

How to Use the Resource Allocation Review Report (RAR)

Introduction

The *Resource Allocation Review Report* (RAR) combines Education Finance System (EFS) data with School-level descriptors such as Percent High Needs, Percent English Learner, Accountability Index, Staff experience, Staffing levels, enrollment, grade range, locale, and Organization Type. It is intended to assist in meeting requirements under ESSA and provide a tool to analyze equity and efficiency concerns regarding how education resources are allocated among schools, districts, and student groups.

The report contains five tabs, or pages:

- A dashboard, which consists of:
 - A bubble chart that shows school-level per-pupil expenditure (PPE) data by function for schools at varying levels of High needs. The vertical axis is the School's PPE for the functional area chosen and the X-axis measures the percentage of students enrolled on October 1 who are high needs (EL, SWD, or Free or reduced price lunch eligible). The size of the bubble represents October 1 school enrollments. The color of the bubble shows the Organization Type (Public School, RESC, Regional School Intra- or Inter-district Magnet, or Public Charter Schools).¹ The dotted gray line shows the average PPE for those bubbles showing in the chart. This average PPE is also shown beneath the legend of the bubble chart. Flyovers, or Data Tips, appear as you hover over a bubble to identify the school and provide summary data for that school.
 - A bar chart that shows the average PPE by function across Organization Types.
 - A bar chart showing average PPE by function across School levels (Preschool, Elementary, etc.) and Size (Small, Medium, and Large).
- A Compare Tool that allows users to select school attributes and/or districts and individual schools in order to compare PPE using the bubble chart provided.
- A Compare Trend Tool that allows users to select school attributes and/or districts and individual schools in order to compare trends in PPE using the line chart provided.
- A List table that provides PPE and other relevant data for all schools across all years for which CSDE reports school-level EFS data. This list table provides the easiest means to export the relevant data set for further analysis.
- A Resources page to assist users in getting the most out of this report.

The three charts on the dashboard are interactive in that they can be filtered either by clicking on one or more of the bars in the bar charts (hold down CTRL to choose multiple bars). For example, clicking on the Public Charter Schools bar in the PPE by School Type bar chart will narrow the other two charts to show only Public Charter Schools. They can also be filtered using the drop-down Filters in the upper right corner of the page. Note that breadcrumbs indicating the filters chosen appear above the chart area. To clear a filter, click on the X in the breadcrumb. When no filters are chosen, the breadcrumb will read: "Filters: No selections."

¹Because many schools that are categorized as Programs, Alternative Schools, or Special Education Schools have PPE that are often outliers, they are omitted from the charts as their presence would expand the vertical axis to a point where no other variation in PPE could be distinguished. Furthermore, any average measures of PPE would be dominated by a small number of organizations with small enrollment but high PPE. In short, filtering out these organization types allows for more meaningful analysis of variation in PPE for the majority of schools and students.

Data Glossary

The data glossary in Appendix A provides definitions of the major data elements that appear in the report. Especially important are the definitions of educational functions to which expenditures are allocated. For more information and data by function, please see EdSight/Overview/Fiscal Resources/Per Pupil Expenditures by Function (School).

User Stories

The following scenarios are provided to give users a glimpse into how the RAR report may be useful. It is, by no means, an exhaustive account.

Using the Dashboard:

Start by choosing a Fall of Year. 2019 was the third year of EFS reporting, which allowed districts time to adapt to school-level EFS reporting. It represents a valid starting point. The report also defaults to the most recent year. Note that, because no Accountability measures were generated for the year 2019-20, only Percent High Needs is available as a PPE By Variable for the Bubble chart in Year 2019. To compare Next Generation Accountability Indexes and PPE, choose an earlier year, and select Accountability Index from the PPE By Variable dropdown.

How does PPE vary by school type?

Use the PPE Bar Chart by School Type (See Appendix A for a description of the School Types used in the chart.)

Examples:

Choose as a PPE Function: Total School PPE, Including Share of Central District PPE²

- Total PPE, incl. District Share: Regionals have highest PPE; Public Charters the least; \$17,959 overall

Choose different PPE functions:

- Total PPE, excl. District Share: Regionals have highest PPE; Public Charters the least; \$14,567 overall
- Support services for School-based Admin: Public Charters highest by far; nearly double Public Schools. Intra-district Magnets the least. \$1,108 overall.
- Support services for Instruction: Charters much higher, Magnets the least. \$251 overall
- Instruction: Regionals highest, charters lowest. \$9,791 overall.

If you click on a single bar, it will filter the other two charts on the page to show just schools of that school type. The bubble chart will allow you to see disparities across schools and relationships to their school demographics and performance. The other bar chart will show you PPE by school grade offerings and size, just for that chosen school type.

² While the school's share of PPE central expenditures is not a data element provided in RAR, it is an important factor to consider when comparing PPE across schools and districts. In 2018, the central PPE share ranged from \$181 to \$9628, averaging \$3743 across 994 schools. Public Schools and Regionals averaged approximately \$3700; Charters, \$1977; RESC's, \$3933; Interdistrict magnets, \$4933; Intradistrict magnets, \$4183. These differences may reflect the organizational differences between these types of schools, or merely the degree of centralization the districts choose. It's hard to say what the optimal PPE share is, because it is nearly impossible to discern the value to student outcomes of services provided by the central district office. To minimize the effect of comparing across different degrees of centralization, use Total School PPE, Including Share of Central District PPE.

Hold down CTRL and click on another bar, and the other two charts will be filtered to show just those two school types.

To remove the filters, click back on the blank space in the bar chart, or click the X in the Filters bar above the bubble chart.

How does PPE vary by school level (Elementary, Middle, and High)?

Use the PPE Bar Chart by School Level and Size (See Appendix A for a description of the School Levels and Sizes used in the chart.)

Examples:

Choose as a PPE Function: Total School PPE, Including Share of Central District PPE.

- Small middle schools have the highest average PPE; Large elementary and preschool the smallest. Overall, PPE is \$17,959.
- If you filter for just public schools by clicking on the Public Schools bar in the PPE by School Type chart: : Small middle is the highest, Large Elementary and Preschool still the smallest. Overall, PPE is \$17,970.
- Look at K8 specifically by choosing School Low Grade K and School High Grade 8 in the dropdown filters: RESC's are high PPE, Public Charters low. Small middle schools have higher PPE than large middle schools. Overall, PPE is \$17,618.

If you click on a single bar, it will filter the other two charts on the page to show just schools of that school level and size. The bubble chart will allow you to see disparities across schools and relationships to their school demographics and performance. The other bar chart will show you PPE by school type, just for that chosen school level and size. Click on the Mid-size HS bar and only mid-size high schools will be represented in the bar and bubble charts. Overall, PPE is \$18,130.

To look at two configurations and sizes at once, click on Small Middle, then hold down CTRL and click on another bar such as Large Middle, and the other two charts will be filtered to show just those *two* school configurations and sizes. Overall PPE is \$18,411.

To remove the filters, click back on the blank space in the bar chart, or click the X in the Filters bar above the bubble chart.

What is the relationship between percentage of High Needs students in a school and School PPE?

PPE by HN Bubble Chart

The vertical axis is the PPE Function measure shown in the page filter above and in the title. For the horizontal axis, the report defaults to showing the percent high needs by school. Keep it as Percent High Needs.

Examples:

What stands out?

There is a significant amount of variation in Percent HN, which is not news. CT is a state of highs and lows, of significant income disparity and wide range of socioeconomic circumstances.

There is also a lot of variation in PPE. At first, you may be surprised at the amount of variation across schools and districts in their Per-pupil Expenditures (PPE) and may be tempted to draw conclusions

about inefficiency in the use of public resources, quality of education services provided, or the extreme expense of certain programs. But it's best to make sure we're comparing apples to apples. More about this later.

Some discernible relationship between HN and PPE: More schools below the line at high HN. At low HN, just the opposite. But that could be because high Percent HN are larger schools, and with fixed costs of teacher pay and benefits, expenditures are spread out over more students.

Note, too, Green Regional Schools stick out with low Percent HN, high PPE.

Account for size by choosing a school level and size. Choose mid-sized high schools, and the negative relationship jumps out. Also for large high schools, you see a strong relationship. Same for large middle schools. Not so much for elementary schools.

Using the Filters on the right hand side of the dashboard:

These filters allow us to focus on schools of interest, like Focus, Turnaround, Alliance District schools, Commissioner's Network schools, clusters of Percent High Needs, Locale, etc., or to choose a single or multiple districts.

Examples:

Choose Focus schools:

There is a lot of variation in HN and PPE. See a cluster of high needs schools (80% plus) well below the average PPE of \$18,706.

Choose Turnaround schools:

Notice the axis changed: lowest HN is around 70%! Notice how size really affects PPE by looking at the School-level and Size chart. Hover over the schools in the upper right. They're mostly Hartford schools. High HN, and High PPE. Those below the line, mostly Bridgeport schools.

Within District patterns:

But, choose a particular district: the relationship between PPE and HN changes. In Bridgeport, they spend more per pupil in high HN schools. Little correlation in Hartford, New Haven, Waterbury, Danbury, New London, New Britain.

Within HN bands:

- Go to the Filters and choose Percent High Needs 80-100%. You'll see over 120 bubbles across five school types and the full array of School Levels and Sizes. Note, too, the Average PPE is \$16,406.
- Go to the Filters and choose Percent High Needs 0-20%. You'll see over about 90 bubbles across two school types and the full array of School Levels and Sizes. Note, too, the Average PPE is \$20,307.
- Now put them both on the chart by checking Percent HN 0-20% AND 80-100% from the drop down filters. You see more low HN schools above the average of \$17,555 and more high HN schools below the line. Hover over the schools in each cluster to see where they're located.
- Now, uncheck Percent HN 0-20% AND 80-100% from the drop down filters and check the three boxes from 20 to 80%. The relationship between PPE and HN largely disappears, which suggests

the reallocation opportunity may lie at both ends rather than in the middle, a problem of extremes.

Using the Compare Tool

Use the Filter drop-down to choose one or more districts. Suppose you are a superintendent and want to analyze PPE in your district compare to schools in nearby districts. Click on Filters, choose District Names. Bubble chart will show only schools in the selected districts, color-coded by District, and the Average PPE for this group of schools will show beneath the legend.

Examples:

A Berlin School District administrator might choose Berlin, Cromwell, Meriden, Middletown, New Britain, Newington, Plainville, and Southington. Average PPE is \$16,196.

Filter for just Middle Schools by choosing School High Grade 8. Average PPE is \$16,023. Which districts' middle schools are likely to be less comparable to Berlin's based on High Needs?

Filter for just Elementary Schools by choosing School High Grade 5.

Look at schools with similar Percent HN by choosing 20-40% and 40-60% High Needs. Average PPE is \$16,879. What might explains the significant differences in PPE between these schools?

Using the Compare Trend Tool

Note that when you first open this page, the line chart is too crowded to be useful. Please use the filters to narrow your search. Suppose you are a district administrator and want to analyze trends in PPE over the last three years in your district compared to schools in nearby districts. Click on Filters, choose District Names. The trend chart will show only schools in the selected districts. You can choose schools within those districts to compare.

Using the List Table

The List Table tab is provided to allow users a spreadsheet view of the data for the schools in their district. It includes all of the PPE functions, as well as attributes of the school (e.g., Percent High Needs, NextGen Outcome Rate) for each year in the EFS data set. This can be sorted by clicking on the column header and sorted again by holding down CTRL and clicking another column header. We expect that the most common use if this tab will be to Export the data to Excel so that it can be used to generate other analyses not available here.

Exporting the RAR data set

Because the RAR report allows users to export much of the relevant EFS and school characteristics data to Excel or other programs, it can be joined with datasets by School code and Fall of Year to create more opportunities to focus on opportunities for meaningful reallocations. To export a dataset with just the schools you've filtered for, click on snowman icon in the upper right hand corner of the bubble chart and choose Export data. Choose file type and click OK.

To export the entire RAR dataset, click on the tab "List Table, (all records, all PPE functions). In the upper right hand corner of the table, click on the snowman icon and choose Export data. Choose file type and click OK.

General suggestions for using EFS-based Reports, including RAR

1. Compare schools:

- over the same time period
 - Choose a single Fall of Year to avoid reporting anomalies, learning curves in complying with the EFS system, and significant events (COVID-19, e.g.) that would affect expenditures. A learning curve is likely, but its length and severity will vary across districts and schools. Prefer the most recent year to earlier years.
- of similar organization types
 - Organization type affects revenues, the flexibility to enter into contracts, the ability to reallocate resources, as well as the characteristics of the student population served by the organization, all of which can affect PPE.
- of similar grade offerings
 - Elementary schools have, on average, lower PPE than middle schools, which have lower PPE than high schools, all other things constant.
- of similar student characteristics
 - The presence of a small number of high-expenditure students makes the average, or per-pupil, a less meaningful statistic, as it's no longer as good of a measure of central tendency.
 - High-expenditure students can skew per-pupil amounts over-time, as students advance to higher grades and thus different schools and as students move from school to school by choice.
 - These effects are difficult to assess, because special education expenditures per pupil are not available separately at a school level in EFS reports
- of similar revenue per pupil
 - Expenditures are constrained by revenues, which depend on the local tax capacity and tax effort, tuition, private contributions, federal grants, and state grants, primarily Education Cost Sharing (ECS) grants.
- of similar size
 - Most of the expenditures are fixed by contract and are thus a factor of underlying inputs (staffing, age of staff, existing contracts for various services) rather than enrollment size. It is difficult for districts and schools to reduce expenditures during falling enrollment, unless that decline is significant. Large schools may therefore show lower PPE because fixed expenditures are spread over larger student counts.
- of similar locale
 - Choosing surrounding districts, or districts with similar attributes will yield more reasonable comparisons than comparing Winsted with Bridgeport, e.g.
- of similar Staff FTE per pupil and staff age or experience
 - Most expenditures by districts and schools are for labor (salaries/benefits).
 - Most of the expenditures are fixed by contract and are thus a factor of underlying inputs (staffing, age of staff, existing contracts for various services)
- in the same district or in similar districts

- Some of the relationship between PPE and high needs exists more when looking across districts than within districts
 - Choosing surrounding districts, or districts with similar attributes will yield more reasonable comparisons than comparing vastly different districts
2. Inquire about special circumstances that may have affected a school or district's expenditures
 - Investigate the underlying reasons for PPE outliers
 - School expenditures can vary across districts according to the district's degree of centralization. As such, focusing on Total PPE, including the share of central district expenditures, can minimize this effect. Differences in the share of central PPE depend upon:
 - The degree to which support services are provided by the district central office may be a function of the size of the district, the degree of oversight by local boards, and many other factors.
 - In calculating Total PPE for schools, districts apportion central office expenses according to pupil counts, but this amount may not perfectly reflect the amount of services each school receives from its district central office.
 3. Examine the percentage allocation of expenditures and revenues rather than just amounts, e.g. what percent of Total PPE is spent on Instruction?
 4. Investigate the definitions of what is included in expenditure functions and objects. What are the barriers to reporting by these categories?

Other Considerations when using EFS-based reports, including RAR

1. EFS expenditures are not costs; they are payments. Their relationship to the true costs of education are unknown. Nevertheless, significant variation in PPE for schools of similar size, age of staff, functions, etc. could indicate, for example, over-payments, quality differences, or utilization inefficiencies.
2. EFS is not an accounting system that tracks debits, credits, and capital accounts. For example, payments for expenditures that occur in this fiscal year may be for services rendered in prior or future years, and there is no allowance for depreciation of physical assets. Unless payments for repairs are made in a given year, there is no way to approximate depreciation in these data.
3. Durable, non-durable goods, and services are treated similarly. There is no delineation between the short run, when few, if any resources are variable, and the long run, when most resources are variable.
 - a. Expenditures for equipment can differ in a given year depending if they are leased or purchased. An expenditure on a machine that occurs entirely in one year will overstate the cost of a machine of extended life.
 - b. Differences in School PPE may reflect differences in the use of leasing vs buying.
4. Expenditures are the product of quantities purchased and prices paid. Changes in expenditures can reflect changes to one or the other, or both. Local price differences can skew expenditures, as can prices locked in on existing contracts.

5. Expenditures made as part of resource-sharing agreements across schools and districts may not accurately reflect the true PPE at each participating school or district nor the quantity of services provided per pupil.
6. Schools with major construction projects may incur higher PPE for supplies and equipment and minor construction projects in the year after construction is complete.
7. Comparisons with PPE of private schools or schools in other states may merely reflect a difference in state and local mandates governing their responsibilities in providing education services. The cost of compliance with mandates for purposes of oversight, equity, and myriad other reasons weakens the validity of such comparisons.

Appendix A: Data Glossary

Term	Definition	Values
District	Name of district.	District Names
School	Name of school.	School Names
Low Grade	The lowest grade of the grade range reported for the school in CSDE's Directory Manager system.	PK - 12
High Grade	The highest grade of the grade range reported for the school in CSDE's Directory Manager system.	PK - 12
School Enrollment	Pupil count for October 1 of the school year.	Counts
% High Needs	The percentage of October enrollment identified as high needs, i.e., special education, eligible for free or reduced price meals, or English learners.	Percentages
School Level	School Level is based on School High Grade: Elementary: K-6 Middle: 7-9 High: 10-12 Preschool: PK	Elementary Middle High Preschool
School Level and Size	School Level and Size is based on School Level and the following October 1 School enrollment thresholds : <i>Elementary:</i> School Enrollment 0 to 360: Small Elementary School Enrollment 361 to 460: Mid-size Elementary School Enrollment > 460: Large Elementary <i>Middle:</i> School Enrollment 0 to 360: Small Middle School Enrollment 361 to 660: Mid-size Middle School Enrollment >660: Large Middle <i>High:</i> School Enrollment 0 to 540: Small HS School Enrollment 541 to 1280: Mid-size HS School Enrollment >1280: Large HS <i>Pre-school (all sizes)</i>	Small Elementary Mid-size Elementary Large Elementary Small Middle Mid-size Middle Large Middle Small HS Mid-size HS Large HS Pre-school
Locale	A general geographic indicator based on US Census data that describes the type of area where a school or district is located. City-Large: inside an urbanized area and inside a principal city with population of 250,000 or more City-Midsize: inside an urbanized area and inside a principal city with population less than 250,000 and greater than or equal to 100,000 City-Small: inside an urbanized area and inside a principal city with population less than 100,000 Suburb-Large: outside a principal city and inside an urbanized area with population of 250,000 or more	City-Large City-Midsize City-Small Suburb-Large Suburb-Midsize Suburb-Small Town-Fringe Town-Distant Town-Remote Rural-Fringe Rural-Distant

	<p>Suburb-Midsize: outside a principal city and inside an urbanized area with population less than 250,000 and greater than or equal to 100,000</p> <p>Suburb-Small: outside a principal city and inside an urbanized area with population less than 100,000</p> <p>Town-Fringe: inside an urban cluster that is less than or equal to 10 miles from an urbanized area</p> <p>Town-Distant: inside an urban cluster that is more than 10 miles and less than or equal to 35 miles from an urbanized area</p> <p>Town-Remote: inside an urban cluster that is more than 35 miles from an urbanized area</p> <p>Rural-Fringe: less than or equal to 5 miles from an urbanized area that is less than or equal to 2.5 miles from an urban cluster</p> <p>Rural-Distant: more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as more than 2.5 miles but less than or equal to 10 miles from an urban cluster</p> <p>Rural-Remote: more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster</p>	Rural-Remote
Instruction PPE	Activities dealing directly with the interaction between teachers and students. Teaching may be provided for students in a school classroom or in another location.	Dollars per pupil
Support services – students PPE	Activities providing student support services designed to assess and improve the well-being of students and to supplement the teaching process. This includes guidance, social, and health services.	Dollars per pupil
Improvement of instruction PPE	Activities assisting instructional staff in planning, developing, and evaluating the process of providing learning experiences for students. These activities include curriculum development, techniques of instruction, child development and understanding, and staff training.	Dollars per pupil
Library and media services PPE	Activities for library and educational media services.	Dollars per pupil
Support services – Instruction PPE	Activities assisting the instructional staff with the content and process of providing learning experiences for students not reported as Improving Instruction or Library and media services.	Dollars per pupil
Support services – school-based administration PPE	Activities concerned with the administrative responsibility of directing and managing the operation of a school, such as the principal's office.	Dollars per pupil
Operation and maintenance of plant PPE	Activities concerned with keeping the physical plant open, comfortable and safe for use and with keeping the grounds, buildings, and equipment in effective working condition and state of repair.	Dollars per pupil

Transportation other than to/from home PPE	Activities providing transportation other than to and from home, such as for field trips or athletic activities, if accounted for at the school level.	Dollars per pupil
Enterprise Operations PPE	Activities for enterprise operations, i.e. activities that are financed and operated in a manner similar to private business enterprises, for example a school bookstore. Also includes athletics, bands, dramatics, and any school activity paid by local appropriations. Does not include any student activity funds.	Dollars per pupil
Minor school construction PPE	Activities concerned with minor school construction projects, such as for roof replacement, energy conservation, or updates to comply with building codes.	Dollars per pupil
Total School PPE, Including Share of Central District PPE	Total school-level expenditures, including the share of central district expenditures allocated to schools in the district on an equal per pupil basis	Dollars per pupil
Total School PPE, Excluding Share of Central District PPE	Total school-level expenditures, Total school-level expenditures, excluding the share of central district expenditures allocated to schools in the district on an equal per pupil basis	Dollars per pupil