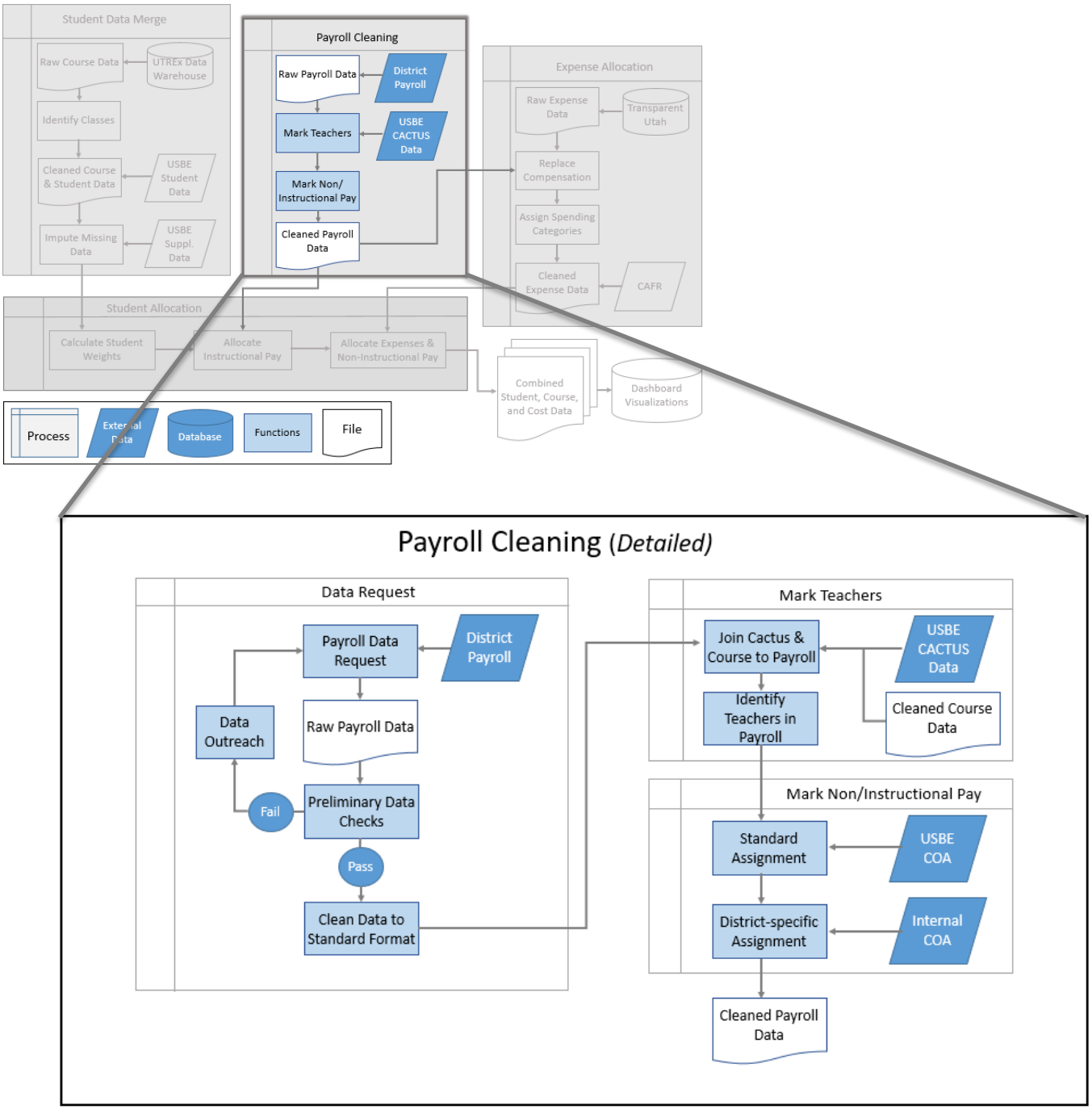
$$\textit{School Number of Student}_i = \text{mode}_{(j=1)\to J}(School\ Number\ of\ Student_i\ in\ Class_j)$$

$$\textit{School Name of Student}_i = \text{mode}_{(j=1)\to J}(School\ Name\ of\ Student_i\ in\ Class_j)$$

This file is then exported for each LEA and used to allocate expenses at the student level based on course-taking patterns, demographic factors, and enrollment information. The test scores are merged in as well and used in the visualizations to display student performance (see *Section 8: Dashboard Visualizations*). At the end of this process, each LEA has a file that specifies which students were in which classes, with each student's demographic, enrollment, and testing information attached to each of their course records.

5. PAYROLL CLEANING

Figure 14. Detailed Process Flow Chart: Payroll Cleaning



Data Request

Project KIDS requests detailed, comprehensive payroll data for all employees from each school district. As mentioned in *Section 3: Data Collection*, this information is not requested from charter schools, to reduce the burden on these smaller institutions. Instead, charter school payroll data is queried from the Transparent Utah database.

Table 2 displays the variables included in the district payroll files and **Table 3** displays the variables included in the charter school payroll files. See *Section 10.3: Charter School Differences* for a more detailed account of the distinctions between district and charter school payroll data.

Table 2. District Payroll Variables

Variable	**Description**
Employee Name	Name information available for a given employee (first, last, maiden, etc.).
Employee Number	Internal LEA employee identification number.
State Number (CACTUS ID)	If available, the CACTUS ID of licensed teachers. *This is often not available.*
Fiscal Year or Check Date	If employees are paid on different fiscal years, information on each pay cycle is provided.
Job Title / Class / Description	A description of the job title(s) of the employee and/or a description of what the employee is being compensated for.
Payroll Account Code/Segment	The account that each type of compensation was paid from. This should include fund, location, function, program and object.
Amount	Amount of pay. The data is aggregated at least by account code, by employee, by fiscal year.
Benefits	If not designated by account code, information regarding insurance, retirement, etc.

Table 3. Charter School Payroll Variables

Variable	**Description**
Employee Name	Name of each employee.
Fiscal Year	The fiscal year for each transaction.
Job Title	A description of the job title(s) for each employee.
Description	A description of the transaction classification (i.e., Wages, Benefits, Bonus).
Other Descriptions	If available, descriptions associated with transaction account codes (category, fund, organization, program descriptions)
Amount	Amount of pay. The data is aggregated at least by description, by employee, by fiscal year

The disaggregated payroll data from school districts gives a higher level of detail than their compensation data on Transparent Utah. The payroll data from each school district is disaggregated, so that compensation totals are separated by person/year/account code/description. This allows for more specific allocation of compensation to students.

For example, for a teacher whose salary consists of both contract teaching compensation and a coaching stipend, the teaching compensation is allocated to the classes she teaches while the coaching stipend is allocated to her team, if those students can be identified. This level of detail prevents over-inflation of teachers' instructional salaries and allows for more precise resource allocation to students. **Table 4** illustrates this example.

Table 4. Payroll Classification: An Example

CACTUS ID	**Employee ID**	**Employee Name**	**Fiscal Year**	**Account Code**	**Description**	**Amount**	**Project KIDS Classification**
123	456	Johnson, Anne	2019	10-500-0500-1000-131	Teacher Salary	$30,000	Instructional
123	456	Johnson, Anne	2019	10-500-0500-1000-241	Teacher Benefits	$10,000	Instructional
123	456	Johnson, Anne	2019	10-500-0500-2200-195	Coach Stipend	$5,000	Non-Instructional

The payroll data from individual districts is particularly essential to the Project KIDS methodological approach because internal employee IDs are not available in the Transparent Utah database. Internal employee IDs help the team distinguish between individual employees, even if there are multiple employees with the same name. So, for example, if there are two John Johnson's at a single school district, the team can use the employee ID to distinguish between the two individuals. This situation arises often, especially in larger school districts.

Project KIDS must distinguish between individual employees because the payroll data is matched with the student-level course data (as described in the following section). Throughout this process, the team ensures that only one payroll employee is matched to each teacher ID in the course data. Continuing the example, if both John Johnson's are teachers, the team must distinguish between the two to know which teacher taught which classes. This ensures that each teacher's compensation is allocated to the correct students. The employee ID supplements the name field to allow for these distinctions.

Employee IDs are rarely required for charter schools because there are normally far fewer employees. Typically, the employee name field is sufficient for distinguishing between individual employees.

Payroll totals from the individual school district files are checked against Transparent Utah's wage data and districts are contacted if the totals are significantly different, indicating a possible issue with data quality. Charter school payroll totals are checked against the compensation totals in the Transparent Utah expense data. Charter schools are contacted if those totals are significantly different, again indicating a possible issue with data quality.

Finally, the data received from each school district are in different formats, so each district's data is manually put into the standard format for the data preparation stage.

Data Preparation

There are two key steps to preparing every LEA's payroll:

1. Determine which individuals in payroll are teachers, based on whether they match to both the CACTUS data and the UTREx course data.
2. Once the teachers are identified, determine whether compensation is instructional or non-instructional.

Step 1: Determine which individuals in payroll are teachers, based on whether they match to both the CACTUS data and the UTREx course data.

Most LEA payroll data does not contain teachers' state-issued CACTUS IDs, which are necessary to match teacher compensation to the classes they taught in the UTREx course dataset. The Project KIDS team, therefore, uses a fuzzy matching algorithm to match individual names in the payroll data to their CACTUS IDs in USBE's CACTUS data. CACTUS data includes individual first and last names, and middle and maiden names if available. To summarize:

- Payroll data needs to be matched to course data to identify teachers
- Course data only contains CACTUS IDs

- CACTUS data contains both CACTUS IDs and names
- Payroll data only contains names
- To merge the data sources, we must:
    - Match course and CACTUS data on CACTUS ID
    - Match course/CACTUS data with payroll on teacher name

Fuzzy matching is necessary because LEAs frequently recorded names slightly differently in their payroll data than in the state's CACTUS data. Fuzzy matching allows two columns to be joined even if they are not an exact match. The CACTUS name information is combined into 13 different variations of a full name for each teacher, since payroll data often records payroll names in a single column (for example, Name = "Last, First"). The CACTUS name variables include last, first, maiden, and middle names. The full list of the name combinations created for fuzzy matching is as follows:

1. Last, First
2. Last, First Middle
3. Last, First M
4. Maiden, First
5. Maiden, First Middle
6. Maiden, First M
7. Last-Maiden, First
8. Maiden-Last, First
9. First Last
10. First Middle Last
11. First M Last
12. Last, Middle
13. Last, First (only first 5 letters of first name)

The fuzzy matching algorithm iteratively evaluates all 13 name variations to try to fully capture matches with the payroll data.

The fuzzy matching algorithm used for this purpose allows for a maximum difference of one character between the two columns. For example, if Anne Johnson's name is recorded as "Anne P. Johnson" in payroll and as "Anne P Johnson" in CACTUS, they will still match up even though they are not exactly the same.

After the fuzzy matching is performed, an analyst manually sifts through the data to search for any additional matches that can be added, and for any duplicated or incorrect matches that need to be corrected. For example, the fuzzy matching algorithm does not catch nicknames in the data, so "Annabel Johnson" and "Anne Johnson" would not be matched with the algorithm, but an analyst can reasonably assume that this is the same person and manually match the two.

Because the purpose of identifying teacher instructional compensation is to allocate those resources to the students in their classes, CACTUS IDs are only matched over to payroll names if they appeared in a legitimate class in the UTREx course data for that year (see *Section 4.1: Class Methodology*).

CACTUS information is used as the intermediary between payroll and the course data because the course data does not contain the names of teachers, only the CACTUS IDs. If CACTUS IDs

are not received from the LEAs, the only way to match payroll to the course data, to determine whether each individual is a teacher, is to first match CACTUS to payroll by fuzzy matching the names, then by matching course to CACTUS by exact matching the CACTUS IDs. The chart in **Figure 15** illustrates this process.

Figure 15. Merging Payroll, CACTUS, and Course Data

Step 2: Once the teachers are identified, determine whether compensation is instructional or non-instructional.

All compensation for individuals that do not match to both the CACTUS and UTREx course data is categorized as non-instructional. For individuals in the payroll data that are matched to CACTUS IDs in both the CACTUS and UTREx course data, compensation is categorized as either instructional or non-instructional, based mainly on the payroll object codes (from the account code) and the descriptions. Since object codes are often not included in charter school payroll data, job titles are used to supplement that information.

The assignment of teacher compensation to instructional and non-instructional is an iterative process. Compensation is first assigned using object codes from USBE's standard COA. Project KIDS has created a standard assignment for each object code associated with salary and benefits in the standard COA.

See the first table in *Section 11.1: School District Payroll Default Assignments* for a list of the standard COA object codes and descriptions, with the compensation type and the Project KIDS standard assignment. Notice that all benefits are by default assigned to instructional. This is because the standard COA descriptions do not indicate whether benefits should be instructional or non-instructional. Multiple methods are used, and discussed later in this section, to determine whether benefits are instructional or non-instructional.

Once the standard assignments have been made, a Project KIDS analyst sifts through each unique description or job title associated with each object code and makes LEA-specific adjustments based on descriptions and job titles. For example, object code 131 is automatically assigned to instructional, but if the description is "Adult Education" then the analyst would change the assignment to non-instructional since adult education students are outside the current scope of Project KIDS (see *Section 10.2: Exclusions*).

See the second table in *Section 11.1: School District Payroll Default Assignments* for a list of common descriptions/job titles used in district payroll data, and the assignment made for each. See *Section 11.2: Charter School Default Job Title Assignments* for a list of common job titles used in charter school payroll data, and the assignment made for each.

The Project KIDS team then uses multiple methods to assign benefits to instructional or non-instructional. The first, most simple, way is to use the same method as is used to assign pay,

utilizing unique descriptions, job titles, or COA information. However, many LEAs do not provide descriptions for benefits that are specific enough for assignment. Two methods are used to remedy this issue:

1. Function codes can be used to assign benefits if it appears that they consistently tie instructional salary to corresponding instructional benefits. If this is the case, benefits can be assigned based on how the salary in the same function code was assigned.
2. Program and/or function codes can be used to split then assign benefits if the different salaries in those groupings are categorized as both instructional and non-instructional. In this case, benefits are split into two rows, then a portion of the total is assigned to instructional and a portion is assigned to non-instructional. The proportion of the total in each row is based on the proportion of salary that is categorized as instructional or non-instructional in those groupings.

Once assignments have been made, an analyst looks through the final data, with both the total salary and the total instructional salary for each teacher. Checks are performed here to look for teachers with surprisingly high or surprisingly low compensation. The analyst searches these outlier individuals online and rechecks compensation assignments to verify that these high or low instructional compensations are not a mistake. Adjustments are made based on these checks in the form of:

1. removing an individual from the teacher list if they do not appear to be a teacher, or
2. reassigning object codes and descriptions to instructional/non-instructional based on the findings.

Instructional compensation is allocated to students through the classes they take (see *Section 7.1: Instructional Compensation Allocation*), and non-instructional compensation is placed in spending categories with other LEA expenses (see *Section 6: Expense Allocation*) and allocated to students based on unique rules for each spending category (see *Section 7.2: Expense and Non-Instructional Compensation Allocation*).

Key Formulas 5.1.1

$$\textit{Teacher}_j\ \textit{Total Instructional Salary} = \sum_{i=1}^{I} Total_{ij}[Type = \text{"Salary"}\ \&\ Classification = \text{"Instructional"}]$$

$$\textit{Teacher}_j\ \textit{Total Instructional Benefits} = \sum_{i=1}^{I} Total_{ij}[Type = \text{"Benefit"}\ \&\ Classification = \text{"Instructional"}]$$

$$\textit{Teacher}_j\ \textit{Total Instructional Compensation} = Teacher_j\ Total\ Instructional\ Salary + Teacher_j\ Total\ Instructional\ Benefits$$

$$\textit{Teacher}_j\ \textit{Total Non-Instructional Salary} = \sum_{i=1}^{I} Total_{ij}[Type = \text{"Salary"}\ \&\ Classification = \text{"Non Instructional"}]$$

$$\textit{Teacher}_j\ \textit{Total Non-Instructional Benefits} = \sum_{i=1}^{I} Total_{ij}[Type = \text{"Benefit"}\ \&\ Classification = \text{"Non Instructional"}]$$

$$\textit{Teacher}_j\ \textit{Total Non-Instructional Compensation} = Teacher_j\ Total\ Non\ Instructional\ Salary + Teacher_j\ Total\ Non\ Instructional\ Benefits$$

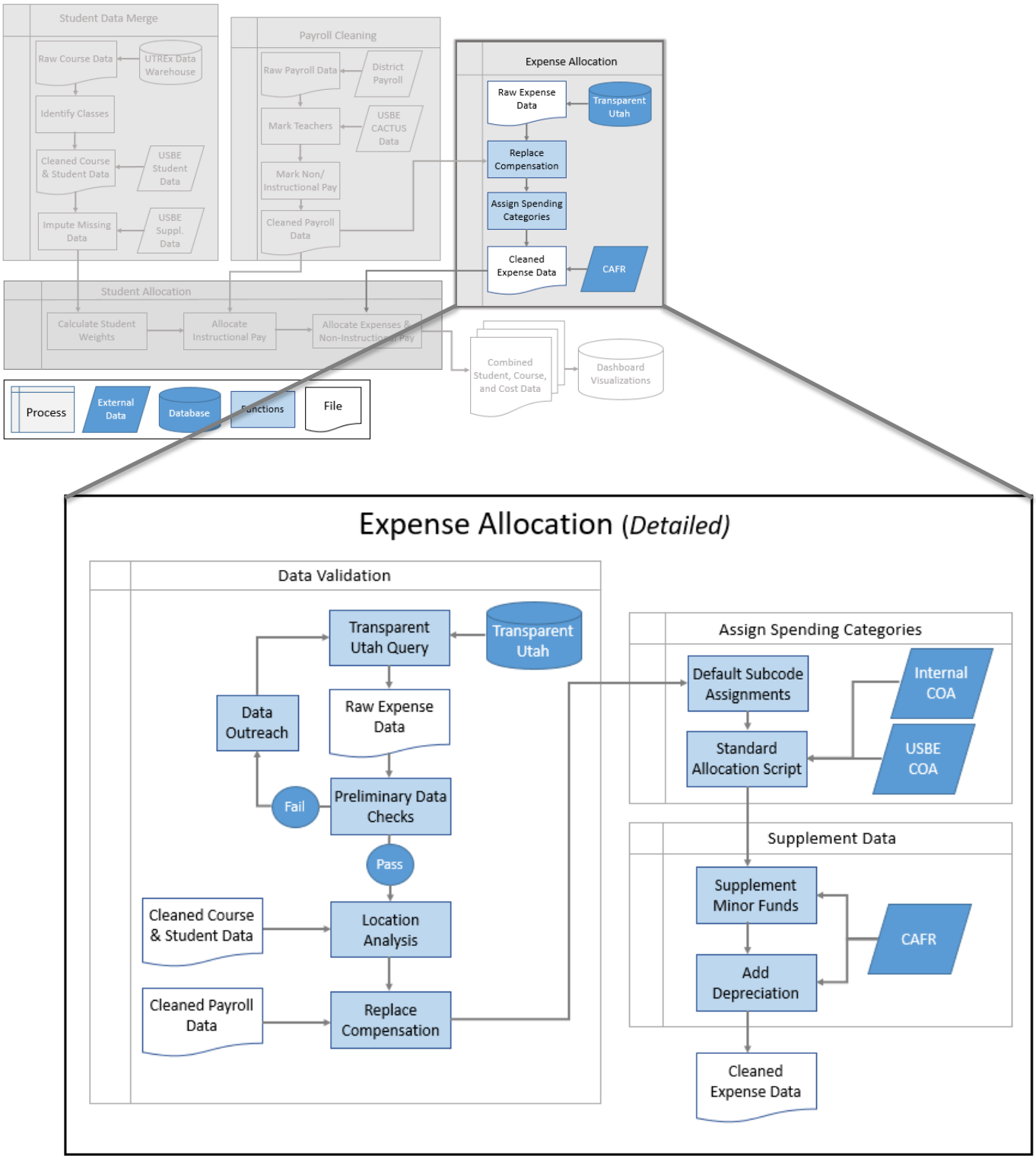
$$\textit{Teacher}_j\ \textit{Total Salary} = \sum_{i=1}^{I} Total_{ij}[Type = \text{"Salary"}]$$

$$\textit{Teacher}_j\ \textit{Total Benefits} = \sum_{i=1}^{I} Total_{ij}[Type = \text{"Benefit"}]$$

$$\textit{Teacher}_j\ \textit{Total Compensation} = Teacher_j\ Total\ Salary + Teacher_j\ Total\ Benefits$$

5. EXPENSE ALLOCATION

Figure 16. Detailed Process Flow Chart: Expense Allocation



Overview

Detailed expense data is queried from the Transparent Utah database. The employee compensation information contained in the Transparent Utah data is then replaced with the cleaned LEA payroll information from *Section 5: Payroll Cleaning*. After preliminary data checks are complete, every expense transaction is allocated to a specific spending category, or subcode.

Project KIDS created approximately 200 unique subcodes that capture the many areas of LEA spending, such as AP Coursework, English Language Learning, or First Grade. Each of these subcodes has specific rules by which expense transactions are assigned to it (see *Section 11.3: Expense Spending Category Assignment Rules*). By the end of this process, all transactions for each LEA are assigned a subcode, as demonstrated by **Key Formulas 6.1.1**.

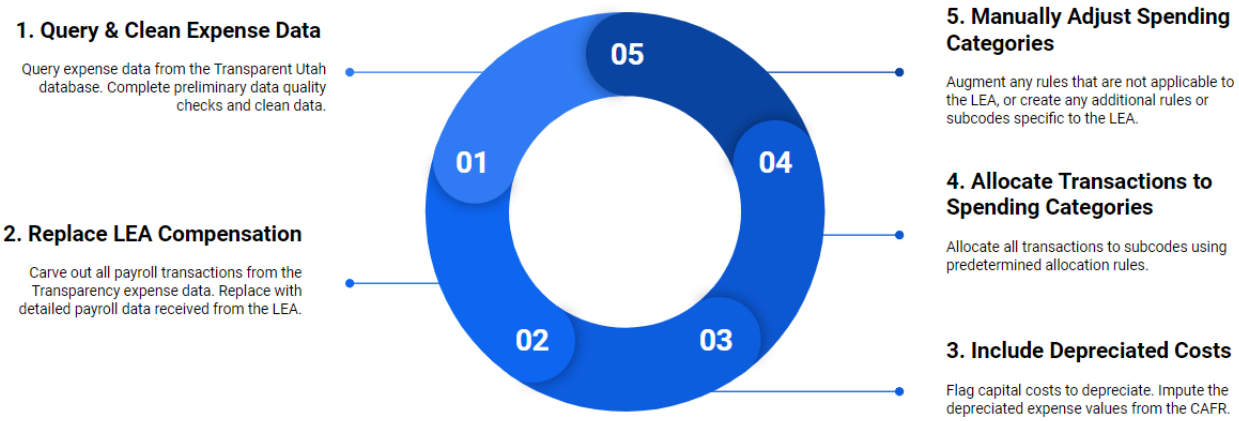
Key Formulas 6.1.1

$$District\ Spending = \sum_i \sum_j Subcode_{ij}$$

for each school and year combination i and subcode j.

Figure 17 provides an overview for how the spending data is processed and assigned individual subcodes. The funds in each subcode are subsequently allocated to the appropriate student groups for each school and school year in *Section 7: Student Allocation*.

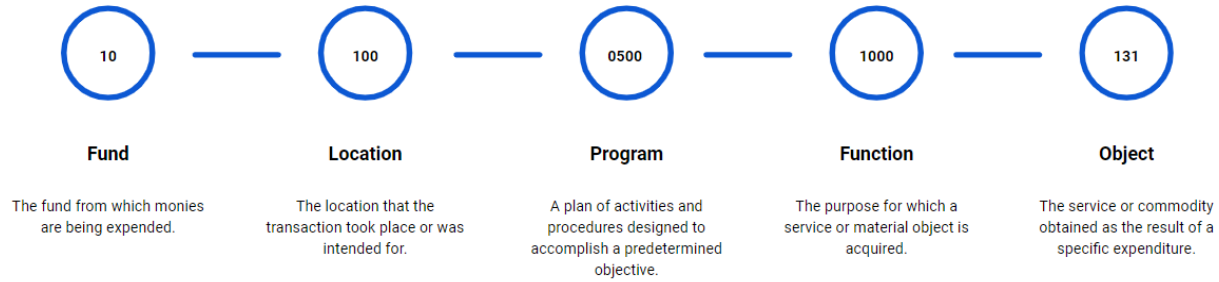
Figure 17. Expense Allocation Process Overview



Transparent Utah Query

Transparent Utah houses the detailed LEA expense data, as LEAs are required to upload quarterly expenditure reports to the system. This transaction-level data is queried and processed to split account codes into their different aspects: fund, location, program, function, and object. **Figure 18** describes the purpose for each aspect of the account code. The expense data also contains names, account aspect-specific descriptions, and a general description for each transaction.

Figure 18. Standard Account Code Structure



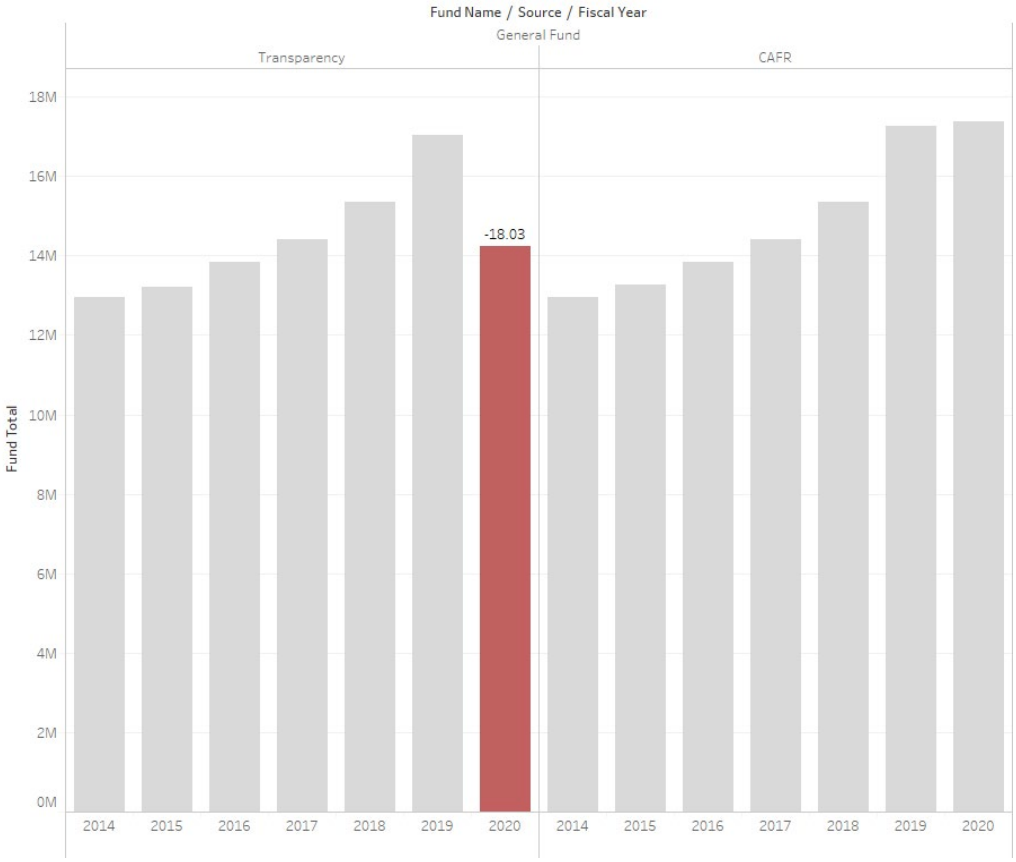
Preliminary Data Checks

Preliminary data checks differ substantially between school districts and charter schools. This is because charter school payroll data is queried from the Transparent Utah database rather than received directly from the LEA like school districts, charter school expense data is usually not broken out at the fund level, and charter school Comprehensive Annual Financial Reports (CAFRs) are not standard and vary in structure. The process for verifying school district expense and payroll data is described below. The charter school data checks and their differences are described in *Section 10.3: Charter School Differences*.

The expense data for school districts is first analyzed at a high level. The data is aggregated to the fund level and totals by year are cross-checked against the fund totals stated in the CAFR. These typically include the general fund, the non K–12 fund, the school food services fund, the capital projects fund, and so on.

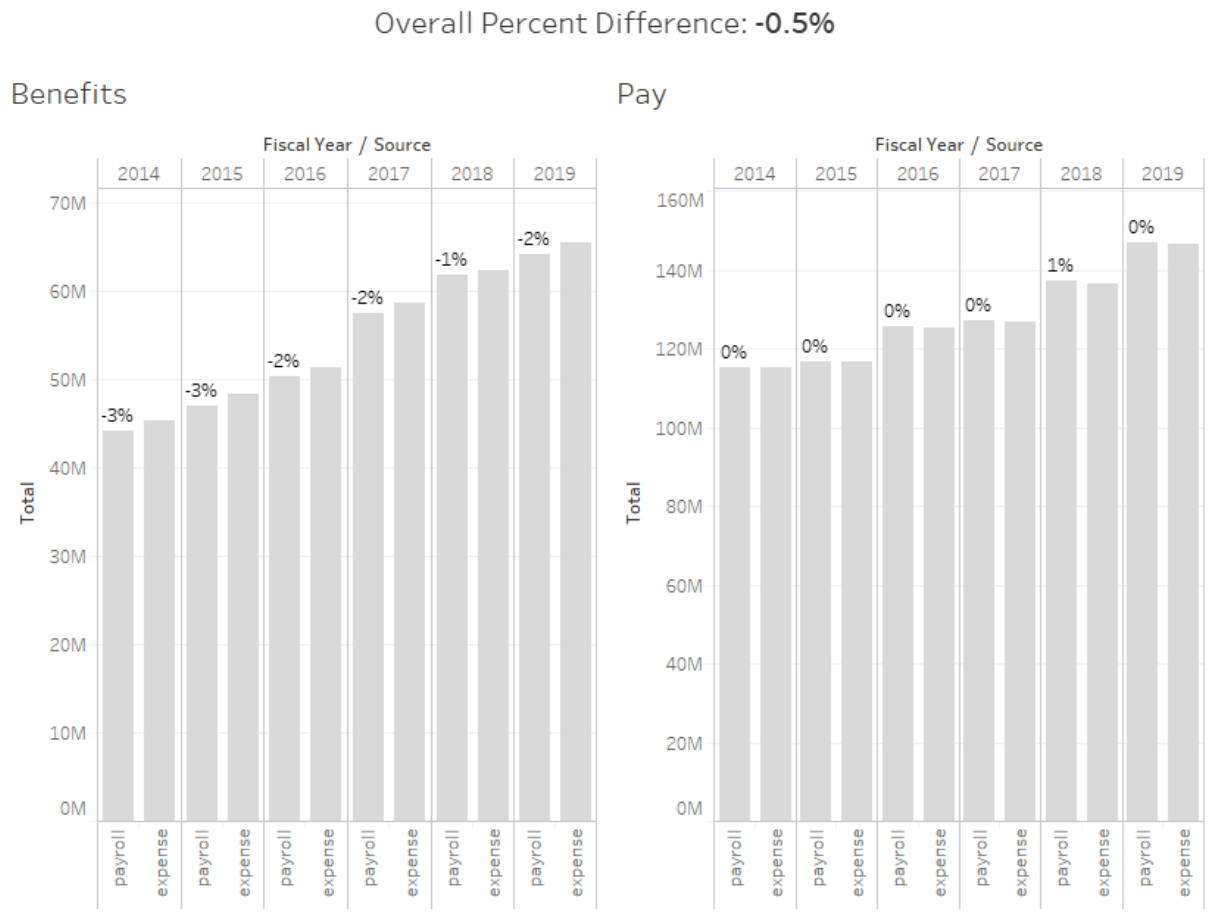
Any significant differences in totals between the two data sources are flagged, and some school districts are contacted at this point to correct any large discrepancies. For our purposes, a large discrepancy is typically defined as more than a 15% difference in the general fund for a given year (as most minor funds can be extracted from the CAFR, see the *Supplement Minor Funds* section). **Figure 19** provides an example of a school district whose Transparent Utah data differed significantly from the CAFR. This data issue was identified during this phase and then corrected.

Figure 19. District Expense Quality Checks



Next, employee compensation totals are compared between data sources. This is because, for school districts, the employee compensation information in the expense data is later replaced with the more detailed information received from the districts. This check ensures that totals by year and by type (salary or benefit) are comparable, as displayed by **Figure 20**. If the totals are not within a reasonable margin of each other, LEAs are then contacted to correct their information.

Figure 20. District Payroll Quality Checks



Location Analysis

Locations from the expense data, payroll data, and course data are analyzed next. Any locations that are not recorded across all three data sources are further researched. Often, any other schools that open or close during our period of analysis (currently school years 2013–14 through 2018–19) or any alternative schools are researched as well, in an effort to add context around the spending patterns at each location.

Locations are sometimes adjusted during this step. Occasionally, schools have different location numbers between data sources. When this occurs, the location number in the expense data is replaced to match the location number in the payroll or course data. Once location numbers are consistent amongst data sources, an Excel file is written that records the location numbers and location names at each LEA. This step ensures that the expenses at each location are matched to the appropriate school or student group.

Compensation Replacement

The final step of the data preparation phase entails replacing the employee compensation in the expense data with the more detailed payroll information. This is necessary because teacher

names are masked in the expense data, and this information is critical in linking each teacher's compensation to their students, as detailed in *Section 5: Payroll Cleaning*. This information is replaced by removing transactions between object codes 100 and 299 (representing salaries and benefits) from the expense data and joining on the payroll data. Teacher names are now attached to their respective compensation, which is allocated to their respective students in *Section 7.1: Instructional Compensation Allocation*.

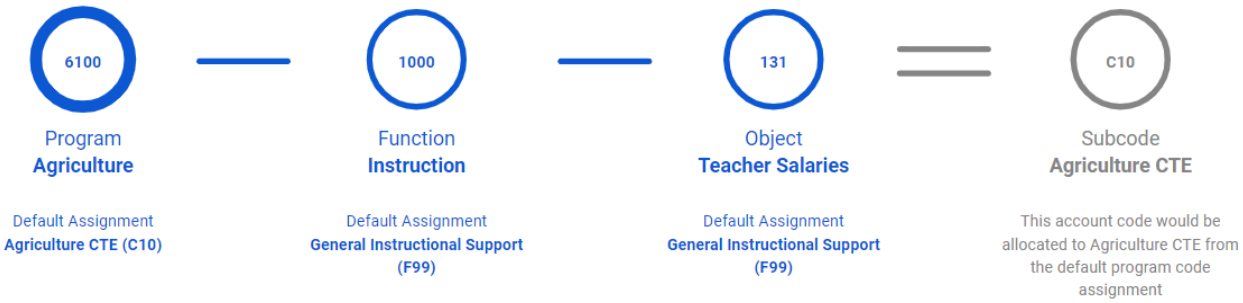
Default Subcode Assignments

A first pass on allocating transactions to various spending categories is made by default account segment assignments. These default assignments are based off of USBE's standard COA. The majority of these program, function, and object codes are mapped to specific Project KIDS spending categories. The comprehensive list of Project KIDS subcodes and their rules can be found in *Section 11.3: Expense Spending Category Assignment Rules*. The list of default mappings from USBE's COA to the Project KIDS subcodes can be found in *Section 11.4: Expense Default Account Code Assignments*.

Figure 21. Account Component Hierarchy for Subcode Assignments

Expenses are first allocated by program code, then object code, then function code, then fund number, as shown in **Figure 21**. This order assigns subcodes by the most specific to the least specific fields. **Figure 22** demonstrates how default assignments allocate an account code to its most specific subcode. In this example, the account code catches on the specific program code and is allocated to the Agriculture CTE subcode. Once a spending transaction is allocated to a specific subcode, the other (object/function/fund) assignments do not alter its subcode.

Figure 22. Subcode Allocation by Default Program Assignment Example



General programs such as program 0005, Regular Basic School, do not have default mappings since they are very broad. These expense transactions hopefully catch on a more specific object, function, or fund code and are thus allocated to the appropriate subcode. **Figure 23** provides an example. In this case, the general program code is bypassed for a subcode assignment, but it catches on the specific object code and is consequently allocated to Psychological Services.

Figure 23. Subcode Allocation by Default Object Assignment Example

Occasionally, all three account code aspects are too general to be allocated to a spending category. These instances are handled manually later on. However, by the end of this step, the vast majority of transactions should be allocated to specific subcodes.

Internal COA

Thus far, we have assumed that an LEA always records expenditures using the standard USBE COA. This is not always the case. A handful of LEAs use their own internal COA within their accounting system (i.e., their account aspects have a different meaning than those set out by USBE). These special cases are handled by reaching out to the LEAs to obtain their internal COA. Once the internal COA is received, it is manually mapped over to the Project KIDS spending categories. This then serves as the default assignments as outlined in the section above.

Standard Allocation Script

Next, the expense data is run through a standard script that further specifies spending categories. This script was developed to make more complex allocation decisions beyond the default subcode assignments. Most of the standard allocation script either makes the default subcode assignments more specific, or makes hard rules regarding expenses that should always be mapped to a specific subcode. **Table 5** outlines the steps of the expense allocation script.

Table 5. Expense Allocation Steps

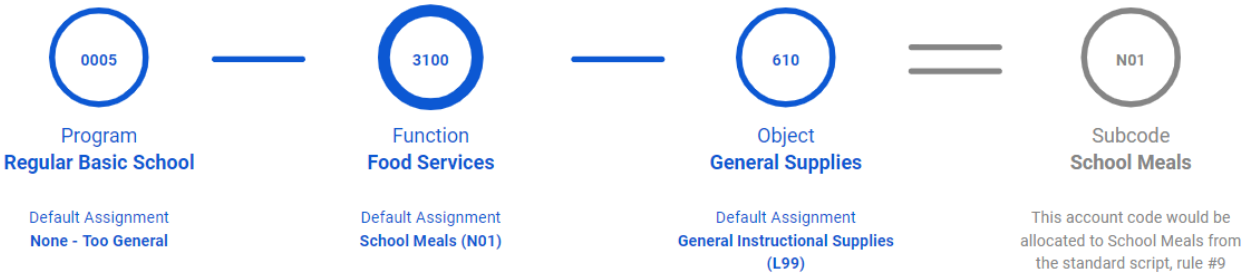
Step	Description	Example
1	Assign subcodes based on the standard COA ranges	Move any expenses with a 36XX program to the General Student Activities (E18) subcode
2	Assign subcodes based on the internal COA, if applicable	Dependent upon the internal COA mapping
3	Assign subcodes for vague programs in the internal COA, if applicable	Dependent upon the internal COA mapping

Step	Description	Example
4	Assign subcodes for expenses that were not previously allocated to a subcode	Manually move leftover expenses to an appropriate subcode or leave them in the Miscellaneous Expense (Z99) subcode
5	Assign administrative object codes to administrative subcodes	For school districts, move pay tied to superintendents, business administrators, and board members based on object codes 111, 112, and 114 to the District Administration (A99) subcode
6	Assign principal and principal assistant salary and benefits to an administrative subcode	For school districts, move pay tied to principals or assistant principals based on object codes 121 and 122 to the School Administration (Q99) subcode
7	Assign subcodes more specifically based on location codes	Move pay at a special education location to the SPED (U01) subcode
8	Assign expenses with a transportation function to a transportation subcode	Move expenses with a 27XX function to the Transportation (T01) subcode
9	Assign expenses with a nutrition function to a nutrition subcode	Move expenses with a 31XX function to the School Meals (N01) subcode
10	Assign expenses in the Student Activities Fund to the General Student Activities subcode	Move expenses from fund 21 to the General Student Activities (E18) subcode
11	Create LEA-specific subcodes that are more detailed than the pre-defined subcodes	Create a subcode such as SPED Vision Services or Immigrant and Refugee Support based on the spending areas of the LEA
12	Make General Instructional Support more specific based on function codes	Move expenses with a 21XX function in the General Instructional Support (F99) subcode to the Student Support Services (B99) subcode
13	Make General Instructional Support more specific based on object codes	Move expenses with object codes such as 600, 610, 640, 641, etc. in the General Instructional Support (F99) subcode to the General Instructional Supplies (L99) subcode
14	Make supplies subcodes more specific based on school level	Move expenses with object codes such as 600, 610, 640, 641, etc. in the Middle School Instruction (F03) subcode to the Middle School Supplies (L02) subcode

Step	Description	Example
15	Reassign Student Support Services to General Instructional Support based on function codes, if applicable	Move expenses with an instructional 1XXX function code in the Student Support Services (B99) subcode to the General Instructional Support (F99) subcode
16	Reassign administrative compensation to other administrative expenses if not compensation, and vice versa	For school districts, move expenses with a salary- or benefits-related object code, 1XX or 2XX, from Other District Expense (A09) to General Administrative Compensation (A08)
17	Reassign administrative subcodes based on function code, if applicable	For school districts, move expenses with an instructional 1XXX function code from General Administrative Compensation (A08) to General Instructional Support (F99) or a more specific subcode
18	Reassign expenses in Operational Expense at district-wide locations to District-Wide Operations for school districts	Move expenses in the Operational Expense (O99) subcode to the District-Wide Operations (A05) subcode if it is at a district location (typically locations less than 100)
19	Assign interest payments on debt to Interest on Debt and capital costs not depreciated to Facilities Acquisition and Construction	Move expenses with object code 830 to the Interest on Debt (D99) subcode
20	Assign expenses in the Non K–12 fund or with a non K–12 function or at a preschool location to Non K–12	Move expenses from fund 26 to the Non K–12 (X99) subcode
21	Implement any other LEA-specific adjustments	Augment any rules that are not applicable to the LEA and manually create additional LEA-specific allocation decisions

Figure 24 demonstrates how the standard script can allocate an account code to its most appropriate subcode. Using the default subcode assignments, this account code would have been allocated to General Instructional Supplies based on its specific object code. However, rule #9 in the standard allocation script assigns expenses with a nutrition function code to the School Meals subcode. This rule augments the default subcode assignment and places it in the most applicable subcode, School Meals.

Figure 24. Subcode Assignment by Standard Allocation Script Example



Supplement Minor Funds

Occasionally, school districts do not upload complete data to Transparent Utah for their non-major governmental funds, or what we refer to simply as minor funds. In these cases, we supplement their data so that the minor fund totals match their verified totals in the CAFR. The minor funds that we supplement are the Student Activities Fund, the Non K–12 Fund, the Tax Increment Financing Fund, and the School Food Services Fund. These funds are generally supplemented if there is more than a 50% difference between the expense total in the Transparent Utah data and the CAFR total. This can be done because these funds have direct mappings to Project KIDS subcodes. (They are mapped to subcodes General Student Activities, Non K–12, Non K–12, and School Meals, respectively.) This ensures that the totals are more accurate, without having to place an additional burden by requesting more data corrections from the LEA.

Note that this process is not undergone for charter schools, as they typically record all of their expenses under the general fund.

Add Depreciation

The Project KIDS methodology ensures capital costs are drilled down to the student level. Capital costs can be viewed in two different ways: by actual cost and by depreciated cost. The former is the actual cost spent on capital in a given year. The latter is the cost of capital depreciated over, or spread across, its useful life.

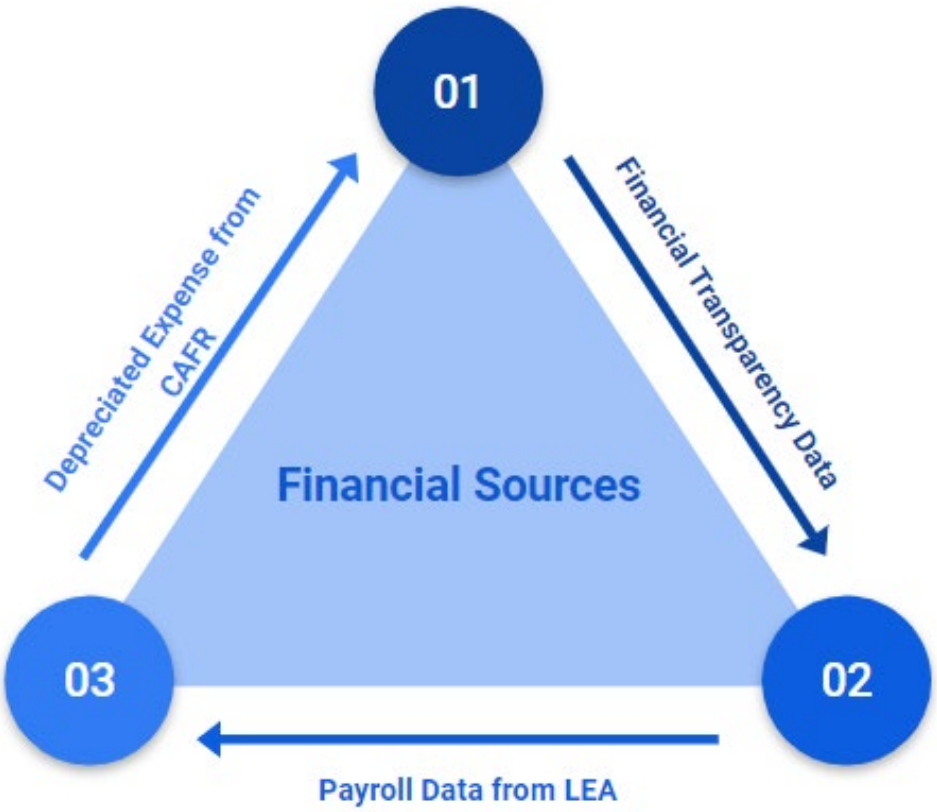
The actual cost of capital is typically reported in the Transparent Utah data system. However, the actual cost of capital is prone to major fluctuations between years, thus making peer-to-peer spending comparisons difficult. For this reason, Project KIDS extracts each LEA's depreciated expense value from the CAFR for each school year. Since the depreciated expense method spreads out the cost of capital across its useful life, it allows capital to be included in the conversation of school spending while still making peer comparisons possible.

Depreciated expense totals are found in the LEA's CAFR. These totals are joined to the expense file and allocated to the Depreciated Expense subcode. Current capital expenditures are allocated to the Actual Cost subcode based on specific capital-related account segments. Capturing capital expenditures in these two ways allows the user to toggle between views. However, the Project

KIDS data dashboards display the depreciated cost by default. A lengthier explanation of why this method is preferred can be found in *Section 10.2: Exclusions*.

To summarize, **Figure 25** details the three key financial sources that capture LEA spending.

Figure 25. Financial Sources

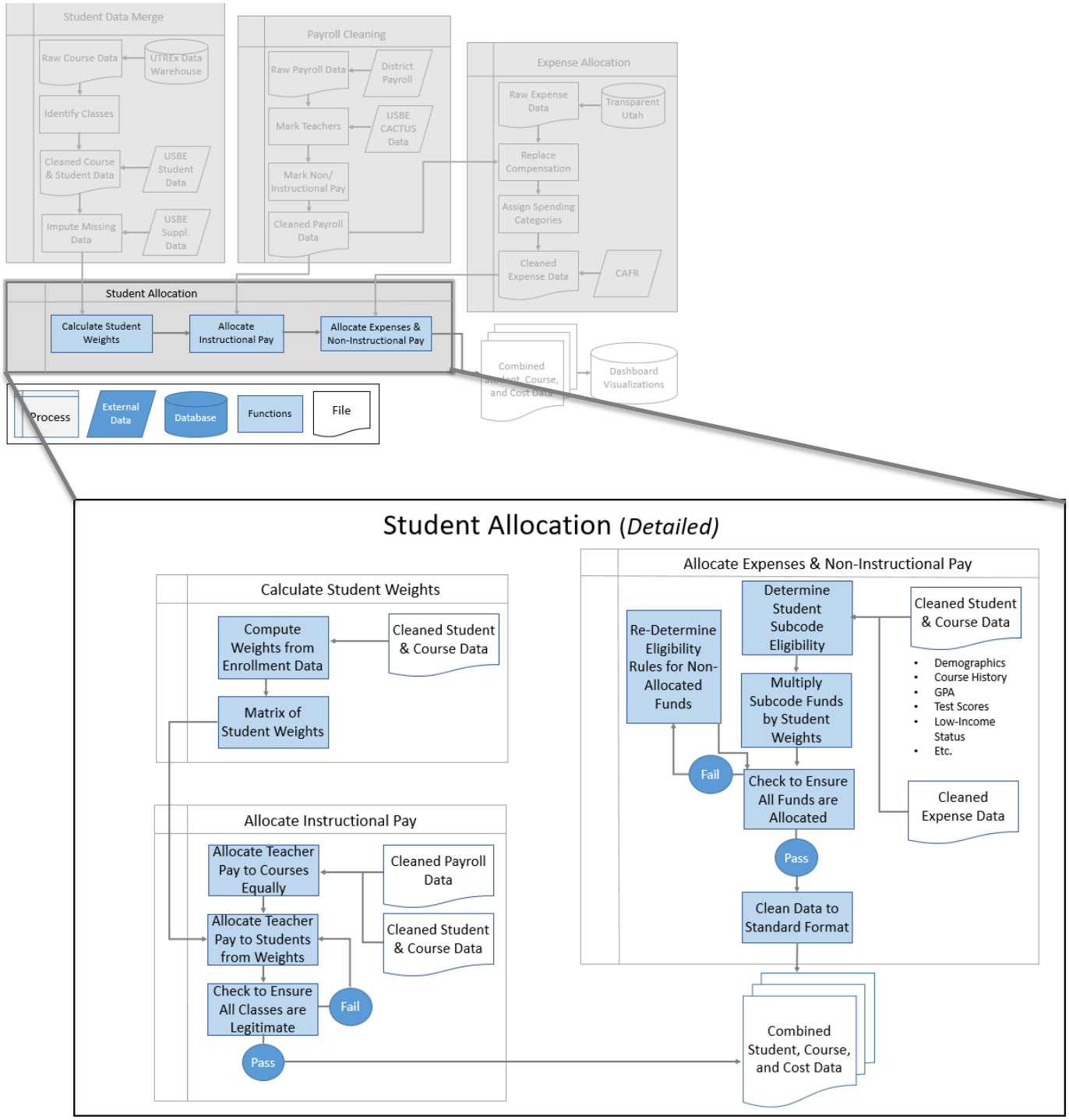


Export Files

At this point in the expense allocation process, all of the LEA's expense transactions are mapped to spending categories that are as specific as possible. Finally, these transaction totals are aggregated by year, location, and subcode. These fields are then utilized to allocate expenditures to specific student groups, as detailed in *Section 7.2: Expense and Non-Instructional Compensation Allocation*.

7. STUDENT ALLOCATION

Figure 26. Detailed Process Flow Chart: Student Allocation



The final data preparation step for the interactive visualizations is to take all expenses and compensation and allocate those resources to individual students. The Project KIDS methodology includes two different methods for allocating resources to individual students:

1. **Instructional Compensation:** Each teacher's instructional compensation is allocated to the students in each those teacher's classes, based on the length of each student's enrollment and the number of teachers assigned to each student in a class.
2. **Expense and Non-Instructional Compensation:** All other expenses and compensation are allocated to students based on individual student information, such as the school the student attends, their unique demographics, and their grade level.

Allocation of instructional compensation to students begins with the student-level merged data file (SMD file) described in this document under *Section 4.2: Data Merge*. This aggregated data resource includes student IDs nested within classes, as defined within *Section 4.1: Class Methodology*. That is, the SMD file specifies which students were in which classes, the teachers who taught those classes, and how much those teachers were compensated for their instructional and non-instructional labors.

Furthermore, the SMD file contains student-level information on utilization of transportation and/or nutrition resources. Most LEAs do not record detailed student-level use of these services, so Project KIDS imputes values for each student. The processes by which these data are imputed are described in an Appendix in this document (see *Section 9.1: Nutrition Imputation* and *Section 9.2: Transportation Imputation*).

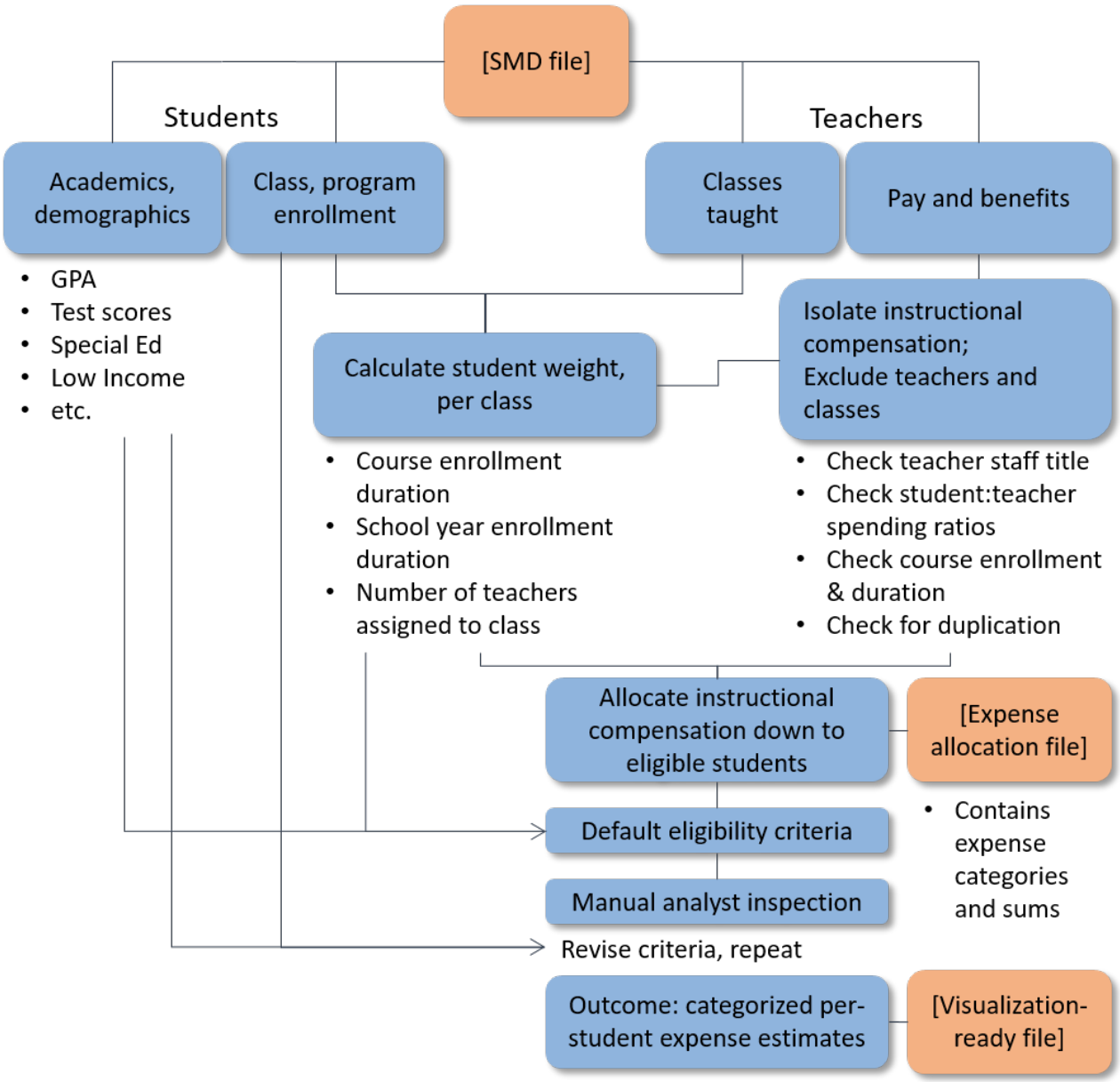
The file also denotes characteristics of students, such as special education status, homelessness status, English Language Learning status, and so on, which are useful for allocating specific expenses and non-instructional compensation to the students most likely to benefit from them. All of this information is used to create specific rules for allocating expenses and non-instructional compensation to individual students. These individual processes are described in the following subsections.

7.1 Instructional Compensation Allocation

Motivation

Project KIDS aims to allocate instructional compensation to individual students. To accomplish this, the Project KIDS team defined student course enrollment (see *Section 4.1: Class Methodology*) and identified instructional compensation transactions (see *Section 5: Payroll Cleaning*). This section describes how each teacher's instructional compensation is allocated among their students based on their course enrollment. The reader can also reference **Figure 27**, which diagrams the process flow for instructional compensation allocation.

Figure 27. Instructional Compensation Allocation Process



Methodology

Project KIDS allocates each teacher's instructional compensation to the students they instruct in proportion to the students' contact time with that teacher. This process is similar for both school districts and charter schools. The process for collecting and cleaning the teacher compensation data that is used in this section is described in *Section 5: Payroll Cleaning*.

The final teacher payroll data file contains teachers and their associated instructional salary and benefits for each year; the method for processing non-instructional district and charter school expenses is described in *Section 7.2: Expense and Non-Instructional Compensation Allocation*. At this stage, we examine this data file to ensure that no teacher payroll data is duplicated, either from a data entry error in the original payroll file or from a mistake in the payroll cleaning process.

In the Project KIDS data structure, students exist within classes which are first defined by the teacher(s) of those classes. The methods used to define the individual classes populated with students are described in *Section 4.1: Class Methodology*.

A survey conducted by the Project KIDS team indicated that, generally speaking, teachers spend a proportional amount of their time between their classes regardless of the class size. Therefore, we allocate all of a teacher's instructional compensation across each of their classes proportionally. See **Key Formulas 7.1.1** for this calculation.

Key Formulas 7.1.1

$$\$\ Allocated\ to\ Class_j\ from\ Teacher_k = \frac{Total\ Teacher_k\ instructional\ compensation}{Total\ \#\ of\ classes_{(1\rightarrow J)}\ taught\ by\ Teacher_k}$$

Then, we allocate those class-specific funds down to individual students by multiplying that compensation by a calculated weighting coefficient that is specific to each student. The weighting coefficient (WGTA) is calculated by measuring the duration in days of a class in which a student was enrolled, then dividing that number of days by the total duration of the class and the number of teachers assigned to the student in that class.

Occasionally, for example, students may leave the course mid-semester for various reasons. To account for this, students enrolled in the class for more days are allocated a greater proportion of their teacher's compensation, with students enrolled from the beginning to the end of the course receiving the largest proportion of money. In addition, we divide by the number of teachers assigned to the student for the course, as classes with multiple teachers distribute the work between those two teachers among their students. See **Key Formulas 7.1.2** for the calculation of WGTA for each student.

Key Formulas 7.1.2

$$WGTA_{ijk} = \frac{\#\ of\ days\ Student_i\ was\ enrolled\ in\ Class_j}{Total\ \#\ of\ Class_j\ days} * \frac{1}{\#\ of\ teachers_{(1\rightarrow K)}\ assigned\ to\ Student_i\ for\ Class_j}$$

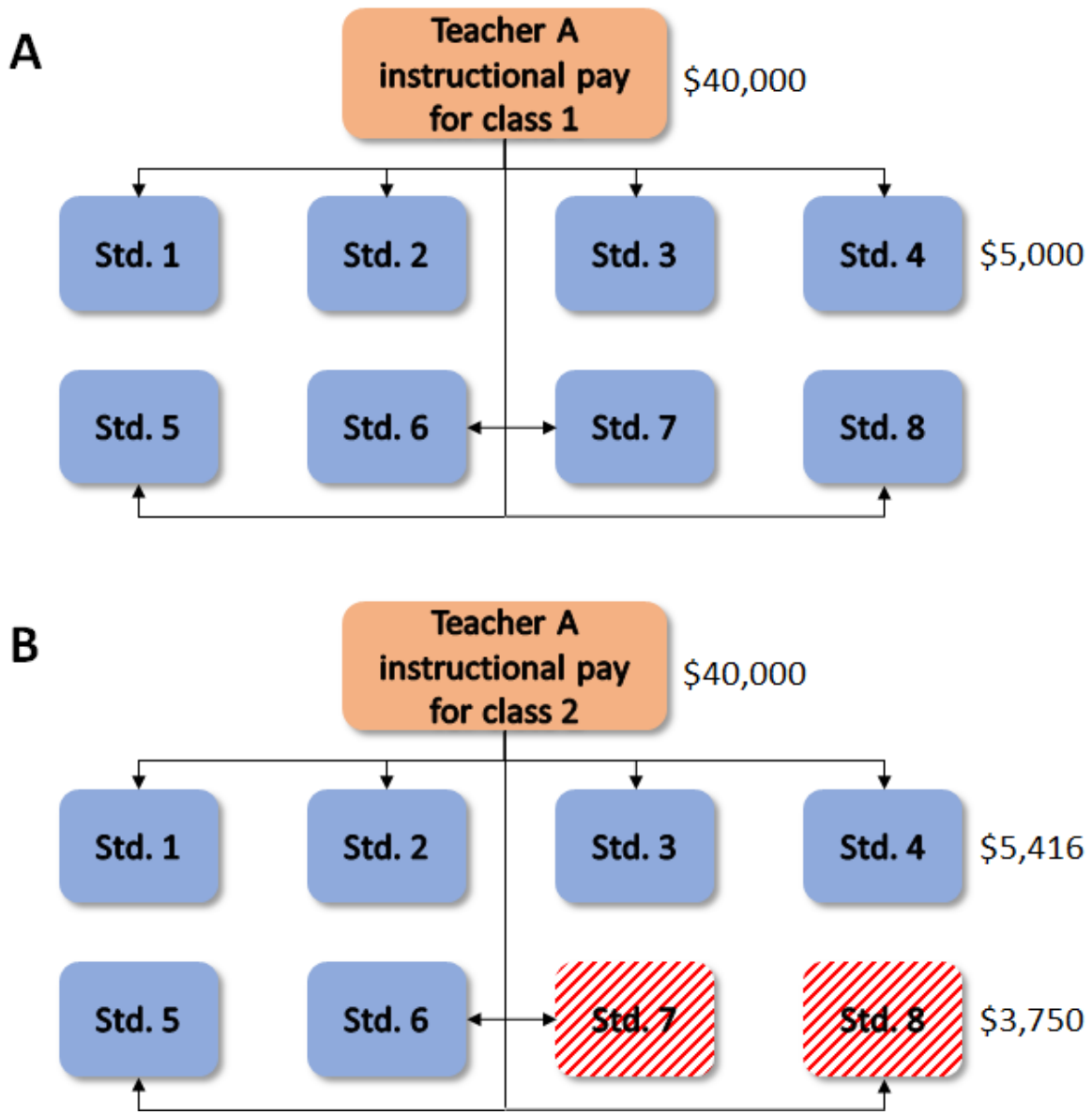
Key Formulas 7.1.3 illustrates the amount of money that each student receives from each class, based on the calculated teacher compensation allocated to the class and the student's weighting coefficient.

Key Formulas 7.1.3

$$\$\ Allocated\ to\ Student_i\ for\ Class_j\ from\ Teacher_k = \frac{\$\ Allocated\ to\ Class_j\ from\ Teacher_k * WGTA_{ijk}}{\sum_{i=1}^{I} WGTA_{ijk}}$$

Teacher salary and teacher benefits are recorded and processed as separate quantities, but the methods employed to allocate these instructional funds to students are the same: those students enrolled in classes for proportionally more days are allocated proportionally more teacher salary and teacher benefits. This method is illustrated in **Figure 28**.

Figure 28. Allocation of Instructional Compensation: An Example



In **Figure 28**, each figure panel represents a class taught by the same teacher during the same school year. Assume the teacher only taught these two classes and was paid a total $80,000 in instructional salary and benefits. These wages are allocated proportionally between their classes (hence, $40,000 per class) and then distributed to the students within those classes. **Panel A** represents how instructional pay is allocated equally to all students enrolled in a teacher's class when those students are enrolled in the course for the same amount of time. Each of these students was enrolled in the class for its entire duration, so they are each allocated $5,000 from the teacher's instructional pay.

Panel B illustrates how instructional pay is allocated to students in proportion to the amount of time they were enrolled in the course. Six students (blue squares) enrolled in the class for its entire duration, and two students (red dashed squares) enrolled in the class for only 75% of its entire duration (i.e., left the class before the end of the term length). To reflect this discrepancy in teacher exposure and instruction, the Project KIDS methodology allocates proportionally fewer instructional dollars from the teacher to those students who were only in the class for 75% of the year ($3,750) and allocates the remaining resources equally among the students who enrolled for the entire duration of the class ($5,416).

Following this allocation of teacher instructional compensation to their students, one final class validity check is completed to ensure class expenses fell within a reasonable range. Individual class expenses are compared with student enrollment counts, and any values which seem out of range are manually inspected. *Section 4.1: Class Methodology* provides a comprehensive description of the processes involved in creating and validating classes from the course enrollment data.

In summary, Project KIDS allocates teacher instructional compensation among their classes and then to students in proportion to the amount of course days in which they were enrolled and based on the number of teachers assigned to the student for the course. Ultimately, this process is implemented as described in order to accurately assign teacher compensation to the individual students who benefit from their instruction.

7.2 Expense and Non-Instructional Compensation Allocation

Overview

Once instructional compensation is allocated among students, non-instructional compensation and other expenses are allocated. This process includes 1) calculating student weight values to determine their likely *utilization* of resources, 2) determining *which students* likely benefitted from specific expenses, and 3) allocating expenses to eligible students based on their student weight values. The goal of this process is to create a best first-order approximation of which students benefit from which resources and create individual student resource profiles. These profiles can be aggregated to analyze spending at the classroom, subject, teacher, school, and LEA levels.

Determining Student Weights & Eligibility

Section 6: Expense Allocation outlines the process by which a Project KIDS analyst categorizes expenses into subcodes for each LEA. The resulting file aggregates expense totals by school location, school year, and spending category. Those total amounts are allocated to eligible students by a slightly different weighting variable from the one described in the previous section. This weighting variable (WGTB) adds up to 1 for each student *if* the student was enrolled in the LEA for an entire school year. Since the data is disaggregated by classes, the WGTA variable described in the previous section is used to calculate the individual student weight in each class, as displayed in **Key Formulas 7.2.1**.

Key Formulas 7.2.1

$$WGTB_{ijk} = \frac{WGTA_{ijk}}{\sum_{k=1}^{K}\sum_{j=1}^{J} WGTA_{ijk}} * \frac{\#\ of\ days\ Student_i\ was\ enrolled\ in\ LEA}{Total\ \#\ of\ days\ in\ the\ school\ year}$$

When the weight is added up across all of a student's classes in a single school year, the first part of the equation cancels out and the student's total weight is only less than 1 if they were enrolled in the LEA for only part of the year. This calculation is displayed in **Key Formulas 7.2.2**.

Key Formulas 7.2.2

$$WGTB_i = \sum_{k=1}^{K}\sum_{j=1}^{J} \frac{WGTA_{ijk}}{\sum_{k=1}^{K}\sum_{j=1}^{J} WGTA_{ijk}} * \frac{\#\ of\ days\ Student_i\ was\ enrolled\ in\ LEA}{Total\ \#\ of\ days\ in\ the\ school\ year}$$

$$= \frac{\#\ of\ days\ Student_i\ was\ enrolled\ in\ LEA}{Total\ \#\ of\ days\ in\ the\ school\ year}$$

These calculations allow for allocation rules to be made on different levels. For example, expenses for mathematics are allocated to students based on only the $WGTB_{ijk}$ calculation for their math classes, but expenses for low income students are allocated based on their total $WGTB_i$ calculation for the year.

Project KIDS analysts determine student eligibility for resource allocation in accord with several criteria which are applied across LEAs statewide. Student eligibility is determined by utilizing the SMD file, which contains over 160 variables from UTREx, SCRAM, and any supplementary data resources (see *Section 4.2: Data Merge*). In the course of an investigation, a Project KIDS analyst may see fit to use any of these variables to accurately pair dollars with students. For example, funding for special education is allocated across students who are marked as utilizing an IEP, just as funding for the financial literacy program is distributed across students enrolled in Financial Literacy courses.

A series of if/else statements are used to assign values based on each student's likelihood to benefit from the resources in each given subcode. If it appears they are likely eligible to benefit from funds in a given subcode, the student's *WGTB* value for that observation is included. If the student does not appear likely to benefit from those funds, they are assigned a null value. Columns are created in the data frame with student weight values for every expense allocation subcode they are likely to benefit from. Some subcode allocation rules are consistent across districts, some decisions are made based on district-specific information, and some are made after contacting district personnel and determining specific groups of students that benefit from programs.

See *Section 11.5: Student Allocation Assignment Rules* for more information on student weight decisions for each spending subcategory.

Allocating Subcode Money Based on Student Weights

Expenses that utilize school location codes in the associated account code are considered location-specific, and are allocated only to students enrolled in courses at those locations. Expenses that utilize a district location code in the associated account code are considered district-wide expenses and are allocated to all students across the district based on weight (*WGTB*). The subcode totals are then divided among all weight values for qualifying students for each spending subcategory, first for location-specific expenses and then for district-wide expenses. Students with higher weights, from being enrolled in the school year for a relatively longer period of time, receive a proportionally higher amount of funding.

The equation in **Key Formulas 7.2.3** demonstrates how a student's share of spending is calculated. This formula is utilized to calculate both a student's share of location-specific funding and district-wide funding. The total amount spent on a given student is then calculated, and represented in **Key Formulas 7.2.4**.

Key Formulas 7.2.3

$$Student\ Spending_{ijk} = \frac{Student\ Weight_{ijk}}{\sum_i Student\ Weight_{ijk}} \times Subcode\ Spending_{jk}$$

for spending subcode k, location and year combination j, and student i.

Key Formulas 7.2.4

$$Student\ Spending_i = \sum_k (Student\ Spending_{i(LS)k} + Student\ Spending_{i(DW)k})$$

where *k* represents the spending subcode, *i* represents the given student, and *LS* and *DW* indicate the student's respective school-specific location and the common district-wide location, respectively.

Charter school network expenses and non-instructional compensation are allocated similarly to districts. These networks have multiple locations that students can attend, as well as network-wide expenses that benefit the entire student population, such as administration. The total amount spent on a given student includes location-specific and charter-wide funds, as displayed in **Key Formulas 7.2.5**.

Key Formulas 7.2.5

$$Student\ Spending_i = \sum_k (Student\ Spending_{i(LS)k} + Student\ Spending_{i(CW)k})$$

where *k* represents the spending subcode, *i* represents the given student, and *LS* and *CW* indicate the student's respective school-specific location and the common charter-wide location.

A large number of charter schools have only one location. No expenses are considered location-specific for these LEA allocations. All expenses are considered charter-wide and all students are eligible for resource allocation based on weight (*WGTB*). The equation in **Key Formulas 7.2.6** demonstrates how a student's share of spending is calculated at single location charter school.

Key Formulas 7.2.6

$$Student\ Spending_i = \sum_k (Student\ Spending_{i(CW)k})$$

where *k* represents the spending subcode, *i* represents the given student, and *CW* indicates the student's charter school location.

Files are then generated to compare aggregated subcode expenses to total allocated amounts, to ensure that all funds are distributed to student groups and that no funds are missing from the per-student spending calculations.

If no students meet the criteria for LEA-specific rules for a given subcode and no reasonable proxy can be determined by the analysis team, LEA personnel are contacted in order to help determine which students are most likely to benefit from that resource. For example, if money is being categorized as Critical Languages because of its COA designation, but there are no foreign language courses in the class data, district personnel would be contacted to determine which groups of students are participating in and benefitting from a foreign language program at the school. The code is run iteratively and totals are checked each time until all funds are distributed to students.

Student Resource Profiles

Each of these subcodes, with the addition of Teacher Pay (see *Section 7.1: Instructional Compensation Allocation*), are also assigned to larger parent categories. These include District Wide Expenses, Student Support Services, Debt and Depreciation, Extra Curricular, Nutrition Services, Transportation Services, Special Education, Operations/Facilities/Construction, Instructional Related Expenses, School Administration, and Miscellaneous Expenses.

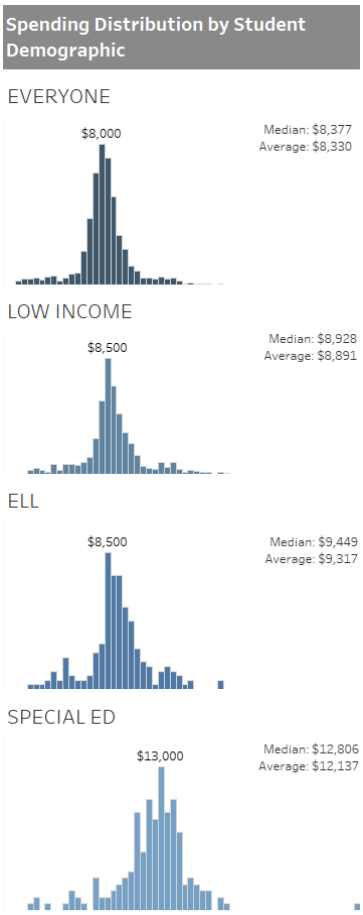
Figure 29. Student Resource Profiles

Category	Amount
Teacher Pay	$ 5,530
Transportation	$ 0
District Administration	$ 1,100
English Language Learners	$ 0
Athletics	$ 500
Nutrition	$ 850
Instructional Support	$ 1,500
Special Education	$ 0
Dual Language Immersion	$ 0
Operational Expense	$ 2,300
Total	**$ 11,780**

Category	Amount
Teacher Pay	$ 3,550
Transportation	$ 800
District Administration	$ 1,100
English Language Learners	$ 0
Athletics	$ 0
Nutrition	$ 150
Instructional Support	$ 1,295
Special Education	$ 0
Dual Language Immersion	$ 1,250
Operational Expense	$ 2,300
Total	**$ 10,445**

Category	Amount
Teacher Pay	$ 7,100
Transportation	$ 800
District Administration	$ 1,100
English Language Learners	$ 0
Athletics	$ 0
Nutrition	$ 500
Instructional Support	$ 2,500
Special Education	$ 3,000
Dual Language Immersion	$ 0
Operational Expense	$ 2,300
Total	**$ 17,300**

Figure 30. Spending Distributions



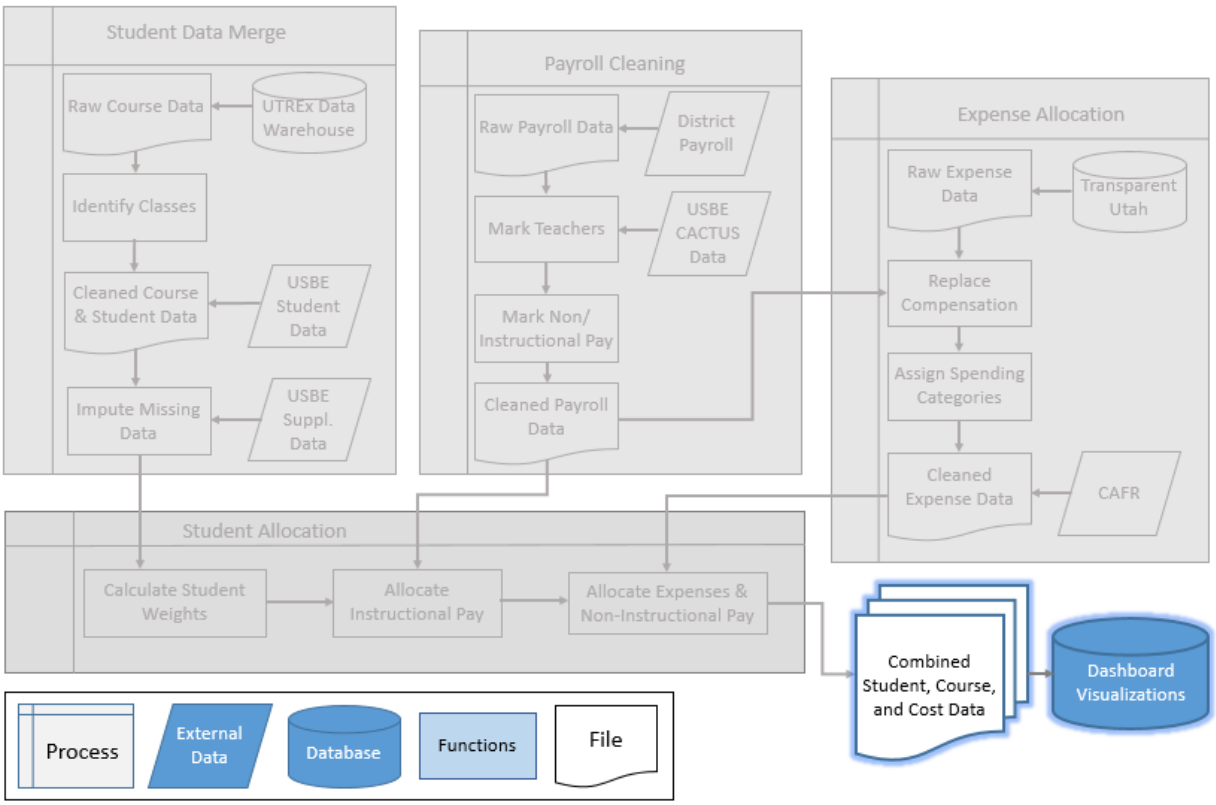
These parent categories and subcategories are used to create the unique student resource profiles described in *Section 2: Project Background* and again displayed in **Figure 29**. Because funds are allocated down to the individual student-by-course level, individual components of their student resource profiles can be used to analyze spending by subject, classroom, teacher, and more.

These different aggregation capabilities are utilized in data dashboards. In addition to viewing average and median costs per student at a given school, users can see distributions of student costs based on a variety of demographic information, by school, or by LEA. See **Figure 30** for an example of these spending distributions.

For more information on the data and dashboard visualizations, see *Section 8: Dashboard Visualizations*.

8. DASHBOARD VISUALIZATIONS

Figure 31. Process Flow Chart: Dashboard Visualizations



Once instructional and non-instructional expenses are allocated to students, three data files are generated for use in Tableau dashboard visualizations, summarized in **Table 6**.

Table 6. Dashboard Data Files

A_[ID]	**All information aggregated at the course level**	• Row level observations include course-level information for each student in each year • Aggregated by Class ID in visualizations to display class or subject level of information
Agg_[ID]	**All spending and assessment information aggregated at the student level**	• Creates a single observation per student per year • Grouping Variables: Student ID, School Year, District ID, School Number Mode, School Name Mode, and School Type Mode*
SCHOOL_[ID]	**All spending and assessment information aggregated at the school level**	• A separate file that includes Chart of Account information for each expense at the district. This file is joined to the subcode names • Each transaction can be analyzed by fund, function, program, or object code, and district personnel can view how their COA classifications are being categorized and grouped by the Project KIDS team for analysis

**Mode values for school number, school name, and school type are used for this aggregation because some students predominantly attend classes at one location, but will attend some classes at a different location (e.g. A Jr. High student that attends one advanced level course that is only offered at a high school in his district).*

In addition to the three data files, each LEA dashboard pulls in a CSV file that contains USBE Average Daily Membership (ADM) information and a CSV file titled "Allocation Explainer." These Allocation Explainer files list each expense subcode that was allocated funds during the *Section 6: Expense Allocation* portion of analysis, which students were allocated those funds during the *Section 7.2: Expense and Non-Instructional Compensation Allocation* portion of the analysis, and why funds were allocated to those specific students. These files are utilized in the simplified methodology page, included with each LEA dashboard. They are used to add another level of transparency into how allocation decisions are being made, with LEA-specific allocation decisions included.

Multiple data files are used because of the breadth and complexity of the information that is displayed in the dashboards. Loading course-level information and calculating aggregate information within every dashboard leads to incredibly slow loading times, which could be frustrating for the end user and diminish the ease and usefulness of these dashboards. In order to increase efficiency, these pre-aggregated student-by-course, student, and school level files are generated and utilized in dashboards where each level of detail is appropriate. Detailed course-level information is utilized in dashboards where that level of granularity is necessary to convey relevant information.

Calculations & Aggregations for Visualizations

Location-specific and LEA-wide student allocations are added to generate one subcode total per student, per course. Some additional fields are then calculated using subcode totals, as displayed in **Table 7** and **Key Formulas 8.1.1**.

Additionally, different expense types can be viewed throughout different dashboards and these calculations are found in **Key Formulas 8.1.2**. Finally, **Key Formulas 8.1.3** displays the calculation for weighted student count, which is also used throughout the dashboards.

Table 7. Calculated Fields for Visualization

Variable Name	**Description**
Teacher Pay	Teacher instructional compensation by student weights
Total Expense	Total cost per student per class within a given year. Sum of subcode allocations and teacher pay, **excluding Actual Cost capital expenditures** and any community service expenditures that are not considered part of per-student spending, such as Non K−12 programs.
All_nocd	Used to sum up total costs **excluding Actual Cost capital expenditures** and any community service expenditures that are not considered part of per-student spending, such as Non K—12 programs.
All_cd	Used to sum up total costs **excluding Depreciated Cost capital expenditures** and any community service expenditures that are not considered part of per-student spending, such as Non K−12 programs.
Course Expense	Sum of allocated costs for instruction-related subcodes by student by course.

Key Formulas 8.1.1

$$Proportion\ of\ School\ Year\ Class_j\ Lasted = End\ of\ Class_j - Start\ of\ Class_j$$

(see Key Formulas 4.1.3)

$$Teacher\ Pay\ for\ Student_i\ in\ Class_j\ with\ Teacher_k = \$\ Allocated\ to\ Student_i\ for\ Class_j\ from\ Teacher_k$$

$$Teacher\ Pay\ for\ Teacher_k\ by\ Class_j = \sum_i \$\ Allocated\ to\ Student_i\ for\ Class_j\ from\ Teacher_k$$

(see Key Formulas 7.1.2)

$$Total\ Expense\ for\ Student_i\ in\ Class_j = Student\ Spending_{ij} + \sum_k \$\ Allocated\ to\ Student_i\ for\ Class_j\ from\ Teacher_k$$

$$Total\ Expense\ by\ Class_j = \sum_i Student\ Spending_{ij} + \sum_{i,k} \$\ Allocated\ to\ Student_i\ for\ Class_j\ from\ Teacher_k$$

(see Key Formulas 7.1.2 and 7.2.3)

$$Course\ Expense\ for\ Student_i\ in\ Class_j = Student\ Spending_{ij}[Instruction\ Related\ Subcodes\ only]$$

$$Course\ Expense\ by\ Class_j = \sum_i Student\ Spending_{ij}\ [Instruction\ Related\ Subcodes\ only]$$

$$Total\ Student\ WGT\ for\ Class_j = \sum_{i,k} WGTB_{ijk}$$

(see Key Formulas 7.2.1)

Key Formulas 8.1.2

$$Total\ Teacher\ Compensation = \sum Teacher\ Pay\ for\ Teacher_k\ by\ Class_j$$

$$Total\ Course\ Related\ Expenses = \sum\left(Course\ Expense\ by\ Class_j + Teacher\ Pay\ for\ Teacher_k\ by\ Class_j\right)$$

$$Total\ Course\ Related\ Expenses\ (No\ Teacher\ Pay) = \sum Course\ Expense\ by\ Class_j$$

$$Total\ of\ All\ Expenses = \sum Total\ Expense\ by\ Class_j$$

$$Total\ of\ All\ Expenses\ (No\ Teacher\ Pay) = \sum\left(Total\ Expense\ by\ Class_j - Teacher\ Pay\ for\ Teacher_k\ by\ Class_j\right)$$

$$Average\ Teacher\ Compensation = AVG\left(\frac{Teacher\ Pay\ for\ Teacher_k\ by\ Class_j}{Proportion\ of\ School\ Year\ Class_j\ Lasted}\right)$$

$$Average\ Course\ Related\ Expenses = AVG\left(\frac{Course\ Expense\ by\ Class_j + Teacher\ Pay\ for\ Teacher_k\ by\ Class_j}{Proportion\ of\ School\ Year\ Class_j\ Lasted}\right)$$

$$Average\ Course\ Related\ Expenses\ (No\ Teacher\ Pay) = AVG\left(\frac{Course\ Expense\ by\ Class_j}{Proportion\ of\ School\ Year\ Class_j\ Lasted}\right)$$

$$Average\ of\ All\ Expenses = AVG\left(\frac{Total\ Expense\ by\ Class_j}{Proportion\ of\ School\ Year\ Class_j\ Lasted}\right)$$

$$Average\ of\ All\ Expenses\ (No\ Teacher\ Pay) = AVG\left(\frac{Total\ Expense\ by\ Class_j - Teacher\ Pay\ for\ Teacher_k\ by\ Class_j}{Proportion\ of\ School\ Year\ Class_j\ Lasted}\right)$$

Key Formulas 8.1.3

$$Student\ Count\ (Weighted) = \sum WGTB$$

Dashboard Overviews - Districts & Charter School Networks

The following screenshots contain data from a fictional school district. These do NOT include data from, nor represent, an actual school district in the state of Utah.

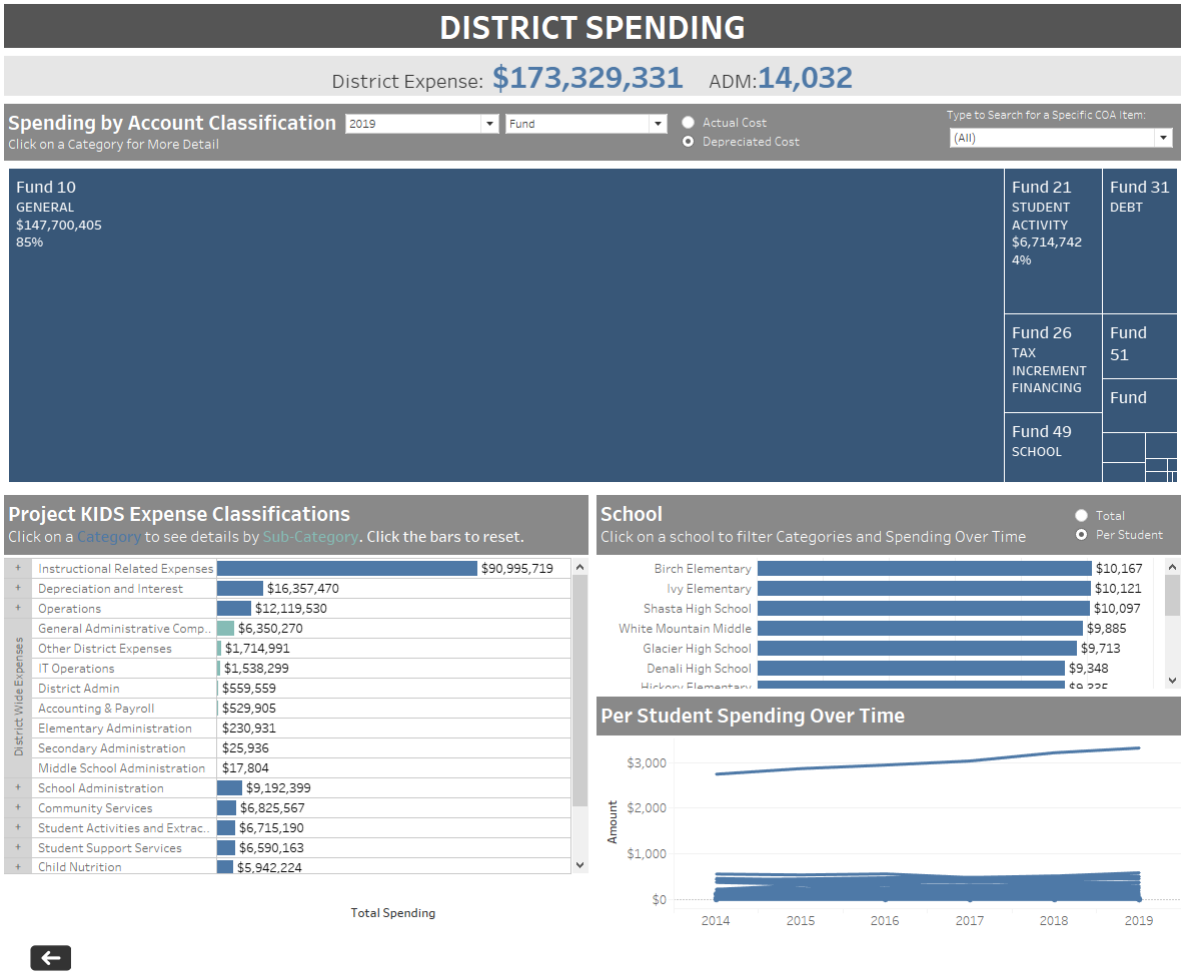
Some dashboards contain personally identifiable information (PII) for students or students groups where n < 10. Access to these dashboards is limited to those who are granted permission to view said data under FERPA privacy regulations. PII information is excluded from all visualizations in de-identified dashboards.

The following discussion refers to a district dashboard, but the same concepts apply to charter school networks.

District Spending

The District Spending dashboard (see **Figure 32**) uses the SCHOOL_[ID] dataset to display district expenses based on accounting codes, and how those expenses flow into the categories and subcategories created by Project KIDS for analysis. The purpose of this dashboard is to help district personnel understand how their internal accounting system is used to allocate funds to the Project KIDS expense classifications, which are specifically designed to allocate the funds to individual students in each of the other dashboards. Location information is included, so users can view school-level totals, per-student averages, and spending over time.

Figure 32. District Spending Dashboard



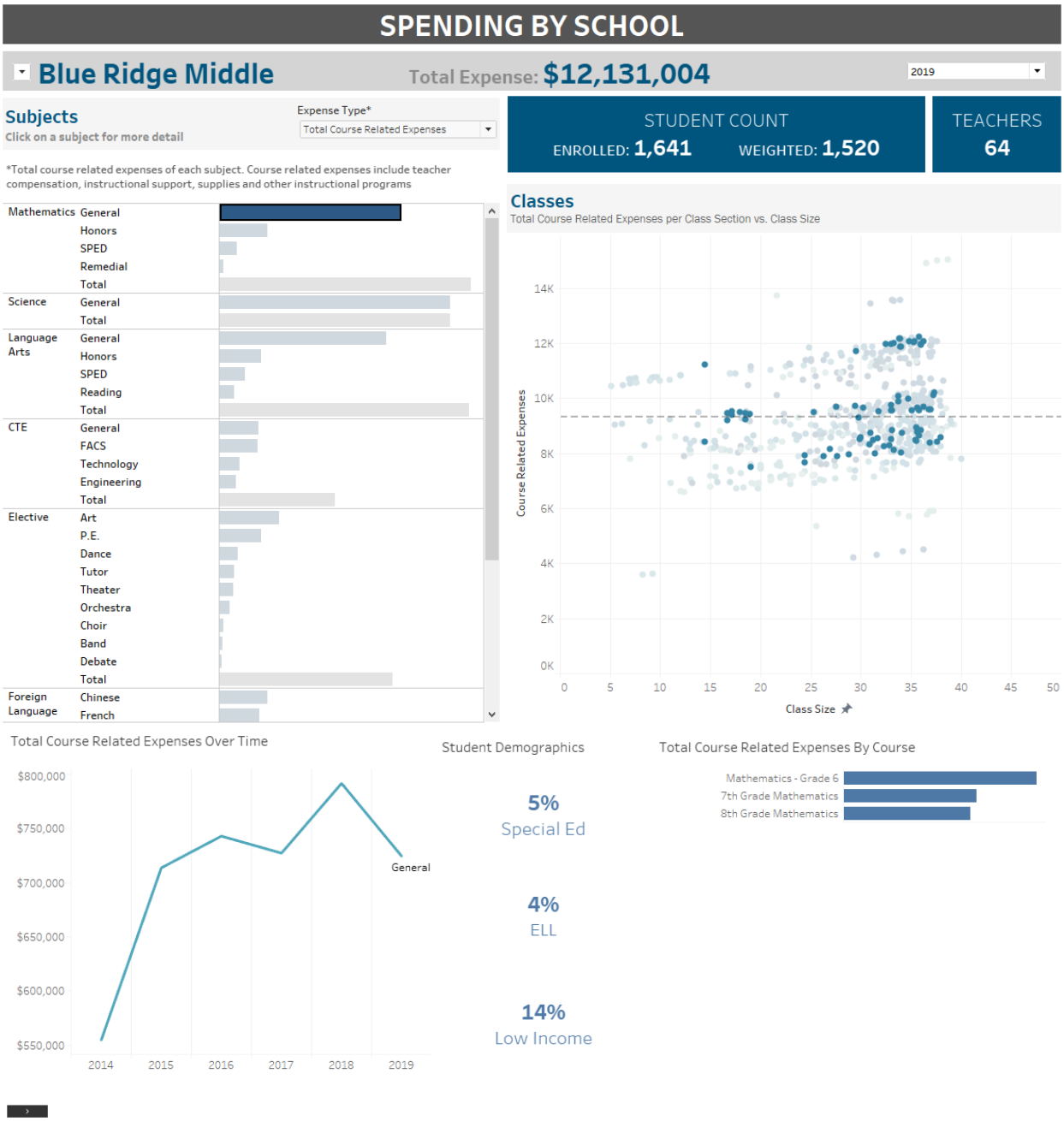
Spending by School

The Spending by School visualization (see **Figure 33**) allows stakeholders to drill into individual schools in their districts to look at spending patterns by subject and by individual classes. The A_[ID] data set is used here so that individual class sizes, course-related expenses, subject-level expenses, subject-specific expense trends, and class demographics can be viewed.

The enrolled student count is the count of distinct student IDs at a school in a given year. The weighted student count is the sum of WGTB at a school in a given year, which takes into account the proportion of the school year each student was enrolled (see **Key Formulas 8.1.3**). Different expense types can be viewed (calculations for these expense types are found in **Key Formulas 8.1.2**).

Averages include course length information in order to account for differences between year-long elementary classes and semester, quarter, or trimester length courses, for better comparisons. See the **Table 7** and **Key Formulas 8.1.1** for more information on specific fields in the datasets used for these visualizations.

Figure 33. Spending by School Dashboards



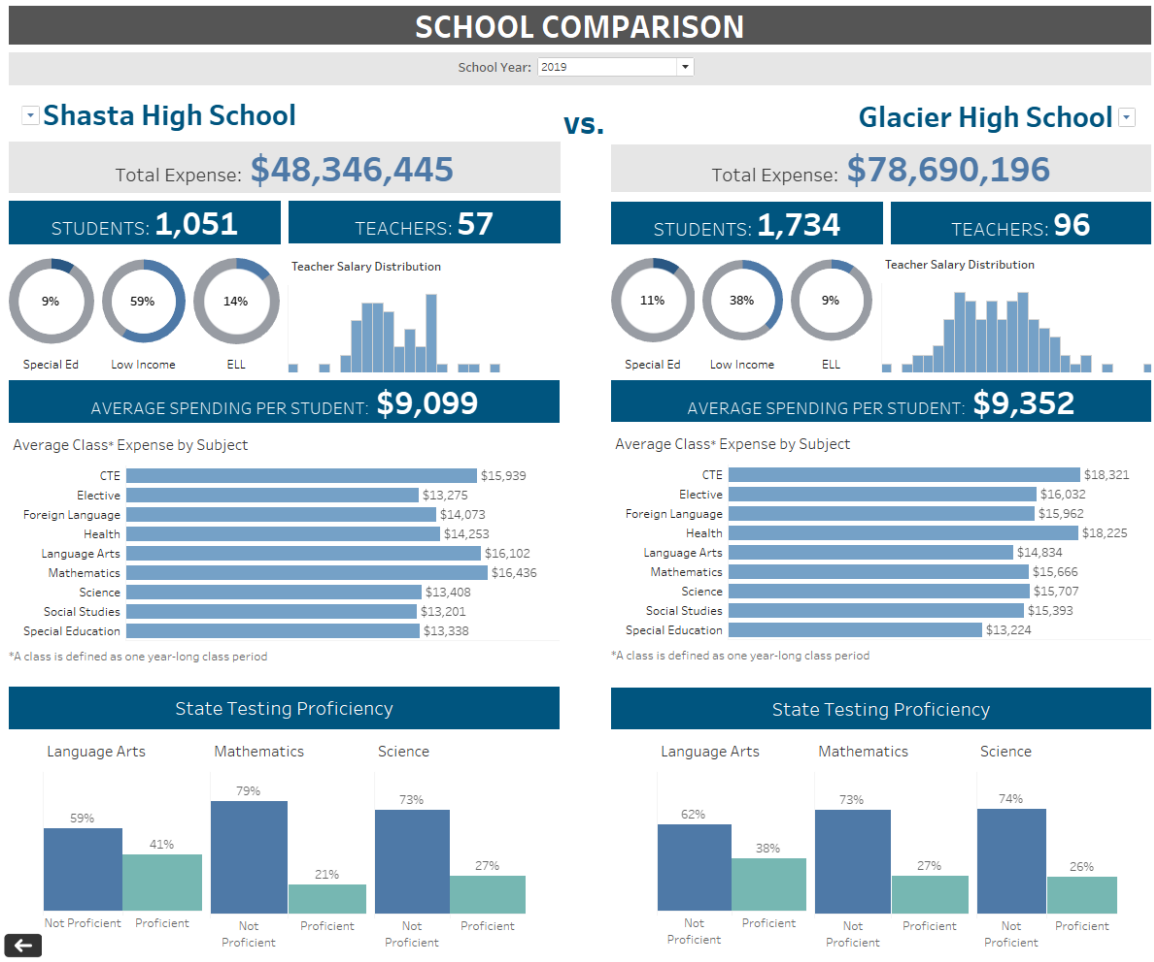
School Comparison

The School Comparison visualization (see **Figure 34**) allows stakeholders to compare spending and performance metrics between schools in their school district. The SCHOOL_[ID] file is used to populate the visualization with each school's total expense. A_[ID] files are used to calculate all other information, since a subject and class demographic level of detail is required.

The student count is weighted; the sum of WGTB at a school in a given year, which takes into account the proportion of the school year each student was enrolled. This calculation is found in **Key Formulas 8.1.3**.

Proficiency scores are calculated by USBE. Students scoring a 1 or 2 on state standardized tests are considered "Not Proficient" and students scoring a 3 or 4 are considered "Proficient."

Figure 34. School Comparison Dashboard

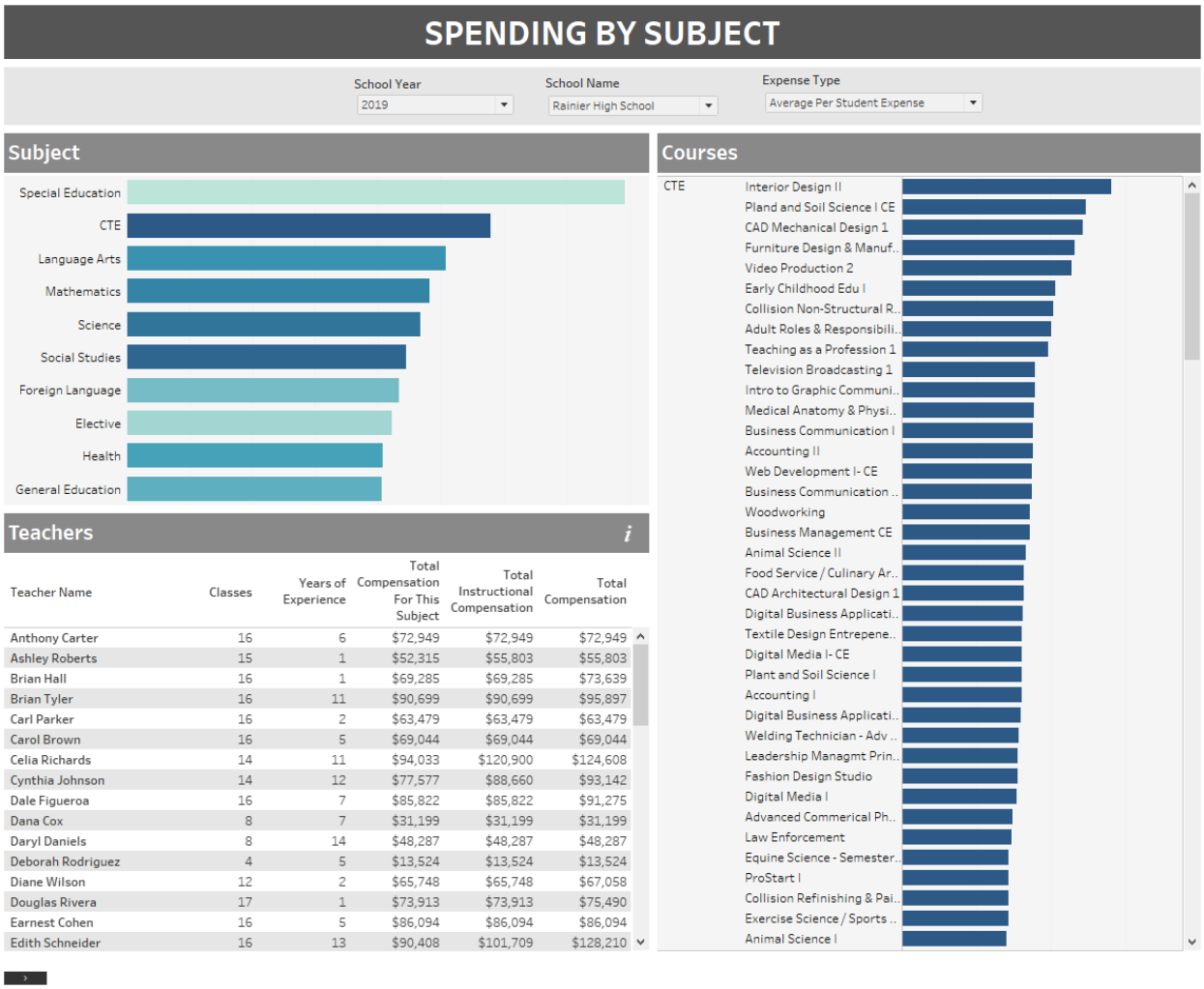


Spending by Subject

The Spending by Subject dashboard (see **Figure 35**) allows stakeholders to evaluate spending by subject, aggregated at the subject, class, and teacher level. The A_[ID] dataset is used so viewers can analyze spending at the subject level.

Teacher compensation information can also be viewed by subject and course. Tenure is a significant factor in compensation, so length of time teaching is also included (years of experience, excluding internships). The "Total Compensation for This Subject" displayed in **Figure 35** calculates each teacher's salary + benefits for a selected Subject or Course. "Total Instructional Compensation" calculates a teacher's salary + benefits for all of their instructional courses within a given year. "Total Compensation" calculates a teacher's total compensation package in a given year, which can include non-instructional items, such as coaching stipends (see **Key Formulas 8.1.2**).

Figure 35. Spending by Subject Dashboard



Teacher Name	Classes	Years of Experience	Total Compensation For This Subject	Total Instructional Compensation	Total Compensation
Anthony Carter	16	6	$72,949	$72,949	$72,949
Ashley Roberts	15	1	$52,315	$55,803	$55,803
Brian Hall	16	1	$69,285	$69,285	$73,639
Brian Tyler	16	11	$90,699	$90,699	$95,897
Carl Parker	16	2	$63,479	$63,479	$63,479
Carol Brown	16	5	$69,044	$69,044	$69,044
Celia Richards	14	11	$94,033	$120,900	$124,608
Cynthia Johnson	14	12	$77,577	$88,660	$93,142
Dale Figueroa	16	7	$85,822	$85,822	$91,275
Dana Cox	8	7	$31,199	$31,199	$31,199
Daryl Daniels	8	14	$48,287	$48,287	$48,287
Deborah Rodriguez	4	5	$13,524	$13,524	$13,524
Diane Wilson	12	2	$65,748	$65,748	$67,058
Douglas Rivera	17	1	$73,913	$73,913	$75,490
Earnest Cohen	16	5	$86,094	$86,094	$86,094
Edith Schneider	16	13	$90,408	$101,709	$128,210

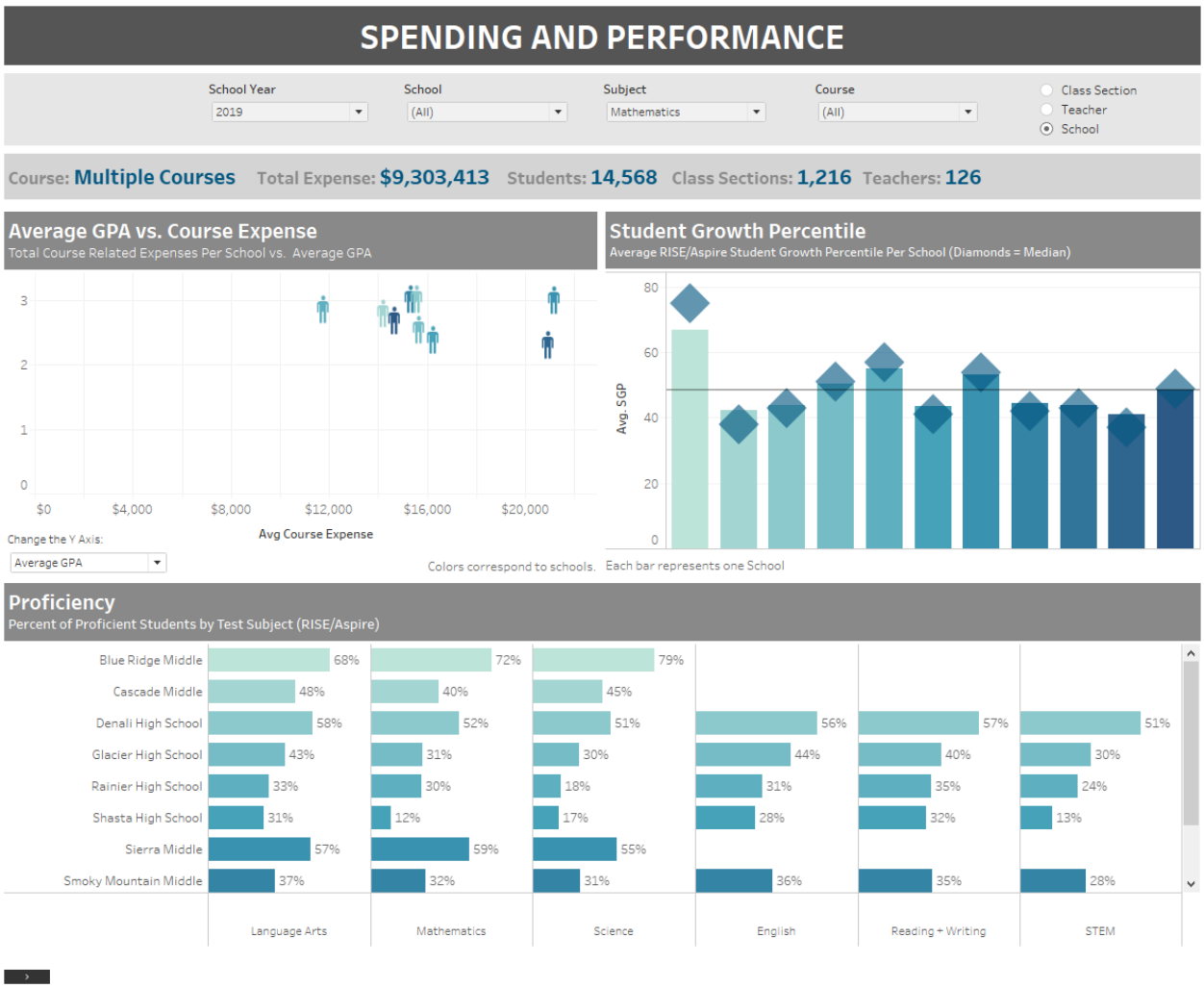
Spending and Performance

The Spending and Performance dashboard (see **Figure 36**) allows stakeholders to evaluate how spending patterns relate to student performance metrics. Multiple performance metrics are tied into this visualization, which allow the stakeholder to use the metrics that matter most to their objectives.

The A_[ID] file is used so expense and performance information can be viewed at the school, individual teacher, or class section level.

Proficiency scores are calculated by USBE. Students scoring a 1 or 2 on state standardized tests are considered "Not Proficient" and students scoring a 3 or 4 are considered "Proficient." English, Reading + Writing, and STEM testing scores are part of Aspire testing, and therefore are only displayed for schools that serve 9th and 10th grades. Users can toggle between GPA, state testing growth measures, state testing proficiency, and ACT scores in the scatterplot.

Figure 36. Spending and Performance Dashboard

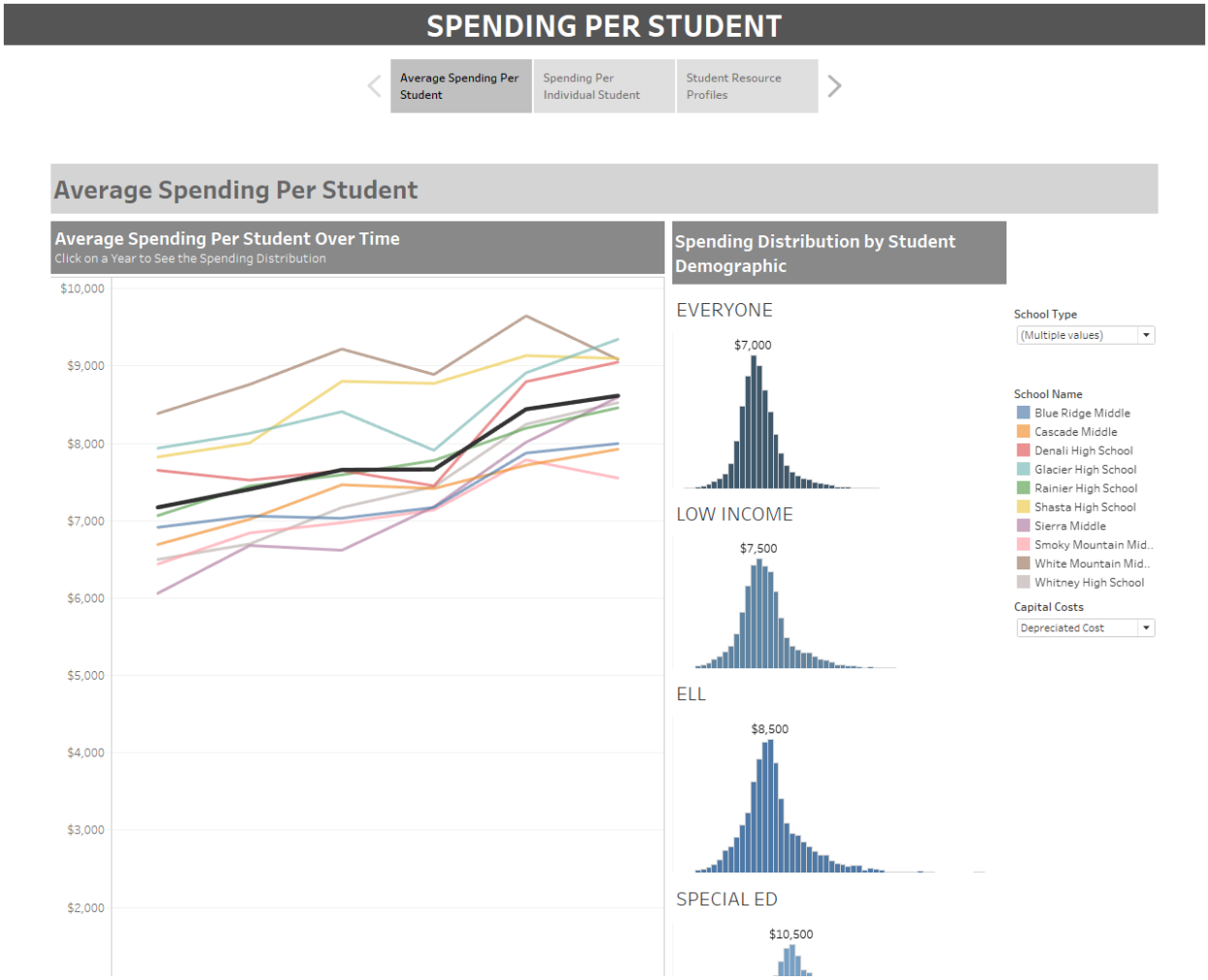


Spending per Student

The Spending per Student dashboard (see **Figure 37**) allows users to evaluate student-level spending. Stakeholders can view average spending by school over time, as well as distributions of student spending. The bottom-up approach that Project KIDS takes to allocate funds to individual students allows for these spending distributions, in addition to average and median estimates.

The Agg_[ID] file is used so viewers can analyze per-student averages at individual schools across time. This file also contains demographic information for each student, so spending distributions, averages, and medians for unique student groups can be examined.

Figure 37. Spending Per Student Dashboard



Performance Drilldown

The Performance Drilldown dashboards (see **Figures 39** through **43**) allow users to evaluate performance measures, aggregated at varying levels of detail. **Figure 38** displays the different aggregation options available. District, Grade, and School levels of analysis in the Performance Drilldown dashboards use the Agg_[ID] file for analysis. Students can be compared within and across groups in any given year. Classroom and Teacher levels of analysis in the Performance Drilldown dashboards utilize the A_[ID] file to enable a more granular level of analysis.

One of the key distinctions in the School-level Performance Drilldown dashboard is that users can compare average per-student costs and state testing proficiency levels at Title I and non-Title I schools, which can be viewed in the bottom left scatterplot. Color is used to differentiate between these two school types, with dark green representing Title I schools and a lighter green representing non-Title I.

Figure 38. Performance Drilldown Dashboard: Options

Figure 39. Performance Drilldown Dashboard: District

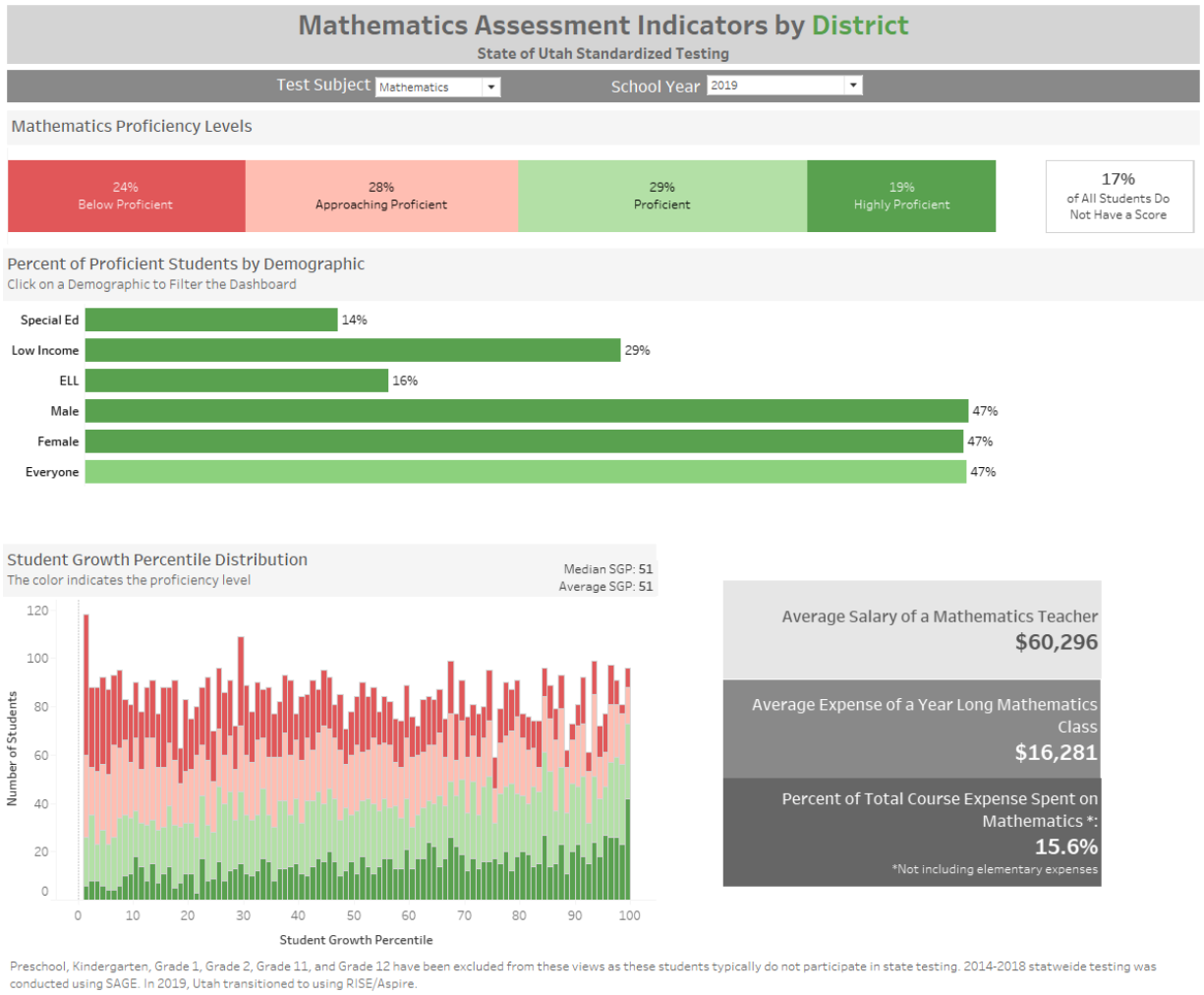


Figure 40. Performance Drilldown Dashboard: Grade

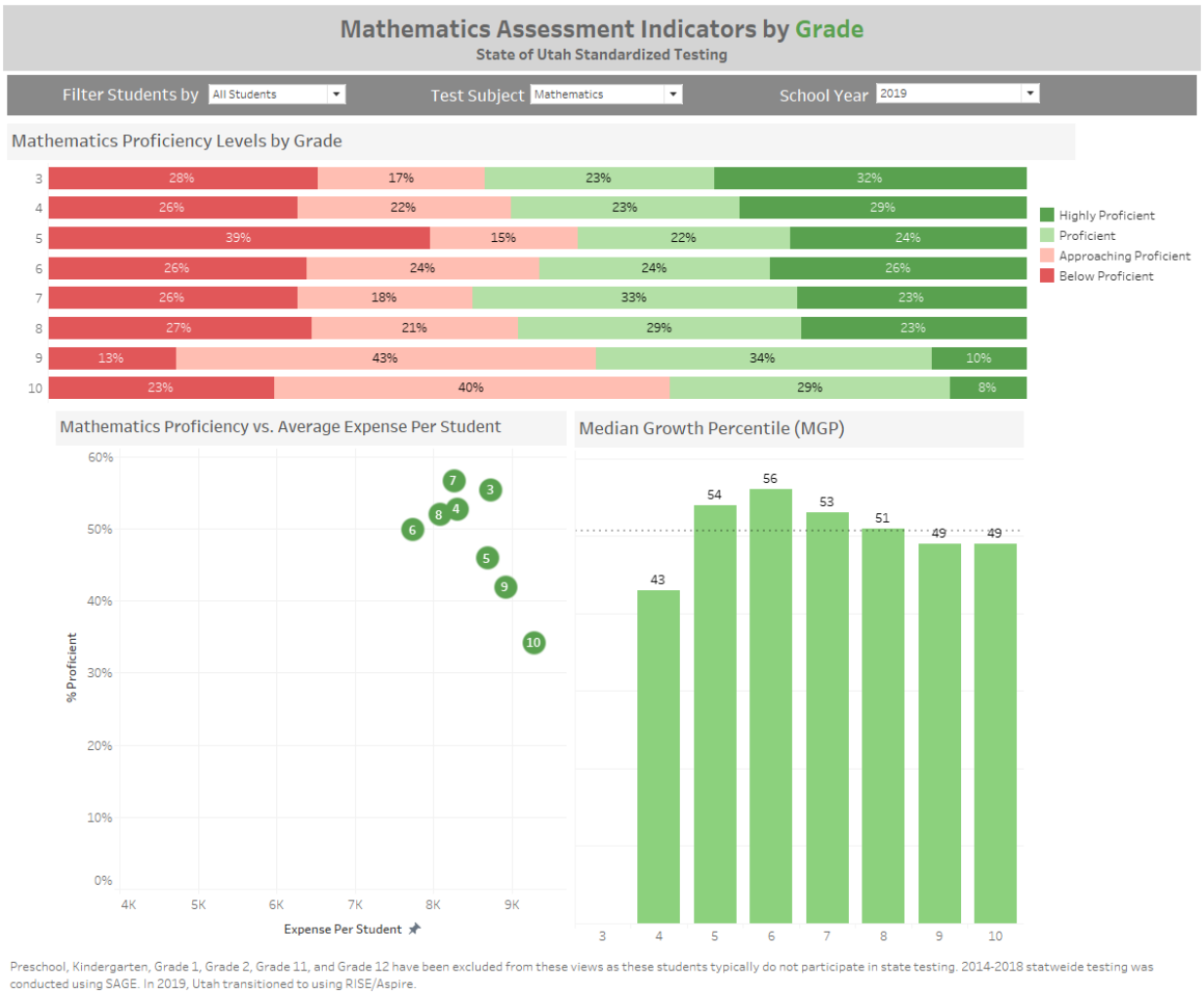


Figure 41. Performance Drilldown Dashboard: School

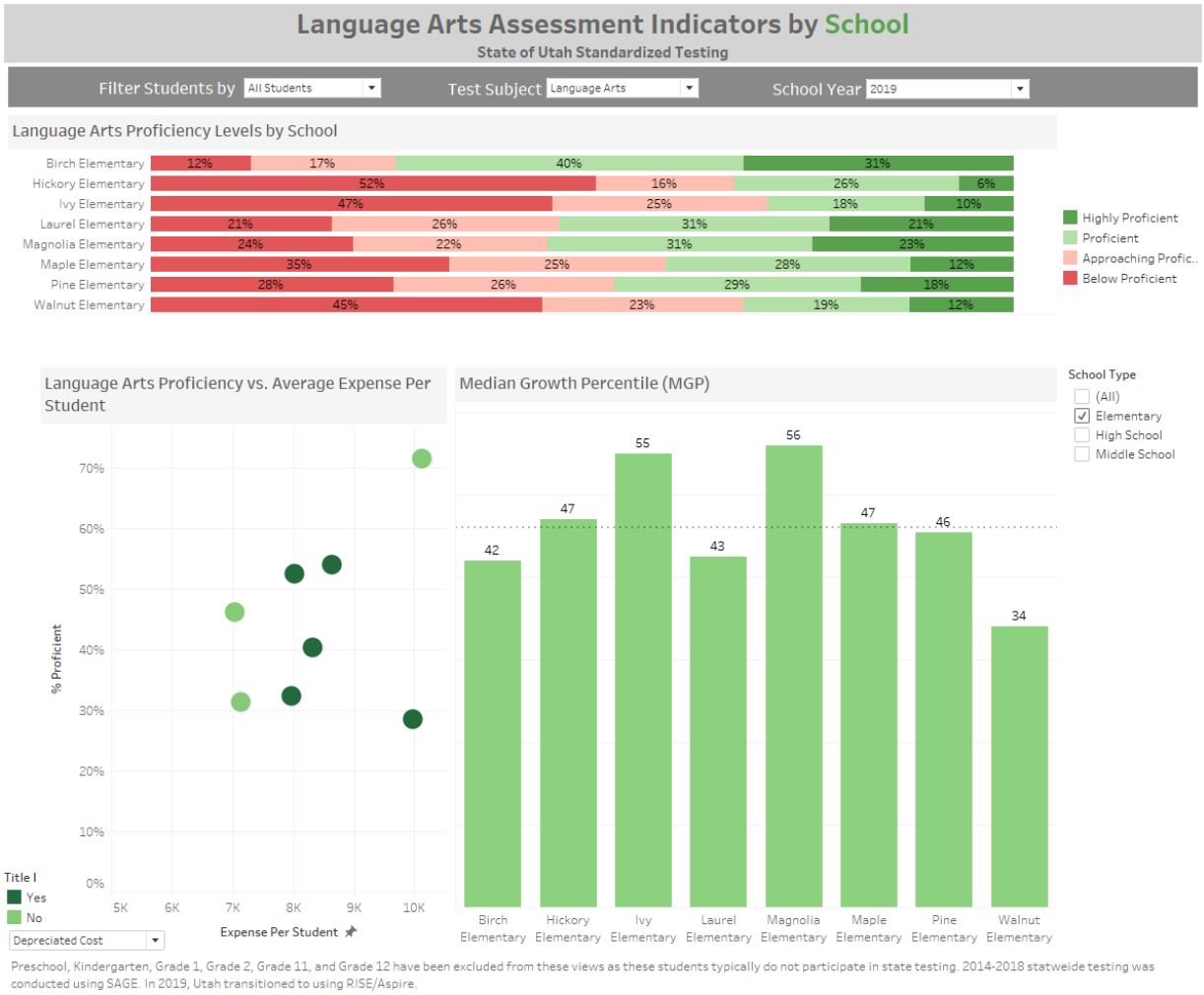
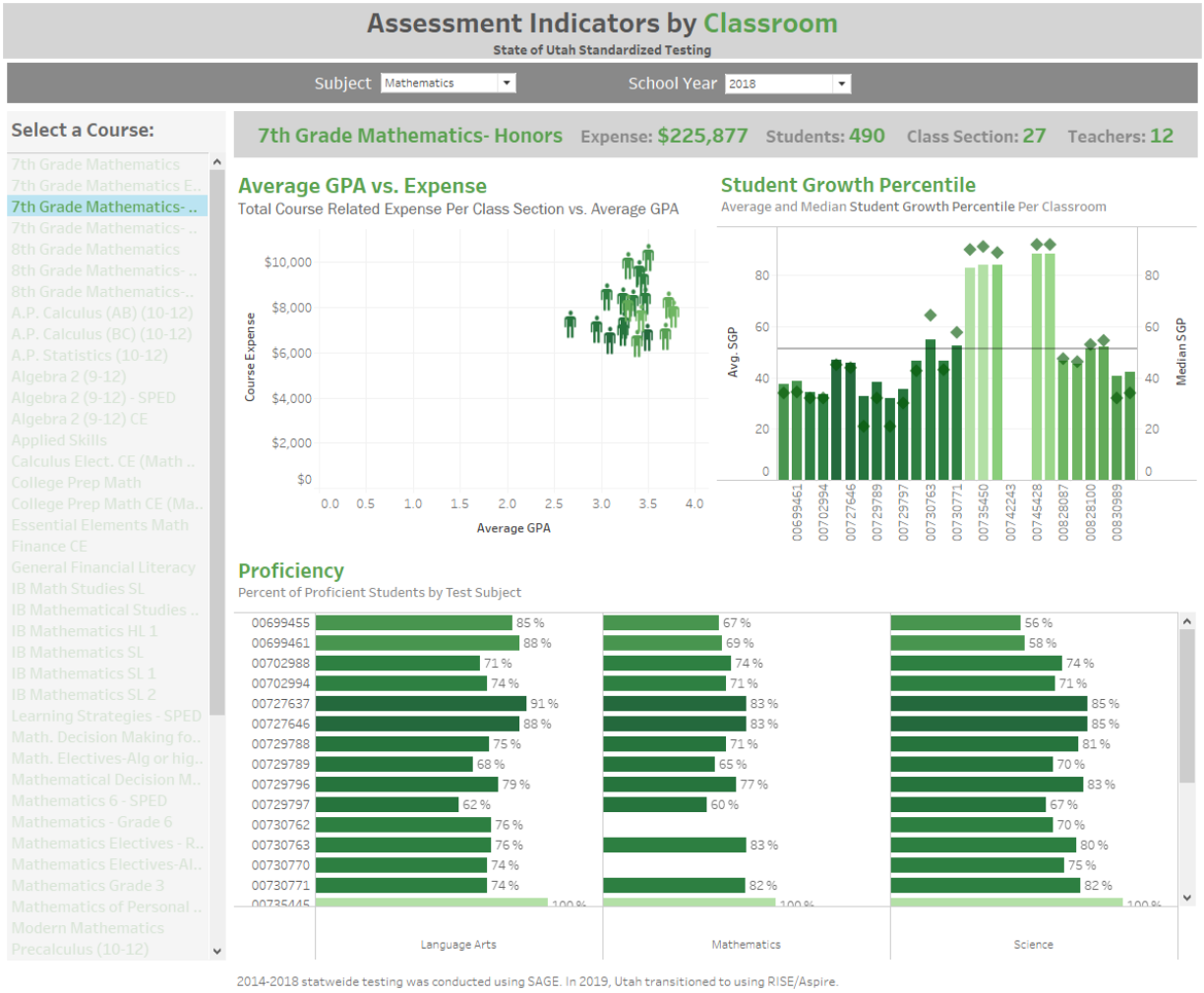
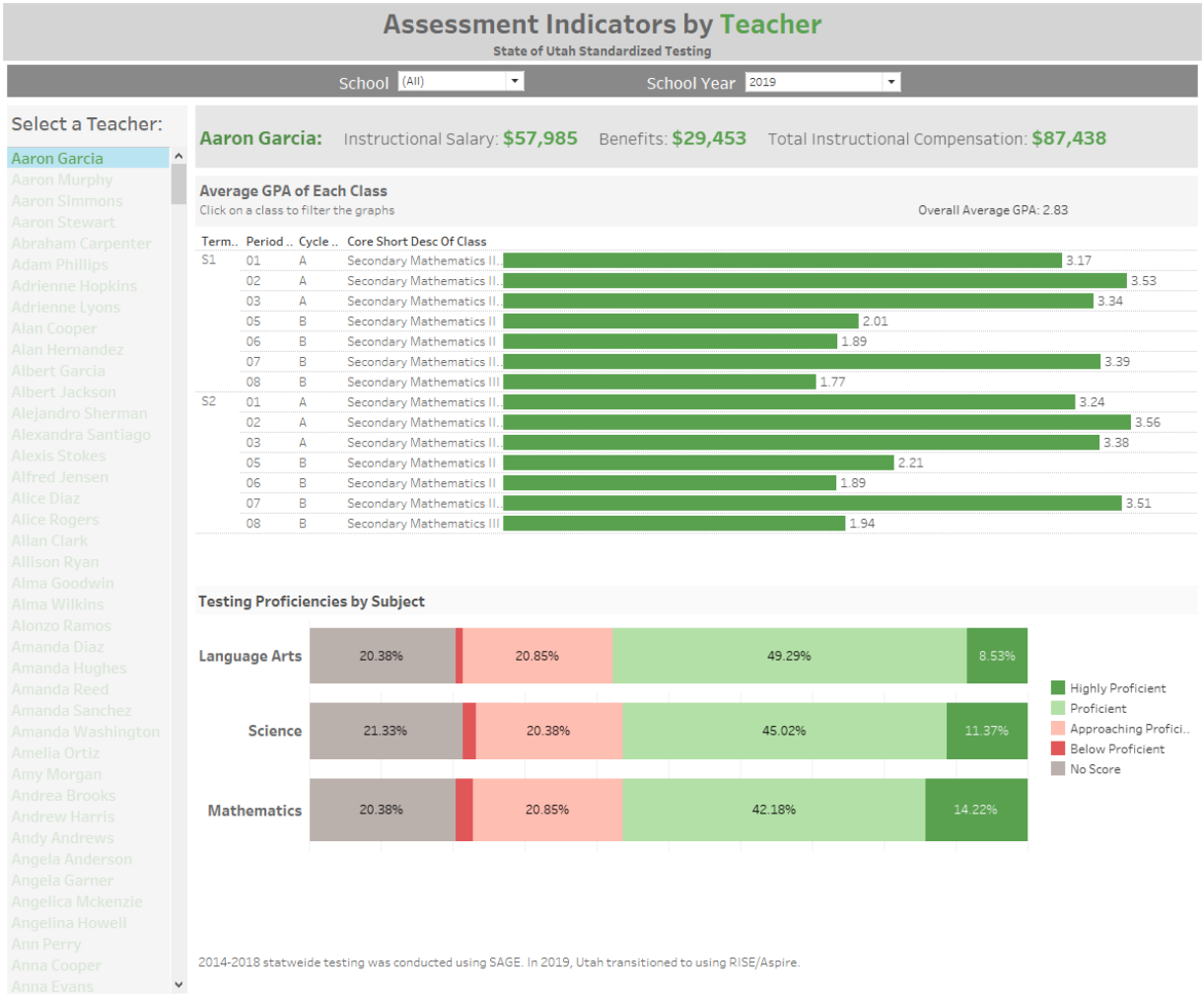


Figure 42. Performance Drilldown Dashboard: Classroom



2014-2018 statwelde testing was conducted using SAGE. In 2019, Utah transitioned to using RISE/Aspire.

Figure 43. Performance Drilldown Dashboard: Teacher



Dashboard Overviews - Single Location Charter Schools

The following screenshots contain data from a fictional school. These do NOT include data from, nor represent, an actual charter school in the state of Utah.

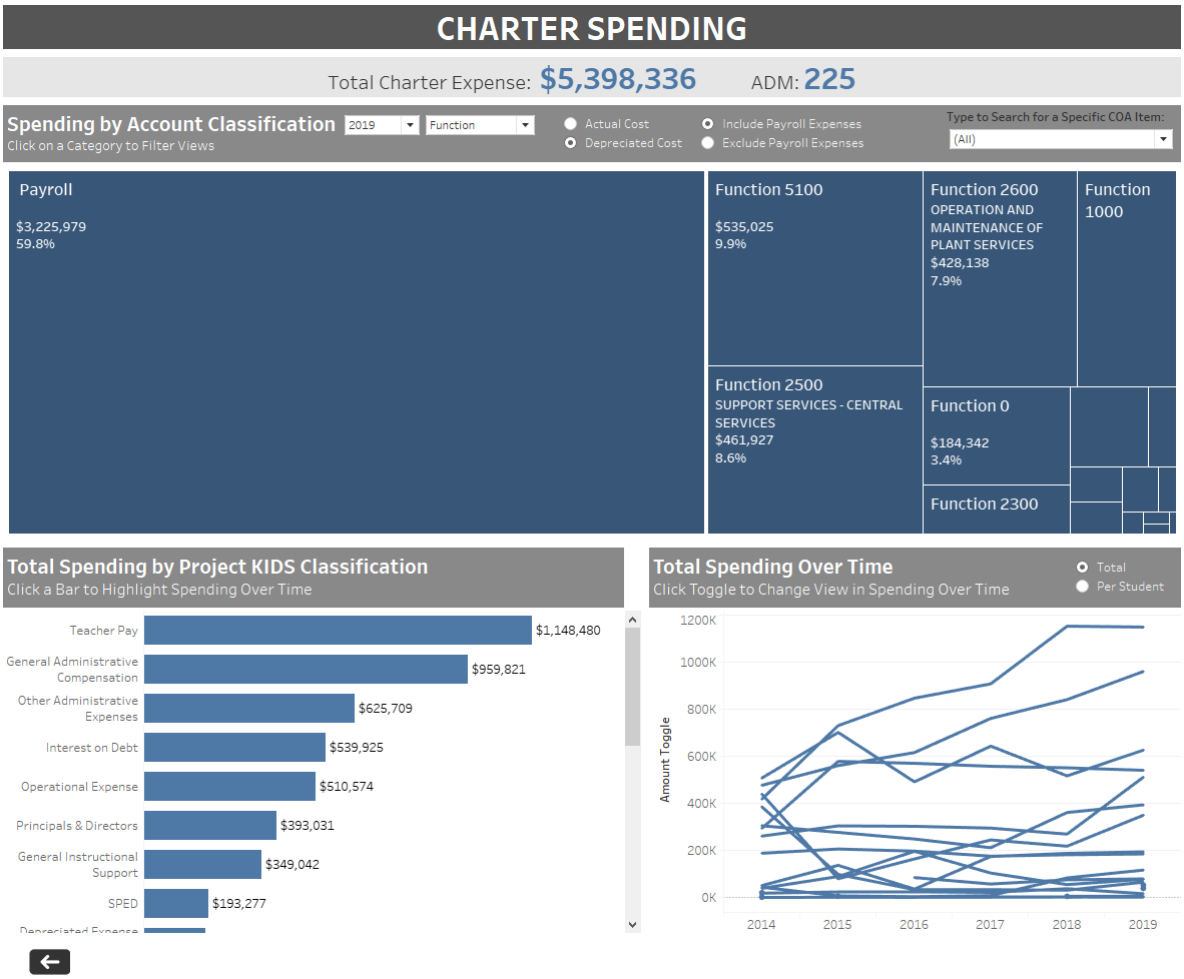
Some dashboards contain personally identifiable information (PII) for students or students groups where n < 10. Access to these dashboards is limited to those who are granted permission to view said data under FERPA privacy regulations. PII information is excluded from all visualizations in de-identified dashboards.

Charter Spending

The Charter Spending dashboard (see **Figure 44**) uses the SCHOOL_[ID] dataset to display school expenses based on accounting codes, and how those expenses flow into the categories and subcategories created by Project KIDS for analysis. The purpose of this dashboard is to help charter school personnel understand how their internal accounting system is used to allocate funds to the Project KIDS expense classifications, which are specifically designed to allocate the funds to individual students in each of the other dashboards.

Unlike the district and charter network dashboards (see **Figure 32**), these single charter schools only have one location. Visualization components that show spending information by school name have been removed, since that level of detail is not relevant in these cases.

Figure 44. Charter Spending Dashboard



Spending by School

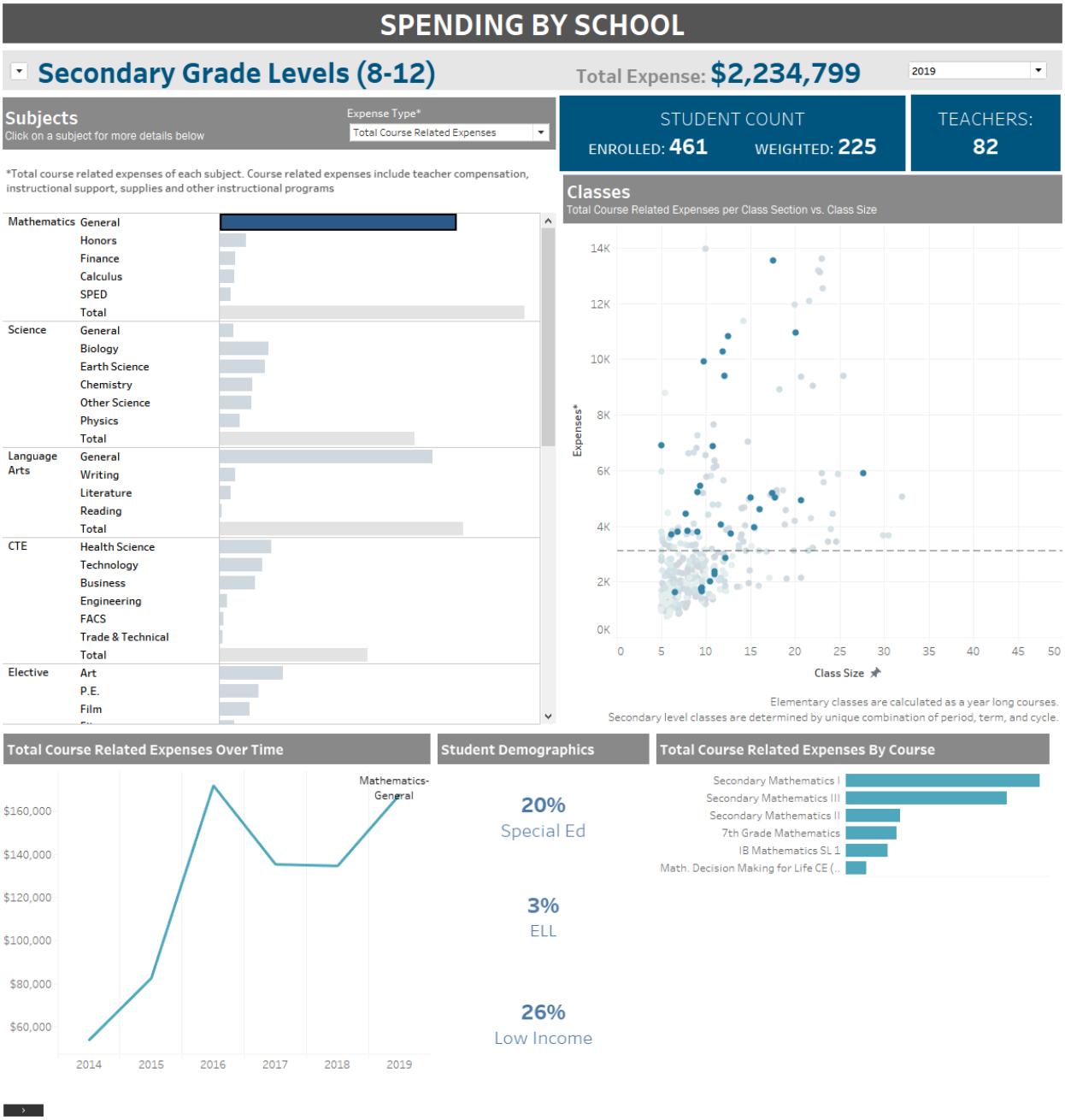
The Spending by School visualization (see **Figure 45**) allows charter school stakeholders to drill into the school's data to look at spending patterns by subject and by individual classes. The A_[ID] data set is used here so that individual class sizes, course-related expenses, subject-level expenses, subject-specific expense trends, and class demographics can be viewed.

The enrolled student count is the count of distinct student IDs at a school in a given year. The weighted student count is the sum of WGTB at a school in a given year, which takes into account the proportion of the school year each student was enrolled (see **Key Formulas 8.1.3**). Different expense types can be viewed (calculations for these expense types are found in **Key Formulas 8.1.2**).

For districts and charter networks, this dashboard allows users to filter by school. This feature generally prevents comparisons between elementary and secondary classes, since typically the spending patterns and class sizes differ significantly between the two. However, single charter schools only have one location and many serve both elementary and secondary students. The school filter is therefore replaced with a filter for either elementary or secondary classes.

See the **Table 7** and **Key Formulas 8.1.1** for more information on specific fields in the datasets used for these visualizations.

Figure 45. Spending by School Dashboards



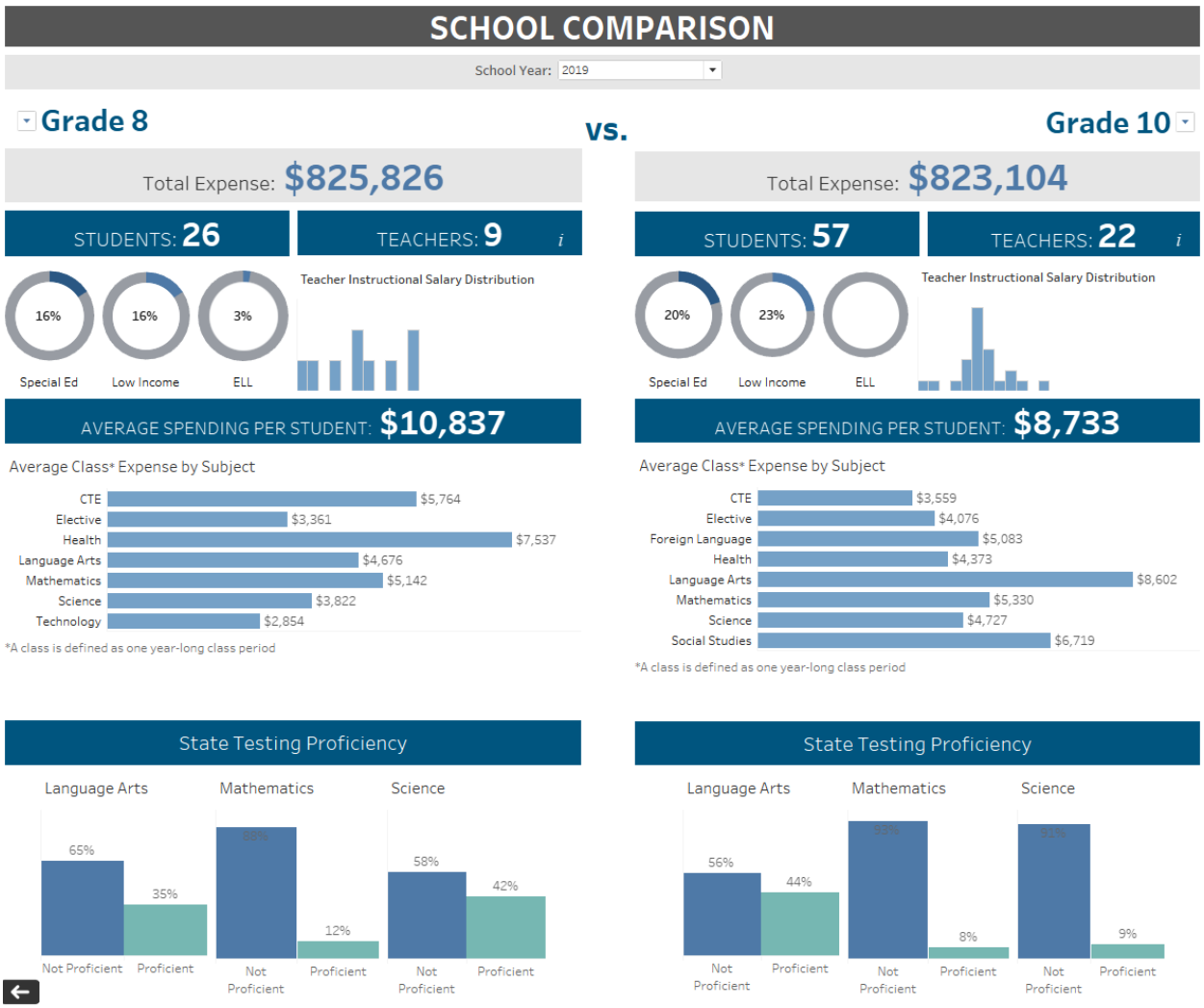
Grade Level Comparison

The School Comparison dashboard for districts and charter networks (see **Figure 34**) allows stakeholders to compare spending and performance metrics between schools in their district or charter network. For charter schools with a single location, this dashboard (see **Figure 46**) allows them to compare relevant metrics between different grade levels within the school, since there is only one school location in these LEAs. The SCHOOL_[ID] file is used to populate the visualization with each grade's total expense. A_[ID] files are used to calculate all other information, since a subject and class demographic level of detail is required.

The student count is weighted; the sum of WGTB at a school in a given year, which takes into account the proportion of the school year each student was enrolled. This calculation is found in **Key Formulas 8.1.3**.

Proficiency scores are calculated by USBE. Students scoring a 1 or 2 on state standardized tests are considered "Not Proficient" and students scoring a 3 or 4 are considered "Proficient."

Figure 46. School Comparison Dashboard



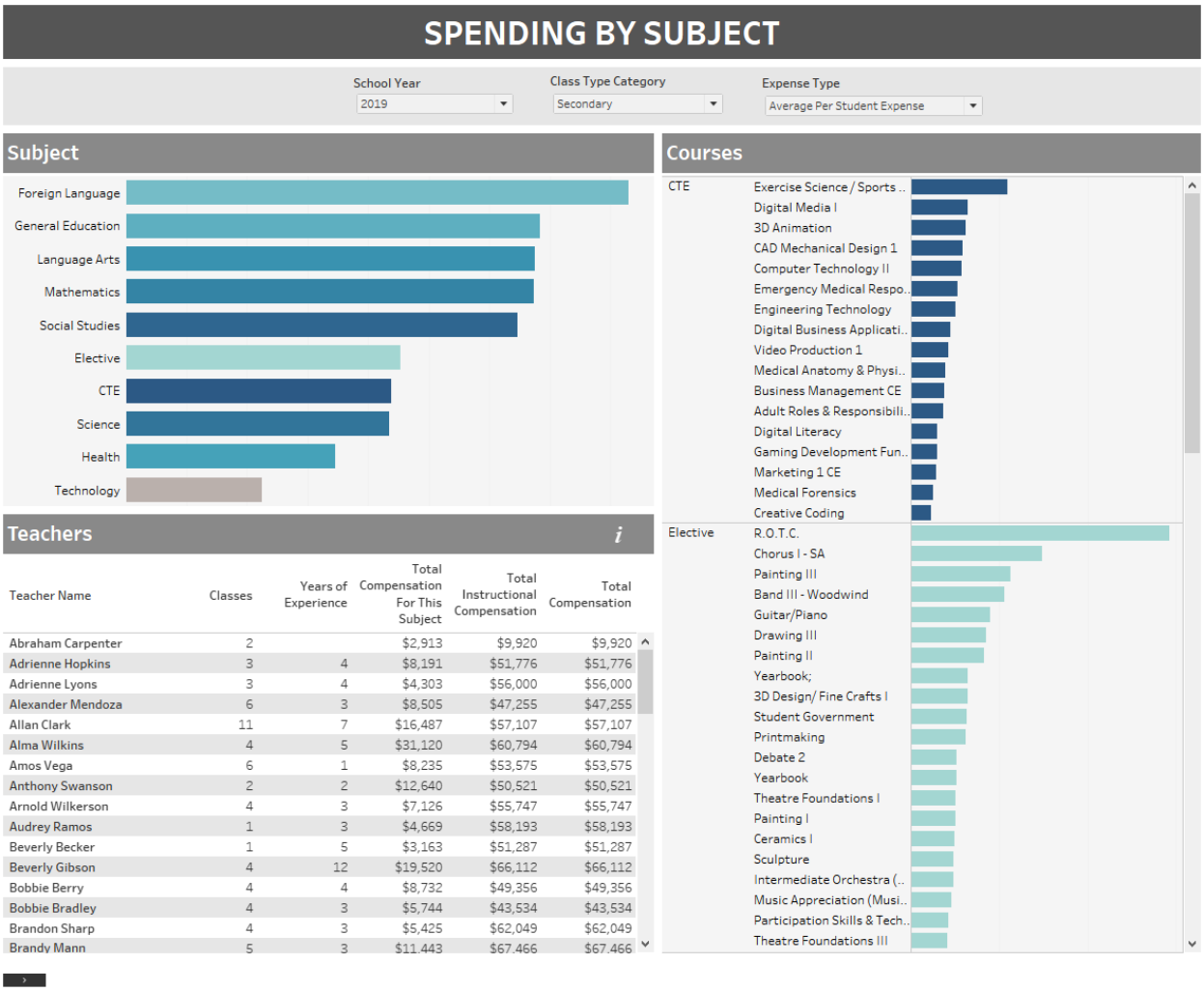
Spending by Subject

The Spending by Subject dashboard (see **Figure 47**) allows stakeholders to evaluate spending by subject, aggregated at the subject, class, and teacher level. The A_[ID] dataset is used so viewers can analyze spending at the subject level.

Teacher compensation information can also be viewed by subject and course. Tenure is a significant factor in compensation, so length of time teaching is also included (years of experience, excluding internships). The "Total Compensation for This Subject" displayed in **Figure 47** calculates each teacher's salary + benefits for a selected Subject or Course. "Total Instructional Compensation" calculates a teacher's salary + benefits for all of their instructional courses within a given year. "Total Compensation" calculates a teacher's total compensation package in a given year, which can include non-instructional items, such as coaching stipends (see **Key Formulas 8.1.2**).

A Class Type Category filter is included so stakeholders can view elementary and secondary classes, since their course expenses can vary significantly. This filter replaces the School Name filter used for districts and charter networks (see **Figure 35**).

Figure 47. Spending by Subject Dashboard



Teacher Name	Classes	Years of Experience	Total Compensation For This Subject	Total Instructional Compensation	Total Compensation
Abraham Carpenter	2		$2,913	$9,920	$9,920
Adrienne Hopkins	3	4	$8,191	$51,776	$51,776
Adrienne Lyons	3	4	$4,303	$56,000	$56,000
Alexander Mendoza	6	3	$8,505	$47,255	$47,255
Allan Clark	11	7	$16,487	$57,107	$57,107
Alma Wilkins	4	5	$31,120	$60,794	$60,794
Amos Vega	6	1	$8,235	$53,575	$53,575
Anthony Swanson	2	2	$12,640	$50,521	$50,521
Arnold Wilkerson	4	3	$7,126	$55,747	$55,747
Audrey Ramos	1	3	$4,669	$58,193	$58,193
Beverly Becker	1	5	$3,163	$51,287	$51,287
Beverly Gibson	4	12	$19,520	$66,112	$66,112
Bobbie Berry	4	4	$8,732	$49,356	$49,356
Bobbie Bradley	4	3	$5,744	$43,534	$43,534
Brandon Sharp	4	3	$5,425	$62,049	$62,049
Brandy Mann	5	3	$11,443	$67,466	$67,466

Spending and Performance

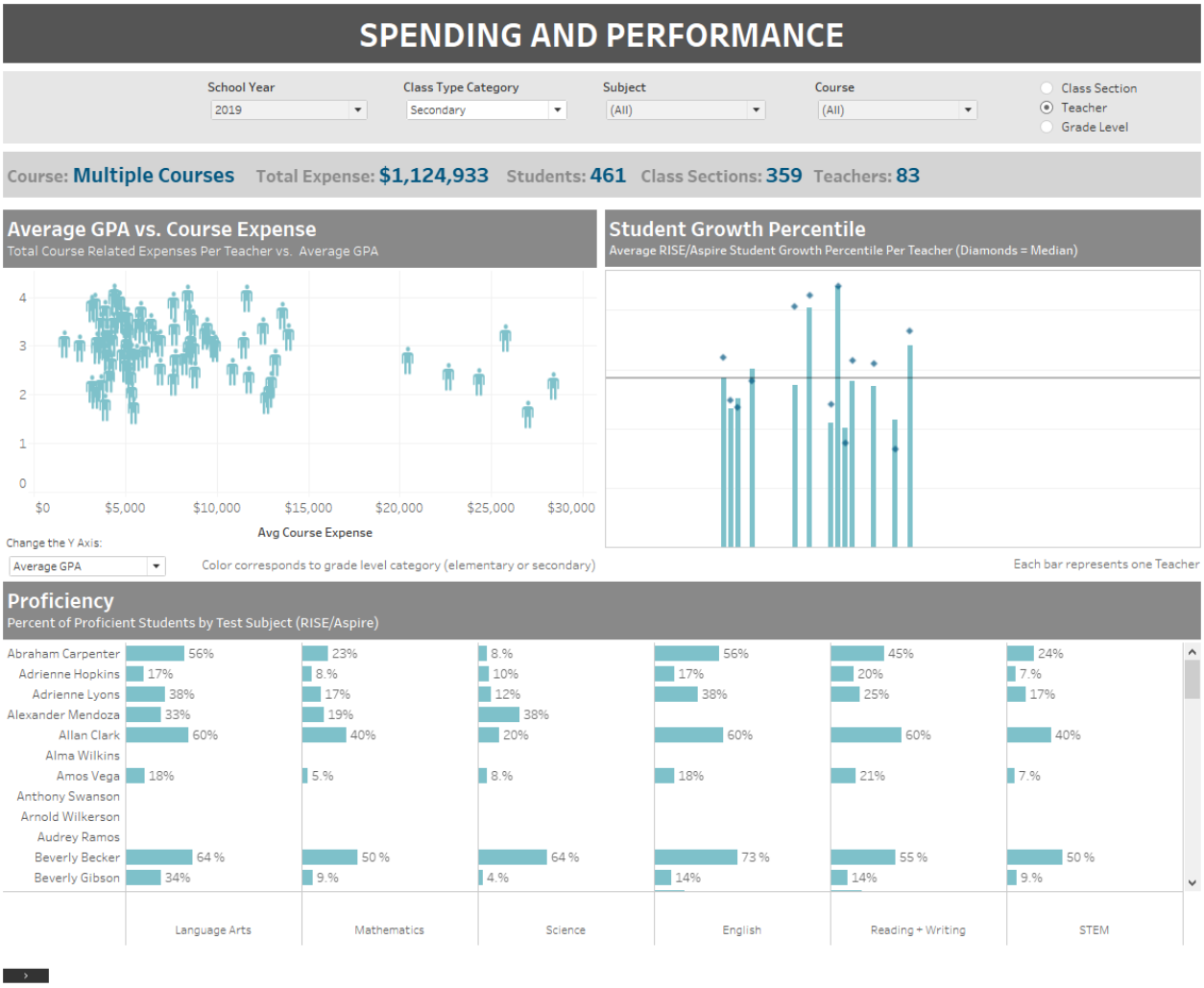
The Spending and Performance dashboard (see **Figure 48**) allows stakeholders to evaluate how spending patterns relate to student performance metrics. Multiple performance metrics are tied into this visualization, which allow the stakeholder to use the metrics that matter most to their objectives.

The A_[ID] file is used so expense and performance information can be viewed at the school, individual teacher, or class section level.

Proficiency scores are calculated by USBE. Students scoring a 1 or 2 on state standardized tests are considered "Not Proficient" and students scoring a 3 or 4 are considered "Proficient." English, Reading + Writing, and STEM testing scores are part of Aspire testing, and therefore are only displayed for schools that serve 9th and 10th grades. Users can toggle between GPA, state testing growth measures, state testing proficiency, and ACT scores in the scatterplot.

GPA data is frequently unavailable for charter schools, particularly in ones that only serve students in grades K–6. When GPA data is unavailable, this option is removed from the visualization. The proficiency scores for English, Reading+Writing, and STEM are not displayed for charter schools that do not enroll students in grades 9 or 10.

Figure 48. Spending and Performance Dashboard

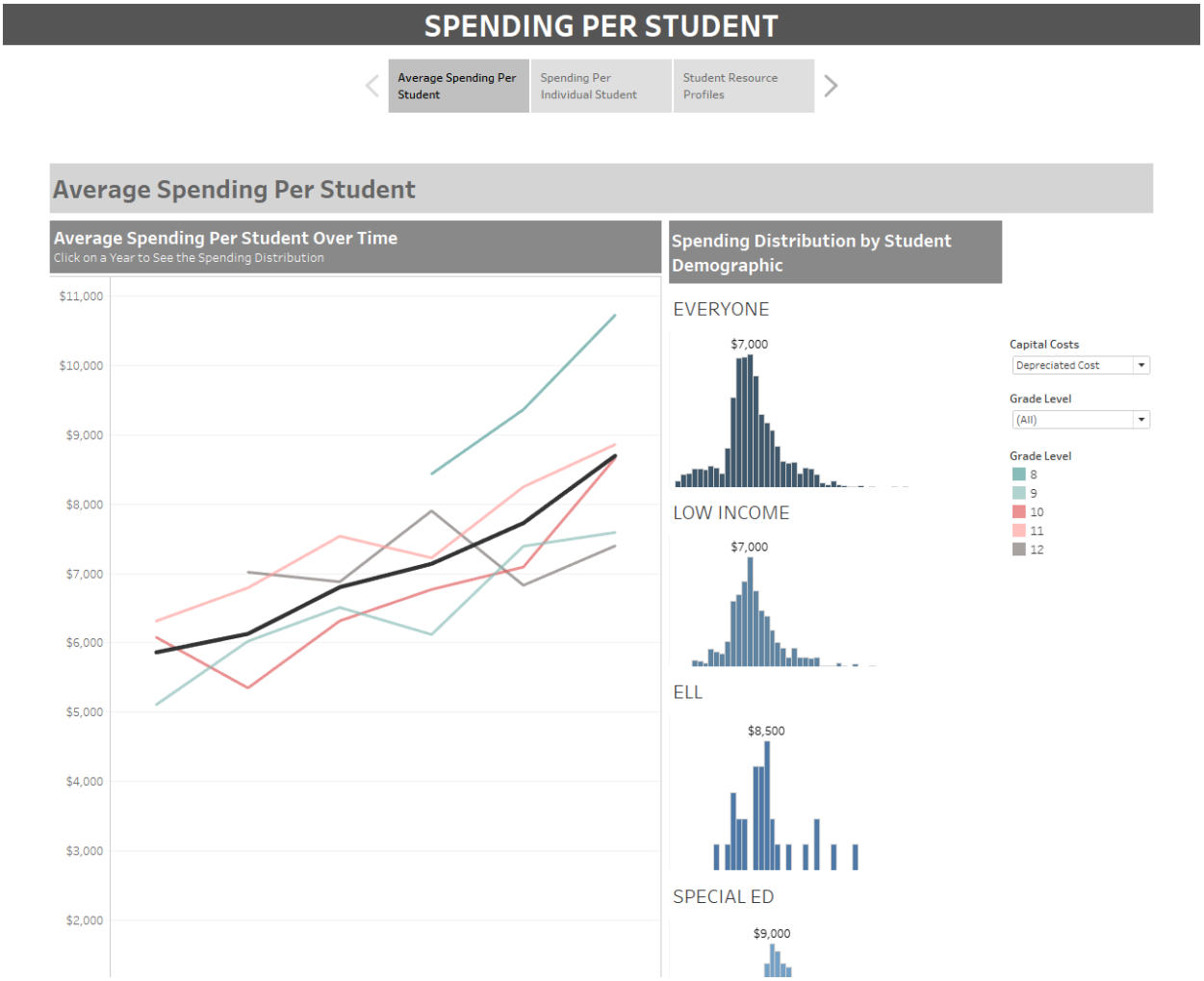


Spending per Student

The Spending per Student dashboard (see **Figure 49**) allows users to evaluate student-level spending. Stakeholders can view average spending by grade level over time, as well as distributions of student spending. The bottom-up approach that Project KIDS takes to allocate funds to individual students allows for these spending distributions, in addition to average and median estimates.

The Agg_[ID] file is used so viewers can analyze per-student averages by grade levels across time (replacing the by-school trends for districts and charter schools, see **Figure 37**). This file also contains demographic information for each student, so spending distributions, averages, and medians for unique student groups can be examined.

Figure 49. Spending Per Student Dashboard



Performance Drilldown

The Performance Drilldown dashboards (see **Figures 51** through **54**) allow users to evaluate performance measures, aggregated at varying levels of detail. **Figure 50** displays the different aggregation options available. School and Grade levels of analysis in the Performance Drilldown dashboards use the Agg_[ID] file for analysis. Students can be compared within and across groups in any given year. Classroom and Teacher levels of analysis in the Performance Drilldown dashboards utilize the A_[ID] file to enable a more granular level of analysis.

GPA data in the Classroom and Teacher levels of analysis are frequently sparse for single charter schools that serve only elementary level students.

School-level performance drilldown for single charter schools (**Figure 51**) mirrors the LEA-level performance drilldown for districts and network charter schools (**Figure 39**). Single charter schools do not have a visualization equivalent to the school-level performance drilldown visualization used for districts and charter schools (**Figure 41**) because there is only one location and the purpose of that dashboard is to compare *between* schools.

Figure 50. Performance Drilldown Dashboard: Options

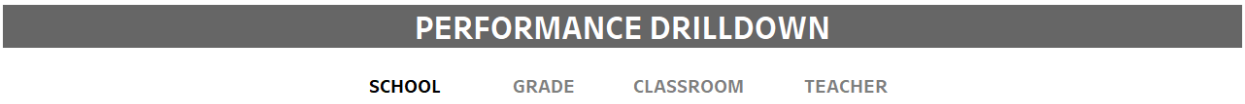


Figure 51. Performance Drilldown Dashboard: School

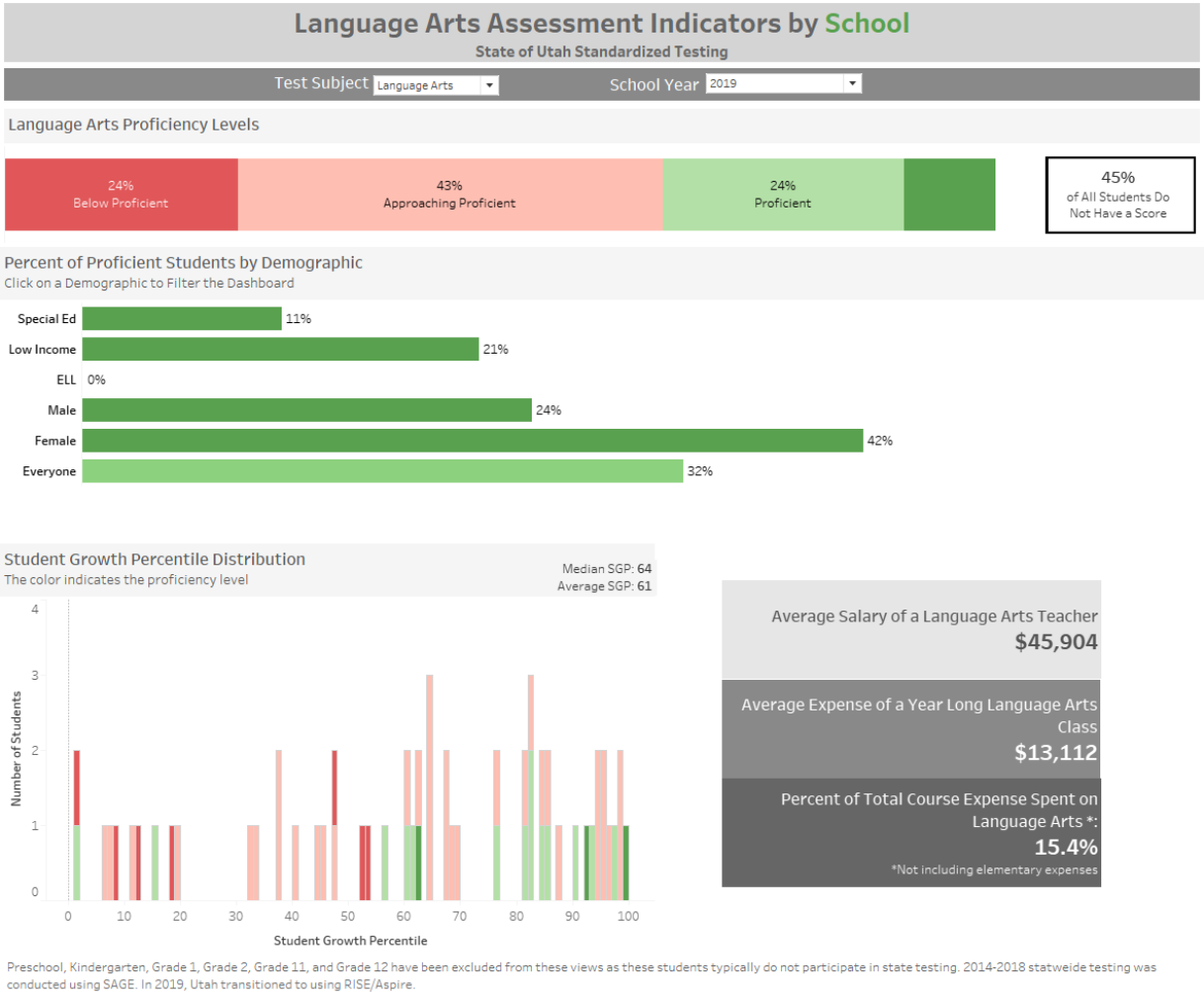


Figure 52. Performance Drilldown Dashboard: Grade

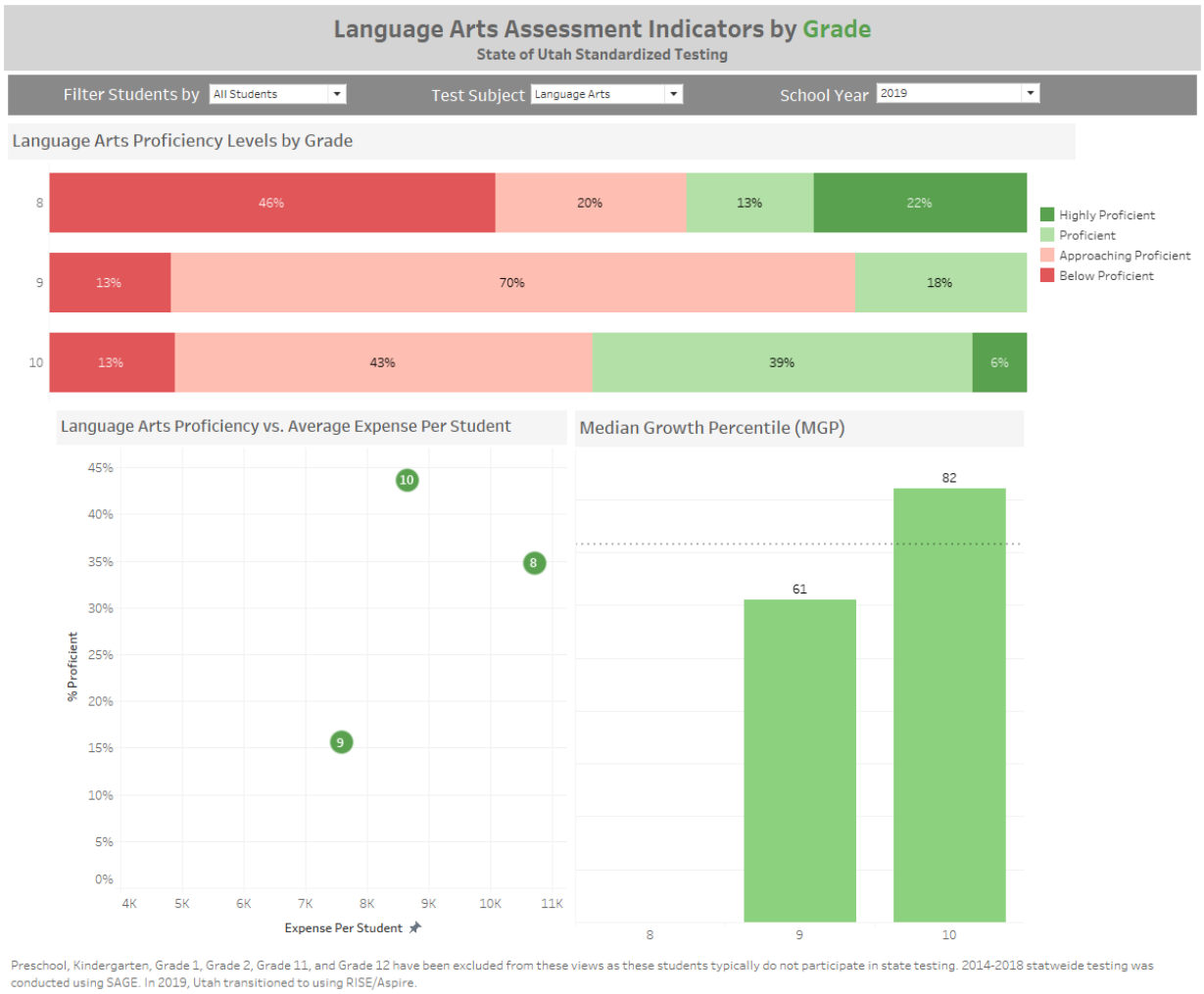


Figure 53. Performance Drilldown Dashboard: Classroom

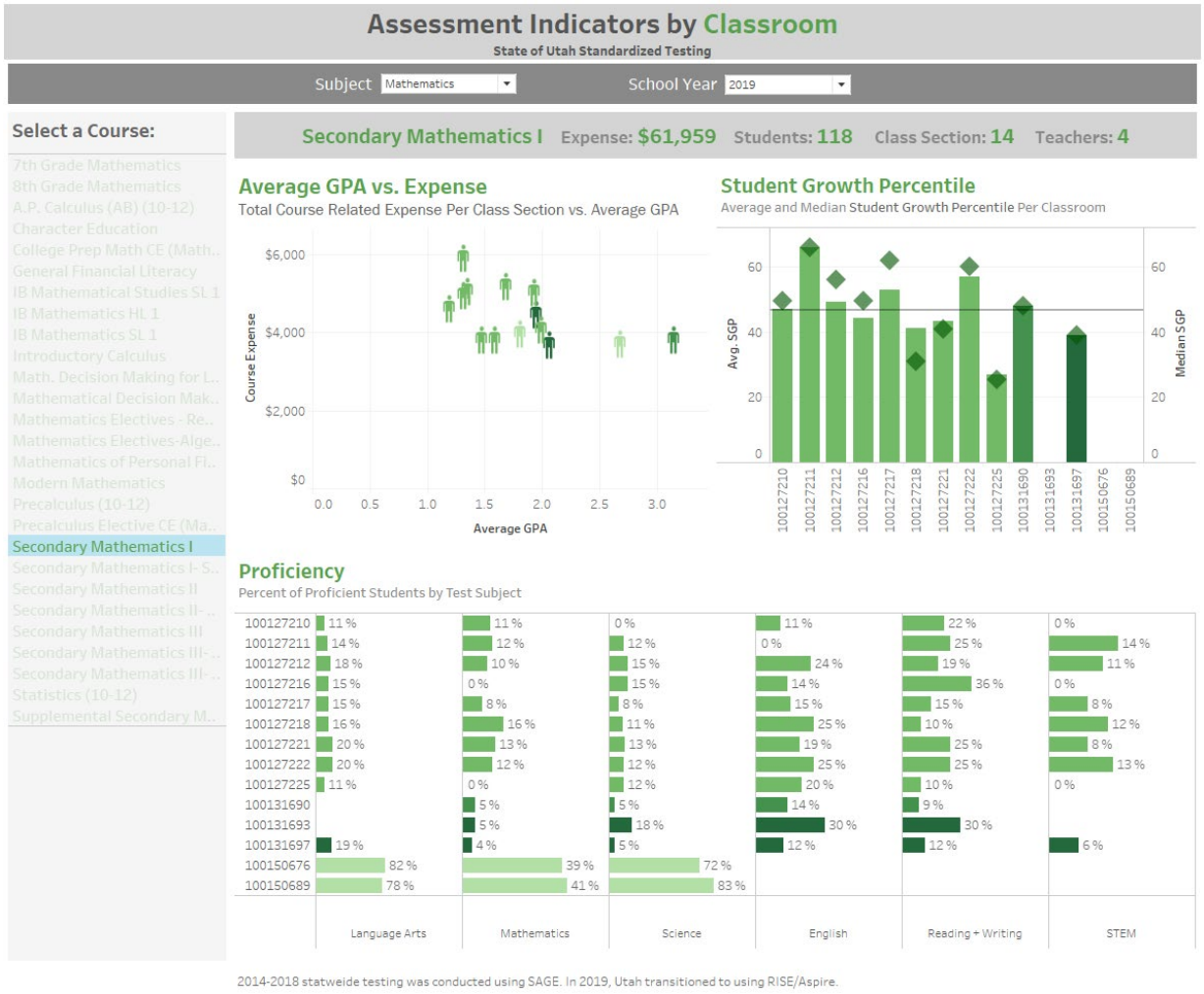
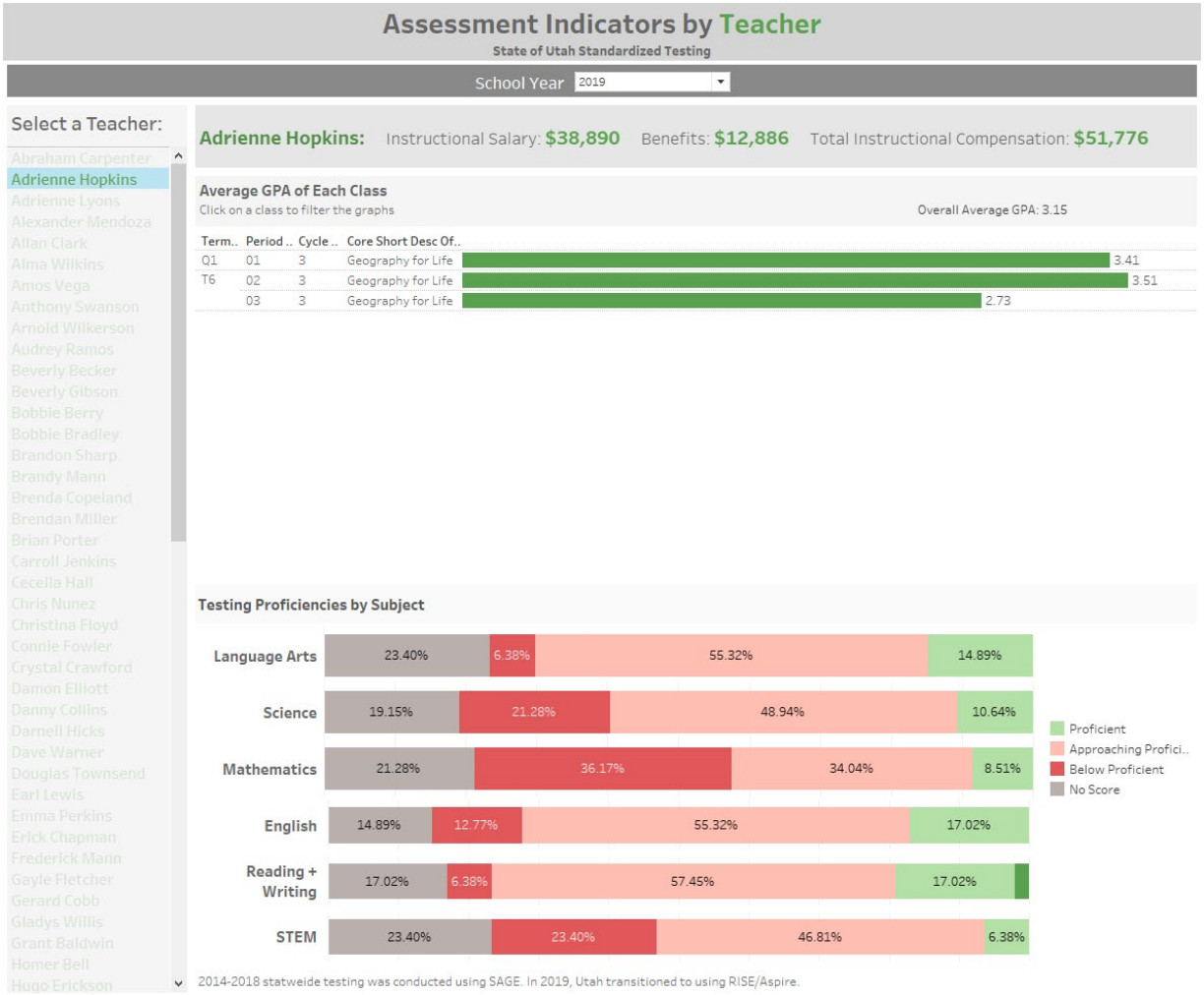
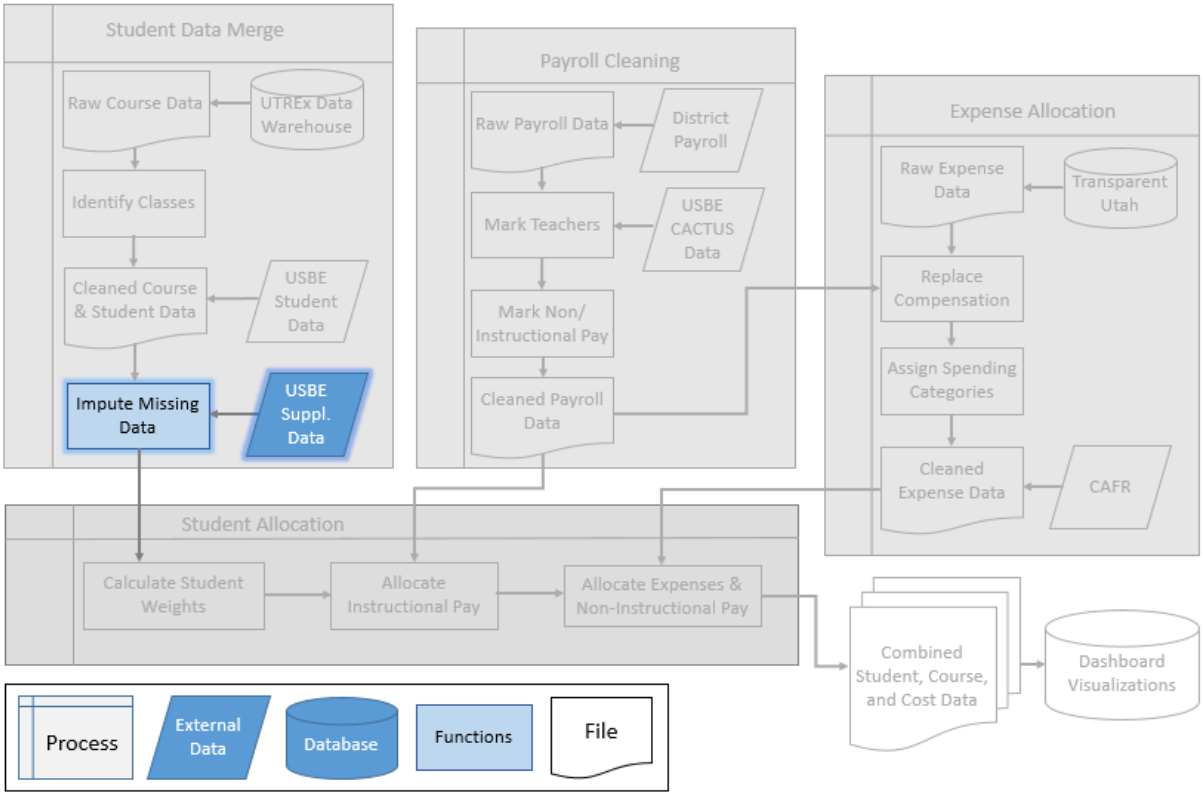


Figure 54. Performance Drilldown Dashboard: Teacher



9. SUPPLEMENTARY PROCESSES

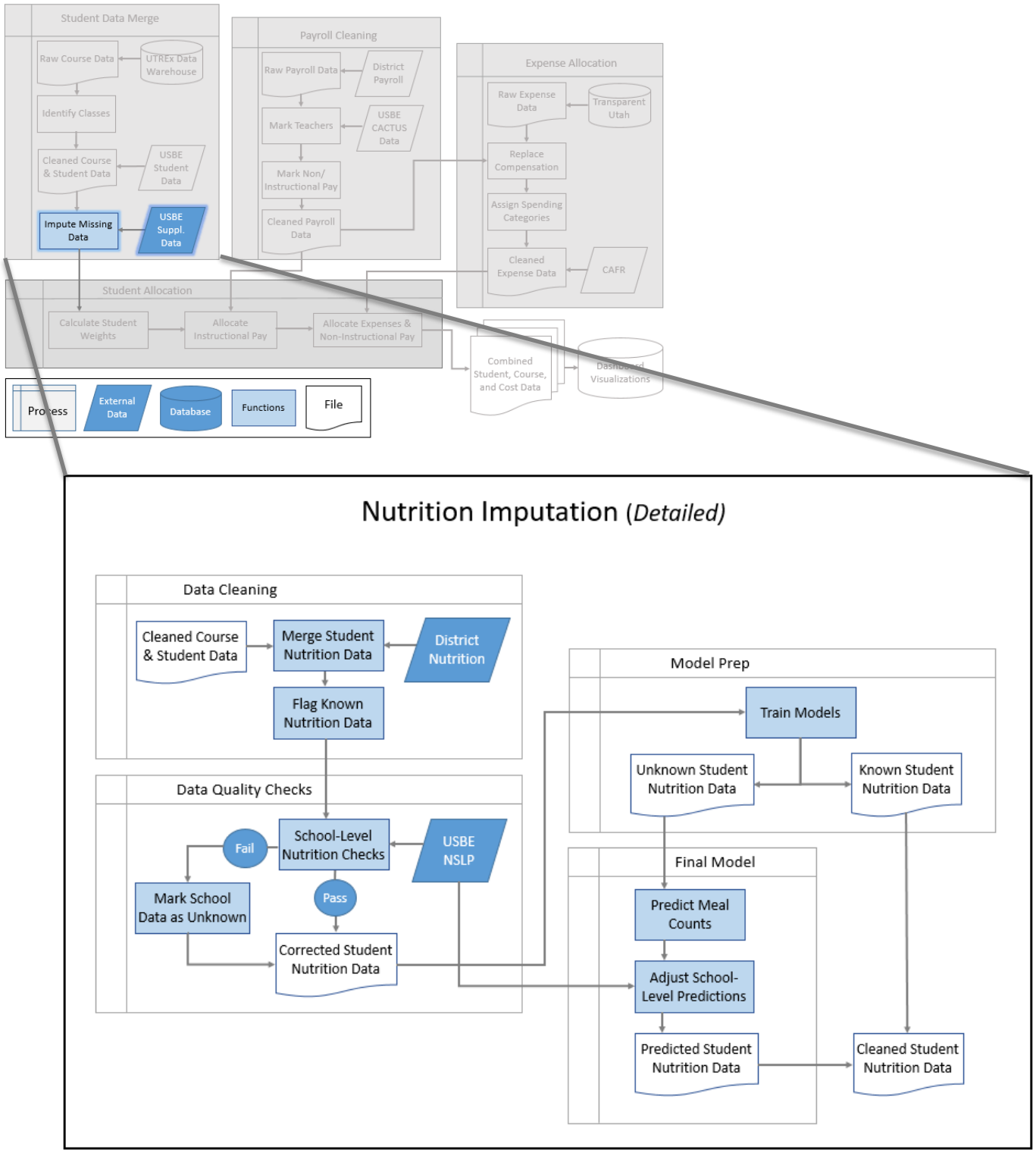
Figure 55. Process Flow Chart: Supplementary Processes



LEAs do not always have the detailed information needed to drill spending down to the student level. This is the case with student nutrition and transportation services. In these cases, the project imputes data to allow for calculation of student-level spending totals. The following sections detail this process. Note that these sections are more technical, as they cover the statistical methods used to impute such data. For the reader interested in how funding is allocated to students once the nutrition and transportation usage data is imputed, see *Section 7: Student Allocation*.

9.1 Nutrition Imputation

Figure 56. Detailed Process Flow Chart: Nutrition Imputation

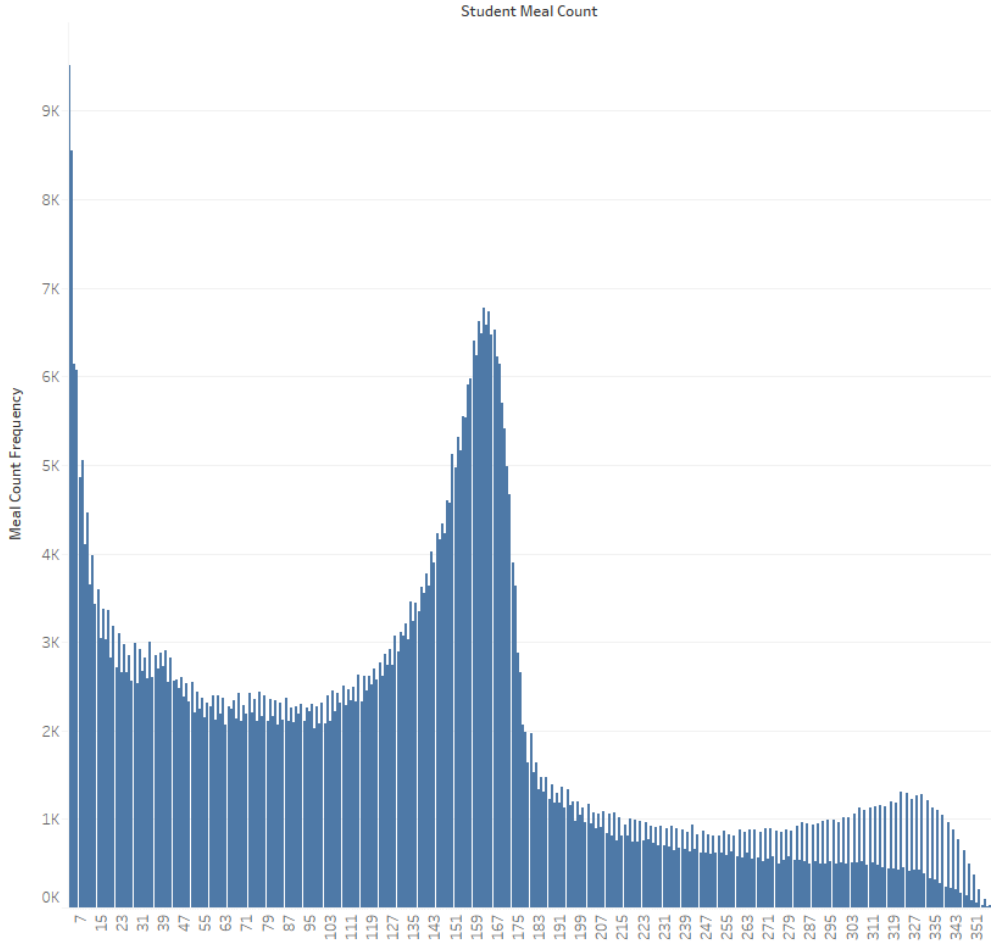


Motivation

This project aims to drill down nutrition spending to the student level as accurately as possible. Some school districts provided detailed nutrition data tracking the number of meals per student, but many districts did not have this information readily available. Thus, this project imputes missing nutrition information for students when this information was not provided. This way, all Utah students are either known or estimated to eat a certain number of school meals each year, and nutrition expenses are allocated to them accordingly. (Note that charter school students are allocated meals differently than school district students, and this is described in *Section 10.3: Charter School Differences*.)

Imputing student-level meal totals is preferred over uniform assignment because it better reflects true meal-eating patterns. An analysis of the known student-level nutrition data provided by school districts showed that roughly 25% of students never ate a school meal during the school year (n = 1,016,488 student/year combinations). Furthermore, if the student does eat at least one meal, there is great variation in the total number of school meals eaten for the given school year, as shown in **Figure 57**. For these reasons, student-level meal totals were imputed for the approximate 3 million student/year combinations whose meal totals were not available. The *Performance* section details the values and the quality of these predictions.

Figure 57. Known Student-Level Meal Frequencies



Summary

The student-level nutrition data provided by districts is first tied to the student- and school-level demographic data received from USBE. This demographic data trains two different machine learning models. The first model predicts the *probability* that a given student ate at least one meal in a given year. The second model then predicts the *number of meals* that a student ate in a given year. For each school and year combination, the student observations are arranged in order from having the lowest probability to the highest probability of eating a school meal.

The NSLP school meal total is then incorporated to act as a cap on the total number of meals allocated to students at each school. A cutoff threshold is determined for each school, and it iteratively adjusts until the sum of meal counts for students with probabilities above the cutoff threshold is as close as possible to the NSLP total. Once this minimum difference is achieved, students with meal-eating probabilities beneath the threshold are assigned a meal count of 0 and students at or above the threshold are assigned their predicted meal count from the second model.

Following the modeling process, every Utah student is assigned a number of school meals, as demonstrated in **Key Formulas 9.1.1**. This information is then integrated back into the Project KIDS methodology. For each district, the total amount of nutrition expenditures is then divided by the total number of meals allotted. This effectively drills down every dollar spent on nutrition in the district to the student level, with students known or predicted to eat more school meals receiving a larger share of nutrition funding.

Key Formulas 9.1.1

$$District\ Meals = \sum_{i} NSLP\ Meals_i \approx \sum_{i} \sum_{j} Student\ Meals_{ij}$$

for each school and year combination i and student j.

Mathematically, **Key Formulas 9.1.2** represents the relationship between district nutrition spending and student nutrition spending for each district.

Key Formulas 9.1.2

$$
\begin{aligned}
District\ Spending &= \sum_i \frac{School\ Spending_i}{\sum_j Student\ Meals_{ij}} \\
&= \left(\left(\frac{School\ Spending_1}{Student\ Meals_{11}} + \cdots + \frac{School\ Spending_1}{Student\ Meals_{1m_1}} \right) + \cdots + \left(\frac{School\ Spending_n}{Student\ Meals_{n1}} + \cdots + \frac{School\ Spending_n}{Student\ Meals_{nm_n}} \right) \right) \\
&= Student\ Spending_{11} + \cdots + Student\ Spending_{nm_n}
\end{aligned}
$$

for each school and year combination i and student j.

Data Sources

District Nutrition Data

Nutrition data received from districts came in many different formats. We clean each district's nutrition data so there is one observation for each student who ate a meal for each year. The resulting information is summarized into these variables:

- STUDENT_ID
- SCHOOL_YEAR
- BREAKFAST (total count)
- LUNCH (total count)
- MEALS (sum of BREAKFAST and LUNCH)

Student Demographic Data

The models rely on student demographic data as the model predictors. The demographic data is aggregated to the student/year level of detail with demographic variables for each student such as GENDER, ETHNIC_HISPANIC, LOW_INCOME, GIFTED, and so on. The UTREx database (USBE's data clearinghouse) provides this information.

NSLP Data

This data frame containing school-level meal totals is received from the NSLP. All traditional schools (i.e., non-alternative schools) report meal totals to this national program every year. USBE also provides this information. The meal count totals are broken down into the following categories:

- BREAKFAST/LUNCH
- FREE/REDUCED/PAID
    - Note that we summarize the values FREE and REDUCED into the single value FREERDC (free or reduced) since this is the value used in the UTREx data

Detailed Methodology

Data Cleaning

The cleaning file pulls in all available district data and merges it with the main student demographic data frame (henceforth referred to as the nutrition data frame).

The cleaning process executes the following steps:

- Add variables BREAKFAST, LUNCH, MEALS, and KNOWN variables to nutrition data frame and set all values to 0
  - KNOWN is a flag that equals 1 if we receive data for the district/year and 0 if not
- Pull in nutrition file from each district available and join to main nutrition data frame by variables STUDENT_ID, SCHOOL_YEAR, and DISTRICT_NAME
  - Replace the 0 meal counts with the correct amount, if available
- Adjust KNOWN flag
  - Set to 1 if we receive data for the district/year and 0 if not
- Recode most categorical variables into binary variables for ease of modeling

Data Quality Checks

The quality checks file analyzes the quality of the student-level nutrition data received from districts against the NSLP data. We utilize the NSLP data to function as our source of truth for how many meals are served at a school in a given year. The student-level nutrition data is then aggregated to the school level so that comparisons can be made between the two data sources. For any schools whose meal count total differs substantially from the amount reported to NSLP, the KNOWN flag is reset to 0, leading the school meal counts to be predicted with our forthcoming model. **Key Formulas 9.1.3** details the criteria for student meals at a school to be marked as KNOWN.

Key Formulas 9.1.3

$$\frac{1}{2}(NSLP\ Meals_i) \leq \sum_j Student\ Meals_{ij} \leq 2(NSLP\ Meals_i)$$

for each school and year combination i and student meal j.

The quality check process executes the following steps:

- Clean NSLP school data
  - Verify that the only schools in the nutrition data and *not* in the NSLP data are alternative schools (the only type of school exempt from reporting meal information to NSLP)
- Flag the alternative schools not present in the NSLP data
  - The students at these schools are uniformly distributed meals later since we have no way of confirming the accuracy of their meal count data
- Calculate percent difference between the NSLP data and aggregated district nutrition data for each school/year
- Reset all student meal counts in the school/year to 0 if one total is more than twice as large as the other

- For the school/year when meals are reset, also reset the KNOWN flag to 0
  - This flag is used to determine whether or not the student meal counts will be predicted. Counts are predicted for all schools/years with a 0 flag and the original meal counts will be preserved for all schools/years with a 1 flag.

Model Testing

This step of the process fits many machine learning models to the nutrition data. Ultimately, two final models are selected. The first model (referred to as the *Phase I model*) predicts the probability for each student/year observation that the given student ate at least one meal in the given year. A preliminary analysis of the available nutrition data received from districts shows that roughly 25% of students never ate a school meal during the school year. Thus, to improve model performance, students with low meal-eating probabilities have their meal counts set to 0 and are then excluded from the next phase of modeling. (See the *Model Final* section to read more about how these low meal-eating probabilities are determined.)

Note that the Phase I model is a classification problem of whether or not a student ate a meal. The following machine learning models for classification are considered:

- GLM
- Naive Bayes Classifier
- Random Forest
- Neural Network
- Gradient Boosting Tree

The second model (referred to as the *Phase II model*) takes the students with high meal-eating probabilities and predicts the number of meals they ate in a given school year. Note that the Phase II model is a regression problem in which the continuous response is the number of school meals eaten. The following machine learning models for regression are considered:

- Linear Regression
- CART Decision Tree
- Neural Network
- Gradient Boosting Tree

Ultimately, the Gradient Boosting Tree model performs best for both the Phase I and the Phase II models. The Phase I model classifies students as being meal-eating or non-meal-eating with 76% accuracy. Furthermore, the kappa value is 0.41, implying that there is real predictive power behind the model such that the 76% percent accuracy is moderately higher than would be expected just by chance. The Phase II model reports an R^2 value of 0.34 and a mean absolute error (MAE) of 52, meaning that the average meal prediction is about 50 meals off target from its actual value. (See the *Performance* section to read more about the limitations of these two models.)

Model Prep

The model prep file pre-processes the nutrition data frame and trains the final models that are pre-selected in the 'Model Testing' file.

The model prep process executes the following steps:

- Aggregate demographic variables to the school and district level (in the form of a proportion) to create additional variables of potential significance
- Set any meal counts less than 10 to 0 for the training phase
    - This improves model accuracy. Early iterations of the Phase II model struggled capturing the true distribution of meal counts since this shape is heavily skewed by very low meal totals (e.g., the many students who forgot their lunch once or twice in a school year and bought a school lunch on those days). Once these observations are excluded from the Phase II modeling phase, the model performance improves significantly.
        - Note that the original meal counts are preserved, and they are reverted back to their original values after the training phase is complete.
- Impute missing predictor variable values
    - This is necessary in order to make predictions in R. There are relatively few missing values in the data frame, and proxy variables impute these values.
- Split data into training and testing sets based on KNOWN flag
- Train Phase I model
    - Train with the full data set of 'known' student meal counts
- Train Phase II model
    - Train with a subset of the 'known' student meal counts where the student meal counts exceed 10

Final Model

The final model file predicts the number of meals students ate in a given year for districts where this information was not provided. This is accomplished by predicting with the Phase I model the *probability* that a given student ate at least one meal in a given year. The Phase II model then predicts the *number of meals* a student ate in a given year.

Next, the NSLP school meal total is incorporated to act as a cap on the total number of meal counts allotted to students at each school. For example, if a school reported to NSLP that they served 50,000 meals in one school year, we want the aggregate student meal totals to be as close to this number as possible. This is done by iteratively adjusting the probability threshold for each school.

For example, say the probability threshold starts at 0.5. All students with meal probabilities less than 0.5 are assigned 0 meals, whereas the other students with probabilities greater than or equal to 0.5 are assigned their predicted meal count total. Once these student meal count totals are aggregated to the school level, say the total number of meals is only 35,000. The threshold then adjusts to a probability lower than 0.5, and the process begins again. This algorithm executes iteratively until the difference between the predicted meal count total and the reported NSLP meal count total is minimized. **Key Formulas 9.1.4** exhibits the minimization equation that the algorithm achieves.

Key Formulas 9.1.4

$$0 \leq \min\left(\sum_j Student\ Meals\left[Prob_j \geq Threshold_i\right]_{ij} - NSLP\ Meals_i\right)$$

$$= \sum_j Student\ Meals\left[Prob_j \geq Threshold_{k_i}\right]_{ij} - NSLP\ Meals_i$$

for each school and year combination *i* and student *j* and minimizing threshold *k*.

Lastly, all schools not required to report their school meal totals to NSLP (i.e., any non-traditional/alternative schools) are handled differently. Since the 'true' NSLP meal count total is unknown for these schools, the student-level meal count totals cannot be verified. Thus, meals are uniformly distributed among all students at these schools.

The final model process executes the following steps:

- Subset the nutrition data for which meal count totals need predictions (e.g., all student/year observations where the KNOWN flag is 0)
    - Note that this is the data frame manipulated throughout the rest of this file
- Predict meal probabilities for each student/year combination with Phase I model
- Predict meal counts for each student/year combination with Phase II model
- Split the data frame into two: one containing students who qualify for free/reduced lunch and one containing students who do not
    - This step is necessary because NSLP reports their school meal count totals to this level of detail. Thus each of the two groups are then capped by their respective meal count total.
- Loop through each school for each student group (free/reduced or not) and iteratively adjust the probability threshold until as close to the NSLP school meal total as possible
    - This is done by first using the *optim* function to obtain a ballpark estimate for the optimal probability threshold. This threshold is then fine-tuned by incrementally adjusting the threshold until it's as close as possible to the NSLP total.
- Assign meal count totals
    - Students with probabilities less than their group/school's probability threshold are assigned 0 meals, and students with probabilities greater than or equal to their group/school's probability threshold are assigned their predicted meal count total.
- Assign uniform meal counts to students at schools without NSLP totals
    - These students receive their district's average meal count total.
- Create flag called REAL_MEALS to demarcate which meals were known or predicted
- Join the data frames with real and predicted data and export

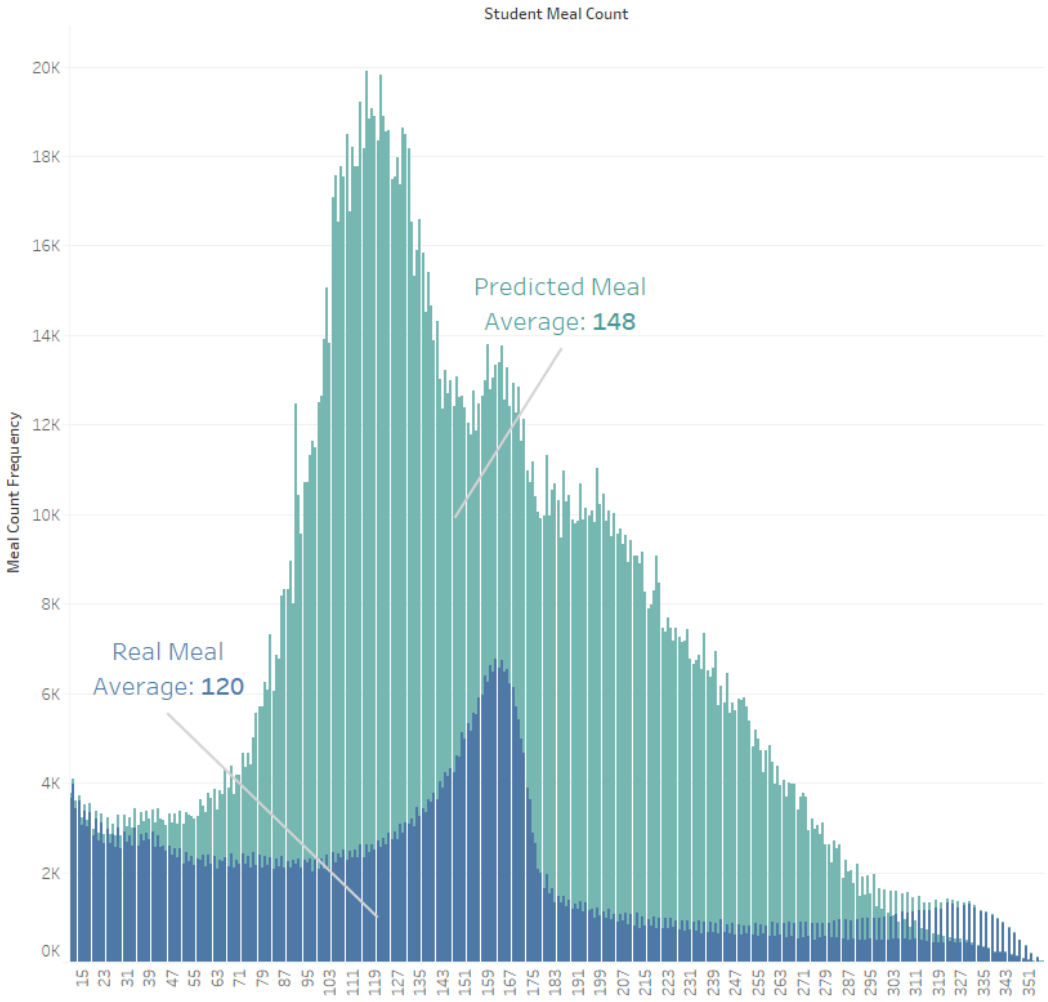
Performance

Overall, the model performs optimally given the complex relationship between student demographic variables and the response variable, the number of school meals students ate. A sufficient amount of data trained the models; nutrition data was provided for about 1 million

students, which left about 3 million students whose meal counts were modeled. The independent and dependent variables correlate fairly, with an R^2 value of 0.34.

Due to its predictive power, the model only roughly captures the bell-shaped distribution of student meal counts. Furthermore, the effect of the interaction between the Phase I model (predicting probabilities) and the Phase II model (predicting meal counts) should be considered. A positive correlation exists between a student's probability of eating a meal and the total count of meals. For example, one may expect a student with a 0.1 probability of eating a meal to be predicted to eat 25 meals, whereas a student with a 0.8 probability of eating a meal to be predicted to eat 150 meals. The students with lower meal count probabilities (beneath the probability threshold) were thus classified to not eat meals and allocated 0 meals. This leads to the model under-representing low meal count students. The graph in **Figure 58** illustrates how the distribution of meals for known and predicted students differ. (Note that the graph excludes students with meal counts beneath 10 so as not to skew the distribution.)

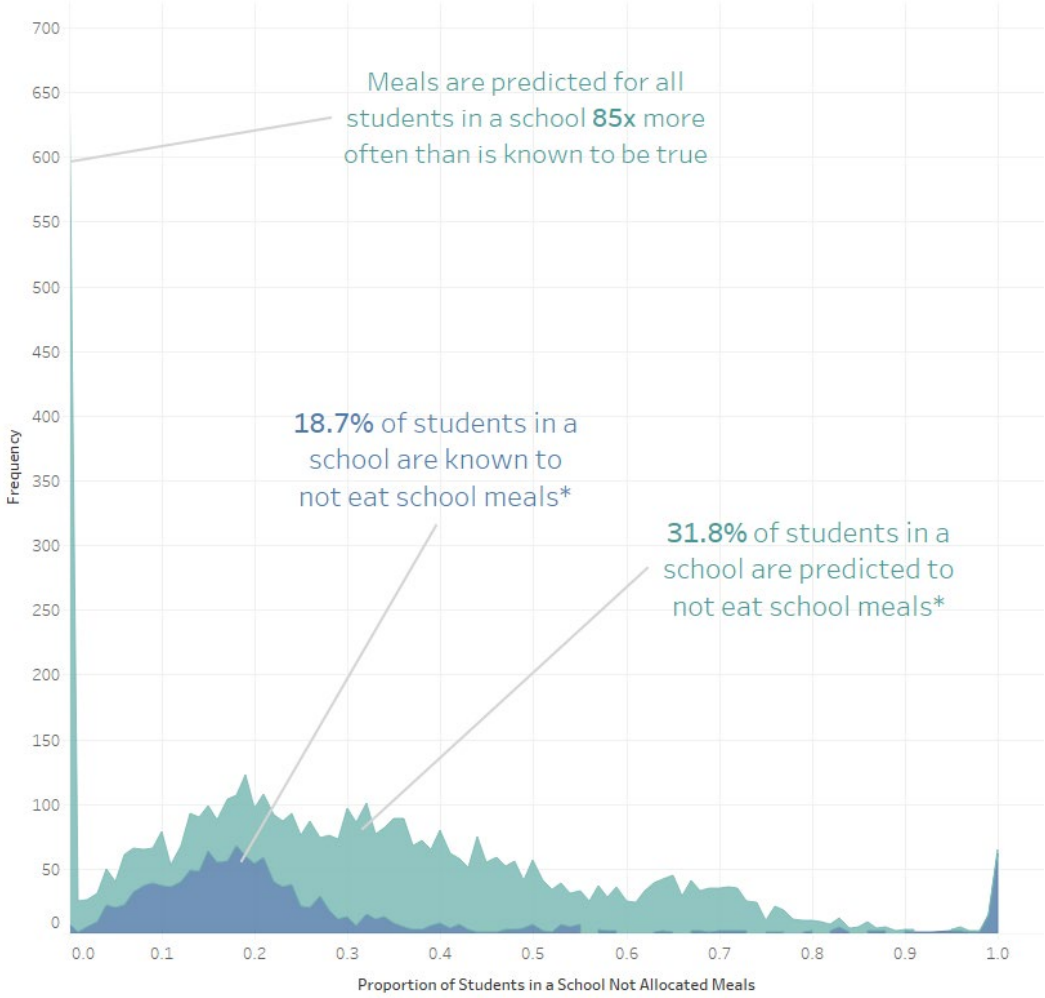
Figure 58. Student-Level Meal Frequencies



Furthermore, the Phase I model struggles to capture the proportion of students who don't eat meals at each school. Calculated by the student-level nutrition data received from school districts, the median proportion of students in a school who don't eat a meal is approximately

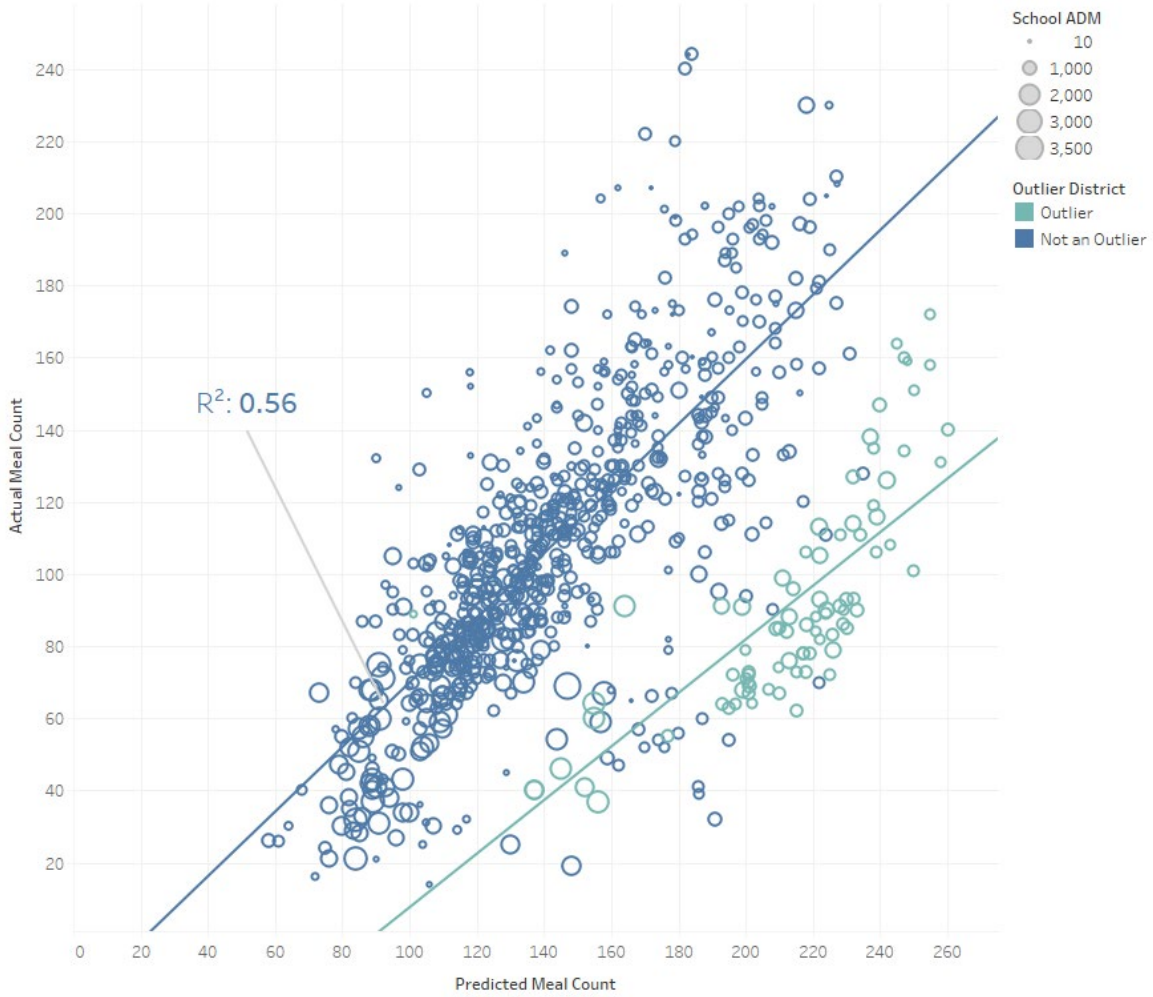
18.7%. However, the predictive model hardly captures this nuance, resulting in a high amount of variance between the proportions of students allocated meals at each school. Additionally, a large number of schools exist where all students are predicted to eat meals. This occurs when the total number of predicted student meals in a school is less than the total reported to NSLP. The frequency graph in **Figure 59** displays the proportion of students in each school who are not allocated meals. (Note that the percentages are reported in terms of the median.)

Figure 59. School-Level Meal Allocation Proportions



Though these caveats are considerable, the meal count predictions fare well when compared to the meal counts reported to NSLP. Since meals counts are reported to NSLP at the school level, a simple average is taken to determine the average student meal count. A positive correlation exists between the NSLP and predicted student meal count averages with an R^2 value of 0.31. Furthermore, if one large outlier district is removed from the analysis, the R^2 value jumps to 0.56. The graph in **Figure 60** displays this correlation with the single outlier district colored turquoise.

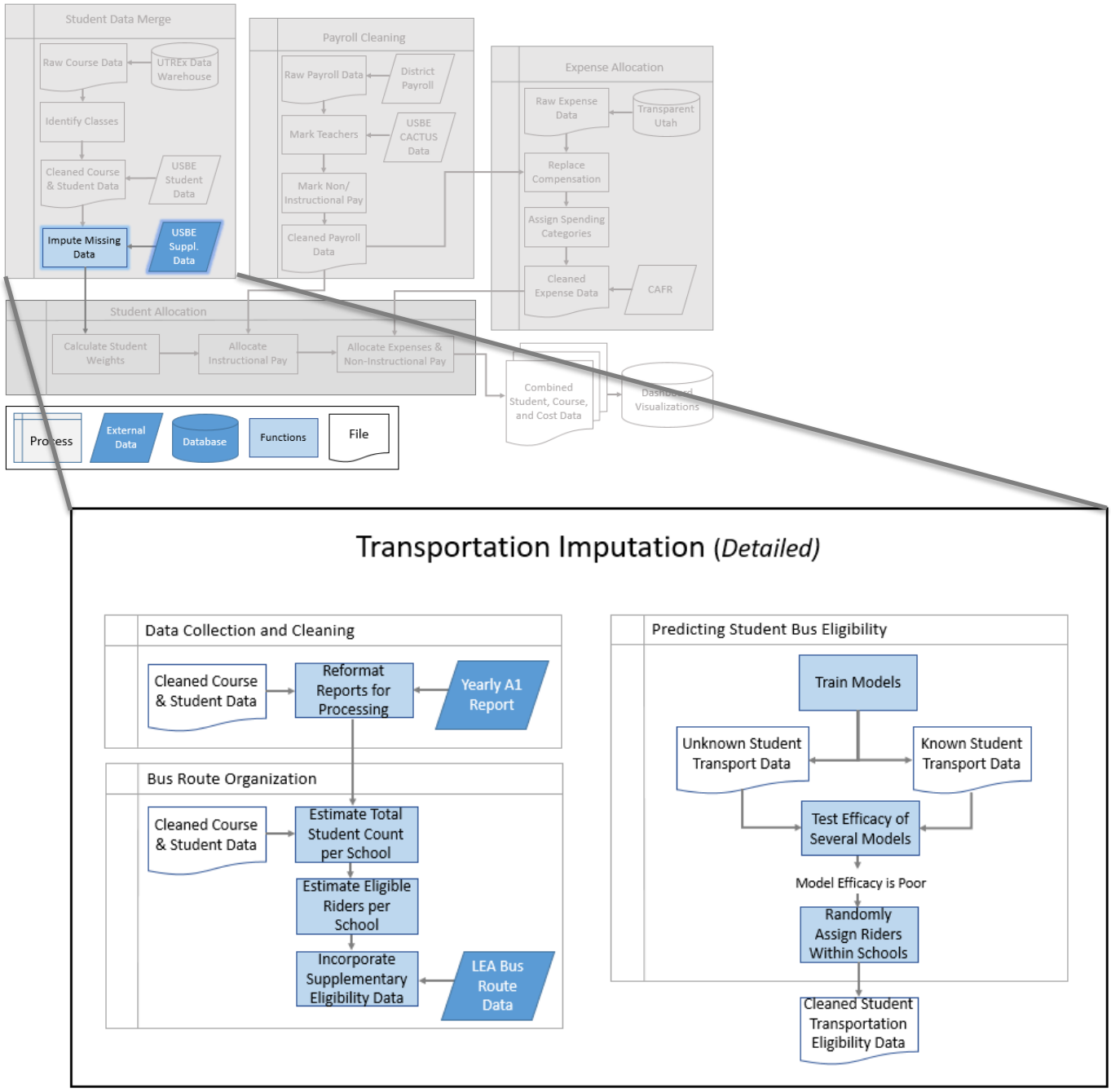
Figure 60. School-Level Comparison of Meal Counts



As shown above, a strong, positive relationship exists between the "true" (NSLP) meal counts and the predicted meal counts at the school level. This demonstrates that the model sufficiently captures general meal trends between the different schools and districts. Naturally, the model struggles more with predictions at the more granular student level. However, given the complex relationship between student demographics and school meal counts, this model sufficiently captures general meal trends across schools and allocates meals to the student level accordingly.

9.2 Transportation Imputation

Figure 61. Detailed Process Flow Chart: Transportation Imputation



Motivation

The goal of this data processing stage is to understand transportation spending at the student level. Understanding which students use transportation services is important so that transportation expenses are allocated to the individual students who are most likely to benefit from them. Project KIDS first collects and cleans standardized state transportation reports, then processes these data to assign student bus eligibility (yes/no) to each student in the state of Utah. This section describes this process in detail.

Between school years 2013–14 through 2018–19, 19% of individual students' bus eligibility statuses are recorded by their school district. The eligibility of the remaining 81% of students is modeled and estimated with several different statistical approaches, described below.

Data Collection and Cleaning

USBE maintains LEA A1 reports in their data warehouse, and Project KIDS uses these reports as a primary data resource. While school districts annually submit these reports, charter schools are not required to do so and therefore charter transportation records are not collected. A1 reports for each school district are collected each year and are identically formatted. These reports track bus routes and the number of students eligible for each route, among other variables listed below:

1. Bus capacity
2. Loaded minutes per route
3. Loaded miles per route
4. Dead minutes per route
5. Dead miles per route
6. Number of stops
7. Number of actual regular ed. Students
8. Number of actual disabled/sp. Ed. Students
9. Number of actual wheelchair students
10. Ineligible minutes
11. Ineligible miles
12. Ineligible/Hazard Students
13. Ineligible Courtesy Students
14. Notes and audit notes
15. Cap percent Act Elig
16. Cap Percent Inelig Total
17. Actual Cap percent total riders
18. Actual total daily minutes
19. Total daily miles (incl inelig)
20. Miles per hour
21. Actual total annual miles (Incl Inelig)
22. Actual total annual minutes (Incl Inelig)
23. Eligible for Full, Half, or No Miles
24. Eligible Annual Miles
25. Eligible Annual Minutes
26. Audit override

27. Wt avg cap

Some A1 reports omitted or incorrectly entered information used to organize the data (e.g., year or district number), resulting in incomplete data sets. To resolve this issue, copies of the Excel spreadsheets were made and the omitted data were input manually.

Some special education-designated, courtesy, hazard, and wheelchair-using students use LEA-provided transportation services but are recorded separately from eligible students. Specifically, these are variables 9, 17, 18, 21, and 22 in the list above. A sum number of these students was used to better capture the total number of students that potentially utilize transportation services. Note that variables 17, 18, 21, and 22 are all listed as "actual," not "eligible."

Bus Route Organization

Project KIDS organizes A1 report data down to school bus routes to understand how many students at each school are benefitting from transportation services each year. School bus routes may be designated as either To, From, or Mixed. All students eligible for a From route are also eligible for a To route. Therefore, we omit all entries for From routes so as to not double-count students. Mixed routes are included in our calculations because they serve students eligible for routes which are identical both to and from school.

While some bus routes operate every day of the year, others operate less frequently. No other combination of variables seem to reliably indicate how to count the number of students serviced by these less frequent routes. Therefore, the number of students who used each route in a given year was estimated by weighting the number of students on each To and Mixed route by the number of days the bus ran the route, as calculated in **Key Formulas 9.2.1**.

Key Formulas 9.2.1

$$Estimated\ Students = student\ count * \frac{\max(days\ run) - days\ run}{\max(days\ run)}$$

By distributing these students across school codes, we can determine the number of eligible riders for each school. However, data values which combine several known school codes (e.g., "106, 152, 124") or refer to several unknown codes (e.g., "MIXED") are uninformative. To address this issue, riders are distributed among all listed school codes in proportion to the population of those schools (see **Table 8**). For example, assume schools 106, 152, and 124 share a school bus route. If school 106 is 10% of the district's population and schools 152 and 124 are each 5% of the district's population, then school 106 is allocated 50% of the riders on the route while 152 and 124 are each allocated 25% of the riders. If several unknown schools are listed (e.g., "MIXED"), then all riders were distributed proportionally across all schools within that district.

Table 8. Calculating School Bus Eligibility

School number	School population	District population	School % of district population
106	100	1000	10%
152	50	1000	5%
124	50	1000	5%

Bus route number	School number	Students on route	Population weight	Estimated school rider count
Route#EX1	106	46	10/(5+5+10) = 0.5	46*0.5 = 23
Route#EX1	152	46	5/(5+5+10) = 0.25	46*0.25 = 12*
Route#EX1	124	46	5/(5+5+10) = 0.25	46*0.25 = 12*

*Estimated student counts were rounded using standard conventions to keep numbers whole (e.g., 11.5 is rounded to 12).

This method for estimating the number of bus riders per school requires knowledge of the population of each school. Therefore, the number of students attending each school during each year was estimated by counting the number of unique student IDs in the course enrollment information provided by the LEA for the school number and year in question. This value provided an estimate of the total population of each school and allowed for the calculation of the proportion that each school contributes to the entire district's population. This proportion served as a weighting factor used to allocate riders to schools in proportion to those schools' relative populations.

Key Formulas 9.2.2

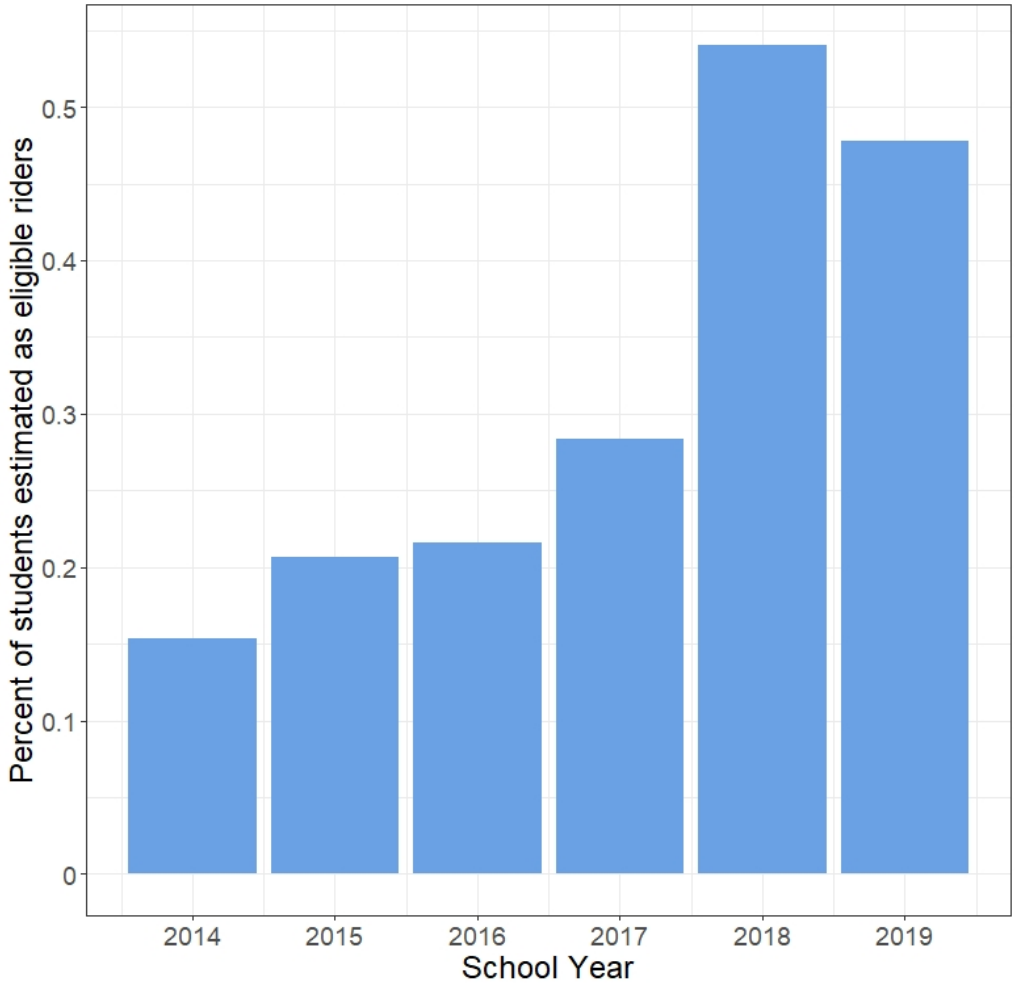
$$School\ A\ population\ weight\ for\ mixed\ routes = \frac{\frac{school\ A\ population}{district\ population}}{\sum \frac{school\ population_i}{district\ population}}$$

If LEAs recorded which students access transportation resources, we want to allocate transportation funds to those students specifically. Data was requested from each district which would allow us to identify which specific students were eligible for transportation services. Thirteen districts had these data available to share; thus, predictive models based on those available data were explored to predict which students are eligible to ride in districts which did not share such data.

Available eligibility data were merged in with UTREx enrollment data by matching school numbers, student IDs, and school years with the same values in the data set containing the estimated number of riders per school. The data product includes the number of students estimated as eligible riders for each school, for each year, in each district. For example, **Figure**

62 illustrates the percentage of students eligible for transportation services in a single Utah high school across six years.

Figure 62. Eligible Bus Riders by School Year



Can We Predict Student Bus Eligibility?

It is possible that some combination of demographic or academic variables predicts whether or not a particular student is eligible to ride the bus. Given that we had rider eligibility data for thirteen districts, these data were used as training and testing data sets for statistical algorithms. Two hypothetical outcomes are outlined, depending on the success of the modeling:

1. If the student-level predictive model works well enough: Assign yes/no (rider or not a rider) to each student per the predictive model; allocate LEA transportation funds equally across students estimated as being a rider.

2. If the student-level predictive model does not work well enough: Rely on estimates of school ridership and do not attempt to predict which students were riders and which were not riders; allocate transportation funds randomly to students up to the upper limit specified by the number of riders per year per school estimated from the A1 reports.

The probability of a student being an eligible rider was modeled first with a single-level logistic regression, then with a multilevel logistic regression (students within schools within districts), and finally a Naïve Bayes Classifier trained with 4-fold cross-validation with the function caret::train in R. Model performance metrics indicated that student-level predictions were unreliable for each model.

The single-level logistic regression attempted to predict the log-odds of a student being labeled as 'eligible' from the linear combination of the following factors: grade level, student attendance, race (i.e., denoted as White, Black, Pacific Islander, Asian, and/or American Indian), free and reduced lunch eligibility, school population, and homeless status. These student demographic characteristics were the variables available from each LEA's enrollment data and those data acquired through USBE's UTREx data warehouse. The estimated coefficient for each predictor included in the model was small and in all cases statistically unreliable (all p values greater than .05). Thus, this simple model was discarded and followed up with a multilevel approach to assess the extent to which different LEAs may be differentially influenced by the same set of predictors.

The multilevel logistic regression model had the same fundamental goal as the single-level version, with the additional aim of allowing for variability across LEAs in how different variables may predict student bus eligibility. The model was defined with the same predictors as the single-level model with the addition that each observation (i.e., student) was nested within their respective district. Conventional assessments of overall model fit such as adjusted R-squared values suggested a poor fit (Adjusted R2 < .01); likewise, individual model coefficients were small and statistically unreliable as in the previous single-level model. Therefore, a final model was tested which employed machine learning principles.

A Naïve Bayes classifier is a set of classification algorithms based on Bayes' Theorem, an inferential statistical framework. This set of algorithms is constructed from a training sample of data and then applied to a separate test sample of data, where one is interested in how well the algorithms from the training set predict known outcomes in the test data sample. This process is referred to as cross-validation and is a standard procedure for evaluating machine learning model performance. A four-fold cross validation procedure separates the entire data set into four equally-sized subsets, designates three samples as training data, and the remaining sample as test (i.e., validation) data.

One common model performance metric used to evaluate the reliability and validity of Naïve Bayes classifiers is Cohen's kappa. This value is calculated by comparing the frequency with which the mode is correct vs. when the model is incorrect in its predictions. Some statisticians have argued that kappas above 0.4 may be reliably specified models; the kappas calculated for each of the four data folds were 0.12, 0.11, 0.12, and 0.12. Thus, each attempt to predict student bus eligibility from demographic, enrollment, population, and attendance data produced statistical models which fall far below conventional standards for reliability and validity. Therefore, all students were randomly assigned bus eligibility as described in scenario 2) above.

Key Formulas 9.2.3

$$\begin{aligned} &Student\ Bus\ Eligible\ (yes, no) \\ &\qquad = Random\ assignment\ up\ to\ maximum\ students\ at\ school \end{aligned}$$

Limitations

The objective of this transportation imputation process was to develop a model which assigns bus eligibility to the students most likely to benefit from to/from transportation resources. The models discussed above failed to reliably predict these students from the available data, therefore a random assignment model is used instead. This method keeps per-student allocations within a reasonable amount, even though individual student bus (in)eligibility in the data may not reflect their true utilization of transportation services. Moreover, those 19% of students whose bus eligibility is reported from the LEA retain that status in the final data product; the remaining 81% of eligibility data, if not imputed, would simply be missing from the Project KIDS database. Thus, while random assignment undoubtedly misallocates some funds, we submit that the alternative of omitting 81% of students from transportation expense visualizations and analyses is the less preferable alternative.

This analysis only included A1 report data on "to" and "from" transportation services. However, students may use district transportation services designed for purposes other than to and from school transportation. These expenses are included in Project KIDS' final visualizations, but are processed separately than the data available from A1 reports. Readers interested in learning about how expenses are categorized can read about this process in *Section 6: Expense Allocation*.

Final Data Product

In summary, the final data set used in the allocation of transportation resources to individual students contains a designation of 'Eligible' or 'Not Eligible' for all students in public schools between school years 2013–14 and 2018–19. Randomly assigned eligible/not eligible riders are noted with FALSE in a variable REAL_DATA and known eligible riders are noted with a TRUE value in the same variable. Some schools had more TRUE 'Eligible' riders than was predicted given the LEA's A1 report(s). These inconsistencies are due to LEAs' A1 reports not accounting for the full population of eligible riders. For example, an LEA may submit a supplemental report specifying 200 eligible riders but their A1 bus route data only allowed an estimate of 80 for that year. These cases were each flagged and investigated for data duplication, data omission, faulty transcription, or file loss issues. However, no cases existed where any of these data wrangling issues were present; therefore, students marked as bus eligible in supplementary reports were left as-is despite their inconsistency with the A1 report.

As a result, for some schools, all students are marked eligible for transportation. While this uniform allocation strategy fails to identify individual students most likely to benefit from to/from transportation services, it is the best solution given the student information available. In other words, the proportional allocation strategy ensures that all *potentially* eligible students are allocated a minimum portion of the available transportation resources.

Identifying which specific charter school students benefit from transportation resources is not possible, given the available data. Therefore, an identical strategy as above was implemented for charter schools: each student enrolled at a charter school is assumed to benefit equally from transportation resources. While this method sacrifices specificity, we posit that it is preferable to assume that transportation resources are allocated to students equally and in small portions than to assume that a random subset of students benefits disproportionately than another.

10. SUPPLEMENTARY INFORMATION

10.1 Limitations

Project KIDS aims to develop data dashboards that empower stakeholders to ask meaningful questions about education spending and student outcomes. However, all analyses are accompanied by limitations which should be addressed. We identify multiple limitations with the Project KIDS methodology:

1. the disaggregation of expenses at higher organizational levels results in first-order approximations instead of dollar-for-dollar accounting,
2. the data visualizations lack the LEA-specific contextual knowledge that stakeholders have,
3. the data is updated yearly and live access to data is not possible under the current framework, and
4. the level of detail in the methodology inherently depends on the level of detail provided in the data we receive from outside entities.

First, the methodology disaggregates expenses at higher organizational levels–such as the district, school, and teacher–and allocates estimated dollars to individual (and identifiable) students. There are inherent advantages and disadvantages to such a process.

On the one hand, Project KIDS replaces the assumptions of simpler methods with multiple levels of careful analysis. Oftentimes, estimates of per-student spending are averages—the total expenses for a year divided by the number of students enrolled that year, for example. The Project KIDS methodology eschews the assumption that resources are equally distributed among students because there is ample evidence to suggest that they are not. This approach allows for a distribution of student resource allocation instead of a single estimation, which more accurately depicts actual spending patterns. For an example of this, refer to the student spending distributions in *Section 8: Dashboard Visualizations*. These distributions are the product of Project KIDS' student-level allocation processes.

On the other hand, like every analytical system, the Project KIDS methodology is underpinned by a set of inherently limiting assumptions. In this case, the per-student spending estimates are first-order approximations and do not account dollar-for-dollar. Indeed, procedures must address those most important methodological questions:

1. *Which students in the same class received "more" of their teacher's pay than others?*
2. *Which portions of teachers' salary and benefits can be allocated directly to students?*

The answers to these questions are important in their own right, but ultimately are prerequisites to other, more actionable questions that face stakeholders about resource allocation and student performance: *Are recent investments in eighth-grade science materials at the new middle school resulting in better outcomes for students?* The Project KIDS team has taken steps to ensure the consistent application of a reasonable set of design choices that stay true to the goal of increasing transparency in public education spending. Ultimately, the values presented in the Project KIDS dashboards are approximate due to the fine-grained nature of the analysis. However, we propose

that these approximations are more accurate than obtaining single top-down estimates of per-student spending.

Second, the spending and performance dashboards do not include important contextual knowledge regarding many organizational expenses. This is a limitation inherent to building data dashboards designed for all stakeholders when, in fact, different LEAs set different goals, work with different populations, and conduct services with different amounts of resources.

A chief goal of Project KIDS is to develop a data system which documents school spending in a meaningful way for these stakeholders—but, the methodology does not provide a comprehensive solution to all spending questions without those incredibly important facts known only to various stakeholders. Such solutions can only be implemented by a system that empowers stakeholders to combine their expert contextual knowledge with the facts of spending and performance. We have therefore built visualizations that are non-normative, making the data easily accessible but leaving the decision-making to stakeholders who have the additional contextual knowledge necessary to make those decisions.

Third, the data systems Project KIDS maintains are updated manually with each fiscal year, so live data is not available. The data requests and processing steps described throughout this document are implemented each year to ensure high quality data, but annual updates mean that stakeholders will not have access to 'live' data while exploring the spending and performance dashboards. This merely defines the scope of the project to include *past* allocation patterns, and not the immediate consequences of those made very recently. There are two main reasons for these yearly updates:

1. Because much of the data is obtained from outside entities, Project KIDS works to reduce the burden of these data requests by only requesting the information yearly. For each data update Project KIDS must request data packages from LEAs and USBE. These requests burden these entities and so they are limited as much as possible. For example, yearly data requests can strain a school district's resources and more frequent requests would compound that issue.
2. Project KIDS data analysts search for irregularities and investigate discrepancies with care, and such care takes time. Significant labor is required to implement each update because of the granular level of detail with which Project KIDS analysts approach the data preparation process. These careful processes are necessary to address the idiosyncrasies in each district's data.

Fourth, because Project KIDS generates visualization-ready data by integrating data warehouses maintained by USBE and by individual LEAs, the level of detail in the visualizations inherently depends on the level of detail that these entities maintain in their data systems. The methodology is designed to comprehensively visualize the historical allocation of financial resources. Nonetheless, the final level of detail available in those visualizations greatly depends on how comprehensively the entity recorded their expenses, course information, and enrollment data. For example, LEAs record payroll information in such a way so that it is useful and tractable given their goals and resources—not so that Project KIDS can precisely allocate teacher compensations to instructional and non-instructional expense categories. Thus, the burden of data translation rests on Project KIDS as the developer, but the granularity of detail depends on the data received.

While the Project KIDS methodology is limited by some design choices, these same choices confer benefits we determine to be worth their cost. For example, the decision to disaggregate data at higher levels to allocate resources to individual students may obscure some expenses at these higher organizational levels. However, the process also permits investigation of investments into individual students or student groups. Similarly, early data updates make 'live assessment' impossible for some expense patterns, but they also ease the burden Project KIDS places on LEAs and allow for more careful investigation into irregularities in the data.

Ultimately, the limitations of Project KIDS are the consequences of meaningful design choices which serve to distinguish the methodology from other approaches.

10.2 Exclusions

Non K–12 Funding

Project KIDS seeks to understand where the money is going in public education. Free, public education typically includes students in kindergarten to grade 12. Though some school districts serve students outside this age range (i.e., pre-K and adult education), these students are outside the current scope of Project KIDS. Furthermore, enrollment data is usually sparse for these non K–12 students. Thus, for theoretical as well as practical reasons, these students are excluded from the Project KIDS methodology.

The Project KIDS methodology handles non K–12 expenses by allocating them to the subcode Non K–12. This subcode is handled differently than the rest, as the expenses contained in the subcode are *not* allocated across students. In other words, this spending is not included in calculations at the student level. Nonetheless, the non K–12 funding is still carved out and preserved in the accounting, so that the total spent on non K–12 programs can be viewed in a district's total spending profile.

The full list of programs that are assigned to the Non K–12 subcode by default can be found in *Section 11.4: Expense Default Account Code Assignments* with the Spending Category of X99.

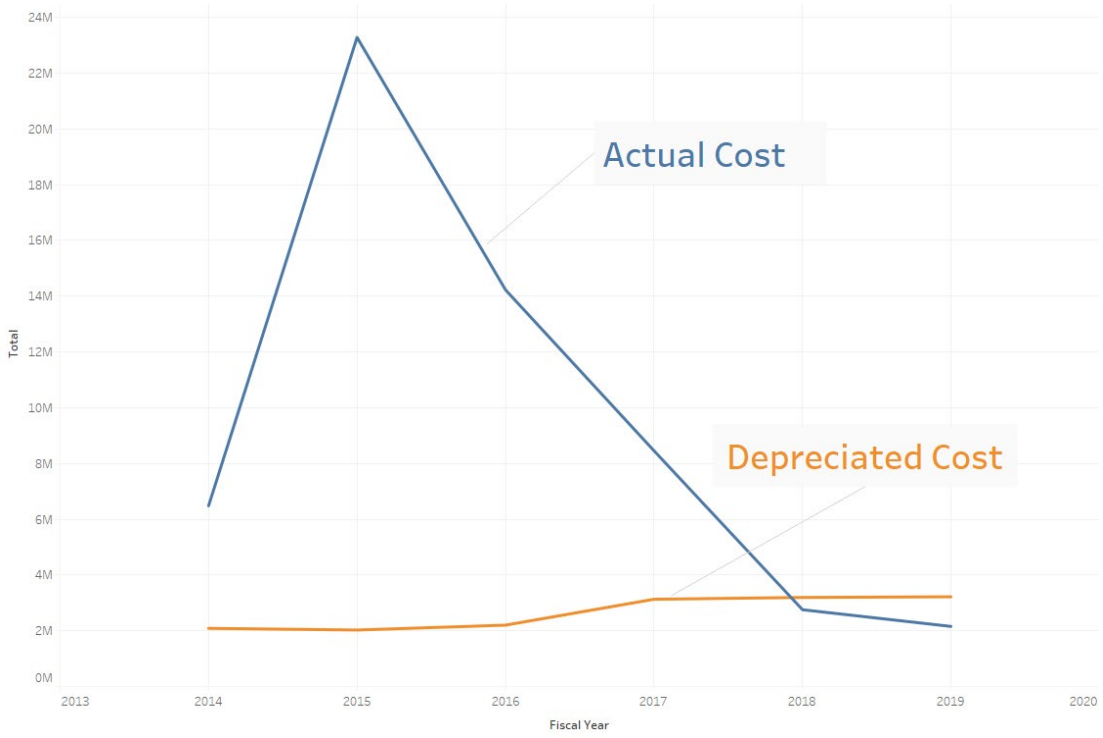
Actual Cost vs. Depreciation

The student data dashboards, by default, display depreciated costs rather than actual costs. The depreciation method is favored by default since it smooths out large capital expenditures (like an extension to a building or a new gym) over their useful lives. Spreading out these costs over a longer period is justified because students for many years into the future will benefit from these capital investments. This method also prevents spikes in student spending profiles in years that large capital investments are made. **Figure 63** demonstrates the actual and depreciated cost for a selected school district.

In **Figure 63**, the large capital investment made in school year 2014–15 totaled about $24 million. This would increase average student spending for the year considerably. (At the school location where this capital investment was made, average student expenditures jumped from $13,800 in 2013–14 to $33,295 in 2014–15.) However, once this is depreciated over its useful life, which is typically 30+ years for large capital projects, this translates to less than $1 million a year in increased costs for the district using the straight-line depreciation method, which is represented by the modest increase in the Depreciated Cost line around 2016–17.

In other words, the depreciation method captures all capital spending, but spreads these costs out over their useful lives to prevent large fluctuations in average student spending totals from year to year. Thus, using the depreciation method, peer-to-peer spending comparisons are more accurately made while including capital in the conversation. Note that for many of the dashboard views, one can toggle between the depreciation and actual cost methods for allocating large capital expenditures.

Figure 63. Actual vs. Depreciated Capital Costs



10.3 Charter School Differences

Payroll Cleaning

Employee compensation information is queried from Transparent Utah for each charter school. Project KIDS requests detailed, comprehensive payroll data for all employees from each school district. However, this information is not requested from individual charter schools, to reduce the burden on these smaller institutions.

Employee IDs

Employee compensation data from the Transparent Utah database does not contain employee IDs, which help the team distinguish between unique employees. For school districts, employee IDs are included in the payroll data individually requested from them. However, this payroll data request is less necessary for charter schools than for districts because charter schools typically have fewer employees, and the name field in the Transparent Utah database is usually sufficient for distinguishing between employees.

Project KIDS must distinguish between individual employees because the payroll data is matched with the student-level course data. Throughout this process, the team ensures that only one payroll employee is matched to each teacher ID in the course data.

Internal employee IDs in the district payroll data help the team distinguish between individual employees, even if there are multiple employees with the same name. So, for example, if there are two John Johnson's at a single school district, the team can use the employee ID to distinguish between the two individuals. Continuing the example, if both John Johnson's are teachers, the team must distinguish between the two to know which teacher taught which classes. This ensures that each teacher's compensation is allocated to the correct students. The employee ID supplements the name field to allow for these distinctions.

Employee IDs are rarely required for charter schools because there are normally far fewer employees. Typically, the employee name field is sufficient for distinguishing between individual employees.

Aggregation Level

Transparent Utah's expense data files include more detailed compensation information, with transaction-level totals. Expense transactions have detailed account code segments, as described in *Section 6: Expense Allocation*, to express the purpose of each payment. However, because names are masked in that data, the wage data is used instead.

The Transparent Utah wage data differs significantly from district wage data in quality. This is because the wage data for most charter schools is aggregated to the teacher/pay type (salary/benefit) level of detail and not broken out into account codes like district payroll. In other words, for most charter schools we do not have transaction-level data on how a teacher's pay is broken out. Instead, we rely on the job title field rather than account segments. This usually reduces a teacher's pay to one dimension: whatever their primary role is. (Note that there are a

handful of charter schools with account segment information that allows for more detailed classification.)

Table 9 gives an example of how compensation is typically classified for school districts and **Table 10** gives an example of how compensation is typically classified for charter schools. These tables illustrate the difference in the level of detail available and utilized in district payroll data versus charter school payroll data. In districts, an extra coaching stipend can be identified and carved out as non-instructional. However, in charter schools this information is wrapped up in the total pay and would be classified as instructional with the main teaching pay. The coaching stipend would be allocated to the classes the teacher teaches in the year, along with their base teaching compensation.

Table 9. District Compensation Classification

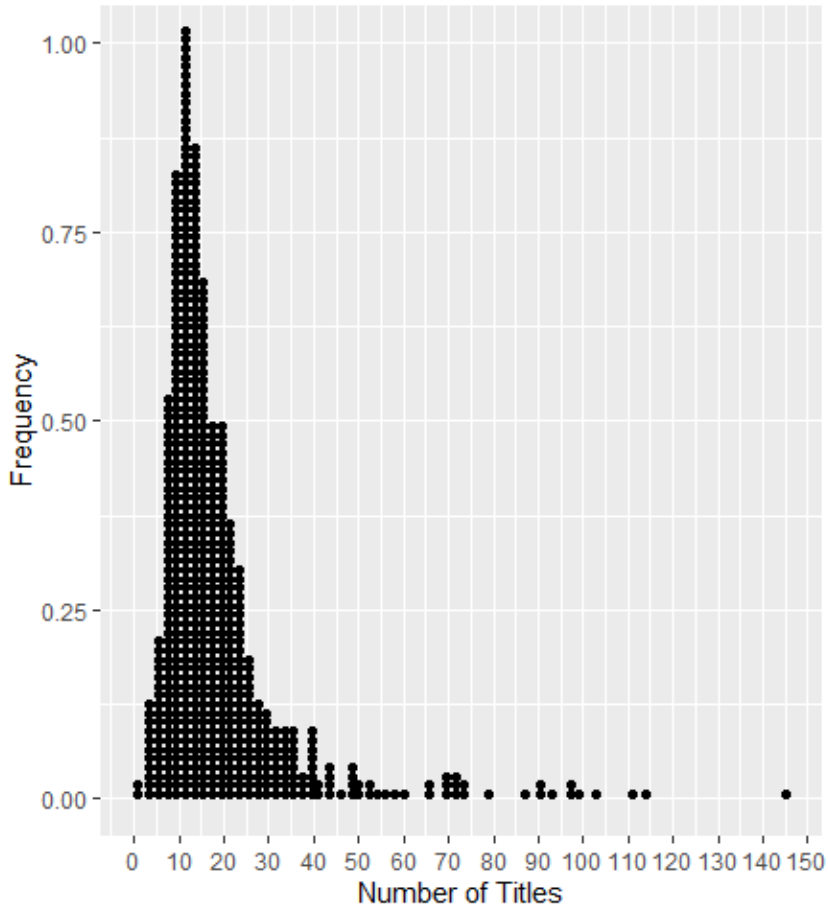
CACTUS ID	Employee ID	Employee Name	Fiscal Year	Account Code	Description	Amount	Project KIDS Classification
123	456	Johnson, Anne	2019	10-500-0500-1000-131	Teacher Salary	$30,000	Instructional
123	456	Johnson, Anne	2019	10-500-0500-1000-241	Teacher Benefits	$10,000	Instructional
123	456	Johnson, Anne	2019	10-500-0500-2200-195	Coach Stipend	$5,000	Non-Instructional

Table 10. Charter School Compensation Classification

CACTUS ID	Employee Name	Fiscal Year	Pay Type	Job Title	Amount	Project KIDS Classification
123	Johnson, Anne	2019	Salary	Math Teacher	$35,000	Instructional
123	Johnson, Anne	2019	Benefit	Math Teacher	$10,000	Instructional

Teachers rarely have more than one title in the data, which means that any supplemental roles that they take on, whether instructional or non-instructional, are lost. Furthermore, the level of detail of these titles can vary significantly between charter schools. **Figure 64** displays a frequency graph of the number of unique job titles by charter school and year combination, with a median of 15 job titles. About 25% of charter schools have less than 10 unique titles in their wage data. When this is the case, instructional titles are limited to “Teacher,” “Aide,” “Substitute,” and the like. Thus, if these teachers do not match over to the course data, their salaries and benefits default to the most general instructional subcode, General Instructional Support. Without the transaction-level detail, there is no way of knowing whether a teacher was paid to serve a specific student population, such as SPED or Title I. The result is a less detailed allocation process.

Figure 64. Charter School Unique Job Title Frequency Graph



Expense Allocation

Blurred Spending by Parent Code

Since charter schools are generally much smaller operations than school districts, it is not uncommon for the staff to wear many hats. However, as described in the *Aggregation Level* section above, charter school employees usually have only one title in the wage data. As a result, spending totals by parent code can become slightly misconstrued.

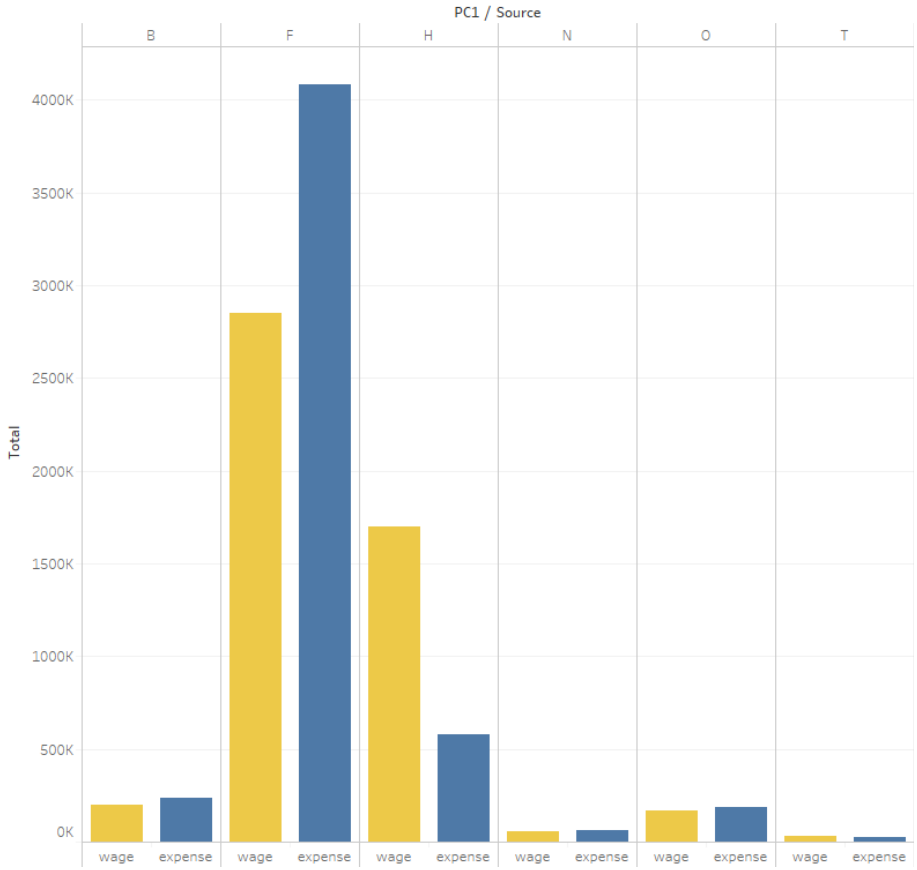
Figure 65 displays how the less granular wage data can blur charter school spending. The data shown is a comparison of the employee compensation totals by category in the expense data versus the totals by category in the wage data. For this LEA, their expense data, colored dark blue, indicates that the vast majority of their employee compensation expenses are instructional (F). These expense totals are generally thought to be more reliable than the wage totals, since they are broken out at a greater level of detail with account codes.

The wage data in **Figure 65** indicates that the charter school spends a relatively high amount on administration (H). What is likely happening is that a number of individuals that work primarily as school staff also spend some time teaching. However, given the level of detail of the wage data, it is difficult to differentiate this spending. At this point, teacher titles in the affected parent

codes are carefully scrutinized to make sure that employee compensation is being allocated to the most appropriate subcode.

After final adjustments are made, the wage data (yellow) replaces this expense employee compensation data (blue), and the totals by parent category therefore become more of a representation of the compensation amounts by job title than by actual function. While these categories are less accurate for charter schools than school districts, the job titles represent the main function of each employee at the school, so the majority of each person's pay is likely accurate categorized by job title. (The reasoning behind the wage replacement is detailed in *Section 5: Payroll Cleaning*.)

Figure 65. Parent Code Totals by Data Source



This phenomenon can occur across a few different parent categories. **Figure 65** displays a blurred line between instructional (F) and administrative (H) spending. Sometimes the line between the student support (B) parent category and instructional (F) or administrative (H) parent categories can be blurred as well. This crossover is less of an issue for the other parent categories. Though this example demonstrates a more extreme case of this occurrence, it is important to note that the Project KIDS data dashboards are sometimes aggregated to the parent code level of detail, and these totals by category can be affected by this phenomenon.

Underrepresented Expenditures

There is evidence that charter schools occasionally cost share with school districts or colleges. For example, a charter school housed in the wing of a school district school would likely share the same cafeteria, gymnasium, and perhaps even the same teachers. Extending this example, the school district may cover most of these shared expenditures, resulting in the charter school reporting minimal costs for nutrition, school activities, and instructional compensation. Charter schools that partner with school district schools or local colleges or universities are more prone to these underrepresented expenditures, and these differences should be contextualized when making comparisons across charter schools.

Reduced Data Checks

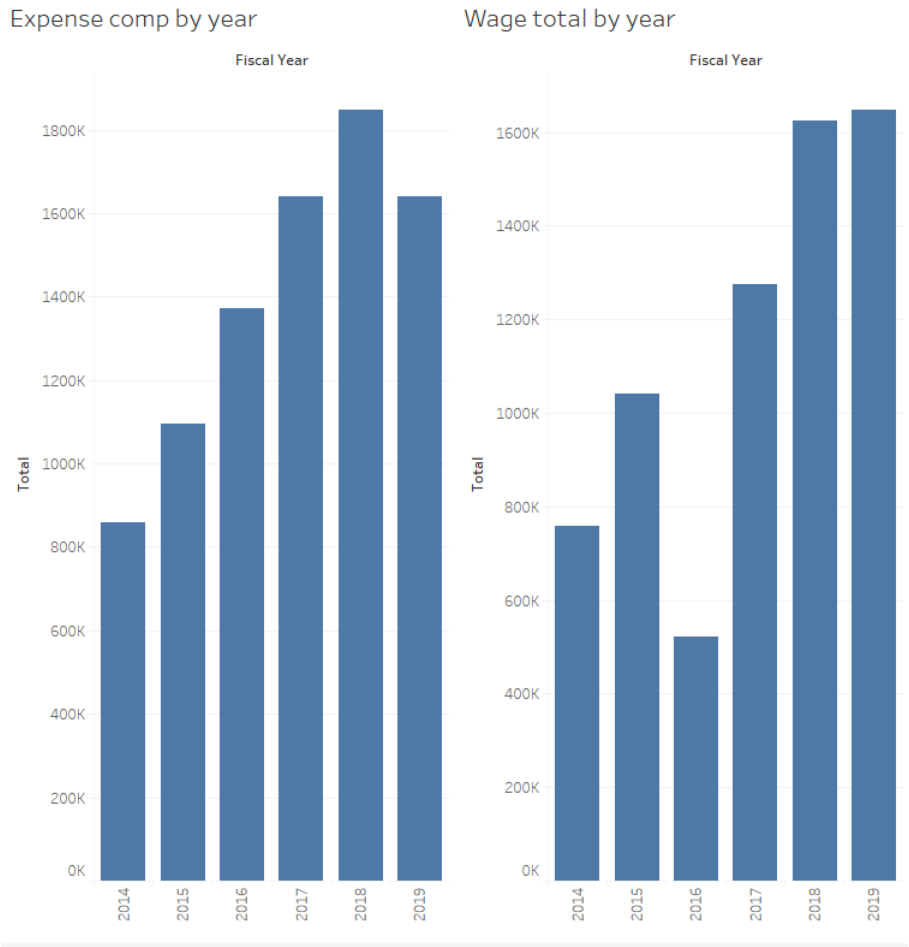
Preliminary data checks for charter schools are less formal than for school districts for a few reasons. Firstly, charter schools rarely record expenses in funds outside of the general fund, so their expenses in the CAFR are usually not aggregated to the fund level like school districts. Instead, charter school spending totals are generally broken out by broad spending categories in the CAFR, which are not standardized and thus differ from charter school to charter school. Additionally, these CAFR spending categories are sometimes vague or overlapping, leaving a considerable amount of guesswork to the analyst.

For these reasons, data checks for charter schools are primarily internal, leveraging historical spending patterns instead of utilizing external data sources. These checks include total spending by year and average student spending by year, in which any major fluctuation, typically defined as more than a 25% spending difference between years that is not explained by changes in enrollment, is investigated. The CAFR is then used as a secondary data source to verify these major spending discrepancies. If the major change in spending is not reflected in the CAFR, charter school administrators are contacted to correct their Transparent Utah expense data.

A similar process ensues for verifying employee compensation totals. For charter schools, wage data is obtained from the Transparent Utah data system instead of requesting the information from individuals LEAs, like what is done for school districts. This places less of a burden on charter school administrators but reduces the level of detail that the payroll information provides, as described in *Payroll Cleaning*.

Nevertheless, the wage data is analyzed at a high level by comparing the total amount of the wage file to the total amount of employee compensation in the expense data each year. (All transactions in the expense data with object codes ranging between 100 and 299 are considered employee compensation, as this range represents employee salaries and benefits.) **Figure 66** illustrates this total by year comparison undertaken for charter schools. Any charter school with more than a 25% difference between wage totals per year or between data sources that is not explained by changes in enrollment is contacted to correct their wage data.

Figure 66. Charter School Spending Quality Checks



Finally, note that a 25% threshold is used for charter schools, rather than the 15% threshold used for school district data corrections. This is because charter schools have smaller operating budgets than school districts, so their spending totals are prone to more fluctuation.

Different Administrative Subcodes

Administrative subcodes for charter schools differ from school districts because the leadership structures between the two LEAs tend to differ. School district leadership always includes a superintendent, a business administrator, and a school board, whose salary and benefits are captured in the District Administration (A99) subcode. The leadership structures and position titles of charter schools administrators, on the other hand, are less well-defined. For this reason, there is some variation in how position titles are categorized between school districts and charter schools.

Table 11 summarizes the subcode classification differences for administrative positions. Namely, the apparent charter school leader, whether titled the Director, Executive Director, Principal, or some other clear title is placed in the Principals & Directors (H01) subcode. This is the charter-specific proxy for the A99 subcode that captures high-level leadership. Note that the business administrator-equivalent in charter schools is placed in the Accounting & Finance (H07) subcode. This is because charter schools do not always have a financial director on staff,

as it is fairly common for charter schools to outsource financial management to companies that specialize in such. Thus, grouping charter school financial directors by specialty makes for better comparisons across charter schools. The other administrator classifications between school districts and charter schools remain fairly constant.

Table 11. Position Title Classification between School Districts and Charter Schools

Position Title	**District Subcode**	**District Subcode Name**	**Charter Subcode**	**Charter Subcode Name**
Superintendents, school board members	A99	District Administration	-	-
Executive directors	-	-	H01	Principals & Directors
School principals	Q99	School Administration	H01	Principals & Directors
Business administrators	A99	District Administration	H07	Accounting & Finance
Accountants, payroll	A07	Accounting & Payroll	H07	Accounting & Finance
IT personnel	A06	IT Operations	H06	IT Operations
Other administrators	A08	General Administrative Compensation	H08	General Administrative Compensation
Other administrative expenses	A09	Other District Expenses	A09	Other Administrative Expenses
Program-specific directors	*		*	

*Note that the salaries and benefits of program-specific directors, such as the elementary curriculum specialist or the special education director, are placed in the most specific subcode possible (in this case, Elementary Administration and SPED). When it is unclear which specific student group they are benefitting, directors are placed in the A08/H08 subcodes. (Only the pay for the executive director or school leader is placed in H01.)

All subcodes, including charter-specific and district-specific subcodes, along with their assignment rules can be found in *Section 11.2: Expense Spending Category Assignment Rules*. Note that these differing administrative subcodes alter administrative subcode assignments from the USBE standard COA. These different mappings can be viewed in *Section 11.3: Expense Default Account Code Assignments*.

Different Data Supplementation

As briefly mentioned in the *Reduced Data Checks* section, charter schools rarely record expenses in funds outside of the general fund. School districts, on the other hand, aggregate spending at the fund level. Some typical funds for school districts include the general fund, the student activity fund, non K–12 programs, and the school food services fund. School districts include verified spending totals by year and by fund in the CAFR, allowing for Project KIDS analysts to cross-check and then, if necessary, extract totals for minor funds (as described in *Section 6: Expense Allocation*.) This process ensures that data totals are accurate to the fund level without having to burden school districts with data corrections.

Since charter schools rarely utilize minor funds, these corrections cannot be extracted from the CAFR. This can affect general expense totals for the charter school, as well as subcode totals specific to those funds if the data is incomplete. (These subcodes include General Student Activities (E18), Non K–12 (X99), and School Meals (N01).) To summarize, the totals of these three subcodes are verified for school districts using the fund totals in the CAFR, but this cannot be done for charter schools.

Though fund totals cannot be extracted for charter schools, there is one unique form of data supplementation that is done for charter schools only. Recall that depreciated expense totals are extracted from the CAFR for all LEAs (school districts and charter schools), as detailed in the *Adding Depreciation* subsection of *Section 6: Expense Allocation*. On a similar thread, rent payments are added for charter schools when they are missing from the data. This information can also be found in the CAFR.

Rent totals are included for charter schools because many charter schools rent their facilities rather than owning them. While depreciation is recorded for owned assets, rent can be thought of as depreciation on unowned assets. Thus for this theoretical reason, as well as the practical reason that rent payments can take up a substantial portion of the budget, rent payments are added for charter schools when they are missing from the expense data.

Note that when rent payments are included in a charter school's expense data, it is usually coded so that the transactions are allocated to the Operational Expense subcode. When the information is extracted from the CAFR, however, the rent payments default to the Depreciated Expense subcode so that they are grouped with the other CAFR totals. Thus, the Depreciated Expense subcode is important to include when understanding a charter school's operating budget.

Inapplicable Standard Allocation Script Rules

Two types of rules in the standard allocation script do not apply to charter schools. These encompass allocation rules based on funds and based on locations (see steps 7, 10, 18, and 20 in the *Standard Allocation Script* subsection of *Section 6: Expense Allocation*). Funds and locations can be leveraged in school districts to better understand the purpose of the expense. For example, districts commonly have a location for transportation spending, which is allocated directly to the Transportation subcode. Charter schools do not typically use funds or locations beyond the general fund and school location, so the appropriate spending categories must be inferred from other parts of the account code.

Student Allocation

Different Scope of Allocation Decisions and Supplementary Data

The majority of charter schools have only one location, whereas all school districts have more than one school. When allocating funds down to individual students in school districts, resources are separated into district-wide and location-specific categories. This additional level of granularity is preferable where possible, as location-specific flags refine the specific pool of students who are most likely to benefit from the funding. However, for single charter schools, all students are eligible for allocation of all funds, so only LEA-allocation strategies are used.

Dashboard Visualizations

Alternative Comparisons

Most of the visualizations for school districts allow the user the filter by school, enabling comparisons between different locations within a district. This functionality is unnecessary, however, for single-location charter schools. Therefore, instead of filtering by school, new interface elements encourage users to sort spending and performance data by other dimensions more applicable to charter schools, such as grade level.

In addition, Project KIDS finds that course expenses can vary significantly between elementary and secondary classes, so we include a Class Type Category filter in the charter school Spending by Subject dashboards to allow stakeholders to compare expenses within and across these class types.

Charter Data Limitations

GPA data for school districts are consistently recorded in USBE's database; these data are merged with state performance reports and are presented in various formats in the Tableau Dashboards. However, GPA data are not always available for charter schools; thus, Project KIDS removes GPA from the visualizations where sufficient data are not available.

Similarly, proficiency scores for test subject areas are not applicable for all charter schools, dependent on grade level served. Therefore, subject proficiency visualizations are only included where applicable.

Additionally, some charter schools do not report detailed wage data for specific years. There are multiple reasons for this. The two most common reasons are:

1. the charter school's expenses were small enough in a given year that they were exempt from wage reporting requirements, or
2. the charter school closed part-way through the school year so they never uploaded their last year of wage data.

In these cases, employee compensation is not tied to teacher IDs and therefore cannot be allocated to specific classes. Classroom- and teacher-level expenses cannot be accurately allocated without individual teacher wage data, so the visualizations for these schools only include the Charter Spending Dashboard and the Spending per Student Dashboard.

See *Section 8: Dashboard Visualizations* for more information regarding the differences between visualizations for single charter schools and school districts/charter school networks.

Supplementary Processes

Uniform Nutrition Assignment

Student meal totals are obtained for students attending district schools only, not charter schools. Charter schools were not requested to provide student-level meal totals out of consideration for the burden it places on their administrative staff. (Likewise, meal totals are no longer requested from school districts as of 2020.) Because student-level meal totals for charter schools are unknown, the analytics team decided to err on the side of caution and not extrapolate the district nutrition model to impute meals for charter school students.

The nutrition results were not extrapolated for a few reasons. Firstly, the meal predictions from the model are based primarily on individual student demographics and demographic proportions aggregated to the school and district level. Losing the set of district-level variables alone would impose the need for a different nutrition model, since the model cannot run with missing variables.

But even if this model was recreated for charter schools with the district-level variables removed, it is unknown whether or not charter school students systemically differ in their school meal-eating habits than school district students. For instance, charter schools tend to have smaller student populations than district schools, and it is not uncommon for charter schools to prioritize the admission of students living within a close vicinity of the school property. This could feasibly lead a relatively high proportion of charter school students being able to walk home for lunch. By the same token, less of a commute to and from school could lead to additional time to pack a lunch at home. Either of these scenarios could cause charter school students to eat fewer school meals than their peers at school districts. Other scenarios such as these could constitute a systemic difference in school meal-eating patterns.

Furthermore, as mentioned above, student- and school-level demographics heavily influence the allocation of meals to students. These demographics may also systemically differ from charter schools to school districts. There are two types of charter schools to consider in particular: those that cater to a very specific student population and those that intentionally create a very diverse student body. Either of these charter schools' demographic makeups may be far outside of the model's observed range. This could cause an over-extrapolation of the model in which the student-level meal counts could be unreliable.

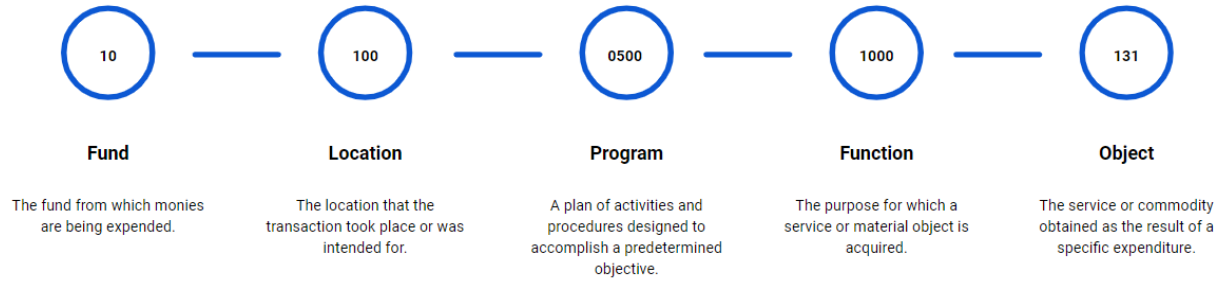
For these reasons, the analytics team decided to err on the side of caution and not extrapolate the district nutrition model to charter school students. Instead, total nutrition spending at a charter school is divided uniformly across student weights at that school. In other words, nutrition spending for charter school students varies solely on their time enrolled at the school, as described in *Section 7: Student Allocation*, not based on demographics or other factors that were deemed significant in the district nutrition model.

Uniform Transportation Assignment

Some charter schools offer to/from transportation services to students. However, USBE does not require that charter schools submit annual A1 reports, which are an important part of the transportation imputation process. Also, Project KIDS does not request transportation reports to avoid placing additional burden on charter schools. Instead, charter school transportation expenses are distributed uniformly across all students enrolled at the school and in proportion to the percent of the school year they were enrolled at the school.

10.4 Glossary

Account Code: Transaction-level expense and compensation data is split out by account codes with the following aspects: fund, location, program, function, and object. The following image shows the structure and explanation of the standard account code:



Actual Costs: Refers to the dollar amount contributed toward large capital assets in a given year. This can include construction of new buildings, building improvements, purchase of equipment, purchase of vehicles, etc. These capital assets can show spikes in per-student spending during purchase years, but they are used by students over long periods of time. To account for these discrepancies and facilitate better spending comparisons, Project KIDS uses Depreciated Costs (see *Depreciated Costs*)

Allocate/Allocation: The distribution of educational monies. This can be done at the Federal, State and LEA level and school level. Project KIDS allows the public to see exactly how the money from the federal, state, LEAs and schools are distributed at the student level.

Annual Financial Reports (AFRs): Yearly financial reports given by districts to the state. Depreciated costs for capital projects are calculated by auditors and included in the AFRs. (See *Depreciated Costs*)

Average Daily Membership (ADM) reports: This number is calculated by the USBE. This student count for each school/ district is frequently used by USBE and other Education stakeholders to calculate student spending. Instead of headcount numbers, taking the average of the daily membership or attendance of students at school gives a more accurate depiction of participation throughout the year. An example of headcount would be the enrollment at the beginning of the school year, whereas the ADM allows for students who were there a quarter or half of the year to still be included (though these students are weighted differently).

At-Risk: Utah Code 53F-2-410 sets the following criteria for the state's "Enhancement for At-Risk Students Program": 1) low performance on statewide assessments, 2) poverty, 3) mobility, 4) limited English proficiency, 5) chronic absenteeism, and 6) homelessness. Districts set more specific rules and make more specific decisions for which students actually benefit from At-Risk funds.

Chart of Accounts (COA): As noted by USBE, "The chart of accounts gives a school district or charter school the ability to accurately and effectively report on its financial activities and be able to compare data with other school districts or charter schools within the state." In other words, the COA defined by USBE creates a standard format for recording each LEA's expense and revenue transactions.

Comprehensive Annual Financial Report (CAFR): A CAFR is a set of financial statements reported by a government of interest (in this case, a school district or charter school) that is independently audited and verified. The Project KIDS methodology utilizes CAFRs to extract depreciation totals and to cross-check expense totals. These CAFRs can be found at the State Auditor's website.

Course Related Expenses: The total cost related to school courses which includes expenses such as teacher compensation, administrative compensation, special education costs, facility costs, as well as supplies. (see *Teacher Pay Calculations*, *Administrative Compensation*, and *Supplies*).

Depreciated Costs: Depreciation is a calculation that spreads the cost of large assets across all years the asset is likely to be used. Depreciated costs are calculated by auditors and included in every district's CAFR. Depreciated costs are used in Project KIDS analysis to account for discrepancies in spending that can be caused by large capital asset purchases and facilitate better comparisons between expenses over time. (See *Actual Cost*.)

Encapsulated Costs: The total costs of a fiscal school year, this includes: teacher compensation, capitol overlay, facilities, supplies by subject etc.

Instructional Compensation: Project KIDS defines instructional compensation as any salary or benefits in a district's payroll data that 1) are paid to a teacher identified in both USBE's CACTUS data and in USBE's UTREx course data and 2) are instructional costs that likely go to the teacher's classes, determined based on account codes and descriptions.

Internal Chart of Accounts (Internal COA): Project KIDS refers to any COA that deviates from the standard USBE COA as an internal COA. (See *Chart of Accounts*.)

Local Education Agency (LEA): LEA is an entity that operates local primary and secondary schools that is in charge of implementing education policies set forth by the federal government. Also known as school district or charter school.

Non-Instructional Compensation: Project KIDS defines non-instructional compensation as 1) any non-instructional salary or benefits that are distributed to a teacher identified in both USBE's CACTUS data and in USBE's UTREx course data, or 2) all salary or benefits that are distributed to anyone who is not a teacher.

Operational Costs: The costs associated with running a school site such as electricity, heating and cooling, water, etc.

Peer Schools: a comparison of teacher salaries, facilities, administration pay, student support services etc. Using Gower's "general coefficient of similarity," similar schools were identified using weighted variables, including school contextual variables such as: low income students, racial minority, enrollment size, limited English proficiency, special education, mobility, and gender (USBE)
https://datagateway.schools.utah.gov/Assessment/CompareSchools/2018/GowerComparison

Spending Category: The terms spending category and subcode are used interchangeably. See the *Subcode* definition.

Standard Chart of Accounts (Standard COA): USBE defines the standard COA yearly, which defines the individual account codes with associated descriptions. USBE states that "The chart of accounts gives a school district or charter school the ability to accurately and effectively report on its financial activities and be able to compare data with other school districts or charter schools within the state."

Student Count - Enrolled: This number appears in the interactive dashboards and is the raw count of the number of students that are enrolled in a school or district in a year.

Student Count - Weighted: This number appears in the interactive dashboards and is a weighted count of the number of students that are enrolled in a school or district in a year. The weighting scheme takes into account the proportion of the school year in which each student was enrolled. Students that were enrolled for the full year get a weight of 1 and students enrolled for only half of the year get a weight of 0.5.

Student Growth Percentiles/Performance (SGP): Individual growth performance that compares student's growth to peers from the previous year.

Subcode: Subcodes are specific spending categories created by Project KIDS. Each subcode has unique rules for which expenses get assigned to it and for which students the spending should be allocated to. For example, "Speech Audiology" and "Concurrent Enrollment" are two subcodes whose spending can be drilled down to specific student groups who utilize the programs. The full list of Project KIDS subcodes can be found in *Section 11.3: Expense Spending Category Assignment Rules*.

Supplies: Includes variables such as materials like textbooks, library books, teacher materials, software, etc.by subject and elementary, middle school, and high school designation.

Teacher Pay Calculations: Teacher pay includes all compensation (salary + benefits). Teacher payroll is divided into instructional and non-instructional compensation based on payroll object codes. Their instructional pay is then divided among the classes they teach in a given year, accounting for the length of the class. Class dollars are then allocated down to the students enrolled in those courses based on their student weight. Non-instructional pay is allocated to specific groups of students that benefit from those additional resources.

Transparent Utah: Transparent Utah is a tool for the public to be able to examine the revenue and expenditures of publicly funded entities in the State of Utah. LEAs are required to upload their financial data to this site on a quarterly basis (or an annual basis for employee compensation).

Utah State Board of Education (USBE): The constitutionally established, elected, non-partisan body that exercises "general control and supervision" over the public education system in Utah, including establishing the state educational core standards, state educator licensing policies, and state high school graduation requirements.

Youth in Care: Public educational services (in the form of teacher services) provided by the state to youth in correctional facilities.

11. SUPPLEMENTARY TABLES

11.1 School District Payroll Default Assignments

The tables below list object codes and descriptions/job titles that are commonly found in school district payroll data and how they are mapped to non/instructional payroll classifications. This list of object codes and descriptions/job titles is not extensive. Specifically, the first table only includes object codes in USBE's standard COA. Additional object codes from internal COAs are not included here. The second table only includes a list of descriptions that are commonly seen across districts. These classifications are utilized in *Section 5: Payroll Cleaning*.

11.1.1 District Payroll Object Code Default Assignments

Payroll Assignment	Object Code	Object Description
Instructional	130	Instructional Salaries
	131	Salaries Teachers
	133	Salaries Sabbatical Leave (Salaries paid to replacement teachers)
Non-Instructional	110	General District Administrative Salaries
	111	Compensation School Board
	112	Salaries Superintendent
	113	Salaries Assoc./Deputy/Asst. Superintendent
	114	Salaries School Business Administrator
	115	Salaries Supervisors and Directors
	120	School Administrative Salaries
	121	Salaries Principals and Assistants
	132	Salaries Substitute Teachers
	140	Licensed Non Instructional Salaries
	141	Salaries Attendance and Social Work Personnel
	142	Salaries Guidance Personnel
	143	Salaries Health Services Personnel
	144	Salaries Psychological Personnel
	145	Salaries Media Personnel Licensed
	150	Office Salaries
	151	Salaries Professional Office Personnel
	152	Salaries Secretarial and Clerical Personnel
	160	Non Licensed Instructional Salaries
	161	Salaries Teacher Aides and Para Professionals
	162	Salaries Media Personnel Non Licensed
	170	Student Transportation Salaries
	171	Salaries Student Transportation Supervisor
	172	Salaries Bus Drivers

Payroll Assignment	Object Code	Object Description
	173	Salaries Mechanics and Other Garage Employees
	174	Salaries Other Student Transportation
	175	Salaries Bus Aides
	180	Operation and Maintenance Salaries
	181	Salaries Operation & Maintenance Supervisors
	182	Salaries Custodial & Maintenance Personnel
Non-Instructional	184	Salaries Technology Personnel
	195	Salaries - Athletic Coaches

11.1.2: District Payroll Description Default Assignments

Payroll Assignment	Payroll Description/Job Title
Instructional	Concurrent Enrollment
	CyberCorp
	Drivers Ed
	Driving Salary
	Excess Leave/Vacation Pay Out
	Extended Year (special ed)
	FACS
	Holiday Stipend
	Home & Hospital Teacher
	HQSR
	Preschool
	Professional Development
	Science Fairs
	Teacher Adjustment Stipend
	Teacher Training
	Title I or II
	TSSP (Teacher Salary Supplement Program)
	Waived Insurance Deposit
Non-Instructional	Academic Advisor
	ACT prep
	ADA Student Accommodation
	Admin/Admin Assistant
	Adult Ed
	After-school Program
	Aides
	Building Level Tech
	Bus Drivers
	Coach
	Community Education
	Construction
	Counselor
	Director
	Drivers Ed Admin/Director
	Extended Year (not special ed)
	Extracurricular Activities
	Extra Duty
	Evening Classes

Payroll Assignment	Payroll Description/Job Title
Non-Instructional	FBLA
	FCCLA
	FFA
	Grant Writer
	Guidance Counselor
	Home School
	HR
	Instructional Assistant
	Maintenance
	Media Center
	Mentor
	Night School
	Online Class
	Other Hourly Positions
	Paraprofessional
	Principal
	Purchased Services
	School Lunch
	Secretary
	Skill Instructor
	Skills USA
	SpEd Aide
	Speech Aide
	Speech Pathologist
	Speech Technician
	Substitute
	Summer
	Supervisor
	TANF
	Ticket Takers
	Tutor
	Work-based Learning

11.2 Charter School Default Job Title Assignments

The table below lists job titles that are commonly found in the Transparent Utah wage data for charter schools and how they are mapped to Project KIDS subcodes and non/instructional payroll classifications. This list of job titles is not extensive; close duplicates and titles that occurred for less than 25 teacher/year combinations are removed for brevity. Note that payroll classifications are marked as instructional (I), non-instructional (N), or left blank for manual classification. These classifications are utilized in *Section 5: Payroll Cleaning*.

Parent Code Description	Subcode	Subcode Description	Job Title	Payroll Assignment
Student Support Services	B02	Speech Audiology	Speech	N
			Speech Therapist	N
	B99	Other Student Support Services	Counselor	N
			Guidance Counselor	N
			Student Support	N
			Nurse	N
			School Counselor	N
			Social Worker	N
			Character Development Director	N
			Family Support Liaison	N
			Guidance Personnel	N
Student Activities and Extracurricular	E01	Athletics	Coach	N
Instructional Related Expenses	C05	Online Ed	Distance Education Instructor	I
			Distance Teacher	I
	C20	ROTC	ROTC Instructor	I
	F01	Other Title I	Title I Aide	N
	F02	Elementary Instruction	Elem - Aides & Instructors	N
			Elem - Teacher	I
			Elementary Teacher	I
			K-5 Teacher	I
			Elementary Groups Instructor	I
			Lower Elementary Teacher	I
			Upper Elementary Teacher	I
	F03	Middle School Instruction	Middle School Teacher	I
	F04	High School Instruction	Hs - Teacher	I
			High School Teacher	I
			Hs- Substitute Teacher	N
	F05	Secondary Instruction	Jr High - Teacher	I
			Jh Teacher	I
			Teacher- Secondary	I
			Jh Teaching Assistant	N

Parent Code Description	Subcode	Subcode Description	Job Title	Payroll Assignment
Instructional Related Expenses	F05	Secondary Instruction	Jr High - Substitute Teachers	N
	F99	General Instructional Support	Teacher	I
			Aide	N
			Substitute Teacher	N
			Teacher Assistant	N
			Paraprofessional	N
			Instructor	I
			Teacher Aide	N
			Teaching Assistant	N
			Instructional Aide	N
			Para Educator	N
			Aides & Instructors	N
			Academic Coach	N
			Specialist	
			Mentor	
			Para-Professional	N
			Librarian	
			Classroom Aide	N
			Tutor	N
			Library	
			Group Instructor	I
			After School Aide	N
			After School Teacher	I
			Instructional Coach	N
			Media Specialist	N
	G01	First Grade	1st Grade Teacher	I
	G02	Second Grade	2nd Grade Teacher	I
			Instr 2	I
	G03	Third Grade	3rd Grade Teacher	I
			3rd Grade Instructor	I
	G04	Fourth Grade	4th Grade Teacher	I
	G05	Fifth Grade	5th Grade Teacher	I
	G06	Sixth Grade	6th Grade Teacher	I
	G13	Kindergarten	Kindergarten Teacher	I
	S04	English	English Teacher	I
	S18	Mathematics	Math Teacher	I
			Secondary Math Teacher	I
			Math	
	S19	General Music	Music Teacher	I
	S20	Instrumental Music	Sistema	I
	S23	Art	Art Teacher	I

Parent Code Description	Subcode	Subcode Description	Job Title	Payroll Assignment
Instructional Related Expenses	S24	Physical Education	PE Teacher	I
	S27	Reading	Reading Specialist	
	S28	Science	Science Teacher	I
	U01	SPED	Special Education Teacher	I
			Sped Aide	N
			Special Education Aide	N
			Sped Teacher	I
			Special Ed Aide	N
			Special Ed Teacher	I
			Special Education Paraprofessional	N
			Special Education	
			Sped Director	N
			Special Ed Case Manager	N
			Sped Coordinator	N
	U25	ELL	El Teaching Assistant	N
			El Teacher	I
Administrative Expenses	H01	Principals & Directors	Director	N
			Principal	N
			Executive Director	N
			Assistant Principal	N
			Assistant Director	N
			Vice Principal	N
	H06	IT	IT	N
			Library Technician	N
			Office Technician	N
	H07	Accounting & Finance	Business Manager	N
	H08	General Administrative Compensation	Administrative Staff	N
			Secretary	N
			Office Worker	N
			Administrative Assistant	N
			Office Manager	N
			Executive Secretary	N
			Administration	N
			Office Assistant	N
			Admin	N
			Admin Assistant	N
			School Secretary	N
			Operations Assistant	N
			School Administration	N
			Office	N
			Registrar	N

Parent Code Description	Subcode	Subcode Description	Job Title	Payroll Assignment
Administrative Expenses	H08	General Administrative Compensation	School Admin	N
			General Operations	N
			Office Aide	N
			Secretary/Clerical	N
			Curriculum Specialist	N
			Receptionist	N
			Administrator	N
			Ambassador	N
			Non-Instructional Assistant	N
Child Nutrition	N01	School Meals	Kitchen	N
			Kitchen Assistant	N
			Lunch Aide	N
			Kitchen Staff	N
			Food Service	N
			Lunchroom	N
			Lunch	N
			Kitchen Worker	N
			Kitchen Manager	N
			Food Services	N
			Kitchen Asst	N
			Lunch Worker	N
			Food Service Worker	N
Operations	O99	Operational Expense	Custodian	N
			Maintenance Worker	N
			Facility Staff	N
			Maintenance	N
			Admin - Maint & Ops	N
			Custodial	N
			Facilities	N
			Sweeper	N
			Janitor	N
Transportation	T01	Transportation	Bus Driver	N
			Bus Transportation	N
Community Services	X99	Non K–12	Preschool Teacher	N
			Day Care Provider	N
			Child Care Provider	N
			Day Care	N
Miscellaneous	Z99	Misc. Expense	Employee	
			Temporary/Seasonal Flsa Non-Exempt Job	
			Employee Benefits	
			Student Hourly	

Parent Code Description	Subcode	Subcode Description	Job Title	Payroll Assignment
Miscellaneous	Z99	Misc. Expense	Wage - Exempt	

11.3 Expense Spending Category Assignment Rules

The table below lists the Project KIDS subcodes and summarizes the rules used to allocate expenses to each subcode in *Section 6: Expense Allocation*. "A" and "Q" subcodes are specific to school districts and "H" subcodes are used exclusively for charter schools. Note that additional LEA-specific subcodes are sometimes created to further specify LEA spending.

Parent Code Description	**Subcode**	**Subcode Description**	**Subcode Rules**
District Wide Expenses (DISTRICTS ONLY)	A01	Elementary Administration	This should include any *district-wide administrative compensation/expenses only for elementary-related programs.*
	A02	Middle School Administration	This should include any *district-wide administrative compensation/expenses only for middle school-related programs.*
	A03	High School Administration	This should include any *district-wide administrative compensation/expenses only for high school-related programs.*
	A04	Secondary Administration	This should include any *district-wide administrative compensation/expenses only for secondary-related programs.*
	A06	IT Operations	This should include any *district-wide compensation/expenses for IT services,* such as an information systems support center, computer tech support, and general technology expenses.
	A07	Accounting & Payroll	This should include any *district-wide compensation/expenses for accounting and payroll services,* such as finance services, accounts payable services, business services, budget development, and purchasing services.
	A08	General Administrative Compensation	This should include any *district-wide administrative compensation that is not captured in other categories*, such as A subcodes and program-specific subcodes (i.e., SPED director in U01). This would include compensation, such as Retiree comp, Human Resources personnel comp, Assistant Superintendent comp, etc.
	A09	Other District Expenses	This should include any *district-wide expense that is not compensation and that is not captured in other categories*, such as A subcodes and program-specific subcodes (i.e., district-wide SPED supplies in U01).
	A99	District Admin	This should only include *compensation for the Superintendent, Business Administrator, and School Board members.*
Charter Wide Expenses (CHARTERS ONLY)	H01	Principals & Directors	This should only include compensation for the *principal, director, or charter school leader*.
	H06	IT Operations	This should include any *charter-wide compensation/expenses for IT services,* such as an information systems support center, computer tech support, and general technology expenses.
	H07	Accounting & Finance	This should include any *charter-wide compensation/expenses for accounting and payroll services,* such as finance director compensation, finance services, accounts payable services, business services, budget development, and purchasing services.
	H08	General Administrative Compensation	This should include any *charter-wide administrative compensation that is not captured in other categories*, such as program-specific subcodes (i.e., SPED director in U01). This would include compensation, such as Retiree comp, Human Resources personnel comp, Assistant Director comp, etc.
	H09	Other Administrative Expenses	This should include any *charter-wide expense that is not compensation and that is not captured in other categories*, such as program-specific subcodes (i.e., district-wide SPED supplies in U01).
Student Support Services	B01	Elementary Counseling	This should only include *expenses and compensation from programs or locations for elementary counseling*.
	B02	Speech Audiology	This should only include *expenses and compensation from programs or locations for speech pathology and audiology services.*

Parent Code Description	Subcode	Subcode Description	Subcode Rules
Student Support Services	B03	Vision Services	This should only include *expenses and compensation from programs or locations for visually impaired/vision services.*
	B04	Physical Therapy	This should only include *expenses and compensation from programs or locations for physical therapy and related services.*
	B05	Psychological Services	This should only include *expenses and compensation from programs or locations for psychological services.*
	B99	Other Student Support Services	This should include *expenses and compensation from programs or locations for general student support services*, such as school nurses, health services, social workers, school-level tech support, and guidance counselors. This also includes *general student support programs*, such as parent involvement programs, AmeriCorps, student achievement programs, student leadership skills programs, enrichment activities programs, peer tutor/student mentor programs, etc. *Prevention services* are also included here, such as crisis intervention, truancy services, drug awareness, gang intervention, suicide prevention, school safety, anti-bullying services, dropout prevention, etc.
Actual Cost	D50	Actual Cost	This should *include expenses that are actual capital costs and therefore should be depreciated*: Between object codes 700 and 800 or between function codes 4000 and 5000 (excluding payroll - object codes 100–299), with a total greater than $5,000 or less than -$5,000. This should also include *debt expenses*: Between object codes 800 and 870, between function codes 5000 and 6000, or programs 5572 or 5575 (excluding payroll - object codes 100–299 and excluding interest on debt - object code 830). Other expenses are sometimes added to this, such as a large bond or other large capital expenses that are categorized differently because the COA is different.
Student Activities and Extracurricular	E01	Athletics	This should include any *general expenses and compensation from programs or locations for athletic programs that cannot be matched to a more specific athletics subcode.*
	E02	Football	This should include any *expenses and compensation from programs or locations for football.*
	E03	Soccer	This should include any *expenses and compensation from programs or locations for soccer.*
	E04	Tennis	This should include any *expenses and compensation from programs or locations for tennis.*
	E05	Track	This should include any *expenses and compensation from programs or locations for track.*
	E06	Cheer	This should include any *expenses and compensation from programs or locations for cheer.*
	E07	Volleyball	This should include any *expenses and compensation from programs or locations for volleyball.*
	E09	Wrestling	This should include any *expenses and compensation from programs or locations for wrestling.*
	E10	Swimming	This should include any *expenses and compensation from programs or locations for swimming.*
	E11	Golf	This should include any *expenses and compensation from programs or locations for golf.*
	E12	Baseball	This should include any *expenses and compensation from programs or locations for baseball.*
	E13	Softball	This should include any *expenses and compensation from programs or locations for softball.*
	E14	Basketball	This should include any *expenses and compensation from programs or locations for basketball.*
	E15	Drill	This should include any *expenses and compensation from programs or locations for drill.*

Parent Code Description	Subcode	Subcode Description	Subcode Rules
Student Activities and Extracurricular	E16	Band	This should include any *expenses and compensation from programs or locations for band.*
	E17	Other Student Clubs	This should only include *expenses and compensation from programs or locations that are clearly for student clubs that don't fit in any of the more specific E subcodes*. Even if it could be matched to a more specific subject in the S subcodes, put any clubs in this subcode.
	E18	General Student Activities	This should include any *general student activities expenses and compensation that don't fit into more specific categories.* Anything that's in the Student Activities Fund and is not more specifically categorized in another E subcode should be moved to this subcode.
	E99	General Extracurricular	This should include any *general extracurricular expenses and compensation that don't fit into more specific categories,* such as an activity supervision program, activity fees, and other activities like chess tournaments.
Instructional Related Expenses	C01	Drivers Ed	This should include *expenses and compensation from programs or locations for Drivers Ed classes and behind the wheel training.*
	C02	Student Council	This should include *expenses and compensation from programs or locations for Student Council.* This includes Student Government
	C03	AP coursework	This should include *expenses and compensation from programs or locations for AP coursework.*
	C04	Concurrent Enrollment	This should include *expenses and compensation from programs or locations for Concurrent Enrollment.*
	C05	Online Ed	This should include *expenses and compensation from programs or locations for Online Education.*
	C06	MATC College	This should include *expenses and compensation from programs or locations for ATE service regions.*
	C07	IB Program	This should include *expenses and compensation from programs or locations for International Baccalaureate services.*
	C08	Stem Center	This should include *expenses and compensation from programs or locations for the STEM Center Pilot Program,* used to determine best practices for teaching technology in the classroom.
	C09	CTE	This should only include *general expenses and compensation from programs or locations for CTE programs and classes, that doesn't fit into other more specific CTE subcodes* (i.e., a program for Agriculture CTE classes should be in C10).
	C10	Agriculture CTE	This should include *expenses and compensation from programs or locations for Agriculture CTE courses.*
	C11	Health Science	This should include *expenses and compensation from programs or locations for Health Science CTE courses.* This can include classes such as Medical Anatomy, Intro to Health Science, Sports Medicine, Biotechnology, etc.
	C12	FACS	This should include *expenses and compensation from programs or locations for Family and Consumer Science CTE courses.* This can include classes such as Child Development, Foods, Adult Roles, Restaurant, etc.
	C13	Business Education	This should include *expenses and compensation from programs or locations for Business Education CTE courses.* This can include classes such as Commercial Art, Marketing, Business and Leadership, Trade and Industry, etc.
	C14	Technical Education	This should include *expenses and compensation from programs or locations for Technical Education CTE courses*. This can include classes such as Photography, Cabinetry, Skilled and Technical Science, Auto Technician, Millwork, etc.
	C15	Technology	This should include *expenses and compensation from programs or locations for Technology CTE courses*. This can include classes such as Information Technology, Technology Life Careers, Computer Science, Keyboarding, Data Processing, Electronics, etc.

Parent Code Description	Subcode	Subcode Description	Subcode Rules
Instructional Related Expenses	C16	Engineering	This should include *expenses and compensation from programs or locations for Engineering CTE courses*. This can include classes such as Bio Manufacturing, Construction, Tech & Engineering, etc.
	C17	College Career Awareness	This should include *expenses and compensation from programs or locations for College and Career Awareness courses.*
	C18	Work Based Learning	This should include *expenses and compensation from programs or locations for Work Based Learning and Internships*.
	C19	NSEP	This should include *expenses and compensation from programs or locations for the Department of Defense National Security Education Program.*
	C20	ROTC	This should include *expenses and compensation from programs or locations for the ROTC Program.*
	C21	Kindergarten Supplemental	This should include *expenses and compensation from programs or locations for the Kindergarten Supplemental Enrichment Program*. Note that if the expenses are for kindergarten students, but not specifically for this program, they should go in G13 instead.
	C22	Service Learning	This should include *expenses and compensation from programs or locations for Service Learning.*
	C23	USTAR Program	This should include *expenses and compensation from programs or locations for the Utah Science Technology and Research Program.*
	C99	General Course Expense	This subcode is mostly used to capture *expenses and compensation from programs or locations for testing and assessments.*
	F01	Other Title I	This should include any *general expenses from programs or locations for Title I programs that cannot be matched to a specific subject or student population.*
	F02	Elementary Instruction	This should only include *general expenses and compensation related to elementary instructional support that cannot be matched to a specific subject or more specific student population*, such as library salaries, media specialists, instructional coaches, class aides, teacher assistants, substitutes, teacher compensation that cannot be matched to a specific class/subject, and professional development. This also includes elementary education programs, such as an elementary reading program, an elementary after school program, elementary teacher prep time, or subject-specific elementary programs (i.e., elementary math).
	F03	Middle School Instruction	This should only include *general expenses and compensation related to middle school instructional support that cannot be matched to a specific subject or more specific student population*, such as library salaries, media specialists, instructional coaches, class aides, teacher assistants, substitutes, teacher compensation that cannot be matched to a specific class/subject, and professional development. This also includes middle school programs, such as an after school program specifically for middle school students.
	F04	High School Instruction	This should only include *general expenses and compensation related to high school instructional support that cannot be matched to a specific subject or more specific student population*, such as library salaries, media specialists, instructional coaches, class aides, teacher assistants, substitutes, teacher compensation that cannot be matched to a specific class/subject, and professional development. This also includes high school education programs, such as a college prep program specifically for high school students.
	F05	Secondary Instruction	This should only include *general expenses and compensation related to secondary instructional support that cannot be matched to a specific subject or more specific student population*, such as library salaries, media specialists, instructional coaches, class aides, teacher assistants, substitutes, teacher compensation that cannot be matched to a specific class/subject, and professional development. This also includes secondary education programs, such as a secondary reading program or GEAR UP, which is a program for 7th–12th graders to help them prepare for college.

Parent Code Description	**Subcode**	**Subcode Description**	**Subcode Rules**
Instructional Related Expenses	F99	General Instructional Support	This should only include *general expenses and compensation related to instructional support that cannot be matched to a specific subject or a specific student population*, such as library salaries, media specialists, instructional coaches, class aides, teacher assistants, substitutes, teacher compensation that cannot be matched to a specific class/subject, and professional development.
	G01	First Grade	This should include *general expenses and compensation from programs or locations for first grade*.
	G02	Second Grade	This should include *general expenses and compensation from programs or locations for second grade.*
	G03	Third Grade	This should include *general expenses and compensation from programs or locations for third grade.*
	G04	Fourth Grade	This should include *general expenses and compensation from programs or locations for fourth grade.*
	G05	Fifth Grade	This should include *general expenses and compensation from programs or locations for fifth grade.*
	G06	Sixth Grade	This should include *general expenses and compensation from programs or locations for sixth grade.*
	G07	Seventh Grade	This should include *general expenses and compensation from programs or locations for seventh grade.*
	G08	Eighth Grade	This should include *general expenses and compensation from programs or locations for eighth grade.*
	G09	Ninth Grade	This should include *general expenses and compensation from programs or locations for ninth grade.*
	G10	Tenth Grade	This should include *general expenses and compensation from programs or locations for tenth grade.*
	G11	Eleventh Grade	This should include *general expenses and compensation from programs or locations for eleventh grade.*
	G12	Twelfth Grade	This should include *general expenses and compensation from programs or locations for twelfth grade.*
	G13	Kindergarten	This should include *general expenses and compensation from programs or locations for Kindergarten.*
	G15	School Land Trust	This includes any *general expenses from a program or location related to the School Land Trust that cannot be matched to a specific subject or student population.*
	G99	Ed Foundation	This includes any *general expenses from a program or location for the education foundation that cannot be matched to a specific subject or student population.*
	L01	Elementary Supplies	This includes any *general elementary instructional supplies that cannot be matched to a specific subject or student population* (i.e., Math classes or SPED students). Always check for general elementary instructional supplies that are put in F02 by default, and move to L01.
	L02	Middle School Supplies	This includes any *general middle school instructional supplies that cannot be matched to a specific subject or student population* (i.e., Math classes or SPED students). Always check for general middle school instructional supplies that are put in F03 by default, and move to L02.
	L03	High School Supplies	This includes any *general high school instructional supplies that cannot be matched to a specific subject or student population* (i.e., Math classes or SPED students). Always check for general high school instructional supplies that are put in F04 by default, and move to L03.
	L04	Secondary Supplies	This includes any *general secondary instructional supplies that cannot be matched to a specific subject or student population* (i.e., Math classes or SPED students). Always check for general secondary instructional supplies that are put in F05 by default, and move to L04.

Parent Code Description	Subcode	Subcode Description	Subcode Rules
Instructional Related Expenses	L02	Middle School Supplies	This includes any *general middle school instructional supplies that cannot be matched to a specific subject or student population* (i.e., Math classes or SPED students). Always check for general middle school instructional supplies that are put in F03 by default, and move to L02.
	L03	High School Supplies	This includes any *general high school instructional supplies that cannot be matched to a specific subject or student population* (i.e., Math classes or SPED students). Always check for general high school instructional supplies that are put in F04 by default, and move to L03.
	L04	Secondary Supplies	This includes any *general secondary instructional supplies that cannot be matched to a specific subject or student population* (i.e., Math classes or SPED students). Always check for general secondary instructional supplies that are put in F05 by default, and move to L04.
	L99	General Instructional Supplies	This includes any *general instructional supplies that cannot be matched to a specific subject or student population* (i.e., Math classes or SPED students). Always check for general instructional supplies that are put in F99 by default, and move to L99.
	S01	Aeronautics	This should include *expenses and compensation from programs or locations for Aeronautics courses.*
	S02	Agriculture Education	This should include *expenses and compensation from programs or locations for Agriculture courses.*
	S03	Arts Crafts	This should include *expenses and compensation from programs or locations for Arts and Crafts courses.*
	S04	English	This should include *expenses and compensation from programs or locations for English courses.* This also includes language arts classes.
	S05	Debate	This should include *expenses and compensation from programs or locations for Debate courses.*
	S06	Journalism	This should include *expenses and compensation from programs or locations for Journalism courses.*
	S07	Speech Drama	This should include *expenses and compensation from programs or locations for Speech and Drama courses.*
	S08	Musical	This should include *expenses and compensation from programs or locations for Musicals.*
	S09	Foreign Language	This should include *expenses and compensation from programs or locations for general Foreign Language courses*, that don't fit into S10–S15.
	S10	Spanish	This should include *expenses and compensation from programs or locations for Spanish courses.*
	S11	German	This should include *expenses and compensation from programs or locations for German courses.*
	S12	French	This should include *expenses and compensation from programs or locations for French courses.*
	S13	Japanese	This should include *expenses and compensation from programs or locations for Japanese courses.*
	S14	Chinese	This should include *expenses and compensation from programs or locations for Chinese courses.*
	S15	Arabic	This should include *expenses and compensation from programs or locations for Arabic courses.*
	S16	Homemaking	This should include *expenses and compensation from programs or locations for Homemaking courses.*
	S17	Industrial Arts	This should include *expenses and compensation from programs or locations for Industrial Arts courses.*
	S18	Mathematics	This should include *expenses and compensation from programs or locations for Mathematics courses.*
	S19	General Music	This should include *expenses and compensation from programs or locations for General Music courses,* that don't fit into S20–S22.

Parent Code Description	Subcode	Subcode Description	Subcode Rules
Instructional Related Expenses	S20	Instrumental Music	This should include *expenses and compensation from programs or locations for Instrumental Music courses.* This includes classes such as Orchestra, Philharmonic, or Guitar.
	S21	Vocal Music	This should include *expenses and compensation from programs or locations for Vocal Music courses.* This includes Chorus/Choir classes.
	S22	Elementary Music	This should include *expenses and compensation from programs or locations for Elementary Music courses.*
	S23	Art	This should include *expenses and compensation from programs or locations for Art courses.* This includes classes such as Ceramics or Painting.
	S24	Physical Education	This should include *expenses and compensation from programs or locations for Physical Education courses.*
	S25	Dance	This should include *expenses and compensation from programs or locations for Dance courses.*
	S26	High Adventure PE	This should include *expenses and compensation from programs or locations for High Adventure PE courses.*
	S27	Reading	This should include *expenses and compensation from programs or locations for Reading courses.*
	S28	Science	This should include *expenses and compensation from programs or locations for General Science courses,* that don't fit into S29-S32. This also includes programs for Science Fairs.
	S29	Biology	This should include *expenses and compensation from programs or locations for Biology courses.* This also includes Life Science and Bio Technology classes.
	S30	Chemistry	This should include *expenses and compensation from programs or locations for Chemistry courses.*
	S32	Physical Science	This should include *expenses and compensation from programs or locations for Physical Science courses.*
	S33	Social Studies	This should include *expenses and compensation from programs or locations for Social Studies courses.* This includes classes such as Humanities and History.
	S34	Stage	This should include *expenses and compensation from programs or locations for Stage and Drama courses.*
	S35	Yearbook	This should include *expenses and compensation from programs or locations for Yearbook courses.*
	S36	Critical Languages	This should include *expenses and compensation from programs or locations for the Critical Languages Program Grant.*
	S37	Dual Immersion	This should include *expenses and compensation from programs or locations for Dual Immersion courses and program administration.*
	S38	Financial Literacy	This should include *expenses and compensation from programs or locations for Financial Literacy courses.*
	S39	Math 456	This should include *expenses and compensation from programs or locations for the 4–6 Math Initiative Program.*
	S40	Math Science Teacher	This should include *expenses and compensation from programs or locations for the Math/Science Teacher Enhancement Program Grant.*
	S41	BTS Arts	This should include *expenses and compensation from programs or locations for the Beverly Taylor Sorenson Arts Program Grant.*
	U01	SPED	This should include any *general expenses and compensation from programs or locations for special education students* that do not fit in a more specific category (i.e., Extended Year SPED or Speech Pathology services)
	U03	Ext Year Disabled	This should include *expenses and compensation from programs or locations for the Extended Year programs for the severely disabled.*
	U04	Ext Year SPED Teachers	This should include *expenses and compensation from programs or locations for the Extended Year programs for special educators.*
	U05	Class Size Reduction	This should include *expenses and compensation from programs or locations for K–8 Class Size Reduction.*

Parent Code Description	Subcode	Subcode Description	Subcode Rules
Instructional Related Expenses	U06	Accelerated Students	This should include *expenses and compensation from programs or locations for Accelerated Students.*
	U07	Centennial Scholarship	This should include *expenses and compensation from programs or locations for the Centennial Scholarship program.*
	U08	At Risk	This should include *expenses and compensation from programs or locations for At Risk students that cannot be matched to a more specific student population*. For example, expenses for an At-Risk Homeless program should be put in the Homeless subcode.
	U09	Youth In Custody	This should include *expenses and compensation from programs or locations for Youth in Custody.*
	U10	Home School	This should include *expenses and compensation from programs or locations for Home Schooled students.*
	U11	American Indian Alaskan	This should include *expenses and compensation from programs or locations for Native American and Alaskan Native students.*
	U13	Early Graduation	This should include *expenses and compensation from programs or locations for Competency Based Early Graduation.*
	U14	Inter-Generational Poverty	This should include *expenses and compensation from programs or locations for the Inter-Generational Poverty program.*
	U16	Early Literacy	This should include *expenses and compensation from programs or locations for Early Literacy programs.*
	U17	Capitol Field Trips	This should include *expenses and compensation from programs or locations for State Capitol Field Trips.*
	U18	Gifted Talented	This should include *expenses and compensation from programs or locations for Gifted and Talented students.*
	U19	Indian Education	This should include *expenses and compensation from programs or locations for the Indian Education program.*
	U20	TANF	This should include *expenses and compensation from programs or locations for the Temporary Assistance for Needy Families program that cannot be matched to a more specific student population.*
	U21	Accelerated Readers	This should include *expenses and compensation from programs or locations for the Javitys Accelerated Readers program.*
	U22	IDEA	This should include *expenses and compensation from programs or locations for IDEA Special Education programs.*
	U24	Deaf Blind	This should include *expenses and compensation from programs or locations for IDEA Deaf and Blind programs.*
	U25	ELL	This should include *expenses and compensation from programs or locations for support of English Language Learners*, including NCLB Title III A.
	U26	Migrant Students	This should include *expenses and compensation from programs or locations for Migrant students.*
	U27	Homebound Services	This should include *expenses and compensation from programs or locations for Homebound services.* This includes Home & Hospital programs.
	U28	ACT Test Reimbursement	This should include *expenses and compensation from programs or locations for the ACT Test Reimbursement program.*
	U29	Homeless Services	This should include *expenses and compensation from programs or locations for Homeless students.*
	U30	Low Income	This should include *expenses and compensation from programs or locations for Low Income students.*
	U99	General Student Expense	This should include *general expenses related to the student body,* such as the newspaper or student directories and planners.
Facilities Acquisition/ Construction Services	M99	Facilities Acquisition and Construction	This should include *expenses and compensation for capital costs such as facilities acquisition and construction services*. Include anything that is in objects 700's or functions 4000's, that was not depreciated because the expenses were compensation or less than $5,000.

Parent Code Description	Subcode	Subcode Description	Subcode Rules
Child Nutrition	N01	School Meals	This should include any *general expenses and compensation for school meals*. Any expenses at a district-wide nutrition location that is not put in M99, D50, or a more specific N subcode, should be moved to this subcode. Also put summer nutritional programs here, and expenses with the Nutrition function code.
	N99	Other Nutrition	This should only include *expenses and compensation for nutrition that does not include breakfast and lunch for students*, such as vending machine expenses.
Operations	O05	District-Wide Operations	This should include *operational and maintenance expenses and compensation at district-wide locations.* Anything that is by default put into O99, but is at a district-wide location, should be moved to O05.
	O99	Operational Expense	This should include *operational and maintenance expenses and compensation,* such as utilities expenses, custodial compensation and supplies, maintenance of electronics, maintenance of grounds, plumbing, painting, general warehouse expenses, maintenance/custodial admin, etc. Anything that is by default put in F99, with a function code associated with maintenance and operations should be moved to O99.
School Administration (DISTRICTS ONLY)	Q99	School Administration	This should include expenses and compensation for school administration, such as principal pay, secretaries, school accountability services, and school admin training. Anything that is by default put in F99, with a function code associated with school administration should be moved to Q99.
Transportation	T01	Transportation	This should include any *expenses and compensation for general student transportation services* that don't fit into other transportation categories (Includes bus drivers, bus aides, mechanics, vehicle servicing and maintenance, etc.). Any expenses at a district-wide transportation location that is not put in M99, D50, or a more specific T subcode, should be moved to this subcode. Anything a function code associated with transportation should be moved to T01.
	T08	Field Trips	This should include *expenses and compensation for Field Trip Transportation.* This is usually a percentage of the T01 expenses pulled into this subcode using the July 15th transportation proportions. If the district's internal COA separates these amounts out, we don't use the July 15th data for this.
	T09	Secondary Transportation	This should include *expenses and compensation for Secondary activity Transportation.* This is usually a percentage of the T01 expenses pulled into this subcode using the July 15th transportation proportions. If the district's internal COA separates these amounts out, we don't use the July 15th data for this.
	T10	Elementary Transportation	This should include *expenses and compensation for Elementary activity Transportation.* This is usually a percentage of the T01 expenses pulled into this subcode using the July 15th transportation proportions. If the district's internal COA separates these amounts out, we don't use the July 15th data for this.
	T11	SPED Transportation	This should include *expenses and compensation from programs or locations specifically for SPED Transportation.* Look out for SPED expenses and compensation at transportation locations - those should be moved to T11.
Community Services	X99	Non K–12	This should include expenses and compensation that should not be allocated to students in the district, such as adult education, post-high school transitional services, community services and programs, and pass-through charter school expenses. All expenses in the Non K–12 Fund and/or Non K–12 Function and/or Tax Increment Financing Fund should go in here.
Depreciation and Interest	D99	Interest on Debt	This should only include *interest payments on debt.*
	Y99	Depreciated Expense	This should include only amounts from the CAFR that reflect changes that depreciate capital expenses.
Miscellaneous Expense	Z99	Miscellaneous Expense	This should only include *any expenses and compensation that are ambiguous or do not fit into any other category,* using COA codes and descriptions.

11.4 Expense Default Account Code Assignments

The tables below list all of USBE's standard COA program, function, and object codes that are mapped by default to Project KIDS subcodes. These mappings are used in *Section 6: Expense Allocation*. Note that school districts and charter schools have different administrative subcodes, so charter-specific subcodes are denoted using parentheses.

11.4.1 Expense Default Program Code Assignments

Subcode	Subcode Description	Account Code	Account Description
A09 (H09)	Other District Expenses (Other Administrative Expenses)	60	Commercial
		5690	Peer Assistance
		5845	Charter School Mentoring
		5846	State Charter School Start-Up
		7501	Improving Americas Schools Act
B01	Elementary Counseling	5642	Elementary Counseling
B99	Other Student Support Services	5368	School Nurses
		5606	Substance Abuse Prevention
		5664	Anti-Bullying Program
		5674	Suicide Prevention
		5693	Strengthening College and Career Readiness
		5830	Dropout Prevention
		6903	Comprehensive Guidance
		6943	Support Services - Formula
		6944	Support Services - Non-Traditional Training
		6946	Support Services - Corrections
		6947	Support Services - Leadership & Development
		6970	Support Services - Add On/Set Aside
		6975	Support Services - District
		7355	AmeriCorps
		7890	NCLB Title IV A - Safe and Drug Free Schools
		7905	Student Support Services Program
C01	Drivers Ed	100	Driver Education
		5609	Driver Education - Vehicles
		5610	Driver Education - Behind-the-Wheel
C02	Student Council	265	Student Council
C03	AP Coursework	5332	Advanced Placement
C04	Concurrent Enrollment	5333	Concurrent Enrollment
C05	Online Ed	5385	Statewide Online Education
C06	MATC College	5605	ATC Service Regions

Subcode	Subcode Description	Account Code	Account Description
C07	IB Program	5612	International Baccalaureate Program
C08	STEM Center	5643	Stem Center Pilot
C09	CTE	6000	Applied Technology and Engineering Ed Programs
		6900	Support Services
		6915	CTE Administration
C10	Agriculture CTE	1530	Summer Agriculture
		6100	Agriculture
		6143	Agriculture - Formula
		6144	Agriculture - Non-Traditional Training
		6146	Agriculture - Corrections
		6147	Agriculture - Leadership & Development
		6170	Agriculture - Add On/Set Aside
		6175	Agriculture - District
C11	Health Science	6300	Health Science
		6343	Health Science - Formula
		6344	Health Science - Non-Traditional Training
		6346	Health Science - Corrections
		6347	Health Science - Leadership & Development
		6370	Health Science - Add On/Set Aside
		6375	Health Science - District
C12	FACS	6400	Family & Consumer Science
		6443	Family & Consumer Science - Formula
		6444	Family & Consumer Science - Non-Traditional Training
		6446	Family & Consumer Science - Corrections
		6447	Family & Consumer Science - Leadership & Development
		6470	Family & Consumer Science - Add On/Set Aside
		6475	Family & Consumer Science - District
C13	Business Education	6500	Business and Marketing
		6543	Business - Formula
		6544	Business - Non-Traditional Training
		6546	Business - Corrections
		6547	Business - Leadership & Development
		6570	Business - Add On/Set Aside
		6575	Business - District
C14	Technical Education	6600	Skilled and Technical Sciences
		6643	Skilled and Technical Sciences - Formula
		6644	Skilled and Technical Sciences - Non-Traditional Training
		6646	Skilled and Technical Sciences - Corrections
		6647	Skilled and Technical Sciences - Leadership & Development

Subcode	Subcode Description	Account Code	Account Description
		6670	Skilled and Technical Sciences - Add On/Set Aside
C14	Technical Education	6675	Skilled and Technical Sciences - District
C15	Technology	6700	Information Technology
		6743	Information Technology - Formula
		6744	Information Technology - Non-Traditional Training
		6746	Information Technology - Corrections
		6747	Information Technology - Leadership & Development
		6770	Information Technology - Add On/Set Aside
		6775	Information Technology - District
C16	Engineering	6800	Technology and Engineering Education
		6843	Technology and Engineering Ed - Formula
		6844	Technology and Engineering Ed - Non-Traditional Training
		6846	Technology and Engineering Ed - Corrections
		6847	Technology and Engineering Ed - Leadership & Development
		6870	Technology and Engineering Ed - Add On/Set Aside
		6875	Technology and Engineering Ed - District
C17	College Career Awareness	6901	College & Career Awareness
C18	Work Based Learning	6902	Work-Based Learning
C19	NSEP	7323	Star Talk - NSA grant
		7324	Dept. of Defense National Security Education Program
C20	ROTC	7326	ROTC
C21	Kindergarten Supplemental	7352	Kindergarten Supplemental Enrichment
C22	Service Learning	7603	Service Learning
C23	USTAR Program	5881	USTAR Program
C99	General Course Expense	290	Testing
		2200	Instructional Classes
		5470	Computer Adaptive Testing
		5646	Pilot Assessment Project
		7930	NCLB Title VI A - Assessment
E01	Athletics	30	Athletics
		230	Sports
E02	Football	31	Football
		236	Football
E03	Soccer	32	Soccer
E04	Tennis	33	Tennis
		37	Tennis
		246	Tennis
E05	Track	34	Track & Cross Country
		244	Track

Subcode	Subcode Description	Account Code	Account Description
E06	Cheer	35	Cheer Leading
E07	Volleyball	36	Volleyball
		242	Volley Ball
E09	Wrestling	38	Wrestling
		245	Wrestling
E10	Swimming	39	Swimming
		247	Swimming
E11	Golf	231	Golf
		238	Golf
E12	Baseball	232	Baseball
E13	Softball	240	Softball
E18	General Student Activities	255	Assemblies
		3600	Student Activity Funds
F01	Other Title I	7801	NCLB Title I A - LEA Grants
F99	General Instructional Support	1500	Summer School and Extended Year Programs
		1510	Extended Year - Day and Summer
		1512	Curriculum Development
		1513	In-Service Training
		1550	Unique Local Summer School and Extended Year Programs
		3300	Other Instructional Classes
		5322	Highly Qualified Teachers - State Appropriation
		5607	Board Certified Teaching Initiative
		5627	Innovative Student Improvement Program
		5633	Supporting Effective Instruction Flow Through
		5655	Digital Teaching and Learning Program
		5668	Effective Teachers in High Poverty Schools
		5685	Para-Educator Funding
		5687	School Turnaround Program
		7380	ETI E-rate
		7800	No Child Left Behind Act
		7860	NCLB Title II A - Teacher Quality
		7870	NCLB Title II D - Educational Technology
G13	Kindergarten	5640	Kindergarten Extended Day
G15	School Land Trust	5420	School Land Trust Program
G99	Ed Foundation	5590	LEA Foundation
L99	General Instructional Supplies	5807	Teacher Salary Supplemental Program
		5810	Library Books & Supplies
		5868	Teacher Materials & Supplies
M99		5500	Public Education Capital Outlay

Subcode	Subcode Description	Account Code	Account Description
	Facilities Acquisition and Construction	5550	Capital Outlay Foundation
M99	Facilities Acquisition and Construction	5551	Charter School Building Sub Account
		5570	Building Reserve
		5619	Charter School Local Replacement
N01	School Meals	8070	State School Lunch Programs
		8079	Other Child Nutrition Programs
Q99 (H09)	School Administration (Other Administrative Expenses)	5625	Charter School Admin Funding
S01	Aeronautics	10	Aeronautics
S02	Agriculture Education	15	Agriculture
S03	Arts Crafts	20	Arts and Crafts
S04	English	110	English
S05	Debate	111	Debate
S06	Journalism	112	Journalism
S07	Speech Drama	114	Speech and Drama
S08	Musical	115	Musical
S09	Foreign Language	120	Foreign Language
S10	Spanish	121	Spanish
S11	German	122	German
S12	French	123	French
S13	Japanese	124	Japanese
S14	Chinese	125	Chinese
S15	Arabic	126	Arabic
S16	Homemaking	130	Homemaking
S17	Industrial Arts	140	Industrial Arts
S18	Mathematics	170	Mathematics
S19	General Music	180	Music
S20	Instrumental Music	181	Instrumental Music
S21	Vocal Music	182	Vocal Music
S22	Elementary Music	183	Music - Elementary
S23	Art	190	Art
S24	Physical Education	200	Physical Education
S25	Dance	201	Dance
S26	High Adventure PE	202	High Adventure PE
S27	Reading	210	Reading
		7810	NCLB Title I B - Reading First
S28	Science	220	Science
		223	General Science
S29	Biology	221	Biological Science

Subcode	Subcode Description	Account Code	Account Description
S30	Chemistry	222	Chemical Science
S32	Physical Science	224	Physical Science
S33	Social Studies	229	Social Studies
S34	Stage	248	Stage
S35	Yearbook	250	Yearbook
S36	Critical Languages	5635	Critical Languages
S37	Dual Immersion	5637	Dual Immersion Program
S38	Financial Literacy	5660	Financial Literacy
S39	Math 456	5820	4–6 Math Initiative
S40	Math Science Teacher	5861	Math/Science - Teacher Enhancement
		7865	NCLB Title II B - Math Science Partnerships
S41	BTS Arts	5882	BTS Arts Program
T01	Transportation	600	School Bus Route Grant Program
		5315	Pupil Transportation
		5317	Rural Transportation Reimbursement
		5371	Guarantee on Transportation
U01	SPED	1200	Special Education
		1205	Special Education - Add-On
		1210	Special Education - Self-Contained
		1225	Special Education - State Program
		1230	Special Education - Intensive Services
		1295	Unique Local Special Education Programs
U02	SPED Preschool	1215	Special Education - Preschool
U03	Ext Year Disabled	1220	Extended Year Program for Severely Disabled
U04	Ext Year SPED Teachers	1278	Extended Year - Special Educators
		5877	Extended Year for Special Ed Teachers
U05	Class Size Reduction	5201	Class Size Reduction - K–8
U06	Accelerated Students	5330	Enhancement for Accelerated Students
U07	Centennial Scholarship	5334	Centennial Scholarship Program
U08	At Risk	5336	Enhancements for Students At Risk
		5339	At Risk - Gang Prevention
U09	Youth In Custody	5340	Youth-In-Custody
		5613	Corrections Institutions
		7840	NCLB Title I D - Neglected & Delinquent (YIC)
U10	Home School	5380	SOEP - Home School & Private
U11	American Indian Alaskan	5622	American Indian Alaskan Native
U12	Early Interventions	5641	Early Interventions
		5694	Early Warning Pilot Programs
U13	Early Graduation	5657	Early Graduation - Competency Based

Subcode	Subcode Description	Account Code	Account Description
U14	Inter-Generational Poverty	5676	Inter-Generational Poverty
U15	UPSTART	5682	UPSTART
U15	UPSTART	7650	UPSTART
U16	Early Literacy	5805	Early Literacy Program
U17	Capitol Field Trips	5808	State Capitol Field Trips
U18	Gifted Talented	5331	Gifted and Talented
U19	Indian Education	7330	Indian Education Programs
U20	TANF	7350	High Quality School Readiness (TANF)
U21	Accelerated Readers	7508	Javits Accelerated Readers
U22	IDEA	7520	Programs for the Disabled
		7524	IDEA-B - Disabled
		7526	IDEA-D - Personnel Training
U23	IDEA Preschool	7522	IDEA-B - Preschool Disabled
U24	Deaf Blind	7527	IDEA-C - Deaf/Blind
U25	ELL	5271	Cache County Special Program for Alternative Language Services
		7584	English Language/Civics Education
		7880	NCLB Title III A - English Language Acquisition
U26	Migrant Students	7606	Migrant Education Consortium
		7830	NCLB Title I C - Migrant Children
U28	ACT Test Reimbursement	5835	National ACT Test Reimbursement
U29	Homeless Services	7950	NCLB Title X C - Homeless Children
U30	Low Income	5648	Partnership for Student Success
U99	General Student Expense	260	Student Body
		2100	General Student Body
		5816	Student Leadership Skills
X99	Non K–12	40	Adult Education
		1600	Adult/Continuing Education Programs
		1609	Adult High School
		1615	Adult High School - 17 and Under
		1680	Unique Local Adult/Continuing Education Programs
		3700	Community Services Program
		3710	Community Recreation
		3720	Civic Services
		3730	Public Library Services
		3740	Custody and Child Care Services
		3750	Welfare Activities
		3800	Other Community Services Programs
		5636	ELL Family Literacy Centers
		5662	Outdoor Recreation Grant Program

Subcode	Subcode Description	Account Code	Account Description
		7580	Federal Adult Education Programs
		7581	Prison/Institutions
X99	Non K–12	7582	Adult Education
		7583	Adult Basic Education
		7585	GED Workforce Service Grant
		7820	NCLB Title I B3 - Even Start Family Literacy
		7900	NCLB Title IV - Community Service Centers
		7910	NCLB Title IV B - Community Learning Centers
		8075	Child and Adult Care Food Program

11.4.2 Expense Default Object Code Assignments

Subcode	Subcode Description	Account Code	Account Description
A06 (H06)	IT Operations (IT Operations)	300	Purchased Professional and Technical Services
		350	Technical Services
A07 (H07)	Accounting & Payroll (Accounting & Finance)	345	Contracted Professional Services - Business Services
A08 (H08)	General Administrative Compensation (General Administrative Compensation)	110	Salaries - General District Administration
		115	Salaries - Supervisors and Directors
		150	Salaries - Office
		151	Salaries - Professional Office Personnel
		152	Salaries - Secretarial and Clerical Personnel
		200	Employee Benefits
		210	State Retirement
		220	Social Security
		230	Local Retirement
		240	Group Insurance
		241	Group Insurance - Licensed
		242	Group Insurance - Classified
		310	Official/Administrative Services
		343	Contracted Professional Services - LEA Administration Salaries
		344	Contracted Professional Services - LEA Administration Benefits
A09 (H09)	Other District Expenses (Other Administrative Expenses)	100	Salaries
		111	Compensation - School Board
		112	Salaries - Superintendent
		113	Salaries - Assistant Superintendent
		114	Salaries - School Business Administrator
		270	Industrial Insurance
		280	Unemployment Insurance
		290	Other Employee Benefits
		349	Purchased Legal Services
		443	Rental of Computers and Related Equipment
		520	Insurance
		521	Property Insurance
		522	Liability Insurance
		530	Communication
		540	Advertising
		550	Printing and Binding
		591	Purchased Services - From LEA Within the State
		592	Purchased Services - From LEA Outside the State
B05	Psychological Services	144	Salaries - Psychological Personnel

Subcode	Subcode Description	Account Code	Account Description
B99	Other Student Support Services	141	Salaries - Attendance and Social Work Personnel
		142	Salaries - Guidance Personnel
		143	Salaries - Health Services Personnel
D99	Interest on Debt	830	Interest on Debt
E01	Athletics	195	Salaries - Athletic Coaches
F99	General Instructional Support	130	Salaries - Instructional
		131	Salaries - Teachers
		132	Salaries - Substitute Teachers
		133	Salaries - Sabbatical Leave
		145	Salaries - Licensed Media Personnel
		160	Salaries - Non-Licensed Instructional
		161	Salaries - Teacher Aides and Para-Professionals
		162	Salaries - Non-Licensed Media Personnel
		184	Salaries - Technology Personnel
		320	Professional Educational Services
		330	Employee Training and Development
		340	Other Contracted Professional Services
		341	Contracted Professional Services - Teacher Salaries
		342	Contracted Professional Services - Teacher Benefits
		580	Staff Travel
		600	Supplies and Materials
		610	General Supplies
		640	Books and Periodicals
		641	Textbooks
		642	eTextbooks
		644	Library Books
		650	Technology Related Supplies
		670	Software
		734	Technology Related Hardware
		736	Technology Software
M99	Facilities Acquisition and Construction	441	Rental of Land and Buildings
		450	Construction Services
		460	Capital Leases
		490	Other Purchased Property Services
		500	Other Purchased Services
		700	Property
		710	Land and Site Improvements
		720	Buildings
		730	Equipment

Subcode	Subcode Description	Account Code	Account Description
M99	Facilities Acquisition and Construction	733	Furniture and Fixtures
		740	Infrastructure
		750	Other Intangible Assets
		790	Depreciation and Amortization
N01	School Meals	191	Salaries - Food Services Personnel
		570	Food Service Management
		630	Food
O99	Operational Expense	180	Salaries - Operation and Maintenance Salaries
		181	Salaries - Operation and Maintenance Supervisors
		182	Salaries - Custodial and Maintenance Personnel
		400	Purchased Property Services
		410	Utility Services
		411	Water/Sewage
		412	Disposal Service
		420	Cleaning Services
		430	Repairs and Maintenance Services
		431	Non-Technology Repairs and Maintenance
		432	Technology Related Repairs and Maintenance
		433	Custodial Services
		440	Rentals
		442	Rental of Equipment and Vehicles
		620	Energy
		621	Natural Gas
		622	Electricity
		623	Bottled Gas
		624	Fuel Oil
		625	Coal
		626	Motor Fuel
		629	Other Energy
		680	Maintenance of Supplies and Materials
		681	Lubricants
		682	Tires and Tubes
		683	Repair Parts for Buses and Other Vehicles
		684	Repair Parts for Garage Equipment
		731	Machinery
		735	Non-Bus Vehicles
		739	Other Equipment
Q99 (H08)	School Administration (General Administrative Compensation)	120	Salaries - School Administration
		140	Salaries - Licensed Non-Instructional

Subcode	Subcode Description	Account Code	Account Description
Q99 (H01)	School Administration (Principals & Directors)	121	Salaries – Principals and Assistants
T01	Transportation	170	Salaries - Student Transportation
		171	Salaries - Student Transportation Supervisor
		172	Salaries - Bus Drivers
		173	Salaries - Mechanics and Other Garage Employees
		174	Salaries - Other Student Transportation
		175	Salaries - Bus Aides
		510	Student Transportation Services
		511	Student Transportation Services - From LEA Within the State
		512	Student Transportation Services - From LEA Outside the State
		513	Student Transportation Services - Commercial
		514	Student Transportation Services - Student Allowances
		515	Payments in Lieu of Transportation
		516	Payments in Lieu of Dead Miles
		517	Student Travel - Overnight
		518	Student Travel - Day Trips/Field Trips
		732	School Buses

11.4.3 Expense Default Function Code Assignments

Subcode	Subcode Description	Account Code	Account Description
A06 (H06)	IT Operations (IT Operations)	2580	Administrative Technology Services
A07 (H07)	Accounting & Payroll (Accounting & Finance)	2510	Fiscal Services
A08 (H08)	General Administrative Compensation (General Administrative Compensation)	2300	Support Services - General District Administration
		2320	District Executive Administration Services
		2500	Support Services - Central Services
		2540	Planning, Research, Development, and Evaluation Services
		2570	Personnel Services
		2590	Other Support Services
		3000	Operation of Non-Instructional Services
A09 (H09)	Other District Expenses (Other Administrative Expenses)	2310	Board of Education
		2311	Supervision of Board of Education Services
		2312	Election Services
		2315	Staff Relations and Negotiation Service
		2316	Independent Audit Services
		2317	Legal Services
		2319	Other Board of Education Services
		2321	Office of the Superintendent
		2329	Other Executive Administration Services
		2520	Purchasing, Warehousing, and Distribution
		2530	Printing, Publishing, and Duplicating Services
		2560	Public Information Services
		3200	Other Enterprise Services
B02	Speech Audiology	2150	Speech Pathology and Audiology Services
B03	Vision Services	2180	Visually Impaired/Vision Services
B04	Physical Therapy	2170	Physical Therapy Services
B05	Psychological Services	2140	Psychological Services
B99	Other Student Support Services	2000	Support Services
		2100	Support Services - Students
		2120	Guidance Services
		2130	Health Services
		2160	Occupational Therapy Services
		2190	Other Support Services - Students
F99	General Instructional Support	1000	Instruction
		2200	Support Services - Instructional Staff
		2210	Improvement of Instruction Services
		2212	Instruction and Curriculum Development Services
		2213	Instruction Staff Training Services

Subcode	Subcode Description	Account Code	Account Description
F99	General Instructional Support	2219	Other Improvement of Instruction Services
		2220	Library/Media Services
		2230	Instruction Related Technology
		2240	Academic Student Assessment
		2290	Other Support Services - Instructional Staff
M99	Facilities Acquisition and Construction	4000	Facilities Acquisition and Construction Services
		4100	Land Acquisition Services
		4200	Land Improvement Services
		4300	Architecture and Engineering Services
		4400	Educational Specification Development Services
		4500	Building Acquisition and Construction Services
		4600	Site Improvement
		4700	Building Improvement
		4900	Other Facilities Acquisition and Construction Services
N01	School Meals	3100	Food Services
O99	Operational Expense	2600	Operation and Maintenance of Plant Services
		2610	Operation of Buildings
		2620	Maintenance of Buildings
		2630	Care and Upkeep of Grounds Services
		2640	Care and Upkeep of Equipment Services
		2650	Vehicle Servicing and Maintenance Services
		2660	Security Services
		2670	Safety
		2680	Other Operation and Maintenance of Plant Services
Q99 (H08)	School Administration (General Administrative Compensation)	2400	Support Services - School Administration
		2490	Other Support Services – School Administration
Q99 (H01)	School Administration (Principals & Directors)	2410	Office of the Principal
T01	Transportation	2700	Student Transportation Services
		2720	Monitoring Services
		2730	Vehicle Servicing and Maintenance Services
		2790	Other Student Transportation Services
X99	Non K–12	3300	Community Services
		3310	Community Recreation Services
		3320	Civic Services
		3330	Public Library Services
		3340	Custody and Care of Children Services
		3350	Welfare Activities Services
		3360	Non-Public School Pupils Services
		3390	Other Community Services

11.5 Student Allocation Assignment Rules

The table below lists the Project KIDS subcodes and summarizes the rules used to allocate expenses in each subcode to individual students in *Section 7.2: Expense and Non-Instructional Compensation Allocation*. "A" and "Q" subcodes are specific to school districts and "H" subcodes are used exclusively for charter schools.

Note that additional LEA-specific subcodes are sometimes created to further specify LEA spending. Also note that assignment rules often differ between LEAs, based on their specific classes or rules for which students qualify for specific programs. Any subcodes marked with "*" require frequent changes in allocation rules between LEAs.

Subcode	Subcode Description	General Student Allocation Guidelines
A01	Elementary Administration	DISTRICTS ONLY. Students in grades K–6
A02	Middle School Administration	DISTRICTS ONLY. Students in grades 7–8
A03	High School Administration	DISTRICTS ONLY. Students in grades 9–12
A04	Secondary Administration	DISTRICTS ONLY. Students in grades 7–12
A06	IT Operations	DISTRICTS ONLY. All students in the district
A07	Accounting & Payroll	DISTRICTS ONLY. All students in the district
A08	General Administrative Compensation	DISTRICTS ONLY. All students in the district
A09	Other District Expenses	DISTRICTS ONLY. All students in the district
A99	District Administration	DISTRICTS ONLY. All students in the district
B01	Elementary Counseling	Students in grades K–6
B02	Speech Audiology	Students with CD or HI disability codes
B03	Vision Services	Students with DB or VI disability codes
B04	Physical Therapy	Students with an OI disability code
B05*	Psychological Services	Frequently varies by district. Most frequently went to all students, because district guidelines stated any student with a need can apply for counseling services
B99	Student Support Services	All students in the district
C01*	Drivers Ed	Frequently varies by district. Some districts predominantly use the driver's ed core code to distinguish classes, but also offer summer or after school programs to students. Frequently allocated to students in grades 10 and 11 since they are most the most likely ages to be participating in a driver's ed program
C02	Student Council	Students in core code 25020000020
C03	AP coursework	Allocated to students for any AP courses they are enrolled in
C04	Concurrent Enrollment	Allocated to student for any CE courses they are enrolled in
C05*	Online Ed	Frequently varies by district. Often tried to use the Online environment code for courses, but those records are kept inconsistently between districts. Other indicators used were "Online" indication in the course title or description, students enrolled at school locations that are based online, or to teachers that were listed as predominantly online teachers. Frequently had to contact districts for more information on these programs

Subcode	Subcode Description	General Student Allocation Guidelines
C06*	MATC College	Allocated to students for any CTE courses they were enrolled in through Mountainland Applied Technology College
C07	IB Program	Allocated to students for any IB courses they are enrolled in
C08*	Stem Center	Frequently varies by district. Most frequently allocated to students enrolled in science, technology, engineering, and math courses. Could vary based on specific program decisions between the STEM Center and the district, and would adjust based on documentation retained on the STEM Center website
C09	CTE	Allocated to students for any Career Technical Education courses they are enrolled in
C10*	Agriculture CTE	Allocated to students for any CTE courses they are enrolled in with agriculture listed as the subject
C11*	Health Science	Allocated to students for any CTE courses they are enrolled in with health sciences listed as the subject
C12*	FACS	Allocated to students for any CTE courses they are enrolled in with family & consumer science listed as the subject
C13*	Business Education	Allocated to students for any CTE courses they are enrolled in with business listed as the subject
C14*	Technical Education	Allocated to students for any CTE courses they are enrolled in with technical education listed as the subject
C15*	Technology	Allocated to students for any CTE courses they are enrolled in with technology listed as the subject
C16*	Engineering	Allocated to students for any CTE courses they are enrolled in with engineering listed as the subject
C17	College Career Awareness	Students enrolled in core code 39010000001
C18	Work Based Learning	Allocated to students for any CTE courses they are enrolled in with Work Based Learning listed as the subject
C19	NSEP	Students enrolled in foreign language courses
C20*	ROTC	Students enrolled in core code 15000000060. Students enrolled in courses with ROTC in the title or description if core code was not used. Some districts had specialized training programs that received funds
C21	Kindergarten Supplemental	Kindergarten students
C22	Service Learning	Students enrolled in core code 25020000050
C23	USTAR Program	Students enrolled in science and math courses
C99	General Course Expense	All students in the district
D50	Actual Cost	All students. Not always used in per-student calculations or visualizations (see Methodology above)
D99	Interest on Debt	All students in the district
E01*	Athletics	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine which P.E. courses required coach approval, or were intended to benefit students participating in sports programs. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E02*	Football	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in football, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.

Subcode	Subcode Description	General Student Allocation Guidelines
E03*	Soccer	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in soccer, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E04*	Tennis	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in tennis, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E05*	Track	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in track or cross country, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E06*	Cheer	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in cheer or "spirit teams," or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E07*	Volleyball	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in volleyball, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E09*	Wrestling	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in wrestling, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E10*	Swimming	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in swimming or diving, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.

Subcode	Subcode Description	General Student Allocation Guidelines
E11*	Golf	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in golf, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E12*	Baseball	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in baseball, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E13*	Softball	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in softball, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E14*	Basketball	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in basketball, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E15*	Drill	Student athlete records were rarely retained in district data, so athletics allocations varied tremendously based on district. Course descriptions were used from school class catalogs to determine if specific P.E. courses were offered for students participating in drill or competitive dance teams, or were intended to benefit students participating in sports programs in general. When no such courses could be determined, funds were allocated to any P.E. course that mentioned "Team Sports" in the course title. Funds would be allocated to all students if there was no reasonable way to approximate students that participated in athletics programs.
E16	Band	Students enrolled in band courses. Sometimes funding was used at elementary schools for band, so money was allocated to all students since no subject-specific course information is available for elementary students for topics like music or art
E17	Other Student Clubs	All students in the district, since specific club information is not retained in the data
E18	General Student Activities	All students in the district
E99	General Extracurricular	All students in the district
F01*	Other Title I	All students enrolled at courses denoted as Title I schools by USBE
F02	Elementary Instruction	Students in grades K–6
F03	Middle School Instruction	Students in grades 7–8
F04	High School Instruction	Students in grades 9–12
F05	Secondary Instruction	Students in grades 7–12
F99	General Instructional Support	All students in the district

Subcode	Subcode Description	General Student Allocation Guidelines
G01	First Grade	Students in grade 1
G02	Second Grade	Students in grade 2
G03	Third Grade	Students in grade 3
G04	Fourth Grade	Students in grade 4
G05	Fifth Grade	Students in grade 5
G06	Sixth Grade	Students in grade 6
G07	Seventh Grade	Students in grade 7
G08	Eighth Grade	Students in grade 8
G09	Ninth Grade	Students in grade 9
G10	Tenth Grade	Students in grade 10
G11	Eleventh Grade	Students in grade 11
G12	Twelfth Grade	Students in grade 12
G13	Kindergarten	Students in Kindergarten
G14	Preschool	Students in Preschool/Pre-K programs
G15	School Land Trust	All students. Districts frequently had complex methods of utilizing this money and it benefitted a wide range of students
G99	Ed Foundation	These funds typically benefit all students in a district
H01	Principals & Directors	CHARTERS ONLY. Charter wide expenses benefit all students.
H06	IT	CHARTERS ONLY. Charter wide expenses benefit all students.
H07	Accounting & Finance	CHARTERS ONLY. Charter wide expenses benefit all students.
H08	General Administrative Compensation	CHARTERS ONLY. Charter wide expenses benefit all students.
H09	Other Administrative Expenses	CHARTERS ONLY. Charter wide expenses benefit all students.
L01	Elementary Supplies	Students in grades K–6
L02	Middle School Supplies	Students in grades 7–8
L03	High School Supplies	Students in grades 9–12
L04	Secondary Supplies	Students in grades 7–12
L99	General Instructional Supplies	All students in the district
M99	Facilities Acquisition and Construction	All students in the district
N01	School Meals	Allocated on imputed meal counts for selected students (see Nutrition methodology above)
N99	Other Nutrition	All students in the district
O05	District-Wide Operations	All students in the district
O99	Operational Expense	All students in the district
Q99	School Administration	DISTRICTS ONLY. All students in the district
S01*	Aeronautics	Funds were rarely utilized for this purpose, but would be allocated to students in courses with space, aeronautics, or engineering courses
S02	Agriculture Education	Allocated to students for any agriculture courses they are enrolled in
S03*	Arts Crafts	Funds were rarely utilized for this purpose, but would be allocated to all students when it was utilized.
S04	English	Allocated to students for any English courses they are enrolled in

Subcode	Subcode Description	General Student Allocation Guidelines
S05	Debate	Allocated to students for any debate courses they are enrolled in
S06	Journalism	Allocated to students for any journalism courses they are enrolled in
S07*	Speech Drama	Allocated to students for any speech, debate, drama, or theatre courses they are enrolled in
S08*	Musical	Allocated to students for any musical theatre courses they are enrolled in
S09	Foreign Language	Allocated to students for any foreign language courses they are enrolled in
S10	Spanish	Allocated to students for any Spanish courses they are enrolled in
S11	German	Allocated to students for any German courses they are enrolled in
S12	French	Allocated to students for any French courses they are enrolled in
S13	Japanese	Allocated to students for any Japanese courses they are enrolled in
S14	Chinese	Allocated to students for any Chinese courses they are enrolled in
S15	Arabic	Allocated to students for any Arabic courses they are enrolled in
S16	Homemaking	Allocated to students for any family & consumer science courses they are enrolled in
S17*	Industrial Arts	Allocated to students for any carpentry, woodworking, welding, or furniture building courses they are enrolled in
S18	Mathematics	Allocated to students for any mathematics courses they are enrolled in
S19	General Music	Allocated to students for any music courses they are enrolled in. All students in elementary schools that also utilize these programs
S20	Instrumental Music	Allocated to students for any band or orchestra courses they are enrolled in. All students in elementary schools that also utilize these programs
S21	Vocal Music	Allocated to students for any choir courses they are enrolled in. All students in elementary schools that also utilize these programs
S22	Elementary Music	All K–6 students in elementary schools that also utilize these programs
S23	Art	Allocated to students for any art courses they are enrolled in. All students in elementary schools that also utilize these programs
S24	Physical Education	Allocated to students for any P.E. courses they are enrolled in. All students in elementary schools that also utilize these programs
S25*	Dance	Allocated to students for any dance courses they are enrolled in
S26*	High Adventure PE	Funds were rarely utilized for this purpose, but would be allocated to students in upper level P.E. courses when it was utilized
S27*	Reading	Frequently varies by district. These funds typically appeared to benefit all students within a district
S28	Science	Allocated to students for any science courses they are enrolled in. All students in elementary schools that also utilize these programs
S29	Biology	Allocated to students for any biology courses they are enrolled in
S30	Chemistry	Allocated to students for any chemistry courses they are enrolled in
S32	Physical Science	Allocated to students for any physical science courses they are enrolled in
S33	Social Studies	Allocated to students for any social studies courses they are enrolled in. All students in elementary schools that also utilize these programs
S34*	Stage	Allocated to students for any theatre courses they are enrolled in
S35	Yearbook	Allocated to students for any yearbook courses they are enrolled in
S36*	Critical Languages	Frequently varies by district. Some districts had specific languages they considered part of this category, and some used this description in conjunction with Dual Language Immersion programs. Funds are allocated to students in relevant courses for each district
S37	Dual Immersion	Allocated to students for any DLI courses they are enrolled in, whether elementary or secondary

Subcode	Subcode Description	General Student Allocation Guidelines
S38	Financial Literacy	Allocated to students enrolled in core codes 01000000100 or 34010000005
S39	Math 456	Students in grades 4, 5, and 6
S40	Math Science Teacher	Students enrolled in science and math courses
S41	BTS Arts	Some variation by district, but typically allocated to students in grades K-6
T01	Transportation	Students with imputed bus eligibility. (See Transportation methodology above)
T08	Field Trips	All students in the district
T09	Secondary Transportation	Students with imputed bus eligibility in grades 7–12
T10	Elementary Transportation	Students with imputed bus eligibility in grades K–6
T11	SPED Transportation	Students with imputed bus eligibility that are eligible to for special education resources
U01	SPED	Students that utilize special education resources
U02	SPED Preschool	Students in Preschool/Pre-K programs that utilize special education resources
U03*	Ext Year Disabled	Frequently varies by district. Districts typically appear to make these programs available to any student that utilizes special education resources that has a need, or has a significant drop in proficiency assessments after prolonged breaks between academic days
U04*	Ext Year SPED Teachers	Frequently varies by district. Districts typically appear to make these programs available to any student that utilizes special education resources that has a need, or has a significant drop in proficiency assessments after prolonged breaks between academic days
U05	Class Size Reduction	Students in grades K–8, because these class size reduction programs are intended to impact those specific grade levels
U06*	Accelerated Students	Frequently varies by district. Most often goes to students marked as Gifted in the student information system
U07	Centennial Scholarship	Students with a completed graduation status that graduated early
U08*	At Risk	Consistently varies by district. Is most frequently demographic specific, but sometimes was allocated to specific grade levels, students with low GPA, or students with low performance on state standardized tests
U09*	Youth In Custody	Frequently varies by district. Sometimes funds are allocated by location rather than student characteristics, and YIC indicators in the student information system are not always used consistently. District personnel were frequently consulted about these programs to determine which students are most likely to benefit from these resources
U10*	Home School	Frequently varies by district. Allocated to students with a homeschool learning environment in the student information system, but indicators are not always used consistently. Sometimes allocated to all students without courses designated as face to face/in person learning
U11	American Indian Alaskan	Students listed as American Indian/Alaskan Native in the student information system
U12*	Early Interventions	Frequently varies by district. Most regularly used for Pre-K programs
U13	Early Graduation	Students with a completed graduation status that graduated early
U14	Inter-Generational Poverty	Students listed as low income in the student information system
U15*	UPSTART	Some variation by district, but typically allocated to students in Pre-K programs or Kindergarten students
U16	Early Literacy	Students in grades K–3
U17*	Capitol Field Trips	Some variation by district. Frequently utilized by grade 4 classes as they study state history, but also utilized in some Utah Studies courses and other miscellaneous programs

Subcode	Subcode Description	General Student Allocation Guidelines
U18*	Gifted Talented	Frequently varies by district. Most frequently allocated to students listed as Gifted in the student information system, but that indicator is not always utilized consistently. Most common proxy indicators were students enrolled in AP/CE/IB courses, or students who scored highly proficient on state standardized tests
U19	Indian Education	Students listed as American Indian in the student information system
U20	TANF	Students listed as low income in the student information system
U21*	Accelerated Readers	Some variation by district. Most frequently allocated to all students in K–6
U22	IDEA	Students that utilize special education resources
U23	IDEA Preschool	Pre-K students that utilize special education resources
U24*	Deaf Blind	Students with a hearing impairment, vision impairment, or Deaf/Blind disability status in the student information system. Sometimes students with multiple disability codes or other disability statuses also benefit from these funds
U25	ELL	Students listed as English language learners in the student information system
U26*	Migrant Students	Frequently varies by district, depending on the data retained by the district. Frequently is allocated to students marked as migrant in the student information system, but sometimes to students that are English language learners
U27*	Homebound Services	Frequently varies by district, depending on the data retained by the district. Frequently is allocated to chronically absent students, students with disabilities, or students with an H learning environment code in the student information system
U28	ACT Test Reimbursement	Students in grade 9 or above
U29	Homeless Services	Students with a homeless status in the student information system
U30	Low Income	Students listed as low income in the student information system
U99	General Student Expense	All students in the district
X99	Non K–12	Not included as part of per-student spending
Y99	Depreciated Expense	All students in the district
Z99	Misc. Expense	All students in the district

*Requires frequent changes in allocation rules between LEAs