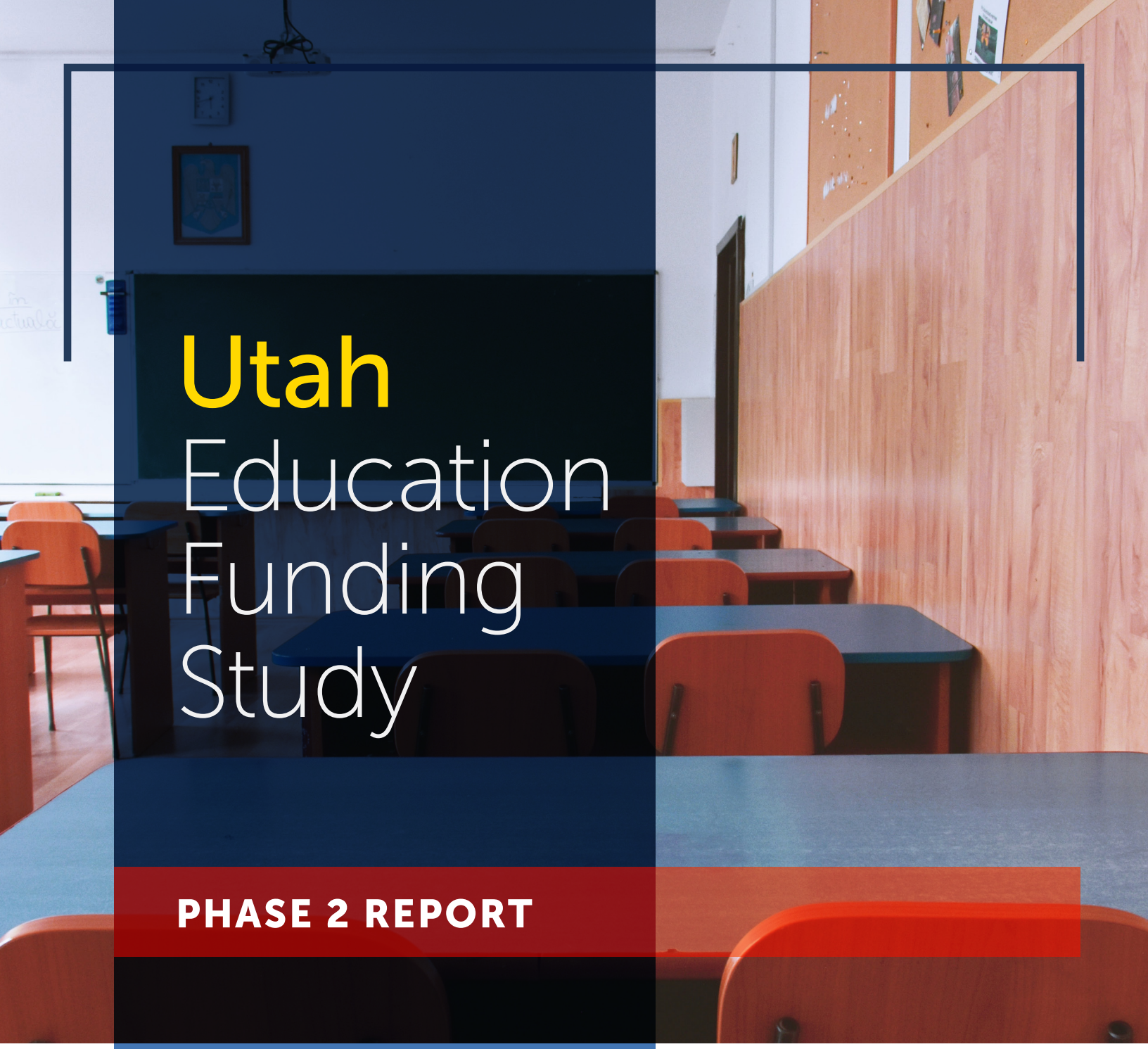

Utah Education Funding Study

PHASE 2 REPORT

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Acknowledgments

This report was developed in consultation with stakeholders and experts across the state.

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We would also like to thank the district and school staff engaged through our case study analysis who were generous with their time, particularly considering the ongoing impacts of COVID-19.

Finally, special thanks to Dr. Lori Taylor for her support and guidance as a subject matter expert; and legislative staff for making themselves available for discussion of the study.

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Executive Summary

Over the past 30 years, K–12 enrollment in Utah has grown rapidly, from 446,652 in 1990 to 704,600 in 2023, and is projected to continue increasing over the next five years (NCES, 2020). As the state's student population expands in size, it is also becoming more diverse.

With these changes in mind, it is imperative that the state's funding system evolve in step with the dynamic needs of its student body. As such, the Utah State Board of Education (USBE) partnered with WestEd and Augenblick, Palaich, and Associates (APA) to prepare a study to evaluate the current K–12 funding system and to determine the extent to which funding formulas meet their intended purposes, particularly with respect to ensuring "reasonably equal educational opportunities for all children" (Utah Code Annotated § 53F-2-103).

This report is the culmination of the second of two phases of a broader study evaluating the school funding formula mechanisms for the K–12 education system in Utah. Phase 1 examined the alignment between Utah's vision for students and the Minimum School Program (MSP), as defined by statute, as well as the extent to which the current MSP meets the principle of reasonably equal opportunities for all students. Phase 2 focuses on analyses that are related, and complementary, to the Phase 1 analyses, in many cases digging deeper into a question considered in Phase 1.

Specifically, Phase 2 examines costs and resource allocation through a variety of methods, with an emphasis on equal educational opportunity. Methods include quantitative analyses of student and fiscal data, as well as an examination of successful school sites through a case study process.

Findings from both Phase 1 and Phase 2 are used in this report to inform policy recommendations on how the existing system can be improved. This study has not assessed or produced an estimated adequate amount of resources needed for the Utah public education system.

Conceptual Framework: Utah's Education Principles

An important aspect of Utah's funding system — reflected in its primary funding program, the MSP — is its coherence with respect to core principles. Statute clearly describes the aims of this program, and these aims reflect two primary principles: (1) reasonably equal opportunity for all, regardless of place of residence, and (2) local participation and determination (Utah Code Annotated § 53F-2-103).

Reasonably equal educational opportunity

A funding system should provide different levels of resources for students and contexts with different needs, to ensure that the same learning opportunities are available to all. This variation in funding levels is the means of accomplishing the MSP objective of ensuring that all children receive "reasonably equal educational opportunities" regardless of their educational context.

Moreover, according to this principle, each community's taxpayer effort should generate a reasonably similar amount of revenue, regardless of the taxable assessed property value or the number of students within the district. This aim is reflected in the MSP objective to ensure that all children receive equal educational opportunity "regardless of their place of residence or the economic situation."

Local participation and determination

A school district should have the independent authority to levy taxes, maintain the revenue generated within the school district, and have autonomy over how to spend the revenue. This principle is reflected in the MSP objective that districts "pay a portion of the cost of a minimum program" and that local boards have the ability to "provide educational facilities and opportunities beyond the minimum program."

These principles provide a conceptual framework for understanding the purpose of the analyses included in this study and for understanding what they examine, as well as a lens through which to interpret results of the analyses and their implications for setting programmatic or funding goals in Utah — in particular, with respect to balancing the potential tension between these principles. As state policy is reformed to better meet the principle of "equal opportunity," it may limit the extent of local determination, and vice versa. Exhibit 1 illustrates this potential imbalance.

Exhibit 1. Principles of Education Funding

Phase 2 Analyses

Analysis Methods

Phase 2 addressed the multiple research questions shown in Exhibit 2. To answer these questions, WestEd researchers employed a mix of quantitative and qualitative methods, including quantitative analyses of sources of local revenue, quantitative analyses of the relationship between student outcomes and associated costs, and engagement of highly successful schools in the state through interviews and document reviews.

Exhibit 2. Utah School Funding Study Phase 2 Research Questions and Analysis Methods

Research Question	Document Review	Stakeholder Input	Data Analysis
Part 1, Section 1: Equalization and Local Contribution Analyses			
To what extent do the effort and capacity to raise local revenue vary across the state, and how do equalization programs adjust for these differences?			x
What are the impacts of requiring a local funding match?			x
Part 1, Section 2: Cost Function Analysis			
How does the amount of spending required to achieve a given level of student achievement vary?			x
Part 1, Section 3: Implications for Equitable Access			
What is the impact of local funding levies on equitable access?			x
Which programs within the MSP are targeted to high-need students and what supplemental funds do they provide to target populations?			x
How do schools with "high" and "low" efficiency compare to their peers?			x
Part 2: Successful Schools			
What is the relationship between monetary and nonmonetary resources and student outcomes?	x	x	x

Research Question	Document Review	Stakeholder Input	Data Analysis
Part 3: Policy Recommendations			
Given current funding levels, what recommendations can be provided to address discrepancies between current funding and intended purposes?	x	x	x

Key Findings and Policy Recommendations

The following list summarizes the findings of the analyses conducted in Phase 2 of this study and provides policy recommendations based on these findings. The list also indicates the report sections in which these findings and recommendations are described in more detail. Part 1 presents the results of analyses with respect to the principle of ensuring reasonably equal educational opportunity. Part 2 investigates, in detail, local practices and resources that are common to a set of successful settings. Part 3 provides policy recommendations to improve alignment between funding and intended purposes, based on the findings of the analyses from both phases of the study.

Part 1: Ensuring Reasonably Equal Educational Opportunity

Section 1: Equalization and Local Contribution Analyses

To what extent do the effort and capacity to raise local revenue vary across the state, and how do equalization programs adjust for these differences?

- Finding 1. There is a large range in local property wealth across districts in Utah, with the wealthiest district holding more than 15 times the taxable assessed property value per average daily membership of the least wealthy district.
- Finding 2. Excess capacity in allowable voted and board levies exists at all levels of school district wealth, but the majority of total capacity is highly concentrated in the very wealthiest districts.
- Finding 3. Although equalization policies are in effect, the impacts of these policies on fiscal neutrality are limited.
- Finding 4. Benefits of the state capital foundation guarantee are inconsistent across levels of local wealth, but additional information is needed in order to draw firm implications.
- Finding 5. Analysis of implied taxable assessed property value per pupil suggests that capital foundation guarantee aid is limited in its ability to equalize local capacity in capital funding.

What are the impacts of requiring a local funding match?

- Finding 6. State funding formula policy type does not appear to be clearly associated with system equity.
- Finding 7. More equitable state funding systems run the vast majority of all funding through the equitable state formula.
- Finding 8. Inequity in less equitable state funding systems is driven by large proportions of funding contributed through local generation outside of the state equitable formula.

- Finding 9. When put in comparable terms, state-required tax rates that define the local share are more similar to each other than it might seem, though Utah's is the second lowest.

Section 2: Cost Function Analysis

How does the amount of spending required to achieve a given level of student achievement vary?

- Finding 10. Local prices for teacher labor vary geographically, with prices up to 31 percent higher in some regions, compared to others.
- Finding 11. Higher spending is predicted as school average academic growth increases, though this association is lower in magnitude among high schools, compared to non–high schools.
- Finding 12. Higher spending is also predicted as school graduation rate increases.
- Finding 13. Predicted spending generally decreases as district enrollment increases, providing evidence that economies of scale are present in Utah at the district level.
- Finding 14. Predicted spending increases as the regional price of labor increases, as measured by the Teacher Salary Index.
- Finding 15. Predicted spending increases as the level of student need increases, as measured by the percentages of economically disadvantaged students and students with disabilities.
- Finding 16. School spending is 94 percent efficient on average, as estimated by the model, with three-fourths of schools above 93 percent.

Section 3: Implications for Equitable Access

What is the impact of local funding levies on equitable access?

- Finding 17. Local voted and board levies contribute significantly to inequity in Utah, though this may be substantially explained by the inequity stemming from the very wealthiest districts.
- Finding 18. Increase in state aid for capital projects likely contributed to improvements in equity over time, though more information is needed in order to draw firm implications.

Which programs within the MSP are targeted to high-need students and what supplemental funds do they provide to target populations?

- Finding 19. The sizes of populations of "at-risk" students and economically disadvantaged students are highly correlated.
- Finding 20. Programs explicitly targeting "at-risk" students or economically disadvantaged students provide significantly less additional funding than would be provided under the weight derived from the cost function analysis.

How do schools with "high" and "low" efficiency compare to their peers?

- Finding 21. "Low" efficiency schools achieve lower outcomes per $1,000 than their peers.
- Finding 22. "High" efficiency schools achieve higher outcomes per $1,000 than their peers, though the differences between these schools are less clear than among "low" efficiency schools.

Part 2: Successful Schools

Section 4: Case Study Analysis

What is the relationship between monetary and nonmonetary resources and student outcomes?

- Finding 23. Districts with case study schools view their role as one of support, seeing school staff as "the experts."
- Finding 24. District allocations to schools beyond a base allocation vary but are consistently driven by an assessment of a school's relative need.
- Finding 25. Districts with case study schools consistently provide a high level of autonomy and flexibility for schools to determine how to spend their funds.
- Finding 26. Successful schools reported receiving limited additional monetary or nonmonetary resources, but to a similar extent as similar schools within their district.
- Finding 27. Culture and leadership among case study schools are important features of their success.
- Finding 28. Case study schools prioritize staff support, including structures for staff collaboration and school-directed and embedded professional development opportunities.
- Finding 29. Data use to improve instructional practices and target support to struggling students is common among case study schools.
- Finding 30. Case study schools recognize and invest in social-emotional resources to support the "whole child."
- Finding 31. Impacts of nonmonetary resources on school success reflect general themes about community engagement support and organizational practice, as opposed to indicating specific additional resources such as volunteers.

Part 3: Policy Recommendations

Given current funding levels, what recommendations can be provided to address discrepancies between current funding and intended purposes?

Section 5: Funding Generation

- Recommendation 1. Increase the Basic Property Tax Levy to rebalance the defined local share of the Basic School Program and minimize the fiscal impact of system improvements to funding distribution.

Section 6: Funding Distribution

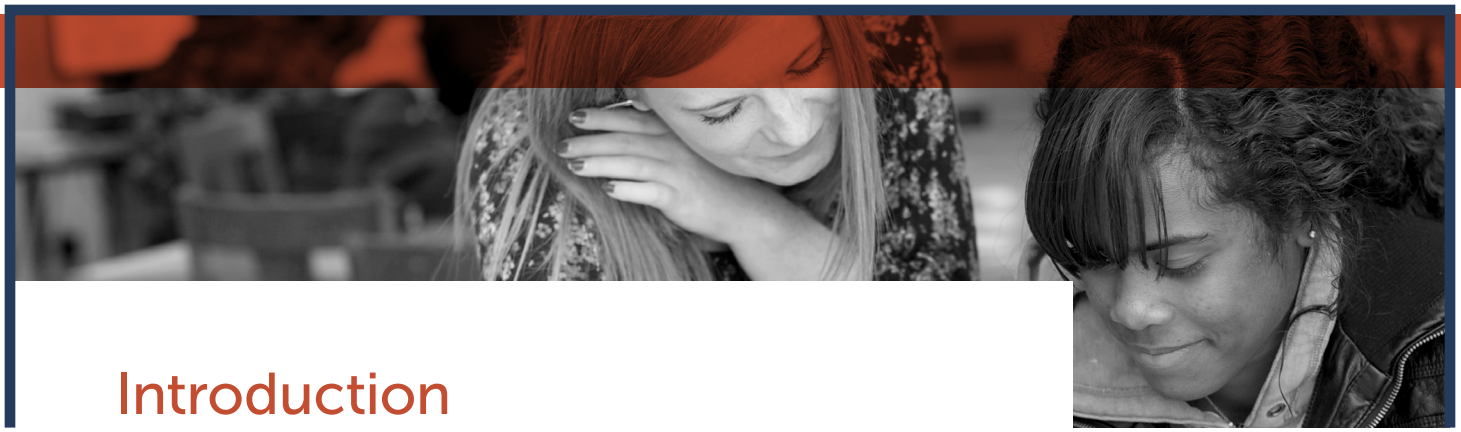
- Recommendation 2. Establish an add-on Weighted Pupil Unit for economically disadvantaged students in the Basic School Program, replacing existing programs targeted to these students.
- Recommendation 3. Reform the Necessarily Existent Small Schools adjustment in the Basic School Program, drawing on study findings, to expand the scope and size of the funding, primarily to address issues of scale.
- Recommendation 4. Establish within the Basic School Program an adjustment for regional variation in the price of teacher labor, based on study findings.

Section 7: Targeted Programs

- Recommendation 5. Reexamine the Related to Basic programs to optimize coherence, stability, continuous improvement, and balance with Basic School Program funds.

Section 8: Effective Practices

- Recommendation 6. Establish a competitive grant focused on supporting schools to develop effective processes within two key strategic areas.



Introduction

Over the past 30 years, K–12 enrollment in Utah has grown rapidly, from 446,652 in 1990 to 704,600 in 2023, and is projected to continue increasing over the next five years (NCES, 2020). As the state's student population expands in size, it is also becoming more diverse.

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Specifically, Phase 2 examines costs and resource allocation through a variety of methods, with an emphasis on equal educational opportunity. Methods include quantitative analyses of student and fiscal data, as well as an examination of successful school sites through a case study process.

Findings from both Phase 1 and Phase 2 are used in this report to inform policy recommendations on how the existing system can be improved. This study has not assessed or produced an estimated adequate amount of resources needed for the Utah public education system.

How to Read This Report

The findings in this report are organized into three parts, each containing sections organized around key aspects of Phase 2 of this study. The following list reflects this structure, including referencing research objectives from the original scope of the study alongside the specific research questions addressing each objective:

Part 1: Ensuring Reasonably Equal Educational Opportunity

Section 1: Equalization and Local Contribution Analyses

To what extent do the effort and capacity to raise local revenue vary across the state, and how do equalization programs adjust for these differences?

- Research Objective 2b: Examine differences in the ability to raise local revenue across the state and determine the extent to which equalization programs adjust for these differences.

What are the impacts of requiring a local funding match?

- Research Objective 2d: Examine the impact of requiring a local funding match to obtain access to state resources on equitability of education resources across the state.

Section 2: Cost Function Analysis

How does the amount of spending required to achieve a given level of student achievement vary?

- Research Objective 2a: Examine differences in the cost of education across educational contexts and determine the extent to which formulas of the MSP adjust for these differences.

Section 3: Implications for Equitable Access

What is the impact of local funding levies on equitable access?

Which programs within the MSP are targeted to high-need students and what supplemental funds do they provide to target populations?

How do schools with "high" and "low" efficiency compare to their peers?

- Research Objective 2c: Examine how varying cost factors and ability to raise local revenue impact equitable access to the core components of a minimum school program.

Part 2: Successful Schools

Section 4: Case Study Analysis

What is the relationship between monetary and nonmonetary resources and student outcomes?

- Research Objective 1d: Analyze the relationship between monetary and nonmonetary resources and student outcomes throughout the state.

Part 3: Policy Recommendations

Sections 5–8: Funding Generation, Funding Distribution, Targeted Programs, and Effective Practices

Given current funding levels, what recommendations can be provided to address discrepancies between current funding and intended purposes?

- Research Objective 3a: Given current funding levels, provide options, modeling of fiscal impact, and recommendations to address discrepancies between funding and intended purposes.

Conceptual Framework: Utah's Education Principles

An important aspect of Utah's funding system — reflected in its primary funding program, the MSP — is its coherence with respect to core principles. Statute clearly describes the aims of this program, and these aims reflect two primary principles: (1) reasonably equal opportunity for all, regardless of place of residence, and (2) local participation and determination (Utah Code Annotated § 53F-2-103).

Reasonably equal educational opportunity

A funding system should provide different levels of resources for students and contexts with different needs, to ensure that the same learning opportunities are available to all. This variation in funding levels is the means of accomplishing the MSP objective of ensuring that all children receive "reasonably equal educational opportunities" regardless of their educational context.

Moreover, according to this principle, each community's taxpayer effort should generate a reasonably similar amount of revenue, regardless of the taxable assessed property value or the number of students within the district. This aim is reflected in the MSP objective to ensure that all children receive equal educational opportunity "regardless of their place of residence or the economic situation."

Local participation and determination

A school district should have the independent authority to levy taxes, maintain the revenue generated within the school district, and have autonomy over how to spend the revenue. This principle is reflected in the MSP objective that districts "pay a portion of the cost of a minimum program" and that local boards have the ability to "provide educational facilities and opportunities beyond the minimum program."

These principles provide a conceptual framework for understanding the purpose of the analyses included in this study and for understanding what they examine, as well as a lens through which to interpret results of the analyses and their implications for setting programmatic or funding goals in Utah — in particular, with respect to balancing the potential tension between these principles. As state policy is reformed to better meet the principle of "equal opportunity," it may limit the extent of local determination, and vice versa. Exhibit 3 illustrates this potential imbalance.

Exhibit 3. Principles of Education Funding

Phase 1 Key Findings

Phase 1 of the study focused on providing Utah with contextual insight regarding the current school funding policy in the state. Specifically, Phase 1 focused on how Utahns define a "minimum school program" and to what extent this definition matches implementation at the state and local levels. In the course of Phase 1 of the study, three overarching research questions were examined:

- What are the current expectations in Utah for a minimum school program?
- How does the current system align with these expectations?
- What do other pathways, such as methods of counting students and year-round schooling, offer?

Phase 1 research found that, with respect to horizontal and vertical equity, the funding formula may not be providing sufficient additional resources for students with greater needs.[1] With respect to fiscal neutrality, results suggest a relationship between district resource levels and district wealth.[2]

Phase 1 also assessed the state-endorsed or state-adopted standards, assessments, strategic documents, and stakeholder perceptions of expectations for a minimum school program. Overall, official documents and stakeholder reports were highly aligned, with one significant exception: social-emotional learning and its integration with a holistic academic program, including, for example, integrating social-emotional learning expectations into regular academic standards.

Further, based on statute and related categorical programs, Phase 1 findings suggest that there is general alignment between the identified expectations for a minimum school program (including the target outcomes reflected in the state's Portrait of a Graduate) and the assignment of funding.[3]

Finally, state funds in Utah are a proportionately larger share of education funding than the national average, but no evidence was found to indicate any relationship between the balance of state and local contributions and overall equity. Other examined educational policy pathways offered useful information but require additional investigation.[4]

Overall, across the explored areas of inquiry, Phase 1 found high alignment between the USBE strategic plan, the Portrait of a Graduate, funding assignments, and stakeholder reports on expectations for a minimum school program. However, analysis of Utah's school funding formula did find evidence that resources for students with greater needs may not be sufficient to address their additional needs, and that wealth discrepancies across districts may not be sufficiently equalized by current funding mechanisms. These results generally serve to motivate the more rigorous investigations in the Phase 2 report, which examines a broader range of quantitative data and includes analyses that allow for more precise interpretations than the general findings of Phase 1.

1 *Horizontal equity* refers to the extent to which similar districts receive similar resources, while *vertical equity* takes into account how resource needs might vary based on student characteristics and whether this variation is reflected in funding distribution.

2 *Fiscal neutrality* examines the relationship between the wealth of a district and the resources that it has for educating its students.

3 Utah's Portrait of a Graduate (USBE, 2020b) identifies the ideal characteristics of a graduate of Utah's K–12 system. These characteristics are aspirations and are not necessarily meant to be quantified and measured.

4 Specifically, a working group discussing competency-based funding systems agreed that continued investigation of this policy is needed, and a review of research on year-round schooling suggests that its impacts on achievement or efficiency have been mixed and limited.

Phase 2 Analyses

Building on Phase 1, Phase 2 of this study included a comprehensive review of the state's school funding formula, aimed at providing the state with findings and recommendations for improvement, especially with respect to the extent to which funding under the MSP is meeting its objective of ensuring that all children have "reasonably equal educational opportunities," as indicated in its statutory purpose (Utah Code Annotated § 53F-2-103).

Although all of the Phase 2 analyses that are focused on ensuring equal opportunity are discussed in the first part of this report, they are best understood as separate assessments of two domains: generation of funds and distribution of funds. These distinct aspects of a school funding formula, in combination, generally reflect the extent to which the system is equitable.

Generation of Funds

One aspect of fiscal equity is the extent to which the generation of funds is reasonably neutral across regions and local wealth. Known as "fiscal neutrality," this condition exists when a community's taxpayer effort generates a reasonably similar amount of revenue, regardless of the taxable assessed property value or the number of students within the district. Section 1 of this report describes differences in districts' abilities to raise local revenue and describes current equalization policy, as well as the impact of approaches to defining a local funding share.

Distribution of Funds

Under an equitable distribution of funds, all students would have access to reasonably equal educational opportunities, regardless of differences in educational contexts, which means that funding allocated for one student group may be more than for another, based on their different and dynamic needs. Section 2 reports on results of measuring student equity through an education cost function analysis, and Section 3 elaborates upon the findings of Sections 1 and 2.

Once the generation and distribution of funds is determined and funding is made available at the local level, the use of those funds is another critical element of the system. The second part of this report investigates, in detail, this part of the state system. Specifically, Part 2 analyses consider nonmonetary practices and resources available to a set of successful schools in the state. For these analyses, case study schools were selected and considered more deeply through stakeholder interviews and document review, including exploration of the local organization and implementation of instructional and support resources, the process of determining the strategic allocation of resources, and the extent to which donated resources or supports are available in these schools.

The third part of this report provides policy recommendations to improve alignment between funding and intended purposes, based on the findings of the analyses from both phases of the study. These recommendations are framed in the context of the expectations identified in Phase 1 and the general education principles reflected in the MSP. Specifically, recommendations focus on four aspects of the state funding system: funding generation, funding distribution, targeted programs, and effective practices.

To address the Phase 2 study research questions, the study team applied analysis methods distinct from those used in Phase 1. These methods are described in the following section.

Analysis Methods

Phase 2 addressed the multiple research questions shown in Exhibit 4. To answer these questions, WestEd researchers employed a mix of quantitative and qualitative methods, including quantitative analyses of sources of local revenue, quantitative analyses of the relationship between student outcomes and associated costs, and engagement of highly successful schools in the state through interviews and document reviews.

Exhibit 4. Utah School Funding Study Phase 2 Research Questions and Analysis Methods

Research Question	Document Review	Stakeholder Input	Data Analysis
Part 1, Section 1: Equalization and Local Contribution Analyses			
To what extent do the effort and capacity to raise local revenue vary across the state, and how do equalization programs adjust for these differences?			x
What are the impacts of requiring a local funding match?			x
Part 1, Section 2: Cost Function Analysis			
How does the amount of spending required to achieve a given level of student achievement vary?			x
Part 1, Section 3: Implications for Equitable Access			
What is the impact of local funding levies on equitable access?			x
Which programs within the MSP are targeted to high-need students and what supplemental funds do they provide to target populations?			x
How do schools with "high" and "low" efficiency compare to their peers?			x
Part 2: Successful Schools			
What is the relationship between monetary and nonmonetary resources and student outcomes?	x	x	x
Part 3: Policy Recommendations			
Given current funding levels, what recommendations can be provided to address discrepancies between current funding and intended purposes?	x	x	x

Data Analysis Methods

Equalization Analyses

The study team examined the following three areas in an effort to understand differences in districts' abilities to raise local revenue and to understand current equalization efforts in Utah:

- the range in local school district revenue-raising capacity in terms of taxable assessed property value per pupil;
- the impact of voted and board levies on fiscal equity; and
- the impact of very property wealthy school districts on fiscal equity.

In addition, the study team considered how other states assign a local funding match requirement and considered different approaches' implications for overall equity. This process involved analyzing public data through detailed comparisons, analysis of new metrics, and iterative data visualization.

Cost Function Analysis

To conduct the education cost function analysis, the study team took the approach of a stochastic frontier analysis (SFA). An SFA differs from other cost function analyses in that it measures and controls for technical cost efficiency.[5] Specifically, it assumes that schools are not cost-minimizing operations, and it therefore endeavors to separate spending beyond the minimum due to technical cost inefficiency from spending beyond the minimum due to random (stochastic) factors (Gronberg et al., 2011a).

A key aspect of this study's cost function analysis is the use of a statistical method, known as a control function, to mitigate the possibility that unobserved differences in schools are driving how student outcomes and school enrollment relate to school spending and may be biasing the results. This use of a control function is described in more detail in Technical Appendix B.

The data used in the cost function analysis came primarily from administrative data collected and maintained by the USBE. The Project KIDS (Key Integrated Data Systems) program was another important source of data; these data are collected and maintained by the Utah State Auditor. In addition, various public data sources were used.

5 In this context, "technical cost efficiency" refers to the extent to which differences in student outcomes explain differences in spending, based on this study's cost function analysis. See Section 2 for more detail.

Case Study Process

Case Study School Site Selection

As a first step in selecting case study sites, the pool of schools to possibly be included in case studies for this report was reduced, based on the results of the cost function analysis model with respect to estimated technical cost efficiency. The study team then paired the efficiency results with student test performance data to identify schools that both were cost efficient and performed well with respect to student outcomes. Specifically, to be selected, a school must have achieved at least above statewide average student proficiency in fiscal year (FY) 2018–19 in both English language arts (ELA) and mathematics.

The case study site selection process was also aimed at identifying schools from a variety of settings and locations and including some schools with higher populations of English learners and/or economically disadvantaged (ED) students. Ultimately nine schools were identified through this process.

The study team also identified one charter school for inclusion in the case studies, based upon its academic proficiency level and other factors. In total, ten case study schools were identified and engaged.

The Case Study Process

The process was designed to enable the study team to understand the unique approaches of each school and to provide insights into any common elements or themes across the set of these schools. Because the first filter for the school selection was cost efficiency, the study team was particularly interested in how schools reached success with students in an efficient manner and through using nonmonetary resources. In addition, the study team was interested in how districts support schools and how resources flow from districts to schools.

For each case study school that is a traditional public school, the study team reviewed policy documents and met with district and school administrators. For the selected charter school, only school administrators were engaged. Case study school staff and their districts' staff were generous with their time, particularly considering the current pandemic. The study team appreciates the time that these staff spent providing documents and participating in interviews. The case study analysis methods are described in more detail in Part 2, the part of this report that discusses the case study findings.

Stakeholder Survey

Given the small number of case study schools, the study team also administered a survey to the full population of school districts and charter schools in Utah. This survey asked the same questions asked in the case study interviews, thus providing a statewide view of the same topics. Questions relating to how a district interacts with its member schools were removed in the survey sent to charter schools, given the slightly different context of these schools.

Both the district survey and the charter survey are available in full in Technical Appendix D.

Part 1: Ensuring Reasonably Equal Educational Opportunity

The primary purposes of the analyses conducted for this study focused on equal educational opportunity are to analyze variation in local taxable assessed property value (TAV), local levies, and state equalization aid; to examine policies across the United States with respect to defining a local funding match; to assess how costs vary by educational context; and to use the results of these analyses to better understand the extent of equitable access provided through Utah's primary funding program, the MSP.

These analyses build on the equity findings of Phase 1, providing more rigorous detail and exploration. Specific sections of this part of the report include:

- Section 1: Equalization and Local Contribution Analyses;
- Section 2: Cost Function Analysis; and
- Section 3: Implications for Equitable Access.

Section 1: Equalization and Local Contribution Analyses

The analyses described in this section assess the impact of varying levels of local dollars and state equalization aid dollars on the equitable distribution of education funding across Utah's school districts. The goal of equalization aid in school finance formulas is to ensure that a community's taxpayer effort generates a reasonably similar amount of revenue, regardless of the TAV or the number of students within the district.

A core component of this analysis involved examining the following three areas, in an effort to understand differences in ability to raise local revenue and to understand current equalization efforts in Utah:

- school district revenue-raising capacity in terms of TAV per average daily membership (ADM);
- voted and board levies and state aid; and
- capital outlay and debt service levies and state aid.

In addition, the study team considered how other states assign a local funding match requirement, and considered different approaches' implications for overall equity.

To understand this section's findings, a brief summary of key terms may be helpful. Exhibit 5 defines a few key terms specific to the analyses reported in this section.

Exhibit 5. Definition of Section 1 Key Terms

Variable	State
Taxable Assessed Property Value (TAV)	The total dollar value of taxable property in a given district. For example, in Utah this would only include the portion of value that is taxable for property falling under the residential exemption (Utah Code Annotated § 59-2-103).
Taxpayer Effort	The tax rate levied in a given community as a reflection of the "effort" that community is willing to put toward the generation of local revenue through, in this case, property taxes.
Local Capacity	The amount of revenue a community is able to generate at a given tax rate, or within the bounds of any limitation on allowable tax rates, given the local TAV. For example, a community with twice as much TAV will generate roughly twice as much revenue from the same tax rate (or effort).
State Equalization Aid	State funding provided to increase the capacity to raise revenue and mitigate the impact of low property wealth. This aid includes, for example, equalization aid provided for the voted and board levies (as discussed in Section 1b), and the Capital Outlay Foundation Aid program (as discussed in Section 1c).
Excess Capacity	The amount of revenue a community has the capacity to generate, within Utah's caps on tax rates, beyond (or in excess of) what it is generating at its current rate (see for example Finding 2).
Mill Rate	The dollars of tax per $1,000 of TAV, or the tax rate multiplied by 1,000. This term is a typical way to refer to tax rates (see for example Section 1d).

The data used for the analyses in this section are based on the state annual financial reports including reporting of expenditures, revenues, tax rates, and other financial statistics. As these analyses are an extension of the equity analysis conducted in Phase 1, the data sample of categories of revenue and expenditures are as reported in Phase 1 — specifically, as follows:

- **State and Local Revenues.** Includes all state and local revenues except capital outlay and debt service levies (revenue codes 1124–1129, 1174, 1178), tuition from other local educational agencies (LEAs) within the state (1320), transportation fees (1410–1440), food service receipts (1610–1690), miscellaneous revenue from other school districts (1950), tax increment fund (26), related to basic programs (3200), and capital outlay programs (3700).
- **Total Revenues.** Consists of the state and local revenues listed above, plus federal funds, excluding child nutrition programs (4560–4574) and federal USDA commodities (4970).
- **Total Expenditures.** Consists of district expenditures from the general fund (10), special revenue funds (20), and student activity fund (21) except for the following functions: student transportation (2700), food service (3100), facilities acquisition and construction services (4000s), and debt service (5000s).
- **Instructional Expenditures.** Consists of expenditures in the instruction function (1000) from the general fund (10), special revenue funds (20), and student activity fund (21).

Section 1a: Variation in Local Revenue

FINDING 1. THERE IS A LARGE RANGE IN LOCAL PROPERTY WEALTH ACROSS DISTRICTS IN UTAH, WITH THE WEALTHIEST DISTRICT HOLDING MORE THAN 15 TIMES THE TAXABLE ASSESSED PROPERTY VALUE PER AVERAGE DAILY MEMBERSHIP OF THE LEAST WEALTHY DISTRICT.

Utah is challenged by the wide range in TAV per ADM, the measure of local school district wealth and revenue-raising capacity that is used in state formulas.[6]

When a state has a wide spectrum of local capacity, school funding formulas must provide a significant amount of equalization in the form of state aid to lower-wealth districts, impose caps on voted and board levies for higher-wealth districts, or must use some combination of these means or other means to achieve equity of educational resources. Exhibit 6 shows the five districts with the lowest TAV per ADM and the five districts with the highest TAV per ADM in FY 2017–18.

Exhibit 6. Five School Districts With Lowest and Highest Taxable Assessed Property Value Per Average Daily Membership in FY 2017–18

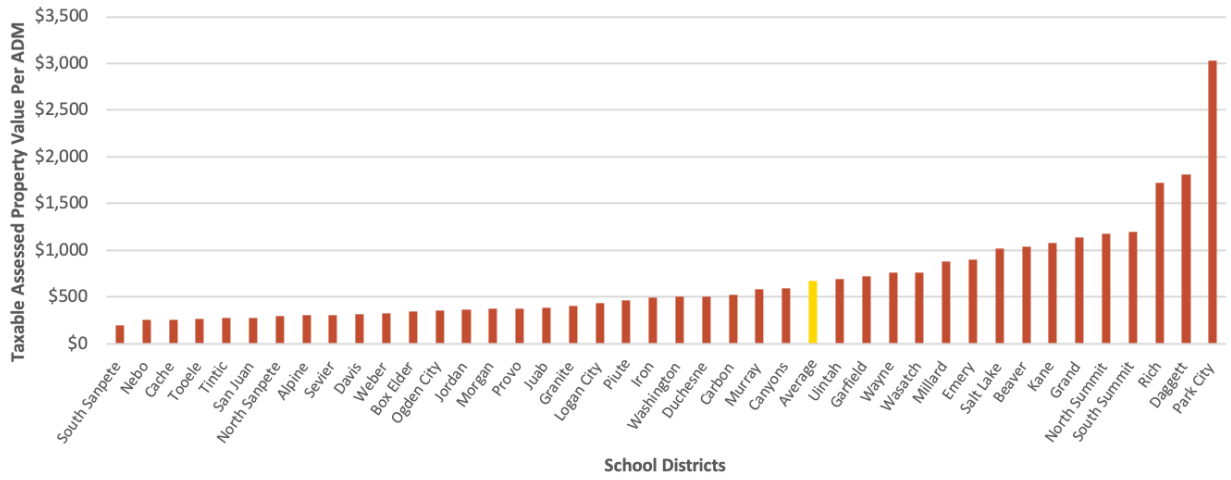
Lowest TAV School Districts	TAV Per ADM	Highest TAV School Districts	TAV Per ADM
South Sanpete	$194,662	North Summit	$1,179,665
Nebo	$254,738	South Summit	$1,192,272
Cache	$257,937	Rich	$1,718,229
Tooele	$261,690	Daggett	$1,813,608
Tintic	$272,368	Park City	$3,026,544

Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE.
Note: TAV refers to taxable assessed property value.

Exhibit 7 displays the TAV per ADM, from lowest to highest, for all 41 school districts, along with the average value. There is a wide range in property wealth among school districts. For example, the highest TAV per ADM, in Park City School District, is more than 15 times greater than the lowest, in South Sanpete School District, and more than four times greater than the average. Importantly, Park City is also significantly wealthier than the next-wealthiest district. However, even setting aside Park City, the second-wealthiest district is still nine times wealthier per ADM than the least wealthy district.

6 A more complete discussion of how wealth was measured for this analysis is provided in Technical Appendix A.

Exhibit 7. Taxable Assessed Property Value Per Average Daily Membership (in $1,000s) by Utah School District in FY 2017–18



Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE.

Section 1b: Voted and Board Levy Revenues

The second examined area was the variation in revenue generated by the voted and board levies, as well as local tax capacity and effort. In FY 2017–18, all districts had board levies and all but four districts had voted levies. Districts raise a significant amount of revenue from these levies. The revenue raised by local levies alone accounts for approximately 10 percent of the MSP. When state guarantee aid is added, this percentage increases to 14 percent of the MSP.

In FY 2017–18, local and state revenues associated with voted and board levies totaled more than $920 million, averaging $1,611 per ADM. The revenue raised by districts ranged from $757 per ADM in Morgan School District to $6,331 per ADM in Park City School District. State guarantee aid accounted for about 25 percent of total revenue through these levies, averaging $261 per ADM. Sixteen districts received no state guarantee aid, and Tintic School District received the most, with $2,166 per ADM.

FINDING 2. EXCESS CAPACITY IN ALLOWABLE VOTED AND BOARD LEVIES EXISTS AT ALL LEVELS OF SCHOOL DISTRICT WEALTH, BUT THE MAJORITY OF TOTAL CAPACITY IS HIGHLY CONCENTRATED IN THE VERY WEALTHIEST DISTRICTS.

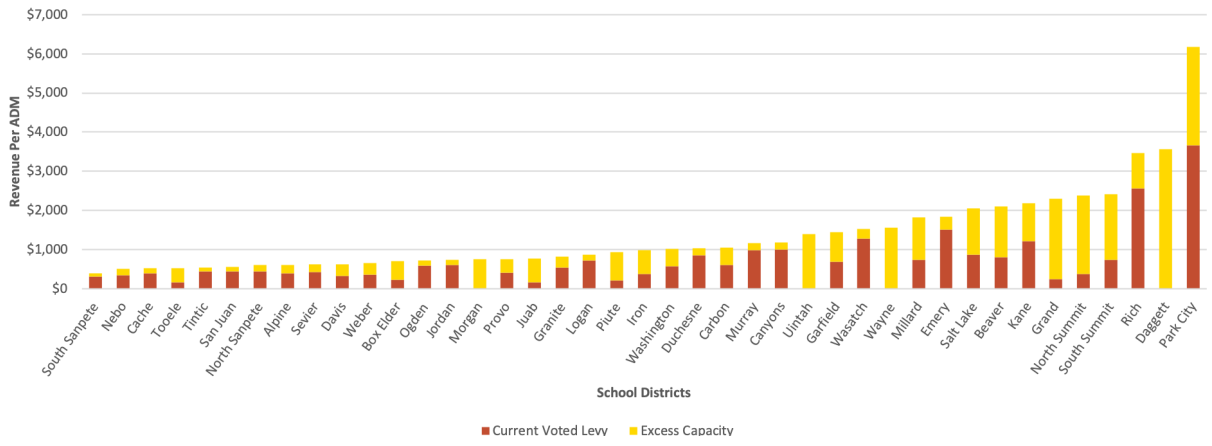
Both voted and board levies have statutory caps on the amount that districts may raise. Districts are allowed a maximum tax rate of up to $0.0020 per dollar of TAV for the voted levy. In FY 2017–18 the board levy had a maximum tax rate of $0.0018 per dollar of TAV, except that districts that had a combined tax rate exceeding $0.0018 per dollar of TAV for several other levy programs during the 2011 calendar year could levy a maximum tax rate up to $0.0025 per dollar of TAV.[7] Sixteen districts fell under the $0.0018 cap, and 25 districts fell under the higher cap.

7 In the 2018 General Session, the board levy maximum tax rate was raised to $0.0025 per dollar of TAV for all school districts.

Exhibit 8 shows the amount of excess voted levy revenue. The dark shading represents the amount of levy revenue currently raised by each district, and the lighter shading represents the amount of additional, or excess, levy revenue each district would raise if it levied the maximum $0.0020 tax rate. The bars for the four districts without a voted levy (Morgan, Uintah, Wayne, and Daggett) have an entirely lighter shading to indicate 100 percent excess capacity. On average, in FY 2017–18 districts levied just over 60 percent of the voted levy limit.

As illustrated in Exhibit 8, this excess capacity is not evenly distributed, with 36 percent of the total excess capacity concentrated in the top five wealthiest districts: North Summit, South Summit, Rich, Daggett, and Park City. Among these districts, an average of 64 percent of their limit is untapped, with an average excess of $2,132 per ADM, compared to an overall average excess of $351 per ADM, and an average of only $169 among the five least wealthy districts.

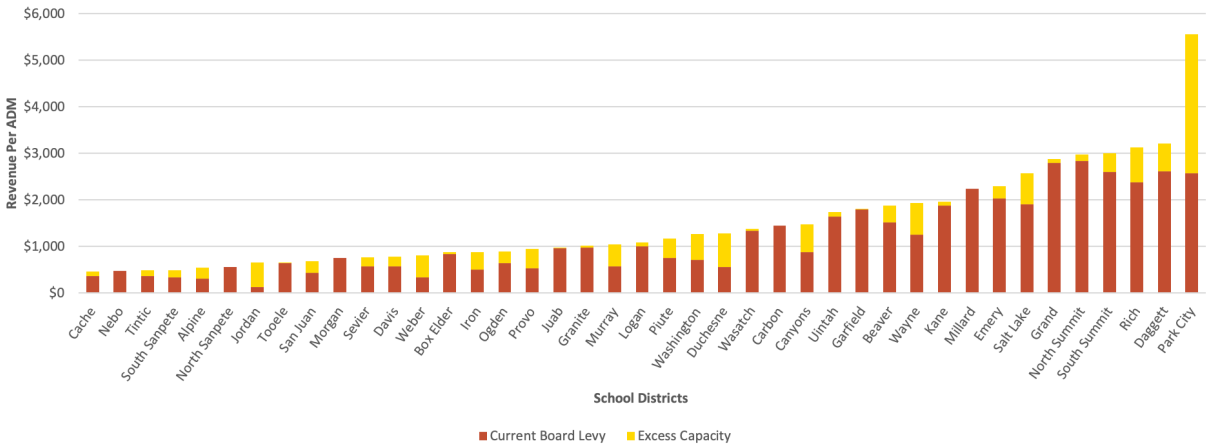
Exhibit 8. Voted Levy Revenue Per Average Daily Membership, Compared With Excess Capacity Revenue Per Average Daily Membership, in FY 2017–18



Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE.

Exhibit 9 presents the same information for board local levies. In FY 2017–18 districts levied, on average, slightly less than 70 percent of their board levy limit. However, this proportion ranged from 20.4 percent in Jordan School District to 100 percent of the limit in the Nebo, North Sanpete, Morgan, Carbon, Garfield, and Millard districts. The average available excess funding per ADM is $298, and the majority of total excess capacity, 36 percent, is again concentrated in the top five wealthiest districts — in this case, primarily the top three, which have 32 percent of total excess capacity on their own.

Exhibit 9. Board Levy Revenue Per Average Daily Membership, Compared With Excess Capacity Revenue Per Average Daily Membership, in FY 2017–18



Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE.

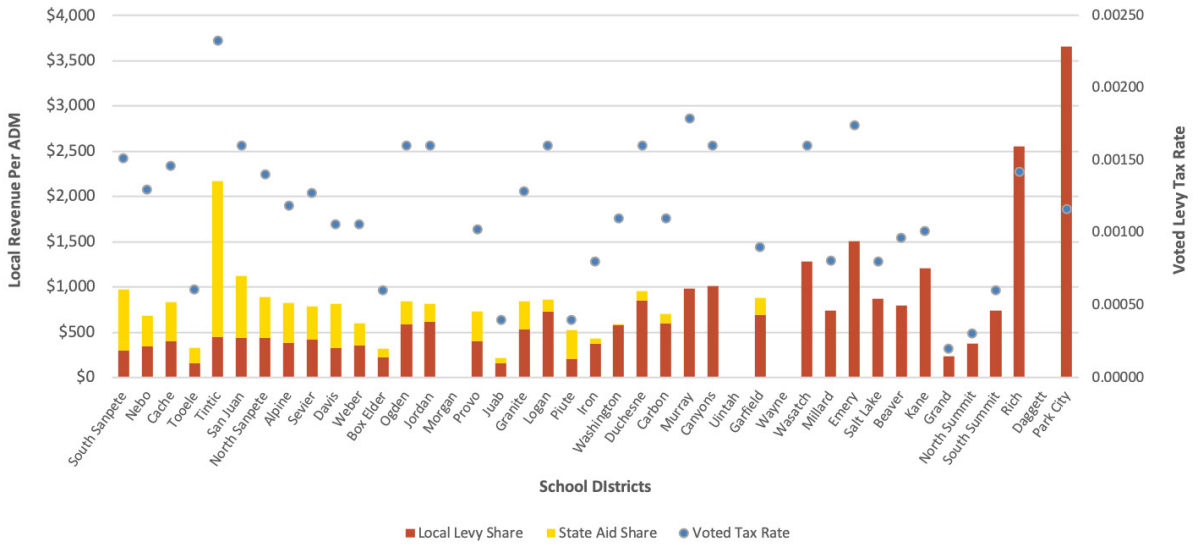
FINDING 3. ALTHOUGH EQUALIZATION POLICIES ARE IN EFFECT, THE IMPACTS OF THESE POLICIES ON FISCAL NEUTRALITY ARE LIMITED.

Exhibit 10 shows the amount of voted levy revenue for each district, with the darker portion of each bar representing the local revenue share and the lighter portion indicating the state guarantee aid share. Four districts (Daggett, Morgan, Uintah, and Wayne) do not have voted levy revenue. The *y*-axis scale on the left side of the chart shows the dollar amounts per ADM. The dot markers indicate the voted levy tax rate approved by voters in each district, with the *y*-axis scale on the right side of the chart showing the tax rate amount. Districts are sorted by their TAV per ADM, from lowest to highest.

Exhibit 10 helps illustrate the equalization effect of state guarantee aid for voted levies, as of FY 2017–18. Districts on the left end of the chart — those with the lowest TAV per ADM — receive, in some cases, half or more of total voted levy revenue through state guarantee aid (51 percent on average). Districts on the right end of the chart — those with the highest TAV per ADM — receive little or no state guarantee aid (2 percent on average).

However, the data suggest that there are limits to the impact of the current state guarantee aid program. On average, the tax rate among districts with TAV per ADM below the state median is higher than the tax rate among districts with TAV per ADM above the median. However, the below-the-median districts generate less revenue than their wealthier peers, with an average of $758 per ADM total revenue for districts below the median TAV per ADM, compared to $953 per ADM for districts above the median.

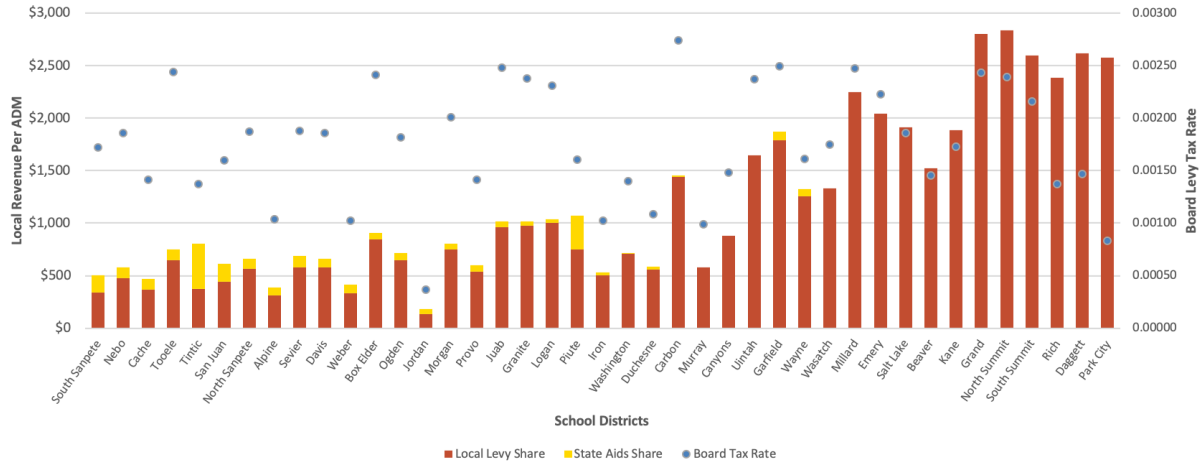
Exhibit 10. Voted Levy and Local and State Aid Shares Per Average Daily Membership, in FY 2017–18



Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE.

Exhibit 11 presents board levy revenue for each district in FY 2017–18. All districts accessed additional revenue through the board levy program, ranging from $186 per ADM in Jordan School District to $2,839 per ADM in North Summit School District. In aggregate, districts with TAV per ADM below the state median amount received about 16 percent of their total board levy revenue in state aid, while districts with TAV per ADM above the median received about 1 percent in state aid. On average, districts with TAV per ADM below the state median levied a slightly lower local tax rate than districts above the median. However, districts with TAV per ADM above the median raised, on average, $1,790 per ADM total revenue, compared to only $695 per ADM for districts with TAV per ADM below the median.

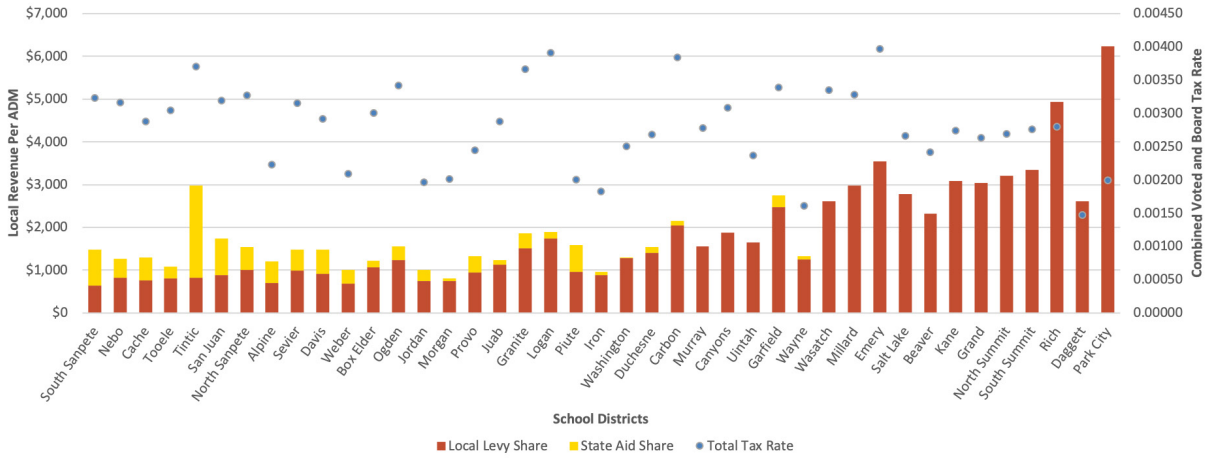
Exhibit 11. Board Levy and Local and State Aid Shares Per Average Daily Membership, in FY 2017–18



Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE.

Finally, to illustrate how state equalization aid impacts funding across both voted and board levies, the FY 2017–18 state and local revenue from both programs and the combined tax rates are displayed in Exhibit 12.

Exhibit 12. Combined Voted and Board Levy and Local and State Aid Shares Per Average Daily Membership, in FY 2017–18



Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE.

Section 1c: Capital Revenues and Local Tax Capacity and Effort

As part of its Phase 2 work, the study team also examined funding for capital projects. The capital outlay levy and the debt service levy are the primary sources of district funding for facilities construction and renovation in Utah. In FY 2017–18, districts levied a total of $271.8 million in capital outlay levy revenues and $349.7 million in debt service levy revenues. The capital outlay levy tax rate is capped at $0.003 per dollar of TAV, and the debt service levy is uncapped.

In addition to the capital outlay and debt service levies, state aid is is available for capital projects through the Capital Outlay Foundation Aid program, which provides aid to districts meeting a minimum threshold of combined taxpayer effort for the capital outlay and debt service levies and property tax yield per ADM, and the Capital Outlay Enrollment Growth Aid program, which provides aid to growing districts with local TAV per ADM that is less than two times the state average. In FY 2017–18, the state appropriated $27.6 million for the Capital Outlay Foundation Guarantee Aid program and $5.6 million for the Capital Outlay Enrollment Growth Aid program.[8]

Another important aspect of the state aid formula is that districts in the upper wealth quintiles may receive aid, due to a minimum aid requirement for small school districts, regardless of wealth. As required by statute, a school district with fewer than 1,000 ADM receives a minimum of $200,000 in Capital Foundation Guarantee Aid if its TAV per ADM is less than or equal to the state average TAV per ADM. The aid minimum decreases to $100,000 for districts in which TAV per ADM is between the state average and two times the state average, and to $50,000 for districts in which TAV per ADM is between two and five times the state average.

8 Utah also administers a revolving loan program for school building construction and renovation, known as the Capital Outlay Loan Program (53A-21-401).

Although these amounts of aid are relatively small, providing state aid to districts with the most wealth per ADM has a small negative impact on the system's measures of fiscal neutrality, the most significant equity issue identified by this analysis. Utah currently appropriates more than $33.0 million annually to equalize the tax effort of low-wealth districts to raise funding for capital projects. A total of $400,000, or 1.2 percent, of this amount goes to higher-wealth districts that receive a minimum aid amount regardless of wealth, due to the small district aid minimum.

FINDING 4. BENEFITS OF THE STATE CAPITAL FOUNDATION GUARANTEE ARE INCONSISTENT ACROSS LEVELS OF LOCAL WEALTH, BUT ADDITIONAL INFORMATION IS NEEDED IN ORDER TO DRAW FIRM IMPLICATIONS.

A school district's total local levy consists of several different revenue components, including the Basic Property Tax Levy, voted and board local levies, and capital outlay and debt service levies. Depending on local needs and on the decisions made by districts and their communities, each levy type's share of a district's total local levy will vary.

The analysis described in this section suggests that districts in the lowest wealth quintile benefit from the Capital Foundation Guarantee Aid program, allowing for their taxpayer effort to be similar to districts in the highest quintile despite a lower TAV per ADM. However, districts in the second-lowest wealth quintile have significantly higher tax effort, suggesting that the guarantee program's design does not provide adequate support for these districts. Specifically, the lowest- and highest-quintile districts dedicate about 15 percent of their allowable tax rate on average, and districts in the second-lowest wealth quintile dedicate 19 percent on average.

Also considered in the analysis is how much of the capital outlay levy limit of $0.003 per dollar of TAV is going unused in a district. The analysis found that, except in the lowest-wealth quintile, the excess capacity increases as local wealth increases, suggesting that higher-wealth districts are able to meet their capital needs while levying at a lower tax rate than lower-wealth districts.

Finally, Exhibits 13 and 14 compare the combined capital outlay and debt service levy tax rates, levy revenue, and capital outlay foundation and enrollment growth revenues across quintiles for FYs 2013–14 and 2017–18. In FY 2013–14, there was a clear progression of the amount of capital funds available by wealth quintile, with total revenues increasing along with local wealth. The one exception was the second quintile, in which districts raised an average of $119 per ADM less revenue than the first quintile.

Exhibit 13. Average Daily Membership, Capital and Debt Service Levy Tax Rates, and Levy Revenue and Capital State Aids by Wealth Quintile Per Average Daily Membership, FY 2013–14

Variable	State	Lowest Wealth Quintile	Wealth Quintile 2	Wealth Quintile 3	Wealth Quintile 4	Highest Wealth Quintile
ADM	553,383	233,627	164,328	96,750	46,041	12,636
Combined Capital and Debt Levy Tax Rate	0.002826	0.003731	0.002951	0.003612	0.002260	0.001479
Combined Capital and Debt Levy Per ADM	$954	$790	$719	$1,354	$1,601	$1,626
Foundation Guarantee Aid Per ADM	$20	$46	$0	$2	$4	$12
Enrollment Growth Aid Per ADM	$2	$4	$2	$2	$0	$0
Total Capital Revenue Per ADM	$977	$840	$721	$1,358	$1,605	$1,638

Source: Authors' calculations based upon FY 2013–14 data from the Utah State Tax Commission, Property Tax Division and the USBE.
Note: ADM refers to average daily membership.

Exhibit 14. Average Daily Membership, Capital and Debt Service Levy Tax Rates, and Levy Revenue and Capital State Aids by Wealth Quintile Per Average Daily Membership, FY 2017–18

Variable	State	Lowest Wealth Quintile	Wealth Quintile 2	Wealth Quintile 3	Wealth Quintile 4	Highest Wealth Quintile
ADM	571,353	153,350	203,063	126,429	76,248	12,262
Combined Capital and Debt Levy Tax Rate	0.002688	0.003582	0.003225	0.002745	0.001822	0.001389
Combined Capital and Debt Levy Per ADM	$1,088	$1,031	$1,001	$971	$1,547	$1,585
Foundation Guarantee Aid Per ADM	$48	$146	$24	$1	$3	$8
Enrollment Growth Aid Per ADM	$10	$16	$10	$7	$5	$0
Total Capital Revenue Per ADM	$1,146	$1,192	$1,035	$979	$1,555	$1,593

Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE.
Note: ADM refers to average daily membership.

Additional data and analyses are needed in order to determine whether this finding is due to a greater willingness on the part of taxpayers in the first quintile to tax themselves at a higher rate or, if the higher rate is necessary, to raise the required amount of revenue even with assistance from state aid. Alternatively, this decrease could be due to lower capital needs, at the time, for districts in the second quintile, or a result of less equalization to support capital spending. Districts in the second quintile received no foundation guarantee aid, compared to districts in the first quintile receiving $46 per ADM, even though districts in the second quintile have an average TAV per ADM of just $280,853 (compared to $213,281 for districts in the first quintile, and to the state average of $333,584 per ADM). As illustrated in Exhibits 13 and 14, trends in FY 2017–18 are similar to those in FY 2013–14.

FINDING 5. ANALYSIS OF IMPLIED TAXABLE ASSESSED PROPERTY VALUE PER PUPIL SUGGESTS THAT CAPITAL FOUNDATION GUARANTEE AID IS LIMITED IN ITS ABILITY TO EQUALIZE LOCAL CAPACITY IN CAPITAL FUNDING.

The goal of equalization in school finance formulas is to ensure that all districts in a state are able to raise reasonably similar revenue amounts at a given tax rate, regardless of local wealth. Equalization programs are typically designed to raise per-ADM wealth in districts that are below the state average level (or median) to the state average level (or median). In some cases, equalization may raise districts' local TAV per ADM to a much higher level, such as an amount at the 70th or 80th percentiles. This is often referred to as a guaranteed tax base.

To determine how well the Capital Outlay Foundation Guarantee state aid program helps to guarantee a minimum tax base for lower-wealth districts, the study team calculated an "implied TAV per ADM." Exhibit 15 reports this measure for each district.[9] It reflects the TAV per ADM that a district would have if its levy produced its total revenue *including state guarantee aid*. Using the implied TAV per ADM figures allows for a determination of how much the foundation guarantee program served to equalize tax bases across the state's districts.

Exhibit 15 shows the difference between actual TAV and implied TAV per ADM and the change, if any, in local wealth quintiles. As the exhibit shows, three districts receiving Capital Outlay Foundation Guarantee Aid program funds moved to a higher quintile: Alpine (from quintile 1 to quintile 2), Piute (from quintile 3 to quintile 4), and Tintic (from quintile 1 to quintile 3). The two-quintile gain by Tintic School District was assisted by the $200,000 minimum aid for small districts with less than 1,000 ADM. The aid also raised the TAV per ADM of low-wealth districts above the median TAV per ADM amount ($477,498 for FY 2017–18) in two districts. The implied TAV per ADM increased from $467,262 to $638,964 in Piute School District, and from $272,368 to $576,828 in Tintic School District.

9 This implied TAV per ADM is calculated by taking the sum of a district's capital and debt levies and capital foundation guarantee aid divided by its combined capital and debt tax rate.

Exhibit 15. Changes in District Wealth Resulting From Capital Foundation Guarantee Aid, in FY 2017–18

District Name	Wealth Quintile	Capital Foundation Aid	Actual TAV Per ADM	Implied TAV Per ADM	Difference	% Diff.	New TAV Per ADM	New Quintile	Quintile Change
Alpine District	1	$7,944,669	$302,308	$331,679	$29,371	9.7%	$331,679	2	1
Beaver District	5	$0	$1,042,199	$0	$0	0.0%	$1,042,199	5	N/a
Box Elder District	2	$0	$346,916	$0	$0	0.0%	$346,916	2	N/a
Cache District	1	$2,709,514	$257,937	$299,138	$41,201	16.0%	$299,138	1	0
Canyons District	4	$0	$587,940	$0	$0	0.0%	$587,940	3	N/a
Carbon District	3	$0	$524,033	$0	$0	0.0%	$524,033	3	N/a
Daggett District	5	$50,000	$1,813,608	$1,993,282	$179,674	9.9%	$1,993,282	5	0
Davis District	2	$4,365,784	$309,817	$327,922	$18,105	5.8%	$327,922	2	0
Duchesne District	3	$0	$507,189	$0	$0	0.0%	$507,189	3	N/a
Emery District	4	$0	$898,763	$0	$0	0.0%	$898,763	4	N/a
Garfield District	4	$100,000	$722,039	$843,206	$121,167	16.8%	$843,206	4	0
Grand District	5	$0	$1,141,739	$0	$0	0.0%	$1,141,739	5	N/a
Granite District	3	$0	$401,768	$0	$0	0.0%	$401,768	3	N/a
Iron District	3	$0	$487,734	$0	$0	0.0%	$487,734	3	N/a
Jordan District	2	$0	$365,751	$0	$0	0.0%	$365,751	2	N/a
Juab District	3	$0	$380,070	$0	$0	0.0%	$380,070	2	N/a
Kane District	5	$0	$1,078,065	$0	$0	0.0%	$1,078,065	5	N/a
Logan City District	3	$0	$434,954	$0	$0	0.0%	$434,954	3	N/a

District Name	Wealth Quintile	Capital Foundation Aid	Actual TAV Per ADM	Implied TAV Per ADM	Difference	% Diff.	New TAV Per ADM	New Quintile	Quintile Change
Millard District	4	$0	$883,687	$0	$0	0.0%	$883,687	4	N/a
Morgan District	2	$0	$373,152	$0	$0	0.0%	$373,152	2	N/a
Murray District	3	$0	$578,334	$0	$0	0.0%	$578,334	3	N/a
Nebo District	1	$8,377,166	$254,738	$310,789	$56,051	22.0%	$310,789	1	0
North Sanpete District	1	$89,779	$299,239	$313,652	$14,413	4.8%	$313,652	1	0
North Summit District	5	$0	$1,179,665	$0	$0	0.0%	$1,179,665	5	N/a
Ogden City District	2	$468,456	$354,266	$363,733	$9,467	2.7%	$363,733	2	0
Park City District	5	$0	$3,026,544	$0	$0	0.0%	$3,026,544	5	N/a
Piute District	3	$100,000	$467,262	$638,964	$171,702	36.7%	$638,964	4	1
Provo District	2	$0	$374,220	$0	$0	0.0%	$374,220	2	N/a
Rich District	5	$50,000	$1,718,229	$1,886,305	$168,076	9.8%	$1,886,305	5	0
Salt Lake District	4	$0	$1,017,344	$0	$0	0.0%	$1,017,344	4	N/a
San Juan District	1	$308,836	$273,727	$312,566	$38,839	14.2%	$312,566	1	0
Sevier District	2	$0	$305,878	$0	$0	0.0%	$305,878	1	N/a
South Sanpete District	1	$1,285,529	$194,662	$275,879	$81,217	41.7%	$275,879	1	0
South Summit District	5	$0	$1,192,272	$0	$0	0.0%	$1,192,272	5	N/a
Tintic District	1	$200,000	$272,368	$576,828	$304,460	111.8%	$576,828	3	2
Tooele District	1	$1,461,166	$261,690	$280,663	$18,973	7.3%	$280,663	1	0

District Name	Wealth Quintile	Capital Foundation Aid	Actual TAV Per ADM	Implied TAV Per ADM	Difference	% Diff.	New TAV Per ADM	New Quintile	Quintile Change
Uintah District	4	$0	$686,127	$0	$0	0.0%	$686,127	4	N/a
Wasatch District	4	$0	$763,180	$0	$0	0.0%	$763,180	4	N/a
Washington District	3	$0	$501,317	$0	$0	0.0%	$501,317	3	N/a
Wayne District	4	$100,000	$760,532	$955,788	$195,256	25.7%	$955,788	4	0
Weber District	2	$0	$323,038	$0	$0	0.0%	$323,038	1	N/a

Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE.
Note: TAV refers to taxable assessed property value.

Exhibit 15 illustrates two issues with the Capital Outlay Foundation Guarantee Aid program formula. First, the aid is insufficient to significantly increase the TAV per ADM of low-wealth districts, particularly those in the second wealth quintile. For districts in the lowest two quintiles of wealth per ADM, only Tintic School District's TAV per ADM was effectively raised to or above the state median amount. Second, six districts in the lowest two wealth quintiles (all in the second quintile) did not receive any aid, probably because they did not have a high enough local combined capital tax effort. However, the study team cannot be sure whether their lower effort is because these districts have a low level of facility improvement need or because they are unable to win the approval of voters for higher local debt service levies.

The Capital Outlay Foundation Guarantee Aid and Capital Outlay Enrollment Growth Aid programs have helped to improve capital funding equity, particularly following an appropriations increase beginning in FY 2015–16. However, this level of state investment may still be insufficient to ensure that all districts have equal access to facility funding. This situation is particularly true for districts in the second wealth quintile. This study's analysis found that higher-wealth districts (those in the fourth and fifth wealth quintiles) continue to raise significantly more capital revenue at lower local tax rates than districts in quintiles 1–3. This analysis also found that state aids were insufficient to raise low-wealth districts' tax bases to the state median TAV per ADM or into a higher wealth quintile, with the exceptions of the Piute and Tintic districts. Finally, from a transparency perspective, the current formula is also quite complex and thus may be difficult for taxpayers to understand.

Section 1d: Impact of a Local Funding Match

As described in the Phase 1 report, the study team examined the relationship between state and local funding share percentages and the equity of the state funding systems. No relationship was found to exist between the equity of the system and the percentage of funding coming from state or local revenues. This section describes the specific funding mechanisms that states use and whether aspects of these approaches are more common in more equitable state funding systems.

FINDING 6. STATE FUNDING FORMULA POLICY TYPE DOES NOT APPEAR TO BE CLEARLY ASSOCIATED WITH SYSTEM EQUITY.

The Education Commission of the States (2019) classifies state funding formulas into one of four categories: foundation formula, resource-allocation model, hybrid, and other. Thirty-eight states use a foundation formula, eight use the resource-allocation model, four have a hybrid approach, and two have "other" systems. The first three approaches differ in how states calculate the funding needed for every district.

A foundation formula generally utilizes a base cost figure and student adjustments. The resource-allocation model uses a prescribed set of student/staff ratios to determine funding. Hybrid approaches utilize aspects of both foundation and resource-allocation approaches, as well as other unique components. All of these approaches are alike in that, after identifying a target amount of funding for each district, the state sets a required local effort, and then equalizes funding up to the targeted funding amount. Property wealth is the most frequent measure of local wealth within these formulas, though some states also include income as part of their wealth calculation. Based upon property wealth, wealthier districts tend to pay most, or even all, of the targeted funding amount, and low-wealth districts receive more state funding.

States determine local effort in different ways. Many states use a statutorily set common local effort requirement for all districts. Another method that states use is to base the level of each district's contribution on a variety of factors. For example, Rhode Island takes into consideration wealth and student characteristics. The

two states that have systems identified as "other" — Vermont and Wisconsin — utilize a guaranteed tax base (GTB) formula. A GTB formula ensures that all communities can raise the same amount per levied tax rate but does not identify a targeted funding amount for each district. Other states, such as Maryland, include a GTB as a component of their foundation formula.

Since the vast majority of states calculate required local share in a similar manner, creating a straight correlation analysis between the type of system used and the equity of systems is difficult. Instead, the study team examined the five most equitable states (Florida, Tennessee, Kentucky, Wisconsin, and Maryland) and the five least equitable states (Alaska, Vermont, New Hampshire, Idaho, and Illinois), according to the EdWeek Equity scores, to see whether specific characteristics of formulas were consistent across both groups of states (Education Week, 2020a).[10]

Exhibit 16 shows the characteristics of the most and least equitable states' funding systems. Three of the five most equitable states use a foundation formula, one uses a GTB formula, and one uses a resource-allocation model. Three of the five most equitable states have local effort rates that vary by year, one has a fixed rate, and the GTB state does not set a rate.

The five least equitable states have the same distribution of formula types as the five most equitable states, with three foundation formulas, one GTB formula, and one resource-allocation model. Two of the states have variable local effort rates, one has a fixed rate, one does not require local effort for the base formula, and the GTB state does not set a rate.

10 Although these equity scores provide information about comparative equity in funding distribution, they do not necessarily reflect adequacy of funding to reach desired or exemplary student academic outcomes.

Exhibit 16. Characteristics of the Most and Least Equitable States' Systems

State	Formula Type	Fixed / Variable Local Effort
Most Equitable		
Florida	Foundation	Variable
Tennessee	Resource-Allocation Model	Variable
Kentucky	Foundation	Fixed
Wisconsin	Guaranteed Tax Base	No Rate Set
Maryland	Foundation	Variable
Least Equitable		
Alaska	Foundation	Fixed
Vermont	Guaranteed Tax Base	No Rate Set
New Hampshire	Foundation	Variable
Idaho	Resource-Allocation Model	Local Effort Not Required
Illinois	Foundation	Variable

Sources: Education Commission of the States (2019); Education Week (2020a).

This analysis indicates that the type of formula and the method for setting tax rates do not seem related to the equity of a system. To understand other factors that might explain the disparities in equity across the most and least equitable states, the study team more deeply examined the systems of two of the most equitable states and two of the least equitable states, including the additional funding levels allowed above the base formulas in each of these systems.

FINDING 7. MORE EQUITABLE STATE FUNDING SYSTEMS RUN THE VAST MAJORITY OF ALL FUNDING THROUGH THE EQUITABLE STATE FORMULA.

Maryland

Maryland's school districts are dependent districts, meaning that the districts rely on county or city government to provide local funding. The state's system determines a target amount of funding, based on four separate formulas, and calculates different required local shares for each of those formulas. Local districts are required to fully fund the local share for the base funding formula but are not required to fund the local shares of the other three formulas, which are all related to specific student needs. Local jurisdictions can fund above the targeted funding levels, but those funds are not equalized.

Although districts can raise funds above the targets, few districts do. A 2017 presentation by legislative staff (Maryland Department of Legislative Services, 2017) shows that only four districts were funded above the targets. Consequently, the vast majority of funding for districts flows through the targeted formulas. These formulas ensure both that distribution of dollars is based on student needs and that funding is equalized by the state.

Florida

Florida funds districts through a base cost and a set of adjustments based on district and student characteristics. The state sets the required local effort rate each year. In FY 2016–17 the rate was 4.638 mills, which generated $7.6 billion of the nearly $15.7 billion in formula funding. Total funding for schools in FY 2016–17 was over $20 billion when all sources are considered (Florida Department of Education, 2017).

In addition to raising money through the formula funding, districts were able to levy up to 0.748 mills for discretionary local effort. In FY 2016–17, these discretionary efforts raised nearly $1.3 billion (Florida School Boards Association, 2017). The state equalizes these levies up to the statewide average wealth, which accounted for more than $200 million in FY 2016–17. Total discretionary local effort was less than 10 percent of formula funding and just over 5 percent of total funding.

Both Maryland and Florida target funding based on specific student characteristics and have the vast majority of funding running through the state formula. Additional local effort is allowed but does not account for a large proportion of the overall funding for districts.

FINDING 8. INEQUITY IN LESS EQUITABLE STATE FUNDING SYSTEMS IS DRIVEN BY LARGE PROPORTIONS OF FUNDING CONTRIBUTED THROUGH LOCAL GENERATION OUTSIDE OF THE STATE EQUITABLE FORMULA.

New Hampshire

New Hampshire utilizes a base cost and makes adjustments for low-income, special education, and English learner students to fund school districts. Districts share in the funding of the state's formula, based on a variable rate set yearly. Although the state uses a funding formula, the majority of district funding is not driven by this formula. According to a recent report (Excel*in*Ed., 2019), in the 2016–17 school year, nearly 75 percent of school district funding came from outside the formula. Local communities make decisions about how much to fund above the formula, and can have highly variable capacity to raise funds. This situation creates wide disparities in per-pupil funding across districts.

Illinois

Illinois recently changed its funding system. Prior to this change, it was frequently referred to as the least equitable system, or one of the least equitable systems, in the United States. This prior system provided aid through a base amount and an adjustment for students experiencing poverty. The state set a local effort requirement for every district. Beyond this requirement, districts were allowed to levy between 9.2 and 18.4 mills, depending on district type, without voter approval, and between 35 and 40 mills with approval. These large amounts of extra dollars outside the funding formula led to a highly inequitable system.

Both New Hampshire's and Illinois's systems identified a base amount and adjustments for student characteristics. The inequity of the systems is driven by the large amount of funding outside of the formulas that is raised locally and not equalized by the state. The additional local funding skews the overall system toward higher-wealth communities.

FINDING 9. WHEN PUT IN COMPARABLE TERMS, STATE-REQUIRED TAX RATES THAT DEFINE THE LOCAL SHARE ARE MORE SIMILAR TO EACH OTHER THAN IT MIGHT SEEM, THOUGH UTAH'S IS THE SECOND LOWEST.

The study team also examined the amounts of effort required by states that set a statutory mill levy (listed in Exhibit 17), to consider how Utah's Basic Property Tax Levy compares to other states.

To be able to compare the amounts of required effort of each state's tax rates, a few conversions were necessary. First, to ease interpretation, tax rates were converted to mills. Second, for each state for which data were available, state mill rates were converted into a mills per actual property value metric. This step is important because not all states create an assessed value based on 100 percent of the actual homestead property value for tax purposes. For example, in Alabama, assessed value of homestead property is 20 percent of real property value, and the state requires 10 mills on homestead assessed value. Multiplying 10 mills times 20 percent of actual value generates a mills per actual value of 2 mills. Kentucky requires 3 mills on 100 percent of actual property value, so its mills per actual value is 3 mills. In Utah, in general, taxable property value is based on 100 percent of the assessed value, but there is an exemption for residential property, equal to a 45 percent reduction in the value, which is equivalent to 55 percent of the assessed value (Utah Code Annotated § 59-2-103). Although this exemption is not factored into the state comparisons displayed in Exhibit 17, it should be noted that if this exemption were factored in, the mills per actual value for Utah would decrease because less than 100 percent of the assessed value is taxable in some cases.

Exhibit 17. Mills per Actual Value for States With Statutory Mills

State	Mill Rate	Taxable Property Value	Mill Per Actual Value
Utah	1.6	100%	1.6
Alabama	10	20%	2
Arkansas	25	20%	5
Georgia	5	40%	2
Iowa	5.4	100%	5.4
Kansas	20	11.5%	2.3
Kentucky	3	100%	3
Mississippi	28	10%	2.8
Missouri	34.3	19%	6.5
Nebraska	10.23	100%	10.2
Nevada	7.5	35%	2.6
New Mexico	0.5	33%	0.2
Oklahoma	35	12.5%	4.4
Texas	9.3	100%	9.3
Wyoming	25	9.5%	2.4

Source: The study team examined the school finance systems of states to identify the mill rate and assessment percentages for the state systems.

Fifteen states, including Utah, set a statutory mill rate to locally fund schools. The rates set in state statutes vary greatly across states; however, once the rate is applied to the taxable property value, the mills per actual value are generally comparable across states, with a few exceptions. Half of the states listed in Exhibit 17 raise mills per actual value between 2 and 3 mills, with statutory mill rates that range from 3 to 20. Six of the states listed in Exhibit 17 were above 3 mills per actual value; Nebraska had the highest value, with 10 mills per actual value. Utah and New Mexico were the only states that mandated less than 2 mills per actual value, at 1.6 and 0.2 mills, respectively.

Additionally, the 15 states that set statutory mill rates also allow districts to raise the rates, through board decisions and/or through local votes. Georgia allows districts to raise the rate of 5 mills to 20 mills without voter approval; any increase to above 20 mills must be voter approved. In Utah, districts are allowed to raise local revenue through the voted and board levies, as well as through the capital outlay and debt service levies, all of which are described in more detail in prior sections.

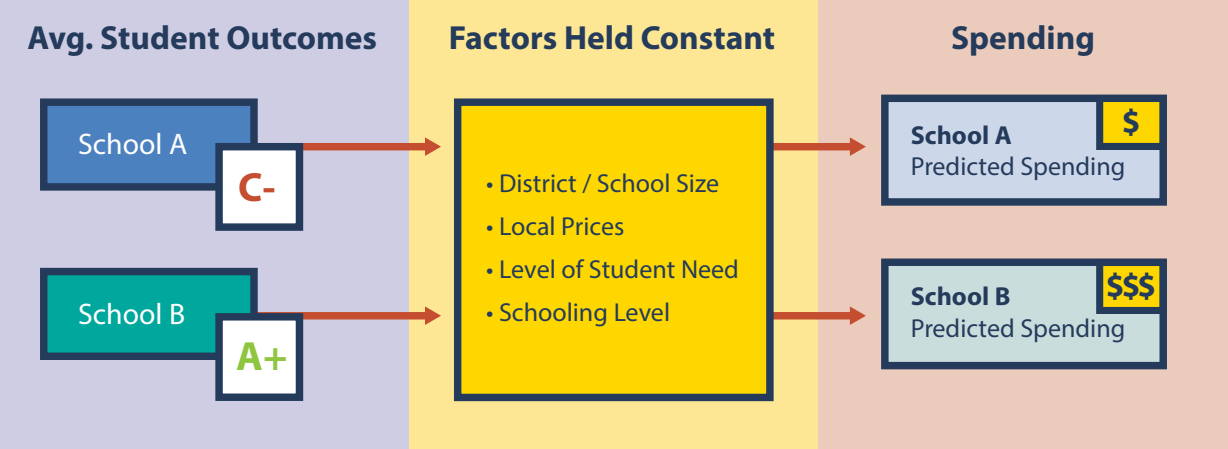
Section 2: Cost Function Analysis

When there is equitable distribution of funds in a state education system, all students would receive equal opportunities, regardless of the fiscal or demographic makeup of their school or district.

This study assesses the extent of this type of distributional equity through an education cost function analysis, which estimates the minimum spending associated with a given set of student outcomes and how this amount varies across student groups, educational settings, or other demographics (Gronberg et al., 2011a). It can be used to assess the extent to which spending and outcomes are associated when observable aspects of educational context that are relevant to costs (i.e., cost factors) are held constant. It can also provide findings with respect to how these cost factors relate to spending if outcomes are held constant — in other words, how costs change as cost factors change if a common outcome standard is established. It should be noted that the cost function analysis model is predictive and does not allow for causal inference. A cost function analysis should not be interpreted as evidence that a particular level of spending in a particular context will cause a set of outcomes; it can only estimate an association between spending and outcomes or cost factors.

Exhibit 18 displays the conceptual framework of the cost function analysis with respect to results about the association between spending and outcomes. In this case, two schools with differing outcomes but with equivalent cost factors have different predicted spending, with the higher-performing school (School B) predicted to spend more than the lower-performing school (School A). The extent of the difference illustrates how predicted spending may differ depending on the outcomes achieved.

Exhibit 18. Education Cost Function Analysis Predicts Minimum Spending



Cost function analysis has its foundation in the classic economic analysis of a firm's cost frontier, or a "minimum cost," given cost factors, inputs, and outputs. In this context, the "firm" is a public school; "cost factors," as previously described, are aspects of educational context, including input prices; "inputs" are a school's expenditures; and "outputs" are the academic outcomes of students in that school. This study's cost function analysis follows the specific approach of Taylor et al. (2018), Gronberg et al. (2017), and others by using stochastic frontier analysis (SFA). An SFA allows for the cost efficiency to be estimated, and, in particular, allows for the assumption that spending might exceed minimum cost for two reasons: inefficiency and/or random shocks.

Finally, a key aspect of the cost function analysis is the use of a control function to mitigate the possibility that unobserved differences in schools are driving how student outcomes and school enrollment relate to school spending and are biasing the results. This use of a control function is described in more detail in Technical Appendix B.

Section 2a: Data and Analysis Variables

Data

The scope of the population (data) in the cost function analysis is limited to a subset of years and school settings. Specifically, only traditional public-school districts were included in the analysis, and only the most recent three years of data — FY 2016–17 through FY 2018–19 — were complete enough to be analyzed. The final population included 78 percent of all schools in Utah, and 99 percent of schools in traditional public-school settings. This amounted to the inclusion of about 85 percent of all students.[11]

The data used in the cost function analysis came primarily from administrative data collected and maintained by the USBE. The Project KIDS (Key Integrated Data Systems) program was another important source of data; these data are collected and maintained by the Utah State Auditor. In addition, various public data sources were used.

11 To the greatest extent possible, data exclusions were minimal and were only made when no alternative course of action was possible. Additionally, in the view of the study team, nontraditional settings (e.g., charter, alternative) represent distinct contexts that differ from traditional settings to a sufficient extent that including them in the same analysis would be inappropriate. This decision and data limitations are discussed more thoroughly in Technical Appendix B.

Analysis Variables

Several key measures make up the cost function analysis. The following sections briefly describe the most important of these measures. These measures and other aspects of the analysis are described in more detail in Technical Appendix B.

School-Level Expenditures Per Pupil

The first step taken to construct a measure of school-level expenditures was to isolate "operating expenditures." For this analysis, "operating expenditures" represent a subset of all expenditures and exclude several categories of expenditures. Most importantly, transportation, food service, capital spending, and debt service expenditures were excluded.

Since complete school-level expenditure data were not directly available prior to FY 2018–19, a school-level expenditure measure had to be estimated using individual-level compensation data. This process follows the process of prior analyses (such as Taylor et al., 2018).[12]

Student Outcomes

This analysis includes a measure of the *level* of quality and a *growth* measure of quality. For the level measure, the study team used the USBE's student-level exit data to construct school-level cohort graduation rates. The district-level graduation rate was applied to schools with no reported graduation rate (typically elementary and middle schools).[13]

The growth measure used in this analysis was a conditional normal curve equivalent (NCE) score, or a normalized gain score. Put simply, this measure reflects a student's performance in the current year relative to expected performance and among peers with the same prior-year score. Student-level state test scores from FY 2015–16 and FY 2018–19 were used to construct this measure. These scores include ELA and mathematics Student Assessment of Growth and Excellence (SAGE) tests in grades 3–8 and high school grades, as well as the new Readiness Improvement Success Empowerment (RISE) tests for grades 3–8 and Aspire Plus tests for high school grades.[14]

It should be noted that although these outcomes are the best available statewide measures of student success, their ability to reflect all aspects of success, or to reflect success well for all students, is limited. Moreover, the state tests changed over the period of analysis, which may raise concerns about the stability of the measure. However, when test scores are standardized, school-level average growth is generally consistent across state tests.[15]

Cost Factors

There are various cost factors in this analysis, including a measure of the price of teacher labor, estimated through a hedonic wage analysis; a measure of school remoteness as a proxy for variation in non-labor prices; proxy measures of student need, including the percentage of ED students and the percentage of students with

12 The study team estimated school-level spending through a combination of several data sources, but primarily relied upon individual-level salary and benefit data from Project KIDS. At the advisement of USBE staff, this data source was favored over the compensation data collected by the USBE.

13 District-level graduation rates were also applied to some schools with irregular grade configurations that served high school grades but did not provide grade 12.

14 Alternate assessment data could not be included in this analysis because performance on these tests is not reported as a continuous score and thus cannot be standardized and compared to other tests.

15 Specifically, there is no statistically significant difference in average school-level academic growth when comparing the year before the change in tests to the year after.

an individualized education plan (IEP); measures of operational scale, including district and school enrollment; and other indicators of school context, including schooling level.

Beyond these cost factors, the analysis also used year fixed effects to control for year-specific factors in cost. Explanatory factors in cost efficiency and random shocks were also included. And, as previously described, a control function was used to account for bias resulting from unobserved differences in schools that are driving how student outcomes and school enrollment relate to school spending.

Section 2b: Results

The results of the cost function analysis are complex, and one can draw several implications from them. The study team has assessed the relative strength and significance of the results, and presents only those of particular note in this section. Among the many results of the analysis, the study team identified those associated with student outcomes, key cost factors, and spending efficiency as the most noteworthy; each of these categories of results is discussed in the following sections. Complete results and additional details are provided in Technical Appendix B.

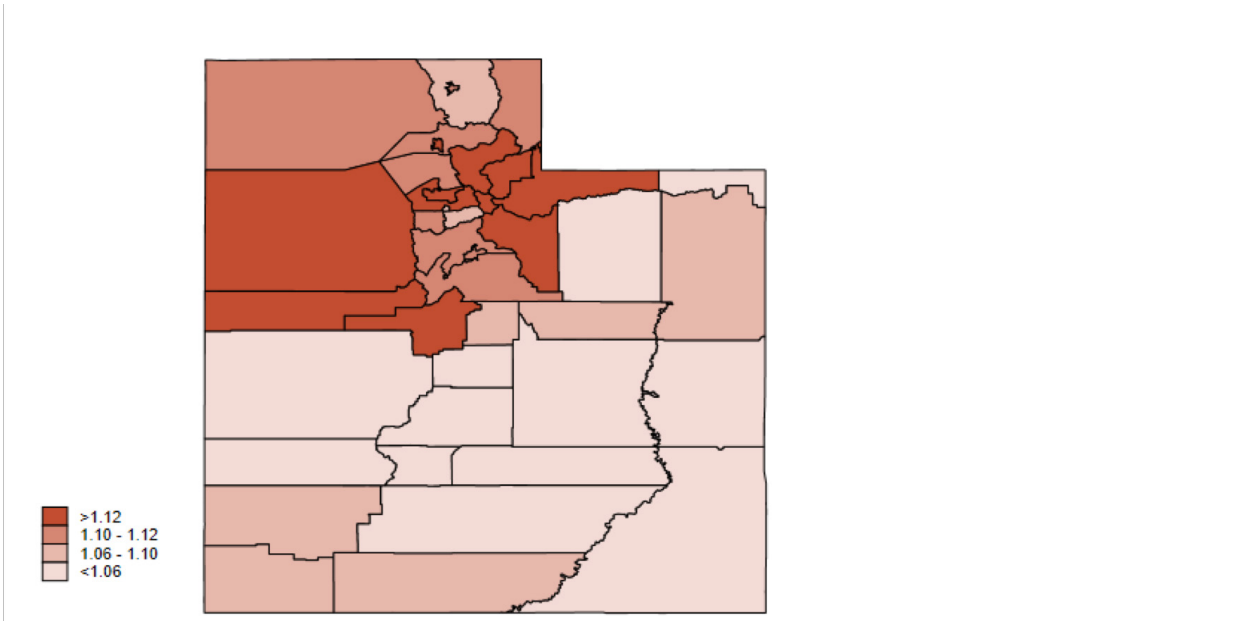
FINDING 10. LOCAL PRICES FOR TEACHER LABOR VARY GEOGRAPHICALLY, WITH PRICES UP TO 31 PERCENT HIGHER IN SOME REGIONS, COMPARED TO OTHERS.

As described in Section 2a, one of the cost factors included in the cost function analysis model was a measure of the local price of teacher labor. This measure is the Teacher Salary Index (TSI). The TSI was created through a method known as a hedonic wage analysis. This type of model seeks to predict teacher salaries when only factors that are out of a district's control are taken into account. So, for example, a district may choose to pay more than a peer district for a teacher with the same qualifications, but even districts with the same choices may have to pay different salaries if one is located in a more expensive place to live than another (Technical Appendix C includes details about this method).

The index resulting from this analysis reflects variation in salary, relative to the minimum predicted amount. It ranges from 1.00 to 1.31, indicating that the price of teacher labor is estimated to be, at most, 31 percent higher in some parts of Utah than in others.

To illustrate geographic variation in the price of labor, Exhibit 19 displays the average district-level TSI in the most recent year of analysis, FY 2018–19. As shown in Exhibit 19, the price of teacher labor is highest in the districts in the northwestern part of the state, generally clustered around the Salt Lake City metro area.

Exhibit 19. Map of the Average District-Level Teacher Salary Index, FY 2018–19



Source: Authors' calculations based on the the data used for the hedonic wage analysis, described in detail in Technical Appendix C.

FINDING 11. HIGHER SPENDING IS PREDICTED AS SCHOOL AVERAGE ACADEMIC GROWTH INCREASES, THOUGH THIS ASSOCIATION IS LOWER IN MAGNITUDE AMONG HIGH SCHOOLS, COMPARED TO NON–HIGH SCHOOLS.

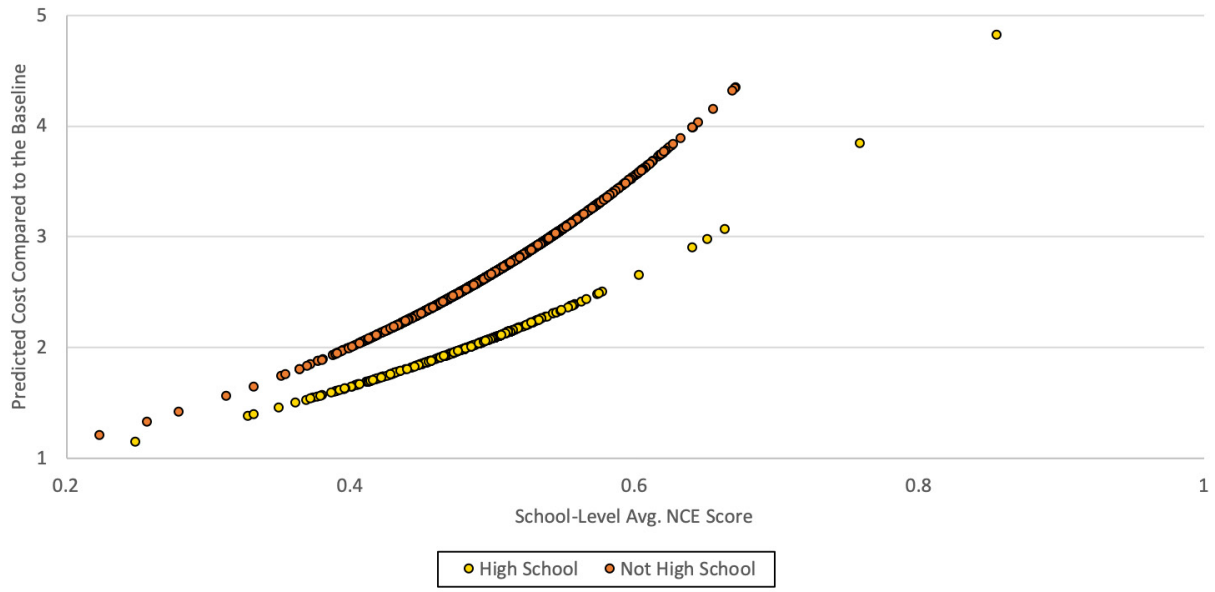
An important and frequently asked question in education finance literature is whether increases in spending can truly affect student outcomes. This topic is discussed to some extent in the Phase 1 report. In general, rigorous evidence is emerging that spending can have this effect on average, particularly for low-income settings or for low-income students (see, e.g., Jackson et al., 2016; LaFortune et al., 2018). The cost function analysis is one approach to understanding the extent of the association between spending and outcomes. However, as previously noted, it cannot speak to whether one is causing the other. For example, if a particular set of high-performing schools is found to be spending more after accounting for cost factors, this finding should not be interpreted as evidence that the spending is causing the outcomes. Nonetheless, a cost function analysis provides important information about whether, in a particular state context, policymakers can view investments in education as supporting improvements to student outcomes on average, given the factors accounted for in the analysis.

As shown in Exhibit 20, in this study's cost function analysis, higher spending is predicted as school average academic growth increases.[16] When considering only high schools, the rate of growth is smaller, but is still significantly positive. This finding is remarkably consistent with other recent cost function analyses (e.g., Taylor

16 It may be helpful to briefly explain this and the other graphics presented here. For Findings 11 through 15, a scatterplot is presented that illustrates, on the *y*-axis, the predicted spending relative to the minimum predicted spending when only the variable of interest is allowed to vary and all other variables are held constant. The *x*-axis displays the value of the variable of interest for each school, in ascending order. In Exhibit 20, the *x*-axis is the measure of academic growth, school-level average NCE scores, and the *y*-axis is the predicted spending above the minimum. As academic growth increases, predicted spending increases, as indicated by the upward-sloping trend.

et al., 2018; Willis, Krausen, et al., 2019). For example, in a recent cost function analysis in North Carolina (see Willis, Krausen, et al., 2019), the magnitude of the relationship is comparable to the one found in Utah, and a similar trend is observed with respect to this relationship in high schools, compared to non–high schools. Although comparisons of cost function analyses conducted in different states should be made with some caution, this level of consistency in results provides important support for the finding in general.

Exhibit 20. Cost Function Analysis Student Outcomes Results — Academic Growth



Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.

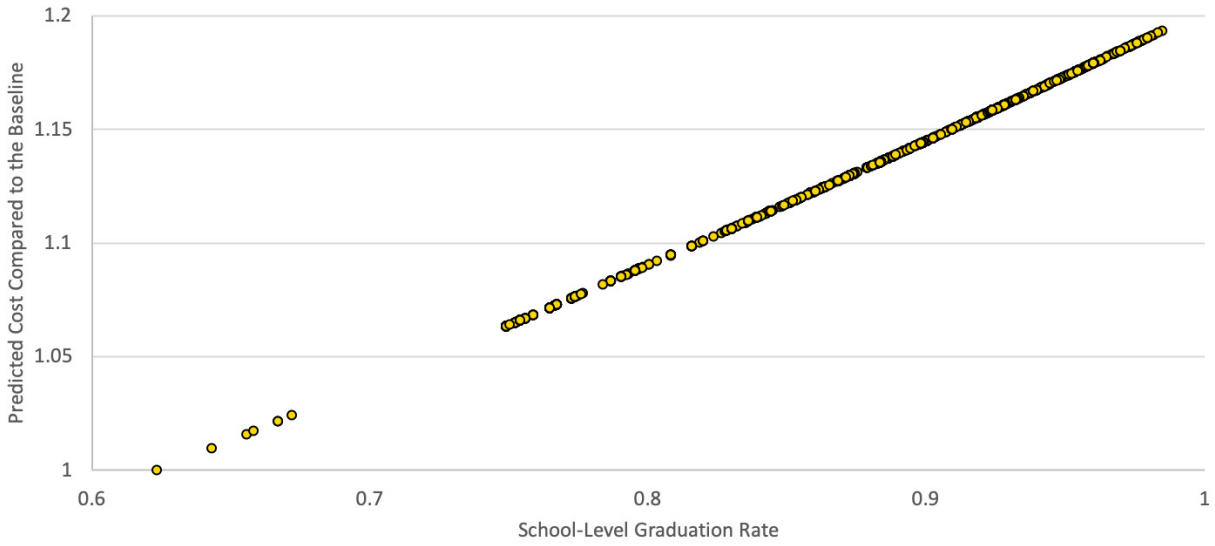
FINDING 12. HIGHER SPENDING IS ALSO PREDICTED AS SCHOOL GRADUATION RATE INCREASES.

In the context of cost function analysis, results of recent cost function analyses with respect to graduation rate as a measure of student outcomes are generally more mixed. For example, positive and significant associations were found in Taylor et al. (2018) and Willis, Doutre, et al. (2019). However, in Willis, Krausen, et al. (2019), the results were insignificant, suggesting that, in that case, additional spending had no clear association with improvements in graduation rates.

A variety of factors may explain these differences in the results of these previous studies. Most generally, observable and unobservable differences may impact the extent to which spending is differently associated with graduation in different states. For example, each state's specific graduation requirements are unique. Another issue may be that students dropping out of high school do not all leave in the year graduation rates are calculated for their class (i.e., 12th grade), though spending in a cost function analysis model is with respect to this final year only. Spending in the first year of the class (i.e., 9th grade) is likely to have contributed to whether students dropped out in that year, and changes the final graduation rate, though the impact of spending in this first year is not accounted for. For this analysis, the study team conducted tests to determine the extent to which accounting for a school's earlier dropouts improved the cost function analysis model, and found no significant improvements.

Despite the apparent general challenges with graduation rate as an outcome measure in the context of prior cost function analysis modeling, this analysis found that spending is predicted to increase as graduation rates increase, as displayed in Exhibit 21, and this result is statistically significant.

Exhibit 21. Cost Function Analysis Student Outcomes Results — Graduation Rate



Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.

FINDING 13. PREDICTED SPENDING GENERALLY DECREASES AS DISTRICT ENROLLMENT INCREASES, PROVIDING EVIDENCE THAT ECONOMIES OF SCALE ARE PRESENT IN UTAH AT THE DISTRICT LEVEL.

A commonly observed phenomenon in economic literature is that as organizations grow in scale, per-unit costs decline, except, in some cases, in organizations of a very large scale. This phenomenon is generally referred to as economies of scale (Silvestre, 1987; Canback, 1998). Conceptually, this makes sense. Very small organizations likely must establish the same foundational elements in order to begin operating. Beyond foundational costs, there is also some cost per every additional unit of production, the total of which changes as the scale of production changes. In small organizations, the fixed foundational costs make up a larger share of costs and reflect a larger per-unit cost, compared to larger organizations, for which these foundational costs are a small proportion of the total.

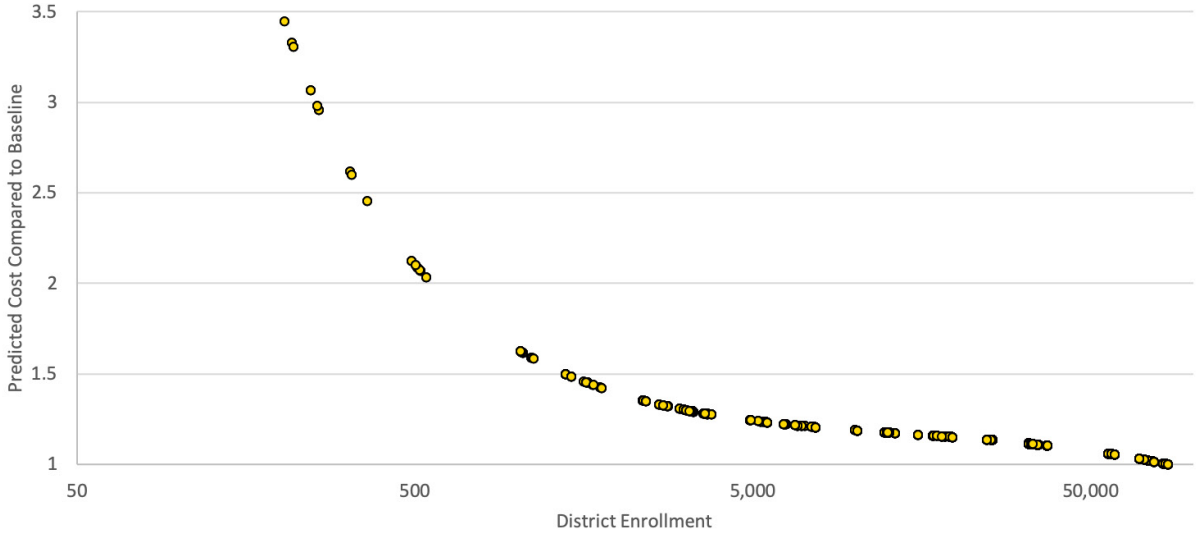
In the education context, this is perhaps best illustrated in staffing costs. A district serving 150 students must still hire a sufficient number of teachers to staff all grades that it serves, even if some only serve a handful of students. In this case, the per-pupil spending for each school will be twice that of a district that serves twice as many students and that can hire *the same configuration of staff*.

As illustrated by Exhibit 22, predicted spending decreases as district enrollment increases, suggesting economies of scale.

Diseconomies of scale are sometimes observed as an increase in per-unit cost as scale increases at a very large operational scale. This is commonly theorized to be a result of the inherent costs of managing exceptionally

large and complex operations, costs that increase with additional production (Robertson, 2007). However, in larger districts in Utah, no evidence of diseconomies of scale was found. The downward trend is observed at all levels of district enrollment.

Exhibit 22. Cost Function Analysis District Scale of Operations Results



Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.

FINDING 14. PREDICTED SPENDING INCREASES AS THE REGIONAL PRICE OF LABOR INCREASES, AS MEASURED BY THE TEACHER SALARY INDEX.

The prices that a district must pay for its resources, and how these prices vary relative to other districts, are a fundamental factor in the cost of education. The impact of prices is most significantly felt as a result of variation in the price of labor, since labor is by far the largest resource category. There are likely many reasons that teacher wages vary, but they generally fall into three categories: job responsibilities, teacher characteristics, and locational characteristics. The last of these categories is the focus of this analysis, as it is the category over which districts have the least amount of control.

With this in mind, the study team constructed a TSI based on a hedonic wage model. The model predicts salaries that a district would pay, based on only the factors beyond their control, holding teacher characteristics and other factors over which they have control constant (see Technical Appendix C for details on this type of analysis). The resulting index reflects the systematic variation in predicted salary, relative to the minimum predicted amount.

The TSI was then introduced into the cost function analysis to control for the variation in the price of labor. One would expect that as the price increases, relative to the minimum price, the spending predicted by the cost function analysis would also increase, suggesting that in order to reach the same standard of outcomes, schools must spend more if their local prices are higher, if all other cost factors are held constant.

As shown in Exhibit 23, the cost function analysis reflects this expected result, though findings are somewhat mixed at very low prices. Specifically, Exhibit 23 shows that predicted spending is very similar, ranging

only about 5 percent, in schools in the bottom 10 percent of local prices, after which predicted spending increases exponentially.

Exhibit 23. Cost Function Analysis Price of Labor Results

Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.

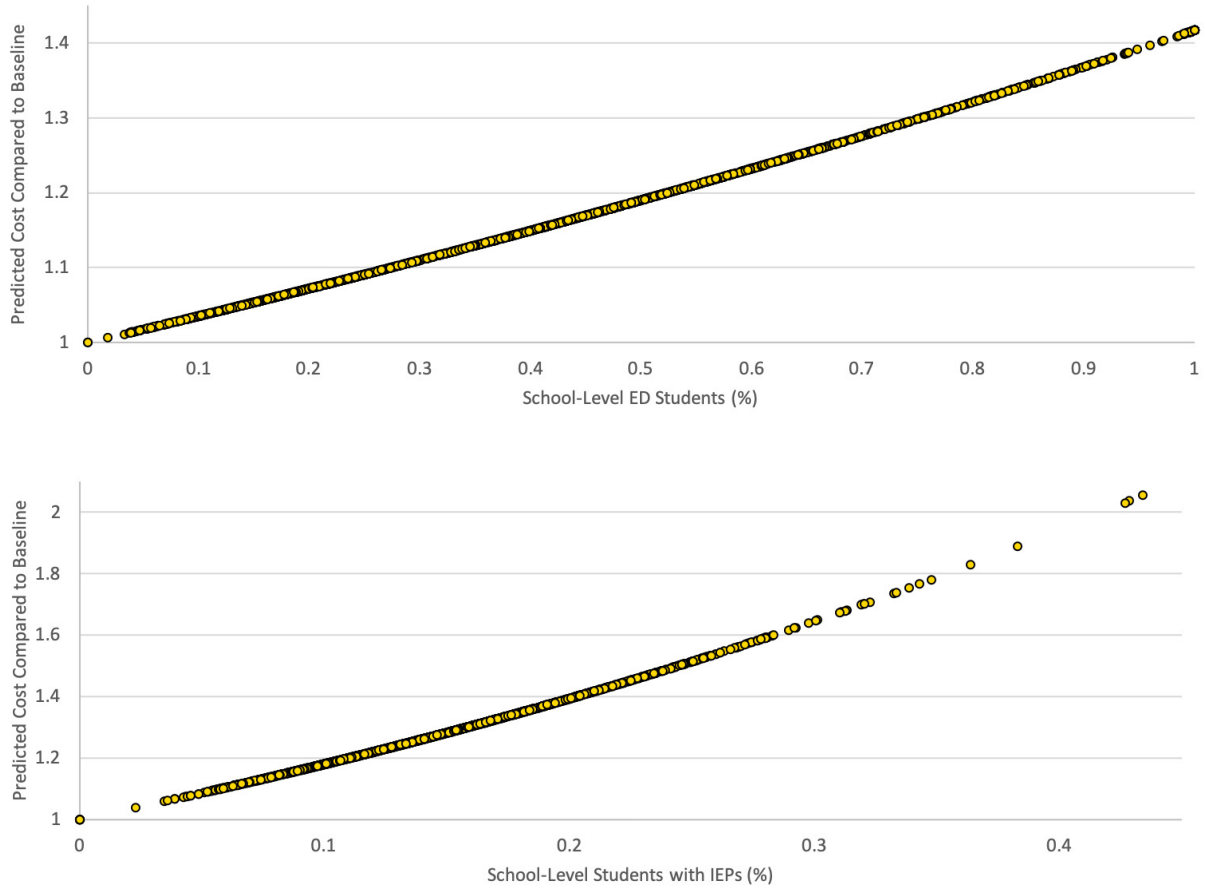
FINDING 15. PREDICTED SPENDING INCREASES AS THE LEVEL OF STUDENT NEED INCREASES, AS MEASURED BY THE PERCENTAGES OF ECONOMICALLY DISADVANTAGED STUDENTS AND STUDENTS WITH DISABILITIES.

Another critical factor in the cost of education is the level of need among a school's population of students. It is widely understood that students' innate characteristics and access to out-of-school resources influence the resources required within the public-school setting to ensure that all students have equivalent educational opportunities.

Certain measures of need are commonly considered to be reflective of a school's overall student need — specifically, the proportions of students who are ED, students who are identified for an IEP, and students who are identified as an English learner. Although these measures do not encompass every way in which a student's needs impact a school's costs, they are thought to encompass the aspects of a student that most strongly influence cost and that are strongly enough correlated with other measures of need to be comprehensive. Only the school-level proportions of ED students and of students identified for an IEP are included in this analysis.

In alignment with prior studies (Duncombe & Yinger, 2005; Taylor et al., 2018; Willis, Krausen, et al., 2019), the study team found that, as shown in Exhibit 24, as the level of student need rises, spending is predicted to also rise when student outcomes and cost factors are held constant.

Exhibit 24. Cost Function Analysis Student Needs — Economically Disadvantaged Students and Students With IEPs



Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.

The exclusion of English learners from the set of student need measures requires some explanation. It is because, in Utah, the status of students as ED is very strongly correlated with their status as an English learner.[17] A relationship this strong can pose a problem because if two factors are strongly correlated enough, their unique effects can be hard to estimate separately without bias.

Given this issue, it is best to view the results with respect to ED students as also reflecting a general finding for English learners. The English learner population and the ED student population overlap to such a great extent that resources dedicated to one are likely to benefit the other, especially in the few Utah communities with large populations of English learners.

Another notable aspect of these findings is that the results for students with IEPs are generally more modest than in prior analyses. This difference prompted the study team to do some deeper investigation of what factors might be influencing the difference and how, based on these factors, to best interpret the results. These investigations are detailed in Technical Appendix B. To summarize, the study team concluded that there

17 At the student level, 82 percent of English learners are economically disadvantaged, compared to 32 percent of non–English learner peers — a statistically significant difference ($p < 0.001$). Considering this correlation at the school level yields similarly strong results, with a correlation coefficient of 0.79 ($p < 0.001$).

are sufficient limitations influencing this particular result to warrant a cautious interpretation with respect to magnitude. Ultimately, with these limitations in mind, this report makes no policy recommendations based on the results with respect to students with IEPs.

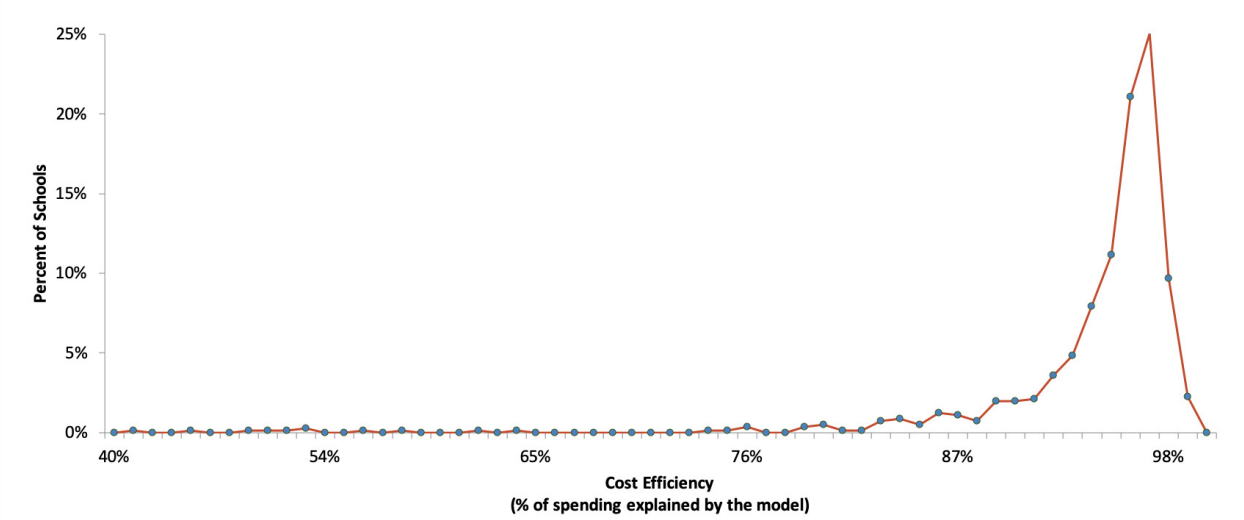
FINDING 16. SCHOOL SPENDING IS 94 PERCENT EFFICIENT ON AVERAGE, AS ESTIMATED BY THE MODEL, WITH THREE-FOURTHS OF SCHOOLS ABOVE 93 PERCENT.

As previously noted, this cost function analysis allows for the assumption that spending is not perfectly technically efficient.[18] Spending might exceed the minimum cost predicted by the model, as a result of inefficiency and/or random shocks. For example, a school might spend more than the minimum because it invested in a program that does not contribute to academic outcomes (inefficiency) and/or because there was a heat wave on a testing day, undercutting the ability for investments to impact outcomes (random shock). In essence, the model estimates account for the fact that some spending does not contribute to the student outcomes in the model, and that such spending is thus beyond the predicted minimum.

Estimates of deviations from the minimum, due to inefficiency and/or random shocks, can be improved and better understood through the inclusion of factors in efficiency of spending. The factors included in the cost function analysis model are a measure of market competitiveness and an indicator for Park City School District. The basis for their inclusion is discussed in detail in Technical Appendix B.

The cost function analysis found that, as shown in Exhibit 25, school technical cost efficiency is approximately 94 percent on average, with a median of approximately 95 percent. This distribution is positively skewed, with efficiency in three-fourths of schools above 93 percent. This suggests that for most schools, the vast majority of their spending is contributing to the academic outcomes included in the model, and that the overall impact of estimated inefficiency is minimal.

Exhibit 25. Cost Function Analysis Technical Cost Efficiency Findings



Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.

18 In this context, *technical efficiency* refers to the extent to which a school is spending close to the minimum required to reach the measured outcomes, given its context (i.e., cost factors).

It is important to note, however, a critical limitation of this part of the analysis: it relies on the student outcomes included in the model. If spending contributes to outcomes that are not included in the model, and that are uncorrelated with the outcomes in the model, it will contribute to spending beyond the minimum, or inefficiency. However, in this context, this does not mean that all "inefficient" spending is wasteful spending. For example, students might go on an annual field trip that supports the development of social-emotional skills but that does not directly impact their performance on that year's tests. The success of the trip in improving social-emotional skills may be totally unrelated to academic performance. In the cost function analysis model, the spending for the trip would be part of the estimated "inefficient" spending, though it may actually represent an important investment to produce a different, but still important, outcome in social-emotional development.

Alternatively, a school may choose to purchase every student a tablet for mathematics classes, as well as licenses to use software related to mathematics instruction. These purchases may also not impact student performance in mathematics, but in this case, impacting mathematics performance is arguably the outcome intended. In this case, this spending would be included in the model as "inefficient," and one would likely view it as truly wasteful.

Unfortunately, it is not possible to disentangle one of these types of "inefficient" spending from the other. However, through the identification and investigation of efficient and successful school environments, the study team was able to take a deeper look at potential efficient practices, as described in Section 4.

Section 3: Implications for Equitable Access

An explicit objective of this study was for the results of the analyses in Sections 1 and 2 of this report to inform an assessment of equitable access in Utah's current system. The extent to which funding is equalized across districts with respect to local wealth, the strength of the current defined local contribution, and the impact of environmental context on costs all provide important information about equitable access in the state, and about the extent to which all children receive reasonably equal educational opportunities.

Specifically, this section examines the impact of local levies on the equity statistics calculated in Phase 1, and the implications of the results of the cost function analysis with respect to ED students and with respect to cost efficiency. This section also includes a comparison of this study's findings on equity to findings from other analyses of funding equity in Utah.

Section 3a: Impact of Local Funding Levies on Equitable Access

FINDING 17. LOCAL VOTED AND BOARD LEVIES CONTRIBUTE SIGNIFICANTLY TO INEQUITY IN UTAH, THOUGH THIS MAY BE SUBSTANTIALLY EXPLAINED BY THE INEQUITY STEMMING FROM THE VERY WEALTHIEST DISTRICTS.

Overall Effect of Voted and Board Levies

Although all districts access voted and board levy revenue, the amount that districts raise is highly correlated with their TAV per ADM. In FY 2017–18, revenue for the 10 districts with the highest TAV per ADM averaged $3,511, while these revenues averaged only $1,554 for the 10 districts with the lowest TAV per ADM.

When voted and board levy revenues are excluded from revenue totals, all of the correlation coefficients measuring fiscal neutrality fall below the 0.50 standard, suggesting that the revenue from the voted and board levies exacerbates the impact of disparities in local wealth on funding. However, this change has little effect on the coefficient of variation, a measure of horizontal and vertical equity. This suggests that, though this revenue contributes to the amount of variation in funding across districts, other funding streams contribute to this variation as well.

Effect of Highest-Wealth Districts

The study team also examined the impact of the state's three highest-wealth districts on the overall equity statistics. The three districts included in this analysis all had a TAV per ADM at least two standard deviations above the mean. These three districts are Rich (TAV per ADM of $1.7 million), Daggett ($1.8 million) and Park City ($3.0 million). Rich and Daggett are also two of the smallest districts in the state (ADM of 489 and 166, respectively).

The analysis found that nearly all of the equity measures substantially improved when these three wealthy districts were excluded (Exhibit 26). The coefficients of variation for state and local and total revenues per ADM and per weighted ADM all decreased significantly, though they still did not meet the standard of less than or equal to 0.10. The fiscal neutrality correlation coefficient measures also all decreased substantially, falling well below the 0.50 standard mark. The high level of local wealth of the three districts enabled them to raise a substantial amount of additional revenue via the voted and board levies. Their average revenue per ADM from the voted and board levies was $4,595, compared to the state average of $2,071.

Exhibit 26. Equity Measures, Excluding Voted and Board Levies and Excluding the Three Wealthiest Districts, FY 2017–18

Equity Measures	Phase 1 Report	Excluding Voted/ Board Levies	Excluding Wealthiest Districts
Horizontal Equity Measures: Coefficient of Variation (Standard of ≤ 0.10)			
State and Local Revenue Per ADM	0.345	0.375	0.289
Total Revenue Per ADM	0.354	0.392	0.302
Vertical Equity Measures: Coefficient of Variation (Standard of ≤ 0.10)			
State and Local Revenue Per Weighted ADM	0.363	0.389	0.284
Total Revenue Per Weighted ADM	0.364	0.397	0.284
Fiscal Neutrality Measures: Correlation Coefficient (Standard of ≤ 0.50)			
Assessed Value/ ADM and State and Local Revenues/ADM	0.627	0.391	0.349

Equity Measures	Phase 1 Report	Excluding Voted/ Board Levies	Excluding Wealthiest Districts
Assessed Value/ ADM and Total Revenue/ADM	0.564	0.336	0.281
Assessed Value/ ADM and State and Local Revenues/ Weighted ADM	0.666	0.434	0.361
Assessed Value/ ADM and Total Revenue/Weighted ADM	0.624	0.394	0.313

Source: Authors' calculations based upon FY 2017–18 data from the Utah State Tax Commission, Property Tax Division and the USBE, including annual financial reports and enrollment data.
Note: ADM refers to average daily membership.

FINDING 18. INCREASE IN STATE AID FOR CAPITAL PROJECTS LIKELY CONTRIBUTED TO IMPROVEMENTS IN EQUITY OVER TIME, THOUGH MORE INFORMATION IS NEEDED IN ORDER TO DRAW FIRM IMPLICATIONS.

Assessing the equity of capital resources is a more difficult task than analyzing the equity of operating funds, as capital projects tend to be episodic, leading to cycles of lesser or greater spending, depending on the timing of facility needs of a district. As a result, analysts may not know whether a district is spending less than peer districts because it is unable to raise the needed revenue or because it is in a period of low capital need and spending. The cyclical nature of facility funding may also result in typically higher coefficients of variation for capital revenues and expenditures, as some districts may be in the midst of a high-need and high-spending cycle while others are in a low-need and low-spending cycle.

The first part of this analysis examines capital revenues for the five-year period of FY 2013–14 through FY 2017–18, using the equity statistics analyzed to inform Finding 17 and described in Section 3a.

One new measure employed in this specific analysis is the federal range ratio. The federal range ratio measures the variation in funding or spending between the 5th and 95th percentile values. It is calculated by dividing the difference in per-ADM amounts between the 95th and 5th percentiles by the per-ADM amount at the 5th percentile. This measure reflects the extent of differences between two extremes in the distribution, while filtering out the impact of outliers. Generally, a lower value indicates greater equity.

Exhibit 27 presents the coefficient of variation (CV), correlation coefficient, and federal range ratio for combined capital outlay and debt service levies for each year and the five-year average. The CV exceeds the 0.10 standard throughout this time period. These values are higher than the CV for state and local operating revenues per ADM reported in the Phase 1 findings (see Exhibit 26). For example, in FY 2017–18, the CV of 0.443 shown in Exhibit 27 is compared to the CV of 0.345 shown in Exhibit 26. This shows that, as is to be expected, the variation in capital revenues across districts is greater than variation in state and local operating revenues. Again, without more data, the study team cannot be certain whether this variation is due to inequities in access to funding and/or to differences in facilities needs across districts during this period.

The correlation coefficients for FY 2013–14 and FY 2014–15 also exceed their benchmark of 0.50, but then fall below the benchmark for the remaining fiscal years. This may be driven by a significant increase in the state appropriation for equalization aids, beginning in FY 2015–16. The appropriation for the Capital Outlay Foundation Aid program more than doubled from FY 2014–15 to FY 2015–16, increasing from $12.6 million to $27.6 million, and then remained constant through FY 2017–18. Similarly, the appropriation for the Capital Outlay Enrollment Growth Aid program increased from $1.9 million to $5.6 million from FY 2014–15 to FY 2015–16, and remained constant thereafter. The increased support for these two programs seems to be associated with improvements in the equity of capital funding in the state, although Finding 5, presented in Section 1c, suggests that this impact may be limited.

As shown in Exhibit 27, the federal range ratio also narrows beginning in FY 2015–16, meaning that the difference in revenues between the districts in the 95th percentile and the districts in the 5th percentile narrowed when more equalization aid became available. This difference decreased from 3.24 (meaning that a district in the 95th percentile raised more than three times the capital levy revenue of a district in the 5th percentile) to 2.14 in FY 2015–16. The ratio increased again in FY 2016–17 before falling back below 3.0 in FY 2017–18. Although the volatility of the ratio from year to year cannot be explained by this analysis, it may be possible to learn more by continuing to track this measure in future years.

Exhibit 27. Key Equity Measures for Capital Outlay and Debt Service Levy Revenues Per Average Daily Membership by Fiscal Year

Statistic	2013–14	2014–15	2015–16	2016–17	2017–18	5-Year Avg.
Coefficient of Variation (≤ 0.10)	0.431	0.448	0.417	0.416	0.443	0.405
Correlation (≤ 0.50)	0.550	0.529	0.401	0.296	0.317	0.436
Federal Range Ratio	3.02	3.24	2.14	3.47	2.60	2.75

Source: Authors' calculations based upon FY 2013–14 through FY 2017–18 data from the USBE, including annual financial reports and enrollment data.

Exhibit 28 shows the change in equity statistics when Capital Outlay Foundation Guarantee Aid revenues are added to the combined levy total. It illustrates that the addition of the Capital Outlay Foundation Guarantee Aid generally improves the equity statistics across all years, compared to the statistics shown in Exhibit 27, demonstrating the direct effect of this aid on equity. Comparing the five-year averages in these two exhibits shows that the five-year CV decreases from 0.405 to 0.381, the correlation coefficient decreases from 0.436 to 0.409, and the federal range ratio decreases from 2.75 to 2.08.

Exhibit 28. Key Equity Measures for Capital Local and Debt Service Levy Revenues and Capital Outlay Foundation Guarantee Aid Per Average Daily Membership by Fiscal Year

Statistic	2013–14	2014–15	2015–16	2016–17	2017–18	5-Year Avg.
Coefficient of Variation (≤ 0.10)	0.417	0.426	0.393	0.388	0.413	0.381
Correlation (≤ 0.50)	0.530	0.498	0.364	0.262	0.284	0.409
Federal Range Ratio	3.02	3.24	2.14	3.47	2.08	2.08

Source: Authors' calculations based upon FY 2013–14 through FY 2017–18 data from the USBE, including annual financial reports and enrollment data.

Finally, Exhibit 29 presents the change in equity statistics when both Capital Outlay Foundation Guarantee Aid revenues and Capital Outlay Enrollment Growth Aid revenues are added to the levies total. The addition of the Capital Outlay Enrollment Growth Aid revenues results in a slight improvement in the equity statistics, compared to the statistics shown in Exhibit 28, which include only the Capital Outlay Foundation Guarantee Aid revenues. Comparing the five-year averages in these two exhibits shows that the five-year CV decreases from 0.381 to 0.379, the correlation coefficient decreases from 0.409 to 0.404, and the federal range ratio decreases from 2.08 to 2.06. The Capital Outlay Enrollment Growth Aid program's impact on equity is likely limited by its relatively small appropriation — totaling only $5.6 million in FY 2017–18.

Exhibit 29. Key Equity Measures for Capital Local and Debt Service Levy Revenues and Capital Outlay Foundation Guarantee and Enrollment Growth Aids Per Average Daily Membership by Fiscal Year

Statistic	2013–14	2014–15	2015–16	2016–17	2017–18	5-Year Avg.
Coefficient of Variation (≤ 0.10)	0.416	0.426	0.390	0.387	0.411	0.379
Correlation (≤ 0.50)	0.529	0.496	0.356	0.254	0.278	0.404
Federal Range Ratio	3.02	3.24	2.10	3.53	2.08	2.06

Source: Authors' calculations based upon FY 2013–14 through FY 2017–18 data from the USBE, including annual financial reports and enrollment data.

Section 3b: Economically Disadvantaged Student Weights Analysis

In the context of a state funding system, weights are traditionally applied as additional funding for particular student groups, reflecting the additional resources required to provide equal educational opportunities for these students. For example, a state may determine that special education students require additional resources in order for them to access equal educational opportunities, and to provide districts with, for each student receiving special education, an additional percentage above a baseline funding amount provided to all students.

In Utah, the application of this general approach can be found in the Weighted Pupil Unit (WPU), the value of which is the basis for many programs, including, for example, the "Special Education — Add On" program.

Utah does not currently apply a weight for ED students, though the cost function analysis does provide evidence that this student group requires additional funding. However, there are programs in Utah that are targeted to serving this population in general. To understand the extent to which the additional resources that these programs collectively provide is aligned with the estimate produced by the cost function analysis, the study team conducted an analysis of funding for these programs.

Selection of Targeted Programs

The first step in this analysis was to identify programs in the current MSP that allocate funding based on the population of ED students and/or that are generally used for this population. Given the lack of programs explicitly targeting this population, the population of interest was expanded to include "at-risk" students as defined in the Enhancement for At-Risk Students (EARS) program.[19] After reviewing all MSP programs, their distribution formulas, and their intended purposes and uses, the study team identified the following programs as meeting these criteria:

1. Enhancement for At-Risk Students (EARS) (Utah Code Annotated § 53F-2-410)
2. Early Intervention Program (Utah Code Annotated § 53F-2-507)
3. Early Literacy Program (Utah Code Annotated § 53F-2-503)
4. Intergenerational Poverty Interventions
5. Partnerships for Student Success

The study team believes that this is the best representation of programs explicitly targeting this population. However, it should be noted that results of this analysis may be highly sensitive to the selection of programs.

19 Specifically, this definition identifies subpopulations including students in poverty, highly mobile students, students with limited English proficiency, chronically absent students, students experiencing homelessness, and students at risk of academic failure. For more information, see Utah Administrative Code R277-708-3 (4)(a).

Effective Weights

To compare the funds in the selected programs to a weighted approach, the study team created an effective weight metric. This metric assumes that all funds within these programs are spent for the benefit of at-risk and/or ED students. Specifically, per-pupil funding for selected programs was established, based on the number of students in the target population, and then the weight was calculated by dividing by the remaining per-pupil funding, based on all students, as follows:

$$\frac{\text{(Selected Program Total/Target Population)}}{\text{(Remaining Funds/Total Population)}}$$

Cost Function Analysis Weight

The cost function analysis produces an estimated association between spending and the percentage of ED students, holding student outcomes and other cost factors constant. To derive a linear weight from these results, the study team followed the approach put forth by Duncombe and Yinger (2005). Specifically, the percentage difference between predicted per-pupil spending at 100 percent ED students and at 0 percent ED students was calculated, with student outcomes and other cost factors held constant. The weight is the result of this calculation subtracted from 1, to represent the additional amount of funding per pupil implied by the model.

FINDING 19. THE SIZE OF POPULATIONS OF "AT-RISK" STUDENTS AND ECONOMICALLY DISADVANTAGED STUDENTS ARE HIGHLY CORRELATED.

In order for a comparison of the effective weights to the cost function analysis weights to be meaningful, the target populations must be very similar. For example, in this comparison, a student who is "at-risk" should generally also be an ED student, and vice versa. This overlap in student populations should be reflected at the student, school, and district levels. Because all ED students are "at-risk" by definition, the important question is whether "at-risk" students are likely to also be ED students.

To test this, the study team compared the percentages of ED students among students in the comparison population and students not in the comparison population, at the student level, in FY 2016–17 through FY 2018–19. Also calculated were correlation coefficients between the percentage of ED students and the percentage of students in the comparison population, at the school and district levels.

At the student level, though there are differences in the size of the ED populations in and out of the comparison groups, the groups overlap significantly (Exhibit 30).[20] Specifically, the percentage of "at-risk" students who are also ED students is 44 percentage points larger than it is for students who are not "at-risk," a statistically significant difference. With respect to the subpopulations of "at-risk" students (e.g., students with limited English proficiency, chronically absent students), the differences are, in some cases, less meaningful, but still statistically significant. Put simply, "at-risk" students are more likely to also be ED students than students who are not "at-risk."

In general, there are also strong correlations between the "at-risk" and ED student populations at both the school and district levels, but the correlation between the "at-risk" student percentage and the ED student percentage is strongest at the district level. This suggests that "at-risk" and ED students tend to cluster in the same districts and, to a slightly lesser extent, the same schools.

20 It should be noted that these results include only those traditional school settings included in the analysis population of the cost function analysis. For more details on the analysis population, see Technical Appendix B.

Exhibit 30. Target Populations: Comparing "At-Risk" Populations to Economically Disadvantaged Students in FY 2016–17 Through FY 2018–19

Comparison Population	Difference in Percent ED (means)	Correlation Coefficient – School	Correlation Coefficient – District
At-Risk	0.44***	0.82***	0.92***
Not Proficient	0.21***	0.47***	0.77***
Limited English Proficient	0.50***	0.79***	0.91***
Chronically Absent	0.18***	0.57***	0.73***
Mobile	0.42***	0.40***	0.91***

Source: Authors' calculations based on the demographic data used for the cost function analysis, described in detail in Technical Appendix B.
Note: Difference in Percent ED reflects the difference in the average percentages of ED students within the comparison population and outside of the comparison population. A positive value indicates that the average is larger within the comparison population.
** p < .05; ** p < .01; *** p < .001.*

FINDING 20. PROGRAMS EXPLICITLY TARGETING "AT-RISK" STUDENTS OR ECONOMICALLY DISADVANTAGED STUDENTS PROVIDE SIGNIFICANTLY LESS ADDITIONAL FUNDING THAN WOULD BE PROVIDED UNDER THE WEIGHT DERIVED FROM THE COST FUNCTION ANALYSIS.

To assess the current level of investment in additional resources for "at-risk" and ED students, the study team first considered the overall level of resources in operational expenditures dedicated to five selected programs that target funds to these populations (Exhibit 31). At about $95.8 million total, these existing programs add up to a minimal amount of spending when compared to all operational expenditures (~$4.4 billion). Assuming that all of the dollars for these programs are targeted to "at-risk" students, this amount of spending represents an additional $187 per "at-risk" pupil.

Exhibit 31. Student Funding: Selected Programs and Overall Operational Expenditures, FY 2018–19

Program	Total (in millions)	Per Pupil	Per "At-Risk" Pupil
Overall Operational Expenditures	4,400	7,073	N/A
Enhancement for At-Risk Students	41.9	67	82
Early Intervention Program	8.5	14	17
Early Literacy Program	43.5	70	85

Program	Total (in millions)	Per Pupil	Per "At-Risk" Pupil
Partnership for Student Success	1.1	~2	~2
Intergenerational Poverty Interventions	0.70	~1	~1
Total Among Selected Programs	95.8	154	187

Source: Authors' calculations using the FY 2018–19 USBE Annual Financial Report of expenditures, limited to operational expenditures as defined in Technical Appendix B.
Note: Values reported are approximate.

Exhibit 32 displays the weight derived from the cost function analysis alongside two effective weights: the weight based on EARS funding alone, and the weight based on all selected programs.

Exhibit 32. Comparing Weights Based on "At-Risk" Population

Cost Function Analysis Weight	EARS Only ("at-risk")	All Selected Programs ("at-risk")
0.42	~0.01	0.03

Source: Authors' calculations using the FY 2018–19 USBE Annual Financial Report of expenditures, limited to operational expenditures as defined in Technical Appendix B, and other USBE data sources.

As indicated in Exhibit 32, the current level of resources implies an effective weight of only 0.03, which is well below the weight derived from the cost function analysis. This reflects the fact that Utah currently explicitly targets very little spending to "at-risk" students.

It should be noted, however, that schools with a larger population of "at-risk" students may receive more dollars than their peers, on average, through several factors that do not depend upon a program explicitly targeting funds to these students.

It is also important to consider that, despite the clear similarities in the populations of "at-risk" and ED students (presented in Finding 19), it is clear that these two groups of students are different in meaningful ways. As such, this analysis of effective weights compared to alternatives should be interpreted with some caution. Specifically, the selected programs are likely serving more students than only ED students, and thus, an effective weight for *only* ED students, that is most comparable to the cost function analysis, would actually be smaller than what is presented in Exhibit 32.

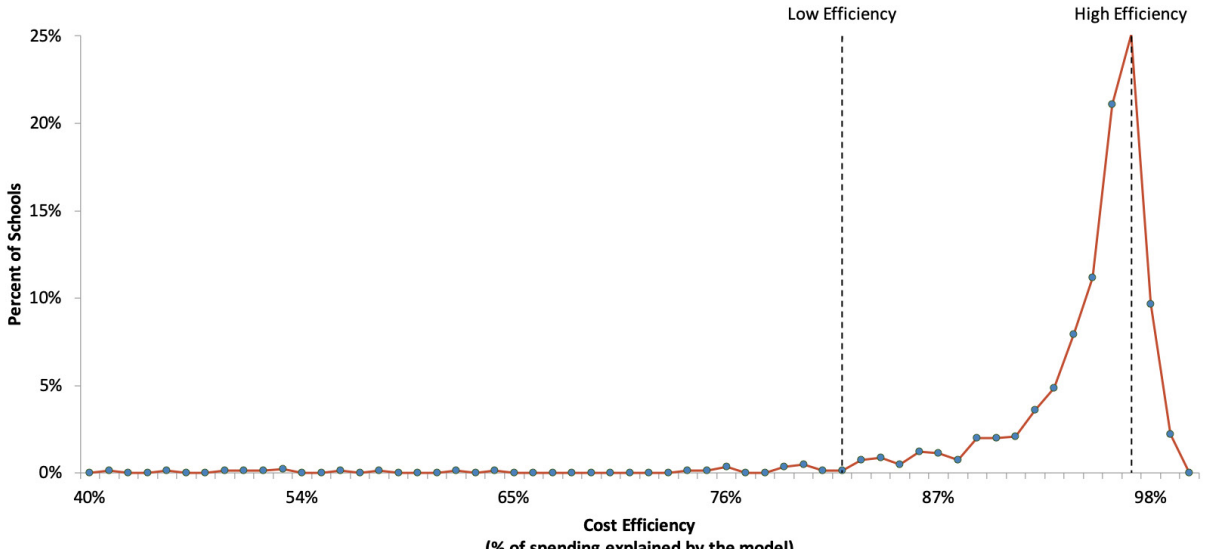
Section 3c: Efficiency Analysis

As discussed in Section 2, the cost function analysis estimates the efficiency of spending and accounts for this in its results. However, in this context efficiency does not necessarily mean only "wasteful" spending and may also include spending contributing to outcomes that could not be included in the model and are uncorrelated with the outcomes included.

Identifying "Low" and "High" Efficiency Schools

To better understand these efficiency results, the study team considered schools in the top and bottom of the distribution of efficiency estimates. Specifically, "low" efficiency schools were drawn from below 82 percent efficiency (inclusive of the bottom 93 schools), and "high" efficiency schools from above 97.7 percent efficiency (inclusive of the top 95 schools). As a reference, the distribution of efficiency in the cost function analysis is shown in Exhibit 33, with vertical lines at the cut points for "low" and "high" efficiency schools.

Exhibit 33. Distribution of Efficiency, Identifying Cut Points for "Low" and "High" Efficiency Schools



Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.

Alternative Estimate of Efficiency for Comparison Purposes

Information about the spending and outcomes of these schools was then compared to information about peer schools, or schools with similar educational contexts. To do this, a rough measure of spending efficiency was considered: outcomes per $1,000 of spending. This metric was calculated by first dividing the relevant school outcome by the school's per-pupil operating expenditures, and then multiplying the result by 1,000 and dividing by the outcome standard deviation to allow for comparability across outcomes.

$$\frac{\text{(School Outcome/School Per-Pupil Spending) * 1,000}}{\text{Outcome Standard Deviation}}$$

In general, one would consider a school with better outcomes for every $1,000 to be more efficient than a setting with a comparable context realizing worse outcomes per $1,000.

Identifying Peer Schools

Before evaluating "high" and "low" efficiency schools, researchers also identified schools with similar environments, to be used as a reference group. To identify these peer schools, all environmental characteristics included in the cost function analysis as cost factors were considered.[21] A Mahalanobis distance, which represents a school's multidimensional "distance" from a reference school with respect to these cost factors, was calculated for each school identified as either "high" or "low" efficiency, in relation to each school not identified in these categories as a reference. The school with the minimum distance for each "high" or "low" efficiency school was selected as its peer.[22]

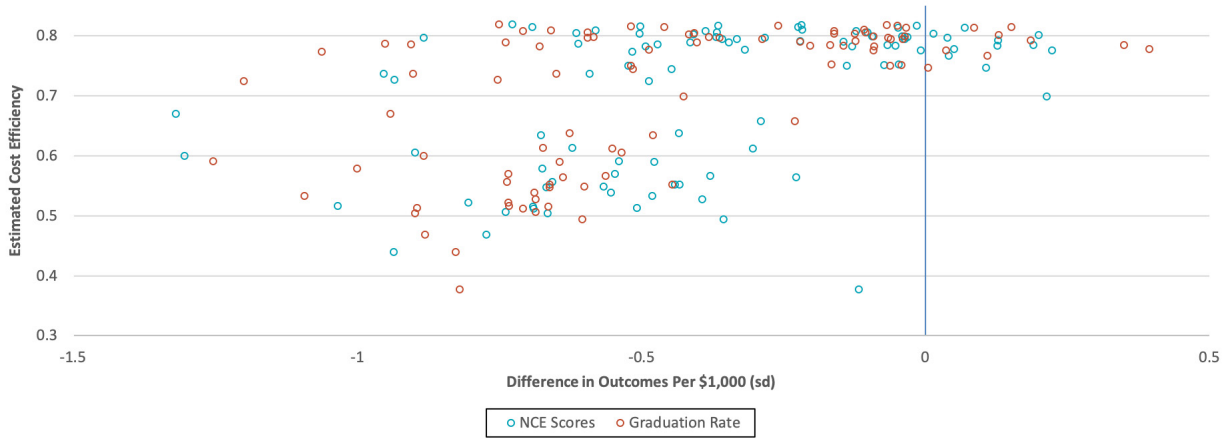
FINDING 21. "LOW" EFFICIENCY SCHOOLS ACHIEVE LOWER OUTCOMES PER $1,000 THAN THEIR PEERS.

The analysis found that, among "low" efficiency schools, 87 percent have lower standard deviations of academic growth (i.e., average NCE scores) per $1,000, and 90 percent have lower standard deviations of graduation rates per $1,000, than their peer schools. On average, "low" efficiency schools have a school-level academic growth per $1,000 that is 0.38 standard deviations lower than peer schools, and have a school-level graduation rate per $1,000 that is 0.45 standard deviations lower than peer schools. Exhibit 34 illustrates this finding. The *x*-axis reflects the difference between the outcomes per $1,000 for "low" efficiency schools and their peers, with a negative value indicating a lower value for the "low" efficiency school. The *y*-axis is the efficiency estimate of the "low" efficiency school.

21 Specifically, these characteristics included percentage of ED students, percentage of students with IEPs, school and district enrollment, distance from the nearest metro or micro area, and the Teacher Salary Index.

22 As one would expect, schools' characteristics are highly correlated with those of their peer schools, with no correlation coefficient lower than 0.81 for a given dimension, and all highly statistically significant ($p < 0.001$).

Exhibit 34. Difference in Outcomes Per $1,000 Between "Low" Efficiency Schools and Their Peer Schools



Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.

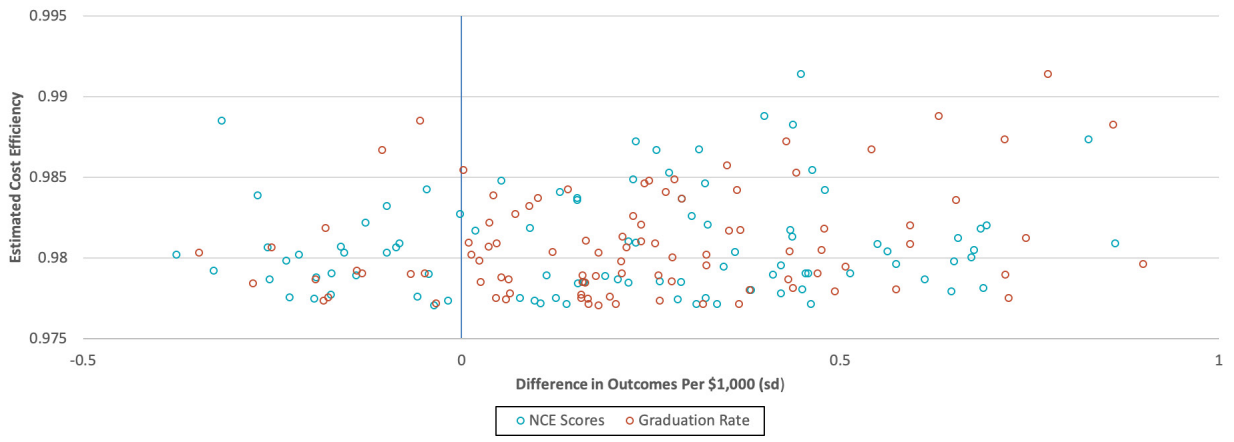
As expected, the vast majority of "low" efficiency schools have lower outcomes per $1,000 than their peers, and in general, the lower a school's estimated efficiency is, the larger the difference is. The few schools in which outcomes per $1,000 are greater in "low" efficiency schools are clustered at the high end of the efficiency distribution within this group. This may suggest that as schools get closer to the typical level of efficiency (as illustrated in Exhibit 34), the distinction between a "low" efficiency school and a comparable peer school is less meaningful with respect to efficiency.

FINDING 22. "HIGH" EFFICIENCY SCHOOLS ACHIEVE HIGHER OUTCOMES PER $1,000 THAN THEIR PEERS, THOUGH THE DIFFERENCES BETWEEN THESE SCHOOLS ARE LESS CLEAR THAN AMONG "LOW" EFFICIENCY SCHOOLS.

The analysis found that, among "high" efficiency schools, 69 percent have higher standard deviations of academic growth per $1,000, and 85 percent have higher standard deviations of graduation rates per $1,000, than their peer schools. On average, "high" efficiency schools have a school-level academic growth per $1,000 that is 0.20 standard deviations higher than peer schools, and have a school-level graduation rate per $1,000 that is 0.23 standard deviations higher than peer schools.

Similar to Exhibit 34, Exhibit 35 shows the difference between "high" efficiency schools and their peer schools with respect to outcomes per $1,000. A positive value indicates that "high" efficiency schools realize a higher level of outcomes per $1,000 than their peers.

Exhibit 35. Difference in Outcomes Per $1,000 Between "High" Efficiency Schools and Their Peer Schools



Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.

As expected, most differences in outcome per $1,000 are above 0, though the typical difference in efficiency between "high" efficiency schools and their peer schools is not as clear as when comparing "low" efficiency schools and their peers. This may reflect that the overall distribution of efficiency estimates is top heavy. As shown in Exhibit 33, a sizable percentage of schools have an efficiency estimate above 0.93, and the median efficiency estimate across all schools is 0.95. The minimum estimate for the "high" efficiency schools is about 0.977, which is much closer to the median school than 0.82, the highest estimate for the "low" efficiency schools. Overall, these findings suggest that there may be less deviation from the typical school, in terms of efficiency, among schools at the high end of the distribution than among those at the very low end.

Nonetheless, these results generally support the overall validity of the cost function analysis estimates of efficiency.

Section 3d: Comparing This Study to Other Analyses of Funding Equity in Utah

This study is not the only review of Utah's school finance system, or the only assessment of its funding equity in recent years. It is, in fact, the third comprehensive review of Utah's school funding formula — the first being the original Utah School Finance Study in 1972, which established the MSP, and the second being a comprehensive assessment of Utah's public-school finance system, including the MSP, in 1990 (Leishman & Young, 2011).

In addition to these prior comprehensive studies of the Utah finance system, two more recent independent assessments of national school funding formulas offer relevant findings. These more recent analyses, which offer distinct approaches to examining equity and draw independent conclusions, merit review and comparison to findings in this study.

Is School Funding Fair? A National Report Card

Is School Funding Fair? A National Report Card (Baker et al., 2018), an annual study of equity, analyzes the condition of state school finance systems nationwide, with a focus on the fair distribution of resources to the neediest students, as measured by student poverty. The report provides a set of rankings across four measures.[23]

Based on analysis of data over multiple years, up to 2015, the authors conclude that, with respect to funding distribution, Utah provides its highest-poverty districts with, on average, 41 percent more funding per student than its lowest-poverty districts, making it the state with the strongest measure in this respect. This conclusion may seem to contradict the findings in this study, but important differences in analysis aims and methods make this type of comparison difficult. With this in mind, the study team offers three important considerations with respect to comparisons of this study to Baker et al. (2018). Specifically, the two studies differ in the scope of their analyses, in the underlying data, and with respect to key methods.

Distinct Analysis Scope

To begin with, there are important differences in the scope of each study. Put simply, the Baker et al. (2018) study is a targeted national analysis that applies common national measures to all states to compare them to one another with respect to very specific measures. Unlike this study, it is not specific to Utah's context, or comprehensive in nature.

In particular, Baker et al. (2018) examine a narrower research question, asking "whether a state's funding system recognizes the need for additional resources for students in settings of concentrated student poverty" (p. 9). To answer this question, the authors consider whether state and local revenue is estimated to be greater on average in settings with higher poverty than those with lower poverty, when other factors in cost are accounted for.[24]

The focus of this study is different in a couple of important ways. The cost function analysis is meant to address how the amount of spending associated with *a given level of student achievement* varies across differing educational contexts, including differences with respect to student poverty. Baker et al. (2018) make no claims with respect to how costs may differ in communities with more poverty, relative to lower-poverty areas, let alone what specific weight would allow for reasonably equal educational opportunity.

Another important difference is how the results of the analysis are used. Baker et al. (2018) simply consider whether, on average, communities with more poverty end up with more revenue. In contrast, the findings in Section 3b of this report dig deeper to consider the extent to which the Utah funding system *is designed to target* dollars to ED students. The absence of explicit targeting does not necessarily mean that districts with larger populations of students in poverty will not end up with more revenue through the complex process of allocation. However, it also does not necessarily suggest that these additional funds are meant for, or will be used to support, this population.

23 These four "fairness" measures are the estimated level of funding, the estimated distribution of funds to low- vs. high-poverty districts, the state level of funding effort, and the extent to which school-aged children are served in public settings.

24 Importantly, the authors' conclusions are based on predicted funding estimated by a regression model that accounts for various cost factors, including student poverty (based on Census Small Area Income and Poverty Estimates [SAIPE] data), regional wage variation (based on the NCES Comparable Wage Index), economies of scale (based on district size), population density (based on Census data), and the interaction between economies of scale and population density.

In short, the differences in scope alone might explain the differences in the conclusions reached and limit the appropriateness of comparisons. The following section considers differences in data and methods, which might also contribute to the differences in findings and conclusions between the two studies.

Distinct Data and Methods

The underlying data sources used by Baker et al. (2018) differ from this study's cost function analysis (the most comparable analysis) in a few important ways.

First, it is important to consider that Baker et al. (2018) assessed equity at the district level and the cost function analysis considered equity at the school level. Although there are limitations on this study team's ability to precisely estimate school-level spending, this analysis still takes into account the fact that distribution of dollars to schools *within* a district may be less equitable than the overall allocations to districts. For example, a high-poverty district may have its students in poverty concentrated in a few schools, and the distribution of resources to its schools may reflect this uneven distribution of student need. This is not accounted for in Baker et al. (2018).

Baker et al. (2018) also rely on different data for both spending and poverty. For spending, the authors use district-level NCES Finance Survey (F-33) data, as opposed to the USBE annual financial reports. The authors also use district-level Census SAIPE data, as opposed to using data on ED students maintained by the USBE that defines this student group differently. The use of different data sources may also contribute to differences in the findings of these two studies.

There are also differences in methods, some of which are significant enough that their impact on results cannot be tested. For example, although both the cost function analysis and the Baker et al. (2018) analysis are generally based on regression analysis, the specific type of model used for the cost function analysis is different enough to make true comparisons difficult. However, other differences are more straightforward and offer some opportunity to assess possible impact.

For example, Baker et al. (2018) include a different set of cost factors in their model than this study does. Also, although some categories of cost factors are present in both analyses, there are differences in specific measures. Notably, Baker et al. (2018) use the national NCES Comparable Wage Index to account for regional variation in the local price of teachers, while this study uses a Utah-specific TSI based on a hedonic wage analysis. Perhaps the most important analytical difference between these measures is the amount of variation available. The CWI has 12 possible district-level values for the 41 districts in the state, while the TSI has hundreds of values and a unique measure for nearly every school in the cost function analysis sample. There are a few other straightforward apparent differences in methods,[25] but technical details available for the Baker et al. (2018) report are limited.

Determining the extent to which, and in what ways, these differences in methods and data affect results is difficult. However, testing suggests that if the Baker et al. (2018) model were replicated using data from this

25 For example, the cost function analysis used a log-transformed version of both district enrollment and per-pupil spending, and Baker et al. (2018) apparently did not. This type of transformation is commonly employed for these measures in cost function analyses (Baker et al., 2019; Willis, Krausen, et al., 2019; Gronberg et al., 2017).

study, the results would be similar, but less strong, and that if the analytical methods were more closely aligned, the results would be even less strong.[26]

In summary, comparing this cost function analysis to Baker et al. (2018) is challenging because the scopes, methods, and data sources of the two studies are distinctly different. Though testing suggests that differences in methods and data are likely consequential, ultimately differences in the scopes of these analyses make general comparisons inappropriate. As previously noted, the finding in Baker et al. (2018) that, on average, districts with more students in poverty receive more funding than lower-poverty districts is not in direct contradiction with the results of this study. However, unlike the Baker et al. study, this study is focused on how predicted spending *given a common set of outcomes* varies by the population of students in poverty *at the school level*. Additionally, this study is focused on whether the current system *is designed to target funding* to support the additional needs of ED students, which appears to not be true even if more funding is flowing to districts with more of these students.

Education Week's *Quality Counts Report Card*

Education Week (EdWeek)'s annual *Quality Counts Report Card* (Education Week, 2020a) produces grades for each state in three key areas: "chances for success," school finance, and student achievement. Across these areas of the *Quality Counts Report Card*, school finance grades offer the set of analyses most comparable to this study. Specifically, with respect to fiscal equity, the *Quality Counts Report Card* examines:

- How does funding for property-poor districts differ from that of their wealthier counterparts?
- How different are the spending levels of the highest- and lowest-spending districts?

Compared to other states and to the national average, Utah is ranked as 21st in equity, on par with the national average rating. Various measures contribute to this overall score, as discussed in the following section. However, Utah's grade being on par with the average rating does not necessarily contradict this study's findings that opportunities for improvement exist. Moreover, with respect to equity, there is very little variation in state grades, making Utah's grade harder to distinguish from those of other states.[27] Finally, the essential scope of this study is comparable to that of Baker et al. (2018), which complicates comparisons, as discussed in the prior section. With that said, some of the measures used in the *Quality Counts Report Card* apparently align with equity measures examined in Phase 1, so comparisons to this analysis are most appropriate.

26 Specifically, to replicate Baker et al. (2018), the study team estimated a series of ordinary least-squares regressions. They found that using comparable measures with the different data sources suggests that, on average, high-poverty districts receive ~31 percent more than low-poverty districts, vs. the 41 percent in Baker et al. (2018). When the same model is specified with the log transformations of spending and enrollment and with the TSI replacing the CWIFT, the results suggest that, on average, high-poverty districts receive only 10 percent more than low-poverty districts. These findings are limited and may be best interpreted as an illustration of how important data and modeling choices can be, rather than a definitive comparison of the studies, especially given that the effect of more significant differences (e.g., use of a SFA or a control function) was not, and cannot be, tested.

27 Specifically, of the 49 states with Equity grades, only five grades were assigned. 20 states received a B+, with an additional 23 receiving either an A- or a B, leaving only 6 states with lower grades than a B. This means that 41 percent of states received the national average and 88 percent received a B, B+, or A-. According to EdWeek's *User's Guide to the Grading and Methodology* (Education Week, 2020c), the range of scores for these three grades is about 9 points, while the total overall range is 40 points or more. In fact, Utah's raw score is about, at most, +/- 5 points from 88 percent of the other states. In summary, if virtually all states are generally within a few points of one another, it is hard to assign much significance to the score of any given state.

Specific Measures Examined

In the 2020 *Quality Counts Report Card* analysis of school finance, several measures contributed to the overall score:[28]

- **Wealth-Neutrality Score**: Similar to the fiscal neutrality analysis in Phase 1 and in Section 1 of this report, this score reflects the correlation between district revenue and local property wealth.
- **McLoone Index**: This metric was analyzed in the Phase 1 report.
- **Coefficient of Variation**: This metric was analyzed in the Phase 1 report.
- **Restricted Range**: This measures the difference in spending between the 5th and 95th percentiles of per-pupil spending, somewhat similar to the federal range ratio described in Section 3a.

The data sources for the EdWeek analysis are slightly different from the data sources used for the Phase 1 analysis, because EdWeek relied on public sources, rather than collecting data directly from state agencies. For example, EdWeek appears to have used Census data as its source for "property-based" wealth, as opposed to using data from state financial reports. EdWeek also analyzed FY 2016–17 data, whereas the Phase 1 analysis assessed FY 2013–14 and FY 2017–18 data, though comparing FY 2016–17 and FY 2017–18 seems reasonable to the study team.

With respect to the three comparable measures, as noted in the Phase 1 report, EdWeek's results are more favorable than the results of the Phase 1 analysis for all.[29] However, in addition to differences in data sources, EdWeek's analysis adjusts student counts to account for student need, using different weights than were used in Phase 1, and makes adjustments for differences in cost of living that were not made in Phase 1. EdWeek's analysis also does not provide much detail on which specific revenues and expenditures were included in its analyses, or on the specific methods that it employed.

In summary, although some differences in comparable measures do exist, the EdWeek report's overall results are limited by their lack of variation and may rely on methods that deviate from the study team's preferred approach and best practice.

28 Some additional information on these measures is provided in Education Week (2020b).

29 For example, the McLoone Index values were similar: 0.87 for FY 2017–18 in the Phase 1 analysis, compared to 0.941 in EdWeek's report. However, the coefficient of variation differed more — 0.351 in FY 2017–18 in the Phase 1 report, compared to 0.166 in the EdWeek report — though in both analyses Utah would be above the threshold of 0.10. The fiscal neutrality measures differed much more. Specifically, the correlation coefficient between assessed value per pupil and per-pupil state and local revenues in the Phase 1 study was 0.608 in FY 2017–18. compared to the EdWeek Wealth-Neutrality Score of 0.179. Raw scores for all states in the EdWeek report can be found in Education Week (2020a).

Part 2: Successful Schools

As part of the overall finance study, the cost function analysis described in Section 2 of Part 1 created a model that used student growth data and district and school characteristics to examine many aspects of Utah's education system. These aspects included the relationship between specific student or district characteristics and the level of resources necessary to ensure that all students can achieve similar academic outcomes. The model cannot describe how resources are implemented in schools, or identify any nonmonetary resources that schools or districts have available and that might impact student performance. To better understand how schools utilize resources effectively, the study team interviewed 10 schools, from across the state, that represent successful settings.

In addition to these interviews, the study team administered a survey to all districts and charter schools in the state. The team was not able to gather responses from all of the districts and charter schools, but 25 traditional school districts and 57 charter schools responded to questions about their instructional program and resource use. These survey results provide a complement to the information gathered from case study schools and help to put these schools' practices in the larger context of the state.

Section 4: Case Study Analysis

Section 4a: Case Study Analysis Methods

Case Study School Selection

As a first step in selecting case study sites, the pool of schools to possibly be included in case studies for this report was reduced, based on the results of the cost function analysis model with respect to estimated cost efficiency (as described in Finding 16 and, in more detail, in Technical Appendix B). Traditional public schools included in the analysis received an average efficiency score of 0.935, with efficiency scores ranging from 0.377 to 0.991. To be selected, a school must have received an efficiency score above the average, and final selected schools' scores ranged from a high of 0.982 to a low of 0.945.

The study team then paired the efficiency results with student test performance data to identify schools that both were efficient and performed well with respect to student outcomes. Specifically, to be selected, a school must have achieved at least above statewide average student proficiency in FY 2018–19 in both ELA and mathematics. The study team also used the USBE's school comparison tool (USBE, 2020a) as additional information in the final selection of schools. The tool identifies 19 comparison schools for each school in the state and compares ELA and mathematics proficiency and growth scores for the 20 total schools. The study

team excluded a school if it was in the bottom quartile of the comparison group in more than one of the four comparison areas. Generally, the identified schools were in the top half of all four comparison areas.

The study team's selection process was also aimed at identifying schools from a variety of settings and locations, including rural and urban/suburban areas and elementary, middle, and high schools. The team also sought to identify some schools with higher populations of English learners and/or ED students. Although it was difficult to find particularly high-need schools that also fell at the highest levels of efficiency, the study team was able to identify above-average-efficiency schools with larger high-need student populations.

Finally, although the cost function analysis model did not include charter schools (see Technical Appendix B for detail on the cost function analysis population), the study team did seek to identify one charter school for inclusion in the case studies, focusing on elementary charter schools in particular. To do this, the proficiency levels of all of the elementary charter schools in the state were ranked from highest to lowest. The top four elementary schools in the state were identified, and then their comparison-school lists were examined. Based on overall score, comparison-school position, and geography, the study team identified the charter school to include in the study.

As a result of this selection process, the study team selected five elementary schools, two middle schools, and two high schools, as well as the one charter school. The selected schools varied as follows:

- **School Size**: The selected elementary schools ranged in size from 361 to 668 students. The sizes of the middle schools were 377 and 606, and the sizes of the high schools were 333 and 1,551. The selected charter school serves 1,021 students in kindergarten through seventh grade.
- **Student Population**: Five case study schools have higher than statewide average levels of ED students, and one case study school has a high population of English learners. The selected charter school qualifies as a Title I charter school.
- **District Size**: School districts ranged in size from approximately 1,000 to close to 80,000 students, and were a mix of rural and urban/suburban districts.

Detailed enrollment data and selected demographic data for the case study schools and their districts are provided in Exhibit 36. It is important to note that, due to the aforementioned difference in the selection process for the charter school, this table does not include English learner or special education percentages for the selected charter school.

It is also important to note that the ten selected case study schools are not a representative sample of schools in Utah. In part, they are not meant to be, since they generally represent efficient and high-performing schools. As a result, these schools provide a look at how school staff and administrators, along with district administrators, create successful settings for students, in schools identified as being both effective for students and efficient with resources.

Exhibit 36. Case Study School and District Characteristics, FY 2018–19

School Name	School Enrollment	Economically Disadvantaged Percentage	English Learner Percentage	Special Education Percentage	District Name	District Enrollment	Urban/Rural
Castle Heights Elementary	495	42%	1%	16%	Carbon	3,484	Rural
Crimson Cliffs Middle	606	13%	1%	10%	Washington	31,074	Urban
Fillmore Middle	377	57%	6%	14%	Millard	2,916	Rural
George Washington Academy	1,021	23%	n/a	n/a	n/a (charter school)	n/a	Urban
Mountain Green Elementary	668	8%	0%	13%	Morgan	3,178	Rural
Nebo View Elementary	361	45%	0%	14%	Juab	2,587	Rural
North Summit High	333	29%	3%	12%	North Summit	1,044	Rural
Provost Elementary	465	53%	20%	9%	Provo	16,165	Urban
Timpanogos High	1,551	33%	7%	9%	Alpine	79,748	Urban
Westland Elementary	526	36%	6%	12%	Jordan	54,865	Urban

Source: Authors' calculations based on FY 2018–19 enrollment and demographic data maintained by the USBE.

The Case Study Process

Case studies allow the study team to understand, for each school, a range of factors that potentially impact its success with students, including:

- **General Background**: the community, the school, and the school's student population;
- **School Staffing**: how the school is staffed, and teacher turnover trends;
- **Class Schedule**: how the school day is structured to allow for instructional time, interventions, and teacher planning, collaboration, and professional development;
- **Curriculum and Instruction**: specific curricula or programs used, instructional arrangements put in place to improve achievement, use of instructional coaches, types of student grouping practices used, and any specific instructional strategies in place for high-need populations;
- **Instructional Interventions**: specific interventions for struggling students, and how those students are identified and monitored over time;
- **Assessments**: types of assessments used, frequency of administration, and use of data;
- **Student Support Services**: social-emotional support for students, including counseling and other student mental health services;
- **Professional Development**: understanding of how PD for staff is structured, including when it occurs, who it is led by, and who determines the topics;
- **School Culture**: school culture, including positives and areas where there might be challenges;
- **Leadership**: leadership structure at the school and district levels, including how goals are set and how decisions are made; and
- **Additional Monetary and Nonmonetary Support**: any additional monetary resources that the school receives from the community or from grants, as well as nonmonetary support, such as volunteers, and overall family and community engagement.

The process is designed to enable the study team to understand the unique approaches of each school and to provide insights on any common elements or themes across the set of successful schools in Utah.

Because the first filter for the school selection was efficiency, the study team was particularly interested in how schools reached success with students in an efficient manner, possibly through their use of nonmonetary resources. In addition, the study team was interested in how districts support these schools and how resources flow from districts to schools.

For each case study school that is a traditional public school, the study team reviewed policy documents and met with district and school administrators. Case study school staff, and staff from their districts, were generous with their time, particularly considering the current pandemic. The study team appreciates the time that these staff spent providing documents and participating in interviews.

District Engagement

Study team staff asked each district with a case study school to provide the following materials prior to interviews, for staff review: information on the allocation of resources to schools in the district, and any available district-level strategic plans or similar documents.

The interview protocol focused on how the district supports district schools, how schools are funded in the district, flexibility in resource utilization at schools, and any differences in monetary or nonmonetary resources at the case study school, compared to other district schools. The interview protocol can be found in Technical Appendix D.

Traditional and Charter School Engagement

Each case study school was also asked to provide a set of documents for review prior to interviews. The requested items included:

- Strategic or instructional plans;
- Lists of staff members and roles;
- Schedule and/or course offerings;
- School budgets for the past three years; and
- Any promotional materials/background information that school staff believe is relevant to the school's success.

The school-level interview protocol focused on the school culture and leadership structure; professional development and collaboration; data use, instructional practices, and targeted support for struggling students; student support services; and additional monetary and nonmonetary resources available to the school. The school site interview protocol can be found in Technical Appendix D.

As previously noted, a survey was sent to every district and charter school in the state. The data from the survey provide further context for the information gained through the case studies.

Stakeholder Survey

Although the study team members are confident that the case study sites represent a set of successful school settings, they are mindful of the limitations of examining such a specific and small sample of schools. In particular, "unsuccessful schools" were not considered, and thus, whether identified common practices are also evident to some extent in these settings is not clear. More generally, based on the case study analysis alone, the study team cannot be certain how unique the case study schools' practices are, compared to those of all schools in the state.

With this in mind, the study team administered a survey to the full population of school districts and charter schools in Utah. The survey questions were patterned after the case study interviews, to create as much consistency as possible given the different approaches to data collection. General drawbacks of a survey are its limited ability to probe a respondent's answer to a somewhat broad question and its inability to allow for unexpected responses in the way that an interview can. Given these limitations, the survey is most different from the interviews in that response options are generally specified in the questions, though an "Other" option was often provided.

One aspect of the interviews that was unique to the school district setting, and generally not applicable to charter schools, is the relationship between districts and their member schools — for example, how much flexibility a district allows in a school's management of its budget or staff selection. Given this difference, the survey administered to charter schools did not include questions relating to this topic (both surveys are provided in full in Technical Appendix D).

Respondents

The survey was provided to all school district superintendents and business administrators and to all charter school administrators in October 2020. Potential respondents were given about two weeks to respond.

It should be noted that some districts with case study sites also provided survey responses. To more clearly distinguish survey results from case study findings, these districts are not included in the reported survey findings.

Excluding districts with case study sites and the case study charter school, 18 of the 32 remaining school districts (56 percent) and 55 of the 114 remaining charter school LEAs (48 percent) responded to the survey.[30] Unfortunately, these response rates are generally too low to allow for the study team to make very broad generalizations about the state, based on the results. Nonetheless, the survey findings do offer a complement to the much smaller, and more explicitly targeted, case study sites. Thus, although it would not be appropriate to generalize the survey results to the full population, the study team does report survey results, alongside case study site findings, as suggestive of broader trends outside of the narrow case study sample.

Geographically, survey respondents came from a variety of regions across the state, though some regions were more heavily represented than others. Again, excluding case study site districts, respondents were primarily from the core-based statistical areas (CBSAs) of Salt Lake City (30 percent), Provo-Orem (19 percent), or Ogden-Clearfield (15 percent).[31] Overall, all nine Utah CBSAs were represented, and some respondents were from areas not within a CBSA. With respect to specific counties, most charter school respondents came from Salt Lake County (33 percent), Utah County (24 percent), or Davis County (11 percent). Across all respondents, 20 out of the 29 counties are represented.

Finally, with respect to student achievement, the sample of respondents represents a range of student performance. Specifically, overall LEA proficiency rates in FY 2018–19 ranged from 9 percent to 73 percent, with an average of 45 percent, based on USBE assessment data.

Section 4b: District Findings

The study team interviewed district personnel in each of the nine school districts with case study sites. Though the districts ranged in size, from approximately 1,000 students to close to 80,000 students, several common themes were identified in how districts support schools and in how districts allocate resources to schools. Unless otherwise noted, descriptions of practice refer to districts with case study schools.

FINDING 23. DISTRICTS WITH CASE STUDY SCHOOLS VIEW THEIR ROLE AS ONE OF SUPPORT, SEEING SCHOOL STAFF AS "THE EXPERTS."

The study team found that most of these districts considered themselves in service of the schools and created systems to support this function. These districts believed that the central office's primary function is to provide support to its schools and school-based staff. District staff often referred to school principals and teachers as "the experts" and saw the district's role as to provide as much support, and remove as many barriers, as possible for their school staff.

30 When referring to survey responses applying to both charter LEAs and traditional school district LEAs, LEA will be used instead of district.

31 CBSAs are collections of counties defined by the U.S. Census to be linked through population density and a high degree of social and economic integration.

Examples of staffing support that districts provided to ease burdens on schools ranged from student and family support personnel to instructional personnel. One district provides each school with a health clerk to ensure that health matters are sufficiently addressed at the school, while reducing the need for other school staff members to be pulled away from their typical duties to attend to these matters. The district also employs district-level family liaisons who are available to assist schools when conflicts between schools and families arise. Similarly, in recent years, one district increased its allocation of counselors to ensure that each school has its own counselor on staff, dedicated to the needs of that particular school. Another district provides an instructional coach to every school in the district, to ensure that each school has full-time, embedded capacity-building support available at all times, rather than relying on a shared model in which a coach may only be available to a school on certain days of the week. This sort of support staffing was found to also be somewhat common among survey respondents, though some positions were less common than others. For example, 89 percent of districts provide their schools with guidance counselors or paraprofessionals, but only 50 percent provide an interventionist or community outreach support.

Given the commonality of providing some type of support staff, as reflected in survey responses, *how* a district pairs support with school needs may be most important and impactful. To the extent possible, districts with case study schools reported striving to meet the needs of their schools while ensuring that proper procedural and regulatory requirements are met. For example, one school requested to use some technology funds to purchase a set of new devices for the school. Upon review at the district level, district IT staff realized that the particular brand of device requested did not meet district requirements to be able to be updated remotely. Rather than simply denying the order request, district IT staff worked with the school to understand the school's specific needs and to identify similar devices that met both the school's instructional needs and the district's requirements.

FINDING 24. DISTRICT ALLOCATIONS TO SCHOOLS BEYOND A BASE ALLOCATION VARY BUT ARE CONSISTENTLY DRIVEN BY AN ASSESSMENT OF A SCHOOL'S RELATIVE NEED.

The study team did not identify one specific type of funding approach used by all or most of the districts with a case study school, but, instead, found that each district's process was focused on funding the unique needs of its schools.

With that said, most districts do begin with a base staffing allocation for each school, often by full-time equivalency (FTE), based upon either school student enrollment or targeted class sizes. Several districts noted that they prefer an FTE allocation to a total school staff salary dollar allocation, as they encourage schools to hire the most qualified candidates for open positions. This allows schools to hire the most qualified candidates without worrying about, for example, whether the school's staff salary budget can accommodate a teacher with a master's degree, who is compensated at a higher rate, rather than a teacher with a bachelor's degree or with fewer years of experience. Many districts also calculate funded levels for supplies and materials, based upon student enrollment or another standard measure across schools in the district.

Additional funding is then determined by school need, and the study team consistently found a goal of equity in the distribution of funds to schools. However, each district had its own approach to determining school need and meeting this goal. Districts pride themselves on understanding their schools' resource needs, and on being able to provide for those needs, to the extent possible. One district with multiple high schools seeks to ensure that each high school is able to offer a comprehensive core high school curriculum, regardless of its size. The case study high school in this district was one of the smaller high schools in the district. Without this

intentional, targeted support by the district, it might have struggled to provide that comprehensive course offering with an allocation calculated solely based on student enrollment.

School district survey responses suggest that a single allocation method may be most common; 67 percent of respondents reported either a per-student allocation or an FTE allocation, with per-student allocation being most common. Among the remaining 33 percent, a combination of these two methods was more common than a totally distinct method.

FINDING 25. DISTRICTS WITH CASE STUDY SCHOOLS CONSISTENTLY PROVIDE A HIGH LEVEL OF AUTONOMY AND FLEXIBILITY FOR SCHOOLS TO DETERMINE HOW TO SPEND THEIR FUNDS.

Among the case study schools, once the district allocates funds to schools, principals are generally given broad autonomy to spend those funds as needed. The study team found that, even when funds are allocated in certain categories, processes are in place to allow schools to shift dollars as needed, and as allowed by district policy. For example, a principal in one district may be able to shift funds allocated for textbooks to library, technology, or other instructional materials. District finance or administrative staff work with principals to ensure that flexibility in transfer of funds meets the school's needs, while adhering to any state or federal regulations on use of funds for specific purposes.

This high level of autonomy and flexibility at the school level was the primary theme that the study team heard across the districts with a case study school. Although each district may have established specific districtwide goals, each school determines its own school-specific aligned goals, and principals have ownership over the process to monitor progress toward meeting goals. Principals generally felt that they had the support of the district and the necessary resources to continue to make gains toward student achievement growth. Principals and schools also have the freedom to determine both the types of intervention that will meet their struggling students' needs and the ability to structure the school day and provide opportunities for targeted intervention for students as needed. Likewise, across the case study schools, principals have broad autonomy in hiring decisions, in allocating their staffing FTE among teachers and aides/interventionists, and over their budgets.

Most district survey respondents also reported their district allows for flexibility, though the extent of this flexibility varied by programmatic element. For example, though most respondents indicated their district provides some flexibility to control school budgets, 61 percent reported that their district limits this flexibility to some extent. Moreover, only 28 percent of respondents indicated their district provides total flexibility in program or intervention selection, while the rest offer some flexibility within limits. For only one aspect of programming — with respect to selecting core curriculum — did any respondents report their district providing no flexibility, and only 11 percent of respondents indicated no flexibility in that aspect. Overall, the survey results suggest that providing some flexibility to schools is common, but that perhaps the high levels of broad flexibility are unique to the case study sites.

FINDING 26. SUCCESSFUL SCHOOLS REPORTED RECEIVING LIMITED ADDITIONAL MONETARY OR NONMONETARY RESOURCES, BUT TO A SIMILAR EXTENT AS SIMILAR SCHOOLS WITHIN THEIR DISTRICT.

Districts with case study schools reported that those schools did not have different additional monetary or nonmonetary resources available to them, compared to other schools in their districts. Multiple also mentioned that central office staff try to take the lead in identifying and securing additional grant funding at the district level, which allows school staff to focus on students and ensures more equity of funding across the district.

Survey results are consistent with this finding, with at least 50 percent of respondents reporting that all schools in their district receive various types of additional resources, such as grants, community partner donations, and

Parent Teacher Association/Parent Teacher Organization (PTA/PTO) funds. Grants were a particularly common category of response. In contrast, charter school respondents reported more variation in the availability of these additional resources. For example, although 73 percent reported that grants were a source of additional funding, only 31 percent reported accessing community partner donations, and 44 percent reported PTA/PTO fundraising.

In terms of nonmonetary resources, among survey respondents, parental involvement was quite common, with 94 percent of school district respondents and 67 percent of charter school respondents reporting this as a nonmonetary resource impacting their success. However, other types of nonmonetary resources were less common. For example, 44 percent of district respondents described civic or religious support as having an impact, while 67 percent described local donations as having an impact. Among charter school respondents, the impacts of these two categories of nonmonetary resources were even less significant, with 2 percent and 29 percent of charter school respondents, respectively, describing them as having an impact. Overall, though, these results suggest that nonmonetary resources of various kinds are common in school districts and, to a lesser extent, among charter schools.

However, in contrast to districts with case study sites, survey respondents from districts without case study sites reported at least some variation in availability of these nonmonetary resources among their schools, with 67 percent reporting *moderate* variation and 11 percent reporting *high* variation.

Section 4c: Traditional and Charter Case Study School Findings

The information described in this section is generally representative of all ten schools that the study team engaged. The study team did not find differences between the nine traditional schools and the one charter school interviewed. Unless otherwise noted, descriptions of practice refer to case study schools.

The areas of focus for these successful schools were consistent regardless of the type of school. Key themes are presented in the areas of school culture and leadership structure; professional development and collaboration; data use, instructional practices, and targeted support for struggling students; student support services; and additional monetary and nonmonetary resources.

FINDING 27. CULTURE AND LEADERSHIP AMONG CASE STUDY SCHOOLS ARE IMPORTANT FEATURES OF THEIR SUCCESS.

The study team staff asked interviewees from each school to describe their school's culture. Although case study schools have varied cultures, school staff easily identified specific attributes of their school's culture that contribute to its success. Specifically, they described the positive climates of their schools, resulting from their close-knit, collaborative staff, and how welcome and deeply connected students and families are to their schools and teachers. Multiple case study school staff described their schools as "like a family." It was clear to the study team that the intentional culture seen in the case study schools is an important feature of their success and may be developed without explicitly designated fiscal resources. In some cases, staff described a more personality-driven openness and teamlike atmosphere; in other cases, staff described schools utilizing existing professional development time and resources to intentionally build a school culture around professional growth and development to support student success.

Interviewees from case study schools commonly described a shared and/or flexible leadership structure. Every interviewed principal acknowledged that certain decisions ultimately fall to them; however, each principal

stressed the importance of including staff in decision-making at every opportunity. Nearly every school has some type of leadership team, of varying sizes and makeups, depending on the size and grade span of the school. For example, elementary school leadership teams often had grade-level representation, while secondary schools tended to have content-area representatives. Other members of the leadership team often included the school counselor and/or instructional coach, if these roles were present in the school. Although no two school leadership teams looked the same in terms of team size or positions of staff, the teams shared an explicit commitment by school leadership to regularly solicit the opinions of staff members across the school and to allow, whenever possible, broader participation in decisions that affect the school.

Leadership teams provide direction on the formulation of school goals and the approaches used to improve teaching and learning. In the same way that study team staff saw districts providing schools with a high level of autonomy, high levels of teacher autonomy were observed at the school level. Principals recognized that teachers are their school's best asset and trusted their teachers' abilities. Teachers were encouraged not only to try new approaches with their classes, but to share the results — both what worked and what did not.

It was not possible to meaningfully capture the culture or leadership of a district or school through the survey administered. Thus, this particular topic may represent an opportunity for additional investigation to understand how school cultures and leadership vary across the state.

FINDING 28. CASE STUDY SCHOOLS PRIORITIZE STAFF SUPPORT, INCLUDING STRUCTURES FOR STAFF COLLABORATION AND SCHOOL-DIRECTED AND EMBEDDED PROFESSIONAL DEVELOPMENT OPPORTUNITIES.

The case study schools can be described as collaborative schools. In these schools, daily school schedules were set to ensure that teachers had both individual planning time and collaborative time, typically with their grade-level peers at the elementary level and content-based at the secondary level.

The study team saw intentionality around the purpose, design, and practice of collaboration, often through professional learning communities (PLCs), to improve instruction and student achievement. When possible, schools scheduled PLCs so that the principal or other key leadership personnel could attend. PLCs were utilized to monitor student progress, to track school progress on schoolwide goals, identify students in need of personalized intervention, and for teacher growth and professional development. Collaborative time and, specifically, PLCs were identified as a key component of the schools' cultures and strategies to improve student growth.

The study team also found that although some professional development is district-provided and/or district-directed, the majority of professional development is determined at the school level. School staff identified embedded professional development, provided at regular intervals — such as during collaborative times — and directly related to the school's specific goals, to be the most effective way to support staff professional learning. Implementing a tailored approach to professional development allows the case study schools to make data-driven decisions regarding how to target training toward the school's achievement goals, as well as to support teachers in areas identified for growth.

Further, schools implementing the PLC model reported that having training in the PLC process was essential to developing high-functioning, truly collaborative PLCs, so that the embedded professional development was not only more impactful on instructional practice, but also more impactful on teacher engagement and overall team cohesion. This sort of PLC training, that is specific to collaboration time structures and implementation, may be a best practice that distinguishes successful settings, though more information is needed in order to understand how staff collaboration varies across the state.

FINDING 29. DATA USE TO IMPROVE INSTRUCTIONAL PRACTICES AND TARGET SUPPORT TO STRUGGLING STUDENTS IS COMMON AMONG CASE STUDY SCHOOLS.

Case study schools are data driven. They use formative and summative assessment results, along with consistent classroom assessment tools and teacher observation practices, to identify struggling students who may need intervention to meet expectations.

Each school is organized differently, but typically the principal, the instructional coach, the counselor, or some combination of all three work closely with teachers to interpret student assessment data. PLCs are often utilized to review student data, identify students in need of support, and determine the best approach to serve those students. The overwhelming majority of survey respondents (100 percent of district respondents and 93 percent of charter school respondents) also reported allowing time for PLCs and collaboration to support staff in their use of assessment data, suggesting that this general approach is common. Case study school staff reported that their schools have autonomy to determine the best intervention approaches — that there is no district-level mandate on how to support struggling students. In contrast, the survey results suggest that total flexibility in selecting interventions is less common across the state, with only 28 percent of respondents reporting this level of autonomy.

Although each case study school took a different approach to support struggling students, each had an articulated approach to targeting support to specific students. For example, in one elementary school's model, the school's instructional coach worked with teachers to improve Tier 1 instruction for all students. The school then employed highly trained instructional aides (who participate in training alongside teachers) to focus primarily on Tier 2 instruction, often in small groups. This allows teachers to focus intently on the smaller number of students requiring Tier 3 intervention. Additionally, a secondary-level school recognized the importance of family involvement and hired an advocate to work with at-risk students' families, some of whom do not speak English, to build trust with them and help them feel comfortable working in partnership with the school to support their children.

Finally, school interviewees described support for students as an ever-evolving process. Ongoing data analysis allows students to move in and out of groupings as needed. Additionally, schools focused on the specific skill gaps that students face during intervention periods, not only on specific content deficiencies.

With respect to emphasis on data use among survey respondents, only half of district respondents reported that their district provides for at least a part-time data specialist to support schools in using assessment data. Notably, this response was much less common among charter school respondents, with only 33 percent reporting that their school provides for this type of staff. However common these practices are across the state, given the intentionality and support for data use that are evident in the case study sites, this finding may reflect a nuanced aspect of case study sites' success, and this area may benefit from additional exploration of implementation best practices.

FINDING 30. CASE STUDY SCHOOLS RECOGNIZE AND INVEST IN SOCIAL-EMOTIONAL RESOURCES TO SUPPORT THE "WHOLE CHILD."

Case study schools recognize the need for social-emotional supports for students. Many school interviewees mentioned the need to support the "whole child" and not solely focus on students' academic needs; these schools recognized that there were physical and emotional needs that had to be met first in order for a student to be successful. For example, staff from one school described the intentional process that the school went through to shift its focus from solely academics to the whole child. School leadership reported that this

shift did not result in a loss of academic success, and that it improved the mental health and engagement of students in the school. Staff from many schools reported having a full-time, dedicated counselor at their disposal. Several school interviewees noted that this was a shift from recent years when the counselor position had been part time and shared among multiple schools.

Additional specialists — such as behavior specialists, social workers, and psychologists — were available for case study schools to access as needed, although the staffing approaches varied across districts. One case study school had a school psychologist assigned to the school several days each week; another was able to access the district's behavior specialists as needed; and staff from one district noted that therapists were available throughout the county. Case study school staff generally expressed that student support resources were accessible when needed.

Survey respondents reported that positions such as guidance counselor and student support services staff were fairly common in their LEAs, with at least 72 percent of school districts and at least 56 percent of charter schools reporting these positions as available. Given this apparent wide implementation, this may be another area for additional exploration of the particular qualities of social-emotional support that are most effective at yielding desired outcomes.

FINDING 31. IMPACTS OF NONMONETARY RESOURCES ON SCHOOL SUCCESS REFLECT GENERAL THEMES ABOUT COMMUNITY ENGAGEMENT SUPPORT AND ORGANIZATIONAL PRACTICE, AS OPPOSED TO INDICATING SPECIFIC ADDITIONAL RESOURCES SUCH AS VOLUNTEERS.

Consistent with the information gained from districts, the case study schools did not generally report meaningful amounts of additional monetary resources or specific nonmonetary resources, such as donations or volunteering. Instead, case study schools often spoke of the more general impact of having supportive and engaged communities.

As far as additional monetary funds, many case study schools do have fundraising programs, but these programs are small and do not tend to raise large sums, and grants tend to be managed at the district level and then distributed to schools. Case study schools, therefore, did not seem to be receiving higher levels of additional funding, compared to peer schools in their district. Instead, the study team primarily heard from schools and district administrators about the impact of School LAND Trust and Teacher and Student Success Account (TSSA) funds. Although, given that schools across the state receive these funds, these funds do not clearly fall into the category of "additional funding," among the case study schools these funds are being directed by school administrators to target specific needs for their school communities. Many of the schools are using these funds to supplement or fully supply key personnel in their schools, including instructional coaches and student support personnel. It was clear to the study team that without these additional funds, administrators would struggle to implement their instructional vision for the schools.

Survey respondents also reported that "additional resources" are of limited impact, with only 45 percent of school districts describing the impact as more than minimal. Charter schools reported somewhat more impact, with 62 percent of respondents describing the impact as more than minimal. This would not, however, reflect the impact of funds provided by the state, such as the School LAND Trust or TSSA funds.

Interviewees from a few schools discussed the volunteer and community support they received. For example, one elementary school developed a schoolwide music program over the last 15+ years, as an anchoring identity of the school, and regularly receives donations and support from the community to ensure that every student in the school has the opportunity to participate. One secondary school hosts several career-focused events,

which require a large number of volunteers from the community. Each year, members from across the community, and particularly school alumni, return to the school to participate.

Overall, community engagement was the primary focus of discussion regarding nonmonetary support. Community members take pride in their local schools and are willing to contribute to their school communities in other ways outside of volunteering. School interviewees reported that community members frequently attended school events and were strong supporters of school athletic teams. For example, the School Community Councils were identified as a key way in which community members are directly involved in setting goals and helping to direct where the School LAND Trust funds should be spent. The School Community Councils are required to be involved in those plans; nonetheless, school interviewees expressed true community engagement in the process. Several school interviewees also mentioned support and contributions to the school community by very strong district school boards. Board members are frequently in schools and, in at least one district, even serve on staff hiring committees.

Interviewees from many of the case study schools also reported that their schools are not only recently successful, but have been successful for many years, and that, therefore, the community as a whole expects these schools to perform well. Particularly for the rural case study schools, teachers and staff in the school are part of a tight-knit community, which leads staff to perceive an additional layer of accountability to uphold community standards of excellence. Several case study schools are located in communities that also house postsecondary education campuses, and therefore, the community at large naturally includes students and instructors/professors who value the pursuit of education.

Finally, the study team feels that many of the common themes of success can be considered nonmonetary resources. A strong intentional culture, clear goals, trust in staff, the flexibility to use resources as schools see fit, and a collaborative and data-driven culture focused on all students are all pathways to success that schools can take. Resources are clearly required in order to implement successful strategies for many of these approaches (such as professional development opportunities, school staffing levels sufficient to implement common planning and collaborative time, staff trained in data use, and sufficient staffing to implement targeted interventions to struggling students), and the successful schools appear to focus their resources on implementing these successful strategies. However, these schools, whose selection for the case studies was based, in part, on their efficiency, generally did not have specific additional monetary or nonmonetary resources to work with.

Part 3: Policy Recommendations

The previous sections of this Phase 2 report focused on conducting rigorous analyses that expand upon the scope and findings of the Phase 1 report. The results of these analyses point to findings about the extent to which Utah's current system is well designed to ensure that all children experience reasonably equal educational opportunities and to provide for equalization of disparities in local wealth. In addition, a few case study sites were examined and compared to a broader survey of school districts and charter LEAs to surface common practices in successful settings.

This final part of the report presents policy recommendations that are informed by the totality of the findings from both phases of this study. These recommendations are organized into four broad domains that speak to distinct aspects of the state funding system, and thus to distinct but interconnected opportunities for improvement. Exhibit 37 describes each of these broad domains.

Exhibit 37. Policy Recommendation Domains

Domain	Description
Funding Generation	The mechanisms by which funding is generated and made available to schools and districts and how these funds overall are balanced across state and local sources.
Funding Distribution	How funding is distributed through the Basic School Program to account for differences in resource needs related to differences of educational context.
Targeted Programs	How the targeted Related to Basic programs can be optimized with respect to coherence of purpose and prioritization, stability of funds, evaluation of success, and balance with more general Basic School Program funds.
Effective Practices	Common practices and qualities of successful school environments and how these practices might be fostered and refined more broadly across the state.

Overall Conclusions

Through the study team's engagements with stakeholders, as well as the results of this study's analyses, a few overall conclusions emerged, mainly addressing the extent to which the core principles of the MSP are being met. As described previously, its two primary principles are (1) reasonably equal opportunity for all, regardless of place of residence, and (2) local participation and determination. These principles are illustrated in Exhibit 38 within their statutory context.

Exhibit 38. Purpose and Principles of the Minimum School Program, as Stated in Legislation

Principle 1

A The purpose of this chapter is to provide a minimum school program for the state in accordance with the constitutional mandate. It recognizes that **all children of the state are entitled to reasonably equal educational opportunities regardless of their place of residence in the state and of the economic situation of their respective school districts** or other agencies.

B It further recognizes that although the establishment of an educational system is primarily a state function, school districts should be required to participate on a partnership basis in the **payment of a reasonable portion of the cost of a minimum program.**

Principle 2

A It is also the purpose of this chapter to describe the manner in which the state and the school districts shall pay their respective share of the costs of a minimum program. This chapter also recognizes that **each locality should be empowered to provide educational facilities and opportunities beyond the minimum program** and accordingly provide a method whereby that latitude of action is permitted and encouraged.

Note: Text quoted from Utah Code Annotated § 53F-2-103.

The foundation of the MSP is strong and well designed to support meeting state principles.

The core principles of the MSP have broad resonance and ownership across all levels of the system. These principles were described in positive terms by stakeholders ranging from school staff to state legislators. The study team often heard comments to the effect that "the basics of the system are strong." The study team agrees with this perspective. Fundamentally, the structure of the MSP is based in three components: the Basic School Program (BSP), the Related to Basic (RTB) programs, and the voted and board levies. With these components, the structure is well designed to address the MSP's core principles, and none of this study's findings point to a need for a comprehensive restructuring of the system.

In fact, the study team has concluded that most opportunities for improvement represent a return to the original intent of the MSP when enacted, rather than pointing to a need for a comprehensive change. In some cases, satisfying the original intent may require an evolution beyond specific original policies as the state and the students served change in the coming years. In any case, in the view of the study team, the foundation is well established for adjusting state programs and practices to meet evolving needs in ways that are consistent with the MSP's principles.

In particular, the BSP serves a clear function with respect to the first principle. Different aspects of educational context are accounted for and weighted through the Weighted Pupil Unit (WPU) to establish a foundation amount that depends on the particular resource needs of a district and on a base value determined by the legislature. This foundation is guaranteed by the state, regardless of the capacities of particular districts to raise the funds on their own, given equivalent taxpayer effort. Thus, within the context of the BSP, a child's place of residence does not limit that child's access to resources identified through the WPU and assigned through the BSP. Though there may be opportunities to strengthen the factors accounted for in the BSP, its foundation is strong and allows for this type of improvement.

Moreover, the use of a Basic Property Tax Levy clearly addresses the principle of local contribution by defining a share of the funds that each district must contribute, depending on equal taxpayer effort and accounting for different capacities with respect to local wealth.

Importantly, the BSP funds make up about 64 percent of the MSP funds, pointing to the relative importance of these funds in the overall program.

The RTB programs further extend the first principle by targeting funds to specific districts or schools, based on very specific needs. Although there may be opportunities to optimize how the RTB programs function within the broader system, the study team recognizes the potential utility of a set of funds that are more highly targeted and more varied in their intended purposes than BSP funds are. The impact of this set of programs is also muted because it makes up only about 18.5 percent of the MSP funds and has an average program funding total of $21 million. Thus, changes to any particular RTB program individually are unlikely to shift the broader system to a great extent.

Finally, the voted and board levies function as a mechanism by which the principle of local determination is ensured. Although there are caps on the levy that a district may specify for both levies, in general districts are allowed to determine the extent to which they will support opportunities beyond the minimum program. Moreover, the state guarantees provided through these local levies contribute to the first principle of equal opportunity by mitigating differences in local capacity to raise funds, stemming from differences in local wealth, though there are limits to the impact of these equalization policies (see Section 1b). These funds make up only about 17 percent of the MSP, though they may be more impactful than RTB program funds because the levies provide general-use funds.

In summary, the current structure of the MSP has the foundational components to support state principles and is flexible enough to allow for improvements. However, this situation does not necessarily mean that these components are serving their functions entirely as intended or to the fullest extent possible. If, for example, the ways in which BSP funds are distributed do not sufficiently reflect differences in resource needs, the districts receiving less than they need in order to provide a minimum program might have to levy local funds to provide for these needs. Doing so would move the voted and board levies away from their intended function as an avenue for districts to go above and beyond the minimum, according to their local determination.

A tension exists between the two MSP principles, necessitating a balance between them that cannot wholly satisfy each principle equally.

A tension exists between the two basic principles of the MSP. Although these principles are not necessarily in direct conflict, policies enhancing one principle often diminish the other principle to some extent.

This tension can be most clearly illustrated through the structure of the BSP and how it defines the local share. By setting a local contribution that requires a community to raise funds through a fixed local levy, state policy limits the control of local leaders over their contributions to education according to their assessment of local needs and preferences, particularly if they feel that a *smaller* contribution is more appropriate.

The benefit that balances this limitation is that every district is guaranteed its total BSP funding despite fluctuations in its local capacity to provide for it through local revenue. The stability of this guarantee may be worth the sacrifice of some control.

Another example of this tension is found in the RTB programs, which often require very specific allowable uses. A district receiving these program funds may not feel that these uses are strategically effective in its context, restricting its local determination. However, by establishing such specific targeting, policymakers can be more confident that the purpose of the funds to address a particular need will be adhered to when the funds are spent.

Ultimately, policymakers and state leaders must determine the appropriate balance of these principles across the whole system and with respect to any particular program. The tension described in this section is reflected to some extent in all of the policy recommendations generated by this study, and for each recommendation, evidence from the study is provided to support how the recommendation strikes the optimal balance of these principles.

The final recommendations support system improvements as stand-alone policy changes, but are strongest when implemented in tandem.

Exhibit 39 summarizes the final study recommendations.

Exhibit 39. Study Policy Recommendations

Domain	Recommendation
Funding Generation	**Recommendation 1.** Increase the Basic Property Tax Levy to rebalance the defined local share of the Basic School Program and minimize the fiscal impact of system improvements to funding distribution.
Funding Distribution	**Recommendation 2.** Establish an add-on Weighted Pupil Unit for economically disadvantaged students in the Basic School Program, replacing existing programs targeted to these students. **Recommendation 3.** Reform the Necessarily Existent Small Schools adjustment in the Basic School Program, drawing on study findings, to expand the scope and size of the funding, primarily to address issues of scale. **Recommendation 4.** Establish within the Basic School Program an adjustment for regional variation in the price of teacher labor, based on study findings.
Targeted Programs	**Recommendation 5.** Reexamine the Related to Basic programs to optimize coherence, stability, continuous improvement, and balance with Basic School Program funds.
Effective Practices	**Recommendation 6.** Establish a competitive grant focused on supporting schools to develop effective processes within two key strategic areas.

These specific recommendations are intended to serve specific and distinct goals. If policymakers were to implement only one recommendation, its goals would still be well served. However, the recommendations are interrelated in important ways and support additional improvements if implemented in tandem.

For example, consider how Recommendation 1 and Recommendations 2–4 are interrelated. The latter three recommendations serve specific goals with respect to funding distribution, aiming to adjust funding to better account for how resource needs differ as a result of differences in cost factors, including student needs, scale, and local prices. Implementing each on its own, or all three together, would require additional investment by the state, assuming the WPU value is maintained and other line items are not repurposed. Given the MSP principle that districts pay a reasonable portion of costs, new investments of this kind should be shared between the state and local districts. Recommendation 1 offers a fair approach to increasing local contributions to balance the burden of these new investments suggested by Recommendations 2–4. In this way, these recommendations work in tandem.

Another example is how Recommendations 5 and 6 relate to each other. Recommendation 5 calls for the state to examine opportunities to optimize the coherence and stability of the RTB programs and establish a consistent and thoughtful process of testing the innovative programs that are often housed in this component of the MSP. Recommendation 6 proposes a way to immediately apply the considerations proposed in Recommendation 5 to a new program. Policymakers can, for example, embed in the recommended grant an improvement and evaluation process that aligns methods to the stage of implementation and regularly assesses progress of grantees. In this way, implementing these recommendations in tandem enhances the impact of both recommendations on their respective goals.

When considering these recommendations, policymakers should also take into account such potential opportunities for coherence across recommendations.

Analysis is limited in its ability to inform policies with respect to charter schools, although extending some recommendations to the charter sector may be reasonable.

As the study team conducted its analyses, the extent to which the charter sector may be similar to or distinct from the traditional school setting was often considered. For example, when assessing policies related to local tax levies, the analyses were generally not directly applicable to charter schools. However, when considering how educational context impacts resource needs, consideration of the charter setting was clearly important. Unfortunately, as noted in Section 2 and in Technical Appendix B, charter schools were not included in the cost function analysis, and therefore the results of this analysis do not reflect evidence that is, strictly speaking, applicable to the charter sector.

However, the study team recognizes the importance of the charter sector in the state's public education system. With this importance in mind, whether recommendations drawing on evidence not directly applicable to charter schools can reasonably be extended to the charter sector has been carefully considered:

- Recommendation 1 (funding generation) is focused on local tax levies and is generally not applicable to charter schools.

- The study team concluded that the findings supporting Recommendations 2 (ED student need) and 4 (local prices of teachers) are likely to be sufficiently similar in charter and traditional school settings to allow for broader application of the recommendations.
- The findings supporting Recommendation 3 (scale of operations) are more likely to differ by sector, so the recommendation should not be extended to the charter sector without additional supporting evidence.
- Recommendation 5 (targeted programs) is generally sector agnostic, and thus should be extended to the charter sector.
- The findings supporting Recommendation 6 (effective practices) are based on analysis of charter schools as well as of school districts, so the recommendation should apply to both.

Section 5: Funding Generation

Recommendation 1. Increase the Basic Property Tax Levy to rebalance the defined local share of the Basic School Program and minimize the fiscal impact of system improvements to funding distribution.

Key Findings

Several key findings support this recommendation, including:

- **Phase 1, Equitable Access to MSP.** Fiscal neutrality analysis indicates that, to some degree, district resource levels are related to district wealth.
- **Phase 1, Role and Balance of State and Local Contributions.** Utah is generally more reliant on state funds than the national average, but there is no evidence that the division of funding by source relates to equity.
- **Phase 2, Finding 2.** Excess capacity in allowable voted and board levies exists at all levels of school district wealth, but the majority of total capacity is highly concentrated in the very wealthiest districts.
- **Phase 2, Finding 3.** Although equalization policies are in effect, the impacts of these policies on fiscal neutrality are limited.
- **Phase 2, Finding 7.** More equitable state funding systems run the vast majority of all funding through the equitable state formula.
- **Phase 2, Finding 9**. When put in comparable terms, state-required tax rates that define the local share are more similar to each other than it might seem, though Utah's is the second lowest.

Intended Effect

Given these key findings, the study team sees an opportunity for systemic improvement. Specifically, an increase in the Basic Property Tax Levy would:

- **Rebalance the local share to be more comparable to that of other states.** Utah already has one of the lowest local shares in the United States under the current levy, and without legislative action, this levy will begin to decrease when the five-year "freeze" on this tax rate enacted in 2018 expires.
- **Shift more local dollars to the BSP formula.** This would occur, in effect, because (assuming that districts seek to maintain their overall tax rate) as the Basic Property Tax Levy goes up districts would bring their local levies down; this would concentrate more local revenue in the BSP, a common characteristic of more equitable systems. Moreover, if districts respond to an increase in the Basic Property Tax Levy by lowering their local tax rates, the proposal could result in no net change to their taxes (from a taxpayer's perspective).
- **Make available additional state funding, with the local burden predominantly falling on the communities with the means to bear it.** Absent an increase in state funding for the BSP, the net effect on a district's available funding would depend on how the state distributes the state funding that is made available. The Funding Distribution recommendations focus on this question, but, in general, distributing funds according to resource needs that are not currently addressed by the system would be most in keeping with the state principle of ensuring reasonably equal opportunity. If this approach is followed the burden of this recommendation would, in general, predominantly fall on the communities with the greatest property wealth per pupil. In keeping with the MSP principle of local participation and payment of a reasonable portion of the cost, this outcome is judged by the study team to be most fair, though certainly the extent of this burden is of significance, and it is discussed in the following "Detailed Modeling of Possible Implementation" section for this recommendation.

Alternative Policy Options

The clearest alternative to this recommendation is to change some aspect of the local levy programs. One might see this as most logical if the area of improvement stems from insufficiency of equalization policies. Such a change might include:

- **Increasing the increments of the state funding guarantee such that more funding is provided to less wealthy districts, closing the gap resulting from disparities in wealth.** This change may very well also represent an improvement to the system, but it would necessarily require an increase in funding overall or a decrease in funding elsewhere in the MSP. The study team sees an increase to the Basic Property Tax Levy, and allocating newly available state dollars based on resource needs, as a way to realize the same effect without necessitating an increase in state funding.
- **Changing how the voted and board caps are constructed, to specify a cap on revenue raised, as opposed to a cap on the tax rate levied.** This change would ensure that the wealthiest districts are unable to increase the gap in local funds beyond a certain amount per pupil, and thus could help address disparities in local wealth. However, the study team sees this option as potentially out of step with the state's principle that local communities be empowered to provide opportunities beyond the minimum program. This is because closing the gap in local funds in this way would require capping districts *below* local revenues currently raised through these programs, thereby limiting the ability for some local communities to raise additional funds.

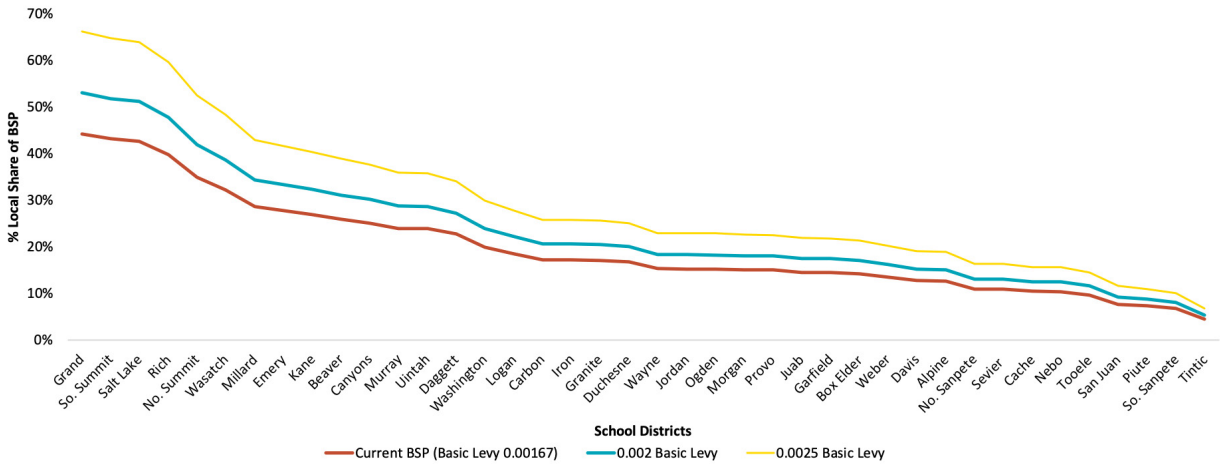
Detailed Modeling of Possible Implementation

Given that there is no clear ideal local share, the study team is not offering a particular ideal Basic Property Tax Levy. Instead, in this section, multiple possible levies are considered and compared to what is more typical across the United States. Specifically, the study team modeled:

- **A levy of $0.0025 per dollar of TAV.** A 50 percent increase over the current levy, this would put Utah very close to the median among states that take a similar approach to defining the local share — $0.0028 per dollar of TAV (see Finding 9).
- **A more modest levy of $0.002 per dollar of TAV.** The study team recognizes that the typical levy nationally may not be appropriate for Utah, and that a gradual progression toward this benchmark may be necessary. With this context in mind, a more modest levy was also modeled.

When modeling the impact of this change, the study team was focused on two aspects of its impact: its change to each district's local share of BSP funds, and the additional per-pupil state dollars made available, assuming no change in overall state revenues. Exhibit 40 illustrates local share for each district under each possible change and under the current Basic Property Tax Levy. As shown in Exhibit 40, most districts had a change of about 13 percentage points or less as a result of the largest modeled increase in the Basic Property Tax Levy. Only 9 districts had a higher change in their local share, and these are the districts with the highest per-pupil TAV.

Exhibit 40. Percentage Local Share of Basic School Program Under Three Modeled Basic Property Tax Levies, by School District

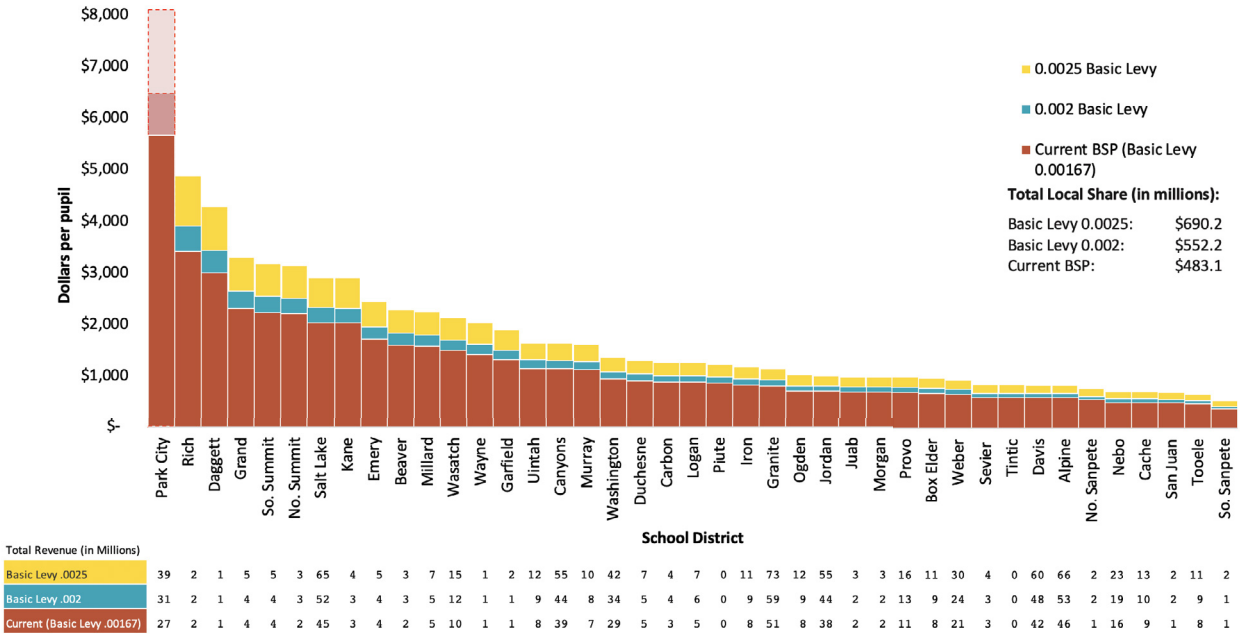


Source: Authors' calculations based upon FY 2018–19 data from the Utah State Tax Commission, Property Tax Division and the USBE.
Note: Park City has been omitted from the table to accommodate for scale. Percent local share of BSP for Park City is as follows: ***Current BSP:*** *128 percent,* ***.002 Basic Property Tax Levy:*** *153 percent,* ***.0025 Basic Property Tax Levy:*** *193 percent.*

Assuming no changes to state funding, the difference between what the new Basic Property Tax Levy would raise in local funds and what is raised under the current Basic Property Tax Levy represents the net state funding now available within the BSP, and the additional funding that districts would have to contribute. As illustrated in Exhibit 41, this amount per pupil is quite small for most districts, even under the largest modeling increase to the Basic Property Tax Levy, and, as with the local share, the wealthiest districts per pupil would contribute the most by far. To provide some additional context to these per-pupil dollars, the amounts in total

revenue raised under each modeled Basic Property Tax Levy are also included in the table at the bottom of Exhibit 41.

Exhibit 41. Dollar Amount of Local Share Per Pupil Under Three Modeled Basic Property Tax Levies, by School District



Total Revenue (in Millions)	Park City	Rich	Daggett	Grand	So. Summit	No. Summit	Salt Lake	Kane	Emery	Beaver	Millard	Wasatch	Wayne	Garfield	Uintah	Canyons	Murray	Washington	Duchesne	Carbon	Logan	Piute	Iron	Granite	Ogden	Jordan	Juab	Morgan	Provo	Box Elder	Weber	Sevier	Tintic	Davis	Alpine	No. Sanpete	Nebo	Cache	San Juan	Tooele	So. Sanpete
Basic Levy .0025	39	2	1	5	5	3	65	4	5	3	7	15	1	2	12	55	10	42	7	4	7	0	11	73	12	55	3	3	16	11	30	4	0	60	66	2	23	13	2	11	2
Basic Levy .002	31	2	1	4	4	3	52	3	4	3	5	12	1	1	9	44	8	34	5	4	6	0	9	59	9	44	2	2	13	9	24	3	0	48	53	2	19	10	2	9	1
Current (Basic Levy .00167)	27	2	1	4	4	2	45	3	4	2	5	10	1	1	8	39	7	29	5	3	5	0	8	51	8	38	2	2	11	8	21	3	0	42	46	1	16	9	1	8	1

Source: Authors' calculations based upon FY 2018–19 data from the Utah State Tax Commission, Property Tax Division and the USBE.

As shown in Exhibits 40 and 41, the increases in local shares are more highly concentrated in wealthier districts with lower BSP totals. In exchange for these increases in local contributions, the additional available state funding would make improvements in distributional equity possible without increasing state revenue overall.

Section 6: Funding Distribution

Recommendation 2. Establish an add-on Weighted Pupil Unit for economically disadvantaged students in the Basic School Program, replacing existing programs targeted to these students.

Key Findings

Several key findings support this recommendation, including:

- **Phase 1, Equitable Access to MSP.** Utah's funding formula is not providing sufficient additional resources for students with greater needs, such as economically disadvantaged students.

- **Phase 2, Finding 11.** Higher spending is predicted as school average academic growth increases, though this association is lower in magnitude among high schools, compared to non–high schools.
- **Phase 2, Finding 12.** Higher spending is also predicted as school graduation rate increases.
- **Phase 2, Finding 15**. Predicted spending increases as the level of student need increases, as measured by the percentages of economically disadvantaged students and students with disabilities.
- **Phase 2, Finding 20.** Programs explicitly targeting "at-risk" students or economically disadvantaged students provide significantly less additional funding than would be provided under the weight derived from the cost function analysis.

Intended Effect

The proposed add-on WPU for ED students is a comprehensive approach to accomplishing a few goals:

- **Better address the additional resource needs of this population.** Currently, this sort of additional funding is provided through a patchwork of programs with different specific allocation formulas and purposes, and all of these programs are relatively limited in scope, even in combination. An add-on WPU with a weight more in line with the findings of this study would expand the scope of these current efforts to better account for the additional needs of ED students.
- **Establish the weight within the BSP, rather than implementing it through a consolidated RTB program.** As the foundation of the MSP, programs included in the BSP represent the core purposes recognized by the system. The recommendation to include this new add-on WPU in the BSP reflects the relative importance that the study team places on addressing the needs of the state's ED student population. Additionally, the inclusion of the new add-on WPU in the BSP ensures stability and appropriate adjustment of funding year-over-year. Some stability can be achieved because the program will adjust as the WPU value adjusts, and will thus keep pace with broader systemwide changes to resources needs and economic conditions. Put simply, whatever the base amount reflected in the WPU value is, the additional resources provided to serve ED students should remain at the same amount over and above the base amount.
- **Improve how well total WPUs reflect a district's needs; thus, state policy to equalize local revenue would adjust in a complementary way.** Specifically, under these programs, the state guarantees a dollar amount *per WPU* in local revenue for a set increment of the local levy: $.0001 per dollar of TAV. As the WPUs added by this proposal improve how well total WPUs reflect a district's needs, state policy to equalize local revenue would adjust in a complementary way.

Regarding the charter sector, the study team concluded that the additional resource needs of ED students served in the charter sector are likely to be, on average, very comparable to those served in traditional school settings. Thus, this recommendation can reasonably be extended to charter schools.

Alternative Policy Options

The main alternative approach to addressing the additional needs of ED students is to build on existing programs intended to support this population. Policymakers could adjust the funding for these programs to, in effect, provide the same weight for ED students as is recommended by this study.

Although the Enhancement for At-Risk Students (EARS) program targets more groups than only ED students, it offers an illustration of this alternative. As described in Section 2, policymakers could adjust the funding for this

program to, in effect, provide an equivalent effective weight for ED students. The current EARS distribution formula would likely need to be changed slightly to be more targeted toward ED students, though even as is, the size of the ED population factors directly into a district's allocation.[32]

However, this approach would require a separate, annual adjustment to program funds to maintain the weight, and failure to make this adjustment could undercut the stability of this weight over time. Moreover, if the goal is truly to ensure some additional amount of funding per ED student in recognition of these students' additional needs, an add-on WPU embedded in the BSP is the most direct way to accomplish this purpose.

Detailed Modeling of Possible Implementation

As with any analysis, there is some level of uncertainty in the results, and thus, a range of possible weights could still be in line with the cost function analysis findings; specifically, as discussed in Section 2, the study team estimates this range of weights to be between 0.32 and 0.52, based on the 95 percent confidence interval. These two values and the primary estimated weight of 0.42 have been modeled as add-on WPUs, assuming no other changes to the current system, and based on FY 2018–19 data.

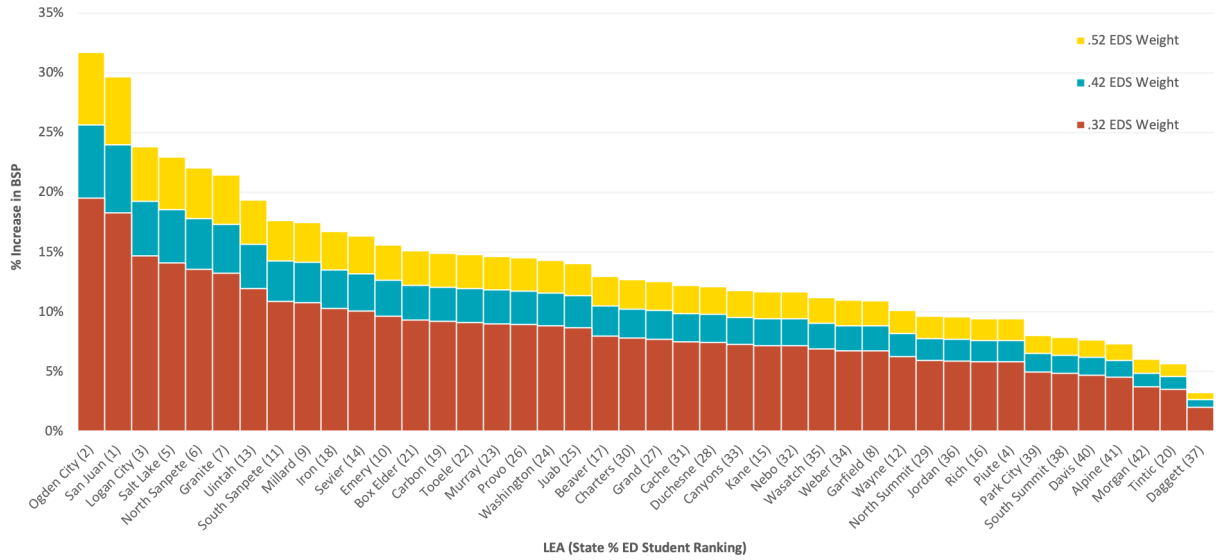
Exhibit 42 illustrates the percentage increase in BSP funding resulting from each weight (charters are included as a single group). The district labels also include their rank with respect to *percent* ED students. As would be expected, those districts with the highest ranks receive the largest increases.[33] On average, based on the primary cost function analysis weight of 0.42, districts would receive an additional 11 percent; the percentages range from 3 percent to 26 percent.

In total, based on FY 2018–19 data, a weight of 0.42 would result in approximately $313 million in additional BSP funding. Assuming that the approximately $38 million provided to districts and charters through the EARS program contributes to this weight, about $275 million in new funding would be required. That is, of course, assuming no change to the rest of the system. Changes to the WPU value, the Basic Property Tax Levy (see Recommendation 1), or other programs within the MSP could impact the amount of new funding required to implement this weight.

32 Specifically, a portion of EARS funds is allocated based on school poverty rates. For more details on EARS, see Utah Administrative Code R277-708.

33 It should be noted, however, that because the weight is applied on a per-pupil basis and each district has a different current base BSP funding amount, for some districts this add-on WPU would not represent a large increase over their current funding in percentage terms.

Exhibit 42. Percentage Increase in Basic School Program Under Different Economically Disadvantaged Student Weights by LEA, Including the Charter Sector, in FY 2018–19



Source: Authors' calculations based upon FY 2018–19 data from the Utah State Tax Commission, Property Tax Division and the USBE.

Recommendation 3. Reform the Necessarily Existent Small Schools adjustment in the Basic School Program, drawing on study findings, to expand the scope and size of the funding, primarily to address issues of scale.

Key Findings

One key finding supports this recommendation:

- **Phase 2, Finding 13.** Predicted spending generally decreases as district enrollment increases, providing evidence that economies of scale are present in Utah at the district level.

Intended Effect

This key finding illustrates that as a district gets larger, it must spend less per pupil to provide for reasonably similar educational opportunities, reflecting evidence that economies of scale, a commonly understood principle in economics, are present in the Utah public-school system.

This concept is fairly straightforward. A district with very few students must still offer the same basic curriculum as districts with more students. This concept is described in more detail in Section 2b, including examples specific to the educational context. Moreover, as discussed in Section 2b, prior cost studies and other relevant literature provide ample evidence for it. Utah already acknowledges the impact of scale in its MSP, and primarily accounts for it through the BSP program Necessarily Existent Small Schools (NESS).

The primary focus of the recommendation is improving the extent to which the state currently adjusts for the impact of scale. This type of adjustment is currently primarily provided through NESS, so it is the focus of comparisons between current policy and the recommended adjustment.[34] Intended improvements would be in two areas:

- **Expand and improve the scope of this adjustment to better address the needs reflected in this study's findings.** Currently, the scope of the NESS adjustment is limited by the overall funding provided and by the number of districts receiving the funds. Only 25 districts currently receive these funds, and total funding for the program was about $32.5 million in FY 2018–19. Also, although this recommendation proposes expanding the scope of this adjustment, the study team does not suggest that all districts receive an adjustment. Rather, the recommendation is to target the smallest districts and gradually reduce the adjustment in larger districts, eventually providing no adjustment to the largest districts. More details are provided in the following "Detailed Modeling of Possible Implementation" section for this recommendation.
- **Improve the predictability of the funding allocation process by simplifying the calculation of funding to a single formula.** Qualification for funding under NESS is based on a complex application process that aims to certify that a school is itself necessarily small, which can limit the extent to which practitioners and the public can understand and anticipate these funds. Further, the actual funding provided is based on a complex analysis, which further limits understanding. Notwithstanding the complex nature of this type of an adjustment, the study team sees an opportunity for improvement in both the final adjustment and the predictability of the process.

With respect to the second area of improvement, NESS currently incorporates various measures relating to a school's size, transportation route, the extent of its consolidation, and other factors into its adjustment. The proposed recommended adjustment would only consider district size in its calculation, making it easier to communicate to practitioners. Additionally, it would be based on the result of a single equation, further increasing predictability, and its focus would be at the district level rather than the school level, recognizing districts as the primary organizational unit within which economies of scale are most often realized.[35]

However, the nonlinear nature of this sort of adjustment requires some degree of complexity. Unlike the ED student add-on WPU, there is no single linear weight that can be applied to adjust for scale because, as district size increases, the impact of economies of scale is exponential. As a result, a complex formula will always be required in order to specify this type of an adjustment effectively. Nonetheless, in the view of the study team, a single formula that allows practitioners to directly calculate their funding represents a more predictable process than the process currently in place.

With respect to applicability to the charter sector, the study team would not recommend applying the recommended scale adjustment to charter schools. The ways in which charters are able to manage administrative functions and staffing can impact how well they are able to provide a basic instructional program for a small group of students and mitigate the impact of scale. This is not to suggest that the effects of economies of scale

34 Several other programs seek to mitigate (at least in part) the impact of scale, and/or are tied to the NESS program. Some of these, such as the Regional Service Agencies, are outside of the MSP. The study team does not offer specific recommendations with respect to whether or how these programs should be affected by implementation of the proposed adjustment.

35 For example, school nurse FTEs, a highly specialized, yet fundamental, educational function, may be most efficiently allocated to schools at the district level. Similarly, a variety of aspects of staff allocation can likely be most efficiently addressed through district policies, rather than within an individual school context.

are not present in charters, just that these effects are likely different enough to warrant a different approach to accounting for them.

Alternative Policy Options

The primary alternative is to keep the NESS formula, with some changes to broaden its impact, perhaps by investing more overall in the program. One downside of implementing a simpler formula that focuses on a single factor is that it fails to account for some potentially important factors. Maintaining the NESS program would allow the state to continue to account for all of these complex factors.

The study team believes that scale is the most important factor incorporated into NESS, and that establishing a strong and predictable adjustment to account for the impact of economies of scale should be prioritized over the incorporation of additional adjustments for distinct factors. However, it may be possible for policymakers to amend NESS to maintain some of these additional factors and complement the recommended adjustment for scale while avoiding duplicative policies.

Detailed Modeling of Possible Implementation

Because the calculation of this adjustment is more complex than prior recommendations, this section first addresses the adjustment formula and then describes its components.

The formula is based on three values: v_1, v_2, and v_3. In the primary model, these values are about -3.315, 0.344, and -0.012, respectively. These values reflect the slope of the nonlinear trend estimated in the cost function analysis. In essence, these three values can be combined with the natural log of district enrollment, *ln*(*Enroll*), to calculate where a given district finds itself on this trend line.[36] Specifically, equation 1 is as follows:

$$ln(Enroll) * v_1 + ln(Enroll)^{2*} v_2 + ln(Enroll)^{3*} v_3 \quad (1)$$

The result is then considered in relation to the minimum value of equation 1, or *min*, which is the result for the state's largest district. To calculate this adjustment relative to the minimum adjustment, *min* is subtracted from the results for the *n*th district, $result_n$. The difference is then exponentiated, providing the percentage a given district's adjustment is above the minimum.[37]

$$\exp(result_n - min) \quad (2)$$

The result of equation 2 is the percentage above the minimum for a given district, which can be used as a weight specific to a given district and applied to all students in that district.

For example, a district with 2,800 students, in a year when the largest district has 80,000 students, can determine its weight by entering these enrollments into its formula:

$result_n$ = ln (2,800)* -3.315 + ln (2,800)^{2*} 0.344 + ln (2,800)^{3*} -0.012 ➔ -10.64

min = ln (80,000)* -3.315 + ln (80,000)^{2*} 0.344 + ln (80,000)^{3*} -0.012 ➔ -10.88

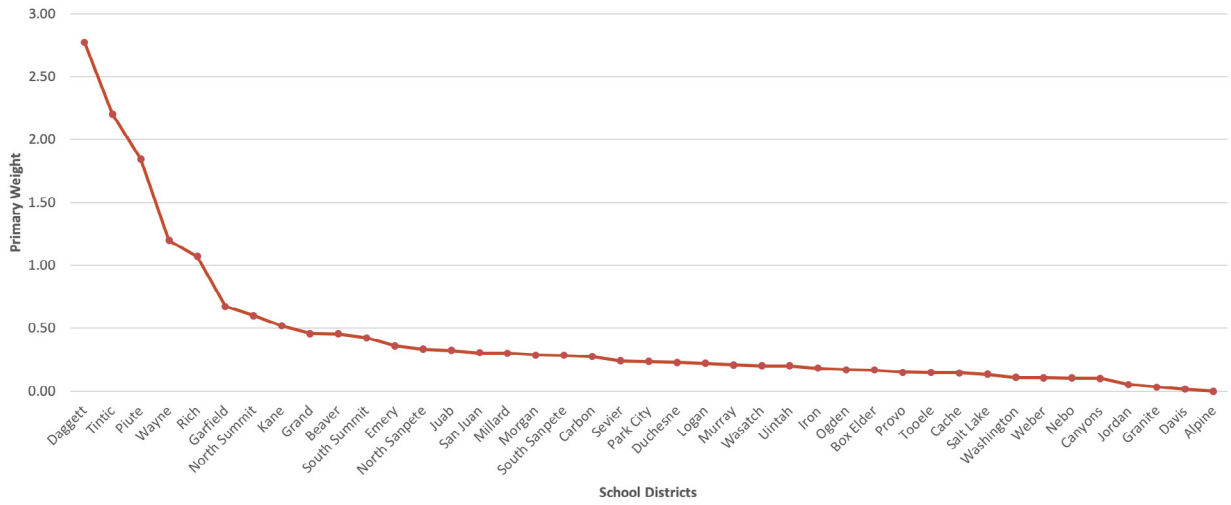
weight = exp ($result_n$ – *min*) ➔ exp (-10.64 – -10.88) ➔ 1.27

Exhibit 43 displays the weights for each district, based on these equations and using the primary values estimated by the cost function analysis model.

36 As is common in cost function analysis, district enrollment is log transformed in this study's model.

37 This exponentiation is necessary for interpretation because the dependent variable, school expenditures, was also log transformed in the cost function analysis model.

Exhibit 43. Primary Adjustment Weights Based on Cost Function Analysis Model Estimates With Respect to Scale of Operations, by School District in FY 2018–19



Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B, and additional FY 2018–19 data from the USBE.

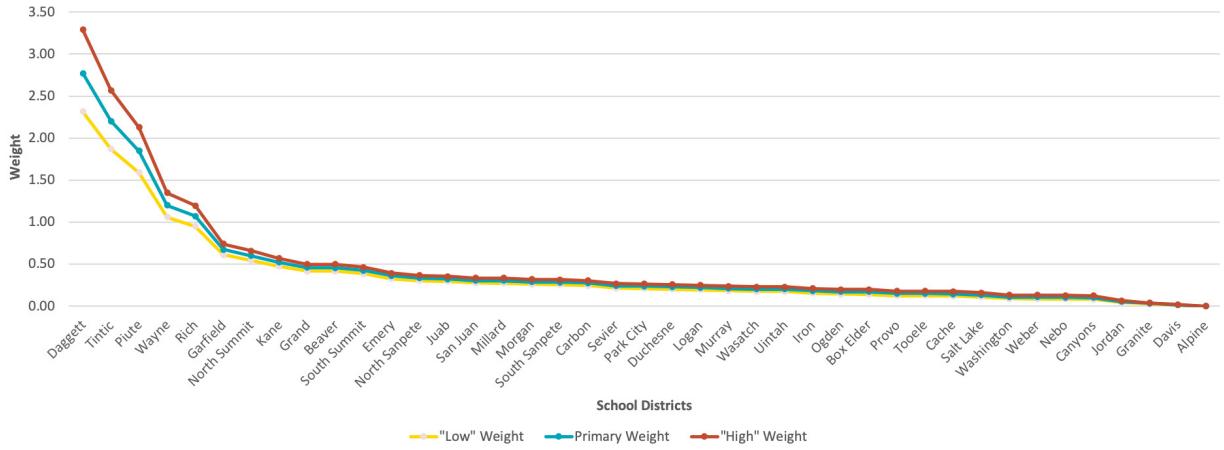
The study team has modeled the impact of a few possible approaches to implementing this recommendation, embedding in this modeling some uncertainty in the exact specification. As with the ED student add-on WPU, the 95 percent confidence interval is used to specify the range of adjustments implied by the cost function analysis. Exhibit 44 reports the values used for each modeled estimate, and Exhibit 45 includes the two additional "high" and "low" adjustments to the information displayed in Exhibit 43. As illustrated in Exhibit 45, the most uncertainty is present among the smallest districts with the largest weights.

Exhibit 44. Modeled Adjustments Estimated by the Cost Function Analysis, Based on the 95 Percent Confidence Interval

Value	Primary Adjustment	"Low" Adjustment	"High" Adjustment
Value 1 (v_1)	-3.315	-2.792	-3.838
Value 2 (v_2)	0.344	0.285	0.403
Value 3 (v_3)	-0.012	-0.009	-0.014

Source: Authors' calculations based on the data used for the cost function analysis, described in detail in Technical Appendix B.
Note: Values are approximate due to rounding.

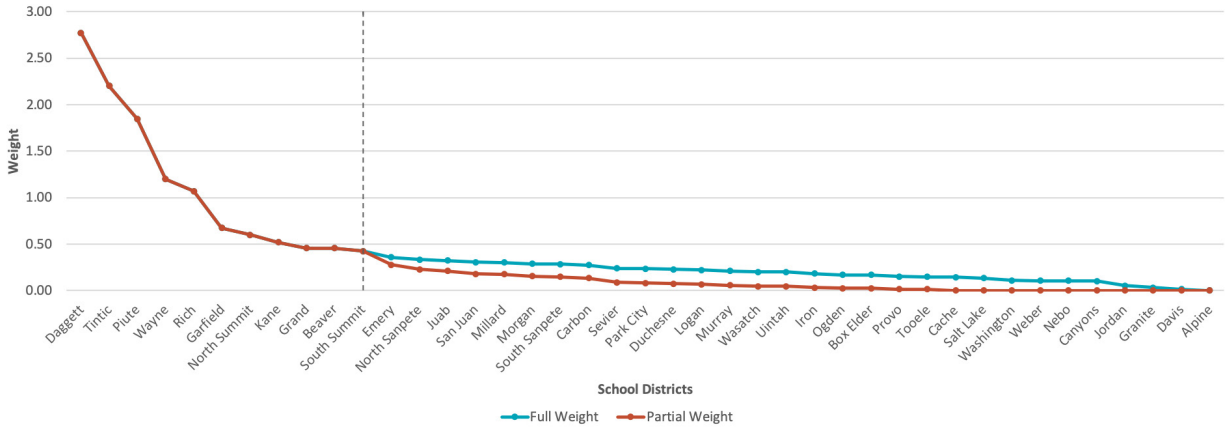
Exhibit 45. All Modeled Cost Function Analysis Weights With Respect to Scale of Operations, by School District in FY 2018–19



Source: Authors' calculations based on the data used for the cost function analysis, described in Technical Appendix B, and additional FY 2018–19 data from the USBE.

There is one final step to calculating these weights: an adjustment to target support to the smallest districts, based on the recognition that resources are constrained and that these districts have the highest needs. Specifically, the study team proposes that the weights in Exhibit 43 be adjusted to reflect a portion of the full weight comparable to the portion of enrollment that is made up by the 25th percentile. For example, the 25th percentile was 1,694 in FY 2018–19. Districts with more than 1,694 students enrolled in FY 2018–19 would receive only a partial adjustment based on how far their enrollment exceeds this value. If a district has, for example, an enrollment of 4,000, the 25th percentile value in FY 2018–19 is 42.35 percent of its total (i.e., 1,694/4,000), and therefore it would receive 42.35 percent of its full weight. Further, the largest districts — those with enrollments 10 times the 25th percentile value — would receive no adjustment at all. Again, this approach is in recognition of the fact that their large size makes such an adjustment unnecessary. Adding the final step described in this paragraph, Exhibit 46 reflects the partial and full district weights for each district, based on the primary adjustment (as shown in Exhibit 43). A vertical line identifies the last district to receive a full weight.

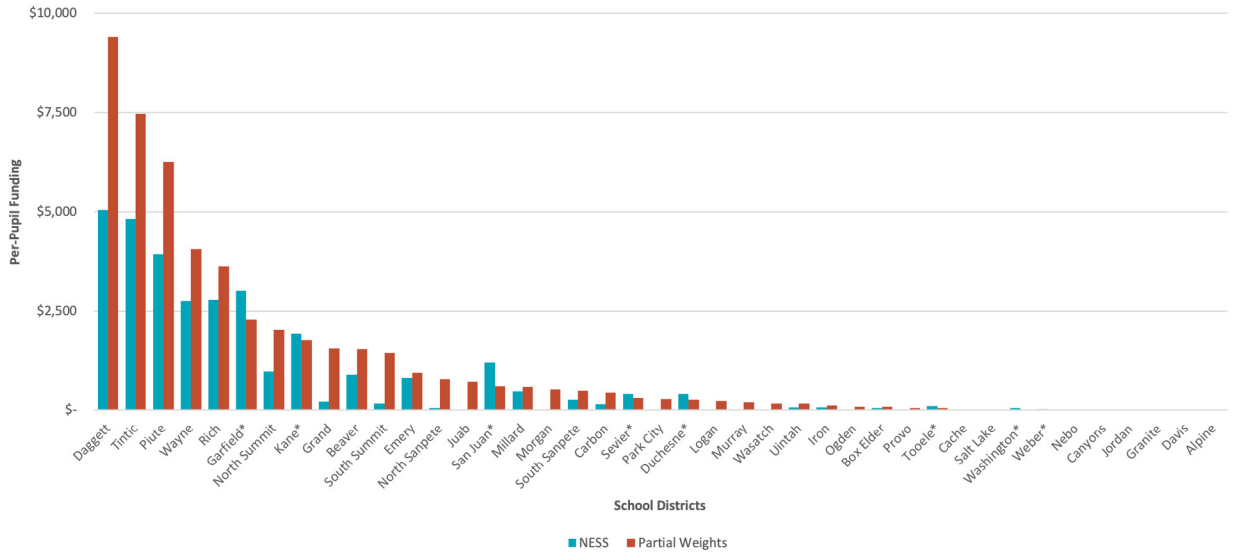
Exhibit 46. Cost Function Analysis Weights With Respect to Scale, Based Upon Primary Adjustment, Including Full and Partial Weights, by School District in FY 2018–19



Source: Authors' calculations based on the data used for the cost function analysis, described in Technical Appendix B, and additional FY 2018–19 data from the USBE.

Whichever adjustment is used (i.e., primary, high, or low), the resulting weights would be multiplied by the WPU value to generate the additional per-pupil amount provided through the adjustment. If the proposed partial weights are applied assuming the WPU value in FY 2018–19, 31 districts would receive some amount of funding, and almost all districts would receive more funding or equivalent funding compared to NESS funding (eight districts would see a reduction). Among those districts receiving funds, the average amount is about $1,568 per pupil, with an overall program total of about $50.1 million, compared to the $31.5 million allocated to districts under NESS in FY 2018–19. Exhibit 47 displays per-pupil amounts under NESS and under the proposed partial weights. Districts receiving a reduction in funding are marked with an asterisk (*).

Exhibit 47. Estimated Per-Pupil Amounts for Necessarily Existent Small Schools and Proposed Cost Function Analysis Weights, by School District in FY 2018–19



Source: Authors' calculations based on the data used for the cost function analysis, described in Technical Appendix B, and additional FY 2018–19 data from the USBE.

Recommendation 4. Establish within the Basic School Program an adjustment for regional variation in the price of teacher labor, based on study findings.

Key Findings

Two key findings support this recommendation:

- **Phase 2, Finding 10**: Local prices for teacher labor vary geographically, with prices up to 31 percent higher in some regions, compared to others.
- **Phase 2, Finding 14:** Predicted spending increases as the regional price of labor increases, as measured by the Teacher Salary Index.

Intended Effect

This recommended adjustment **would**:

- **Use the Teacher Salary Index (TSI) to account for differences in what districts in Utah must pay to hire teachers with the same qualifications that are driven by location.** The key findings suggest that some districts in Utah must pay more to hire teachers with the same qualifications as their peers in other parts of the state.[38] In general, the reasons that salaries vary systemically fall into three categories, as described in Taylor (2011): the person, the job, and the location. Individuals with stronger qualifications

38 Specifically, the TSI suggests more variation than alternative measures — such as the CWIFT — are able to describe, though the highest labor prices are still generally clustered in the districts around the Salt Lake City area.

may be paid a higher wage, and jobs with more difficult working conditions may also require a higher wage. The extent to which wages vary according to these differences may depend on conditions beyond a district's control, but generally wages largely depend on district preferences and policies. In contrast, the location of a district or school may require differing wages if a community has a higher cost of living and/or is a more or less desirable location for workers to reside in. Several states across the country include an adjustment for this sort of locational variation in the price of teacher labor, including Florida, Maryland, Washington, New Jersey, Wyoming, and Colorado (Florida Department of Education, 2019). Ultimately, the purpose of this type of adjustment is to put districts within a state on an even playing field with respect to what they must spend to access the same resources.

The recommended adjustment **would not**:

- **Support attracting and retaining higher-quality staff in specific positions or districts.** It may be helpful to compare this recommendation with existing strategic investments in teacher salaries, such as the Educator Salary Adjustment program. The purpose of this program is to support attracting and retaining qualified staff in specific positions. To the extent that a regional adjustment, such as the one in this recommendation, allows districts to attract and retain teachers to their community, such an adjustment might be viewed as a complement to the Educator Salary Adjustment program (Utah Code Annotated § 53F-2-405). However, rather than singling out positions and awarding bonuses based, in part, on performance, as the Educator Salary Adjustment program does, this adjustment would allow districts to better meet regional labor market salary expectations before considering differences in staff characteristics. Another comparable program is the Effective Teachers in High-Poverty Schools program (Utah Code Annotated § 53F-2-513), though this program also provides bonuses based on a teacher's performance and assignment to high-poverty settings, unlike the recommended adjustment.

With respect to applicability to the charter sector, the study team has concluded that the regional variation in local prices estimated in the TSI is likely to impact charter schools in the same way, on average, as it impacts their traditional school peers. Thus, this recommendation can reasonably be applied to the charter sector.

Alternative Policy Options

Alternative approaches to estimating the variation in local prices exist, which Utah could choose to draw on:

- **These approaches include the use of a cost-of-living index or the use of a comparable wage index.** The advantages and disadvantages of each of these methods are discussed in more detail in Taylor (2011), but one big advantage of the approach recommended in this study, the hedonic wage analysis, is its ability to examine more granular data than other models can. For example, the CWIFT, a national comparable wage index prepared by the NCES and the most prominent alternative measure, offers only 12 district-level values for the 41 districts in Utah. Any adjustment based on this analysis would only be able to capture differences across very large and, arguably, diverse regions of the state. There may also be limitations in the availability of data required for a comparable wage analysis at the level that would allow for a more granular measure, even if it, unlike the CWIFT, could be designed for Utah specifically.

Detailed Modeling of Possible Implementation

Specific implementation of the type of adjustment described in this recommendation varies across states. Many states use an index based on the state average prices, such that a district's value reflects its percentage above

or below the average. One important difference in how this sort of adjustment has been implemented in other states is whether or not the adjustment applies to both districts with above-average prices *and* districts with below-average prices. Districts in the latter category would have their funding lowered as a result of the adjustment. Some states, such as Wyoming, apply their index by adding funds only to districts with above-average prices, leaving those with below-average prices unadjusted (Taylor, 2011). The study team recommends against this approach. As argued in Taylor (2011), this approach provides more funding to districts with below-average prices than is needed, given local prices, and could have the long-term effect of truncating additional funds to districts with above-average prices.[39]

Whichever districts receive the adjustment, the adjustment is most often applied to the final foundation amount, which includes the application of all weights and other adjustments. The study team recommends this approach for Utah. Specifically, in this approach, the district average TSI would be applied to a district's final BSP amount, using an index based on the state average.

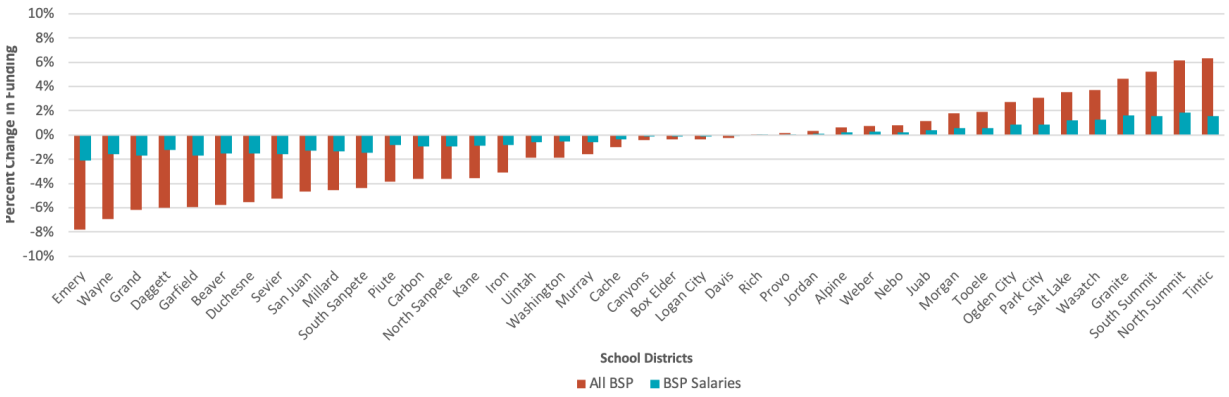
The study team recommends one additional step: that the adjustment be applied only to the portion of BSP funds in a given district that is spent on instructional staff. This step is because the TSI is based on teacher salary data only. Local prices for other categories of expenditures may or may not vary regionally in the same way, including prices for other types of staff. This study cannot provide evidence to indicate whether this is or is not the case, so the study team sees applying the recommended adjustment to the portion of BSP funding typically spent on instructional staff as the most appropriate approach. This type of approach is used in Florida, with the same considerations about differences in prices for different categories of spending in mind (Florida Department of Education, 2019).

Exhibit 48 illustrates each district's percentage changes in BSP funding that would result from applying the TSI to the FY 2018–19 BSP amount, in two ways: (1) to all BSP funding, and (2) to the portion of district funding spent on certificated instructional staff in FY 2018–19.

The study team does feel it would be appropriate to extend this recommendation to the charter sector, given that geographic variation in the price of labor is likely to also impact charter schools in a given location. However, the impact of this proposal on charter schools is not modeled in Exhibit 48, and would depend on the district in which the charter school is located.

39 This effect is because the state would need to entirely fund the adjustment for above-average districts with new revenue, as opposed to the reduction of funds to below-average districts contributing to these additional dollars.

Exhibit 48. Percent Change in Funding, Based Upon Applying the Adjustment to All Basic School Program Funds and to the Portion of Funds Spent on Instructional Salaries, FY 2018–19



Source: Authors' calculations based on the data used for the cost function analysis, described in Technical Appendix B, and additional FY 2018–19 data from the USBE.

Section 7: Targeted Programs

Recommendation 5. Reexamine the Related to Basic programs to optimize coherence, stability, continuous improvement, and balance with Basic School Program funds.

Key Findings

Several key findings support this recommendation, including:

- **Phase 1, Core Components.** Utah stakeholders reported that the vision set by the USBE strategic plan aligns to their own vision for Utah's schools.
- **Phase 1, Current Distribution Formulas.** There is general alignment among the expectations of the MSP, the target outcomes based on the Portrait of a Graduate, and the assignment of funding based on statute in the MSP and related categorical programs with one significant exception with respect to social-emotional learning.
- **Phase 2, Finding 7.** More equitable state funding systems run the vast majority of all funding through the equitable state formula.
- **Phase 2, Finding 30.** Case study schools recognize and invest in social-emotional resources to support the "whole child."

Key Considerations

This recommendation is distinct from the others in that it offers considerations for continually improving and optimizing the RTB programs as a whole, rather than specific changes to the existing set of programs.

It is beyond the scope of this study to evaluate each individual program, primarily because of the varied and limited impacts of each particular program. Any one program will have an inconsistent impact on resources available to a given district, and will have only a minimal impact systemwide.

Rather, the study team considered the RTB programs as a whole and how they can be best leveraged to serve state educational principles. Specifically, the study team offers considerations in four particular areas: coherence, stability, continuous improvement and evaluation, and balance with the BSP.

Although the focus of this recommendation is the RTB programs in particular, many of the considerations that it offers can easily be applied to other components of the MSP and to programs beyond the MSP. For example, extending the staged process of continuous improvement described in this recommendation to new and innovative non-MSP programs can improve system coherence and may benefit the success of these programs.

Coherence

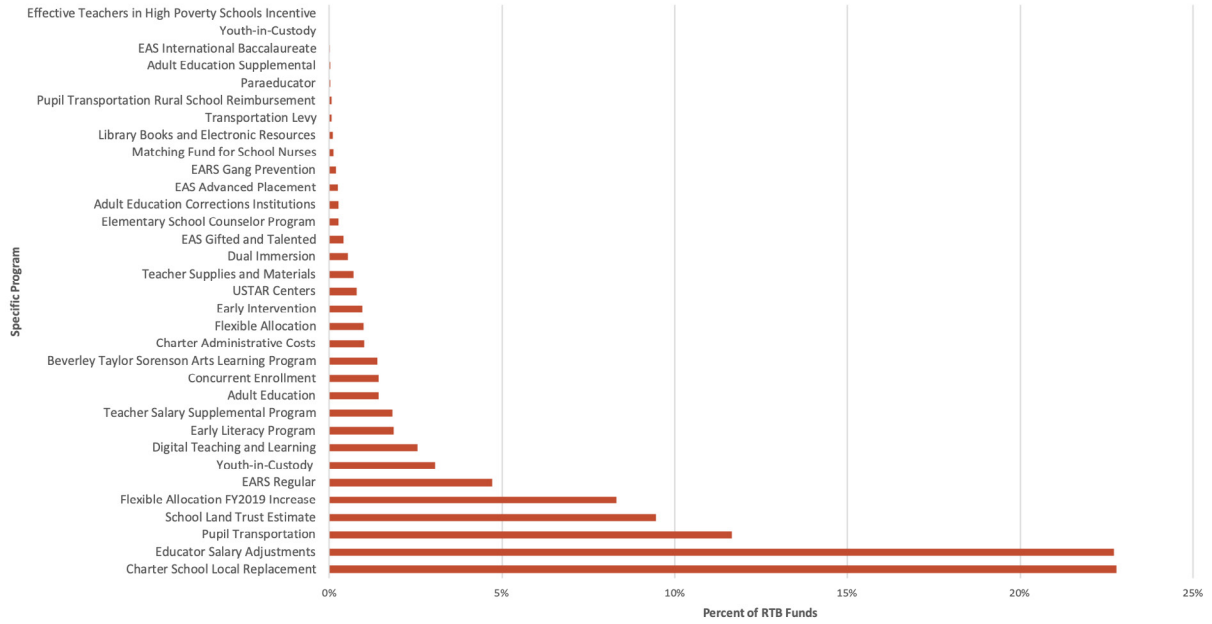
In Phase 1, the study team found evidence to suggest that, in general, the state's strategic planning and vision is coherent with the current distribution formulas in the MSP, though opportunities for improvement may exist. In particular, investment in social-emotional learning was identified as the one area of misalignment.

Currently, two MSP programs generally support social-emotional learning: the Matching Fund for School Nurses (Utah Code Annotated § 53F-2-519) and Elementary School Counselors (Utah Code Annotated § 53F-2-209) programs. Funding for these programs totaled only about $2.9 million in FY 2018–19, making up a very small proportion (< 0.5 percent) of all RTB funds, let alone MSP funds overall. If supporting social-emotional learning is a high priority in state strategic planning, this priority does not seem to currently be reflected in the MSP.

However, addressing such gaps in system coherence may be possible through RTB programs if they can be organized around a few high-leverage purposes that serve key state goals (coherence of purpose), and if funds can be allocated in proportion with the priority of the goal served by any particular program (coherence of prioritization).

Currently, the various RTB programs (28 programs in FY 2018–19) serve many different purposes, with significant variation in the level of investment provided, and cannot be easily organized into a few key purposes. To illustrate this point, Exhibit 49 displays the percentages of funds allocated to each RTB program in FY 2018–19. The exhibit indicates that there are some clear priorities, including Educator Salary Adjustments (23 percent of RTB funds), Charter School Local Replacement (23 percent of funds), and Pupil Transportation (12 percent of funds), but also many very small programs with diverse aims, such as accelerated students, adult education, and school materials/supplies.

Exhibit 49. Percent of Funds Allocated to Each Related to Basic Program in FY 2018–19



Source: Authors' calculations based on financial data from FY 2018–19 maintained by the USBE.

As a starting point for improving the coherence of RTB programs, the study team offers the following specific considerations:

- Do the purposes of the RTB programs overall and of each individual program support Utah's most critical state strategic goals?
- Is the allocation of RTB funds reflective of state priorities, allocating significantly more funding to programs serving high-priority goals?

Stability

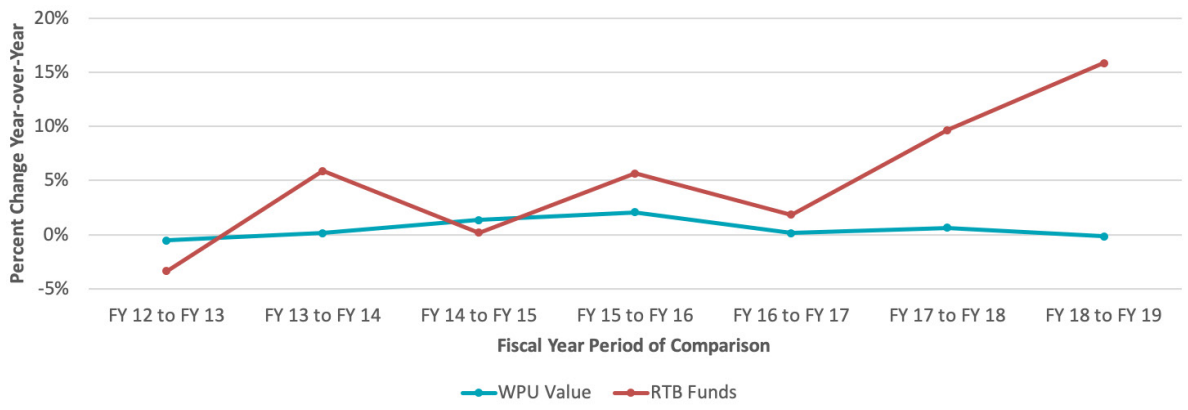
Stability of funding is often a concern for district business administrators, who must think a few years beyond the current year and anticipate changes in their district's budget. Long-term financial planning is part of a strong strategic financial plan for any public program. For example, the Government Finance Officers Association (2020) identifies long-term planning as a best practice in any budget process, stating that "[i]t can be used as a tool to prevent financial challenges; it stimulates long-term and strategic thinking; it can give consensus on long-term financial direction; and it is useful for communications with internal and external stakeholders" (Government Finance Officers Association, 2020, p. 1).

In engaging with the study team, business administrators in Utah often expressed concerns about the regular fluctuations in the RTB programs in particular. This perception is supported by the numbers. Specifically, changes to the value of the WPU, the foundation of the BSP, have ranged from -1 percent to 2 percent year-over-year between FY 2011–12 and FY 2018–19, accounting for inflation. Conversely, changes to total funding for RTB programs have been more volatile, ranging from -3 percent to 16 percent in the same period, again accounting for inflation. These changes mask the volatility in individual programs. Of the 38 programs in existence during this eight-year period, six programs ended, nine were newly created, and four were implemented intermittently across

years. Also, changes to program-level funding often changed more drastically than RTB funds overall, including many programs with year-over-year changes in funding larger than +/- 50 percent. Large percentage changes in very small programs are understandable, but this volatility was also seen among the largest programs, which average about $85 million each annually.

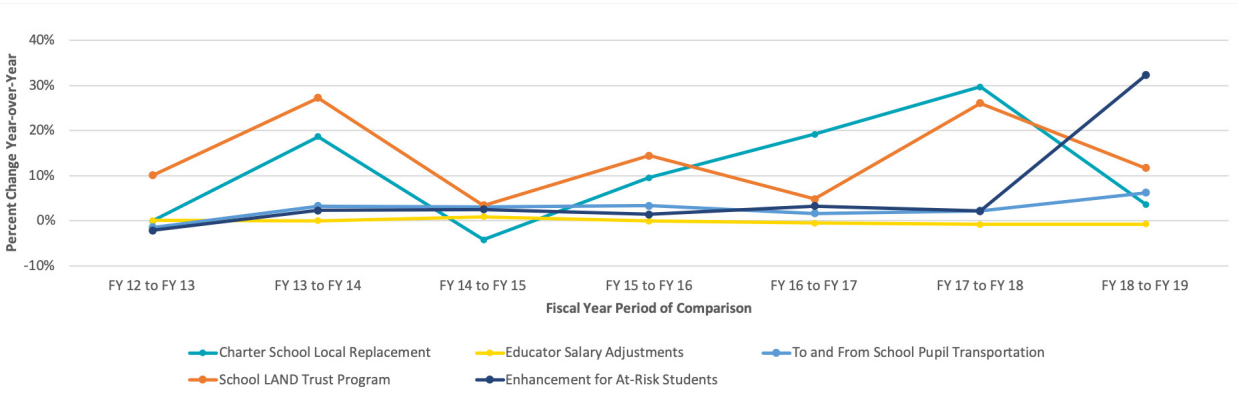
Exhibit 50 illustrates this volatility, displaying the percentage changes in the WPU value alongside the total funding allocated to RTB programs. Exhibit 51 displays percentage changes in the five largest RTB programs, illustrating the larger volatility among specific programs.

Exhibit 50. Year-Over-Year Percentage Changes in the Weighted Pupil Unit Value, Compared to Total Funding for the Related to Basic Programs, FY 2011–12 to FY 2018–19



Source: Authors' calculations based on financial data from FY 2011–12 through FY 2018–19 maintained by the USBE.

Exhibit 51. Year-Over-Year Percent Changes in the Five Largest Related to Basic Programs, FY 2011–12 to FY 2018–19



Source: Authors' calculations based on financial data from FY 2011–12 through FY 2018–19 maintained by the USBE.

Given the levels of volatility shown in Exhibits 50 and 51, the concerns expressed about this volatility by business administrators, and consensus that stability is a strong feature of strategic financial planning, opportunities to improve the stability of funding for RTB programs may exist. Even if, as may be the case for particular

programs, program funding fluctuates due to very clear inherent features of the program's source of funding, the state can still consider policies to mitigate the impact on districts of these natural fluctuations.[40]

As a starting point for improving the stability of RTB programs, the study team offers the following specific considerations:

- When considering long-standing programs, how predictable has funding been year-over-year?
- With respect to new programs, is there a sufficient and predictable initial period over which the program will be phased in and funded?
- When preparing to end a program, is there a sufficient and predictable closing period over which the program funding will be drawn down?

Continuous Improvement and Evaluation

Serving as a laboratory for new programs using innovative approaches to meeting key state strategic goals in new ways is perhaps one of the more exciting systems-level roles that the RTB programs can play. Programs serving new or underserved goals in innovative ways can be piloted through the RTB component of the MSP and can support continuous system improvements over time. The volatility in the RTB programs suggests that these programs may already serve this purpose to some extent. Policymakers create programs based on a specific identified need, and strategically end them depending on their perceived success. Though this sort of churn can create instability, it can also facilitate innovation. This point underscores the fact that tensions may exist between the four areas presented here and suggests a need for policymakers to consider them together as well as individually.

Not all RTB programs may be innovative pilots. Some may be carrying forward a successful innovative practice to a broader scale, while others may be better established and require less frequent active monitoring. One way to improve RTB program success may be to more clearly define what stage of development a program is in and design its implementation to both fit that stage and progress to the next stage. General stages of development include:

- **Prototype Development:** A program that is truly innovative and still in the very early stages of developing key program elements such as a logic model, program staff roles, defined intended outcomes, and so on.
- **Pilot and Scale:** A program that has a clear model for implementation but has not been tested in the field, either among a pilot cohort or at a broader scale.
- **Formal Evaluation:** A program with a long track record of implementation sufficient to allow for more rigorous and formal approaches to evaluating impact.

However, in order to implement and improve new programs, failure is unavoidable to some extent. Whether an innovative new program fails to succeed in its earliest stages or falters as it expands its scale, the reality of failure is the main risk of taking this approach to the RTB programs. Without failure, though, improvement and learning cannot proceed.

One strategy for mitigating the risk(s) of failure is to develop a robust process of evaluating and improving programs at each stage of development. Exhibit 52 describes some approaches that are commonly used in education to accomplish this strategy, by their associated stage of development.

40 For example, the School LAND Trust program funding fluctuates as a result of changes in market performance impacting the permanent State School Fund. The fact that the market fluctuates cannot be directly addressed, but the state can consider policies that mitigate the impact of these fluctuations on district funds and can make the annual dollar amount more stable.

Exhibit 52 is not intended to be a comprehensive list of approaches for developing, refining, and scaling innovative solutions to educational challenges. Rather, each of these approaches illustrates the intentionality required to continually improve and how the process used will differ depending on the stage of development that a particular program is in. In addition, well-established programs may not require as robust a process of improvement as newer programs, and a more targeted review of existing programs may be more feasible.

Finally, it should be noted that, in some cases, the approaches listed in Exhibit 52 — particularly those for early stages of development — have not been tested using the most rigorous methods. For example, the study team is not aware of evidence that the use of improvement science methods will *cause* a given program to better achieve its goals. Given this, a policymaker would ideally use these more rigorous causal methods to evaluate programs. The challenge, however, is that the most rigorous approaches to evaluation are often infeasible for the most innovative pilot programs, and may not easily be leveraged to support, for example, scaling a program to a diverse set of implementation contexts.[41]

Simply put, the difficulty in employing the most rigorous approaches, and the lack of testing of methods more appropriate to innovative programs, should not, in the view of the study team, be a barrier to establishing a thoughtful process of monitoring, evaluating, and continually improving programs, whatever their stage of development.

41 For example, causal designs, such as randomized controlled trials, are often limited in their ability to extend to contexts beyond the very specific context of the evaluation. Thus, several trials would need to be conducted across many diverse settings to truly rely on this method alone to validate programs at scale.

Exhibit 52. Common Processes of Improvement Used in Educational Program Implementation

Stage	Approach	Description	Citation
Prototype Development	Design Thinking	Design Thinking, currently practiced through the Institute of Design at Stanford, is an approach to program design that is focused on empathy and creativity to improve design. There are five stages (or "modes") to the process: • **Empathize:** first understanding the perspectives of "users" or people who have first-hand knowledge of the context of a design problem; • **Define:** using information about the problem to create an actionable problem statement; • **Ideate:** engaging in a creative process to get all ideas on the table to generate the broadest range of possibilities; • **Prototype:** iteratively generating "prototype" solutions that emphasize specific aspects of the problem to ultimately create a more holistic solution; and • **Test:** bringing prototypes to users and other relevant practitioners to assess the strength of these early ideas; ultimately, iterative testing produces a final prototype that can be more formally tested.	Institute of Design at Stanford (2010)

Stage	Approach	Description	Citation
Pilot and Scale	Improvement Science	Developed by the Carnegie Foundation for the Advancement of Teaching, improvement science is a process that emphasizes the use of rapid testing to support developing, refining, and scaling solutions to complex challenges. One of its strongest features is its flexibility to tackle both micro- and macro-challenges systemically. It is guided by six core principles: • Make the work problem-specific and user-centered. • Variation in performance is a core problem to address. • See the system that produces the current outcomes. • We cannot improve at scale what we cannot measure. • Anchor practice improvement in disciplined inquiry. • Accelerate improvements through networked communities.	Yurkofsky (2015)
Formal Evaluation	Traditional Program Evaluation	Once a program reaches a stage of implementation in which it has a consistent process at scale and has been refined through iterative testing, a more formal evaluation may be called for. There are many different types of evaluations, as well as variations on more general methods. These are likely familiar to policymakers and represent a more general category than the other methods presented in this table.	Abadie & Cattaneo (2018)

Stage	Approach	Description	Citation
Formal Evaluation	Cost-Effectiveness Analysis	Cost-effectiveness analysis is focused on understanding the relative efficiency of a given program at meeting its intended goal, by comparing ratios of costs and effectiveness. In short, programs that achieve more progress per $1 invested are more efficient choices, even if their overall effectiveness is smaller in magnitude. This sort of analysis might be described as an assessment of one's return on investment in the context of education. Its use in education is championed and supported most by the Center for Benefit-Cost Studies of Education, at Teachers College in New York City, whose staff includes Henry Levin, a pioneer of the method and its practical applications. This type of more formal evaluation requires an ability to compare alternatives with the same end goals, and is perhaps most applicable when policymakers are faced with multiple policy options.	Levin & Belfield (2015)

An important theme that connects all of the approaches presented in Exhibit 52 is the principle that failure is an opportunity to learn and a risk well worth taking in the pursuit of improvement. Too often, a program is given a "sink or swim" mandate and thus must perform well in its first implementation in order to continue to receive support. A process of continuous improvement, however it is structured, must allow for the first idea to be, as the Carnegie Foundation puts it, "possibly incorrect and definitely incomplete" (Robinson, 2018, p. 3).

With this perspective in mind, the study team offers the following specific considerations to support policymakers to improve the role that RTB programs can play in continuous systems improvement:

- Is a robust process in place for assessing the effectiveness of all RTB programs, particularly those using innovative and untested approaches?
- How should RTB programs be implemented differently depending on their stage of development (prototype development, pilot and scale, formal evaluation)?
- How can program effectiveness be assessed through a process of continuous improvement, rather than a "sink or swim" approach?

Balance with the BSP

With systemwide coherence in mind, it is ideal that the constellation of RTB programs complement, rather than conflicting with, other components of the system, particularly the BSP.

In the view of the study team, the BSP represents the foundation of the MSP funding, and reflects the priorities of the state, which must be supported in tandem with any changes to the base per-pupil amount reflected in the WPU value. Thus, to the extent that RTB programs either overlap or conflict with BSP programs, there are likely opportunities to improve balance between the two.

A concrete example of this point is the Enhancement for At-Risk Students (EARS) program, which would be duplicative with the add-on WPU for ED students in Recommendation 2. If the state adds it to the BSP, a logical step would be for this new adjustment to replace EARS, and for the current EARS funding to be diverted to support the new weight, to maintain balance between the BSP and the RTB programs.

This is a very clear-cut example of what may prove to be a more complex and ongoing process of regularly rebalancing programs in the RTB with the BSP. Policymakers may want to establish a more structured process by which this rebalancing occurs on a regular timetable.[42]

As a starting point for balancing RTB programs with the BSP funds, the study team offers the following specific considerations:

- Across the BSP and the RTB programs, are there any overlapping, competing, or conflicting programs?
- Is there a sufficient process in place to regularly review the BSP and the RTB programs, and does it sufficiently consider the balance between these two components of the MSP?

Section 8: Effective Practices

Recommendation 6. Establish a competitive grant focused on supporting schools to develop effective processes within two key strategic areas.

Key Findings

Several key findings support this recommendation, including:

- **Phase 2, Finding 25.** Districts with case study schools consistently provide a high level of autonomy and flexibility for schools to determine how to spend their funds.
- **Phase 2, Finding 27.** Culture and leadership among case study schools are important features of their success.
- **Phase 2, Finding 28.** Case study schools prioritize staff support, including structures for staff collaboration and school-directed and embedded professional development opportunities.
- **Phase 2, Finding 29.** Data use to improve instructional practices and target support to struggling students is common among case study schools.
- **Phase 2, Finding 30.** Case study schools recognize and invest in social-emotional resources to support the "whole child."

Intended Effect

A focus on a deeper and more qualitative review of successful school settings was an important complement to the more quantitative analyses conducted for this study. Its overarching goal was to understand the practices

42 It should be noted that a process that might have been leveraged for just this purpose was previously in place under H.B. 230, 2018 Gen. Sess. However, this act was subsequently repealed.

of successful schools in sufficient detail to illuminate findings regarding how resources can be used well and efficiently, and how nonmonetary resources (e.g., community engagement, volunteering, parent engagement) can support or complement effective practices and resource use.

Ideally, this sort of investigation would reveal a practice or set of practices that are new and easily replicated. However, what the study team found instead is that the most important effective practices are known but are very difficult to replicate. The key findings for this recommendation paint a picture of a high-functioning school environment that makes strategic investments and, more importantly, fosters a collaborative culture that positions the school well to *make the most* of these investments.

For a culture to support an organization in this way, it must be particularly aligned with that organization's context. There is no one way for this support to be fostered and sustained. Staff at case study sites were consistently focused on *their school's* culture, and they did not necessarily depend on a charismatic leader to sustain their school's vision and community. Moreover, these staff were given the flexibility to create and sustain their culture through changes in the broader system.

This combination of strategic investment and culture may be impossible to create with specific policies, especially policies adopted at the state level. However, state policymakers can support and encourage schools across the state to develop or refine such practices themselves. As more examples of success in a variety of settings emerge, the state can further encourage success by providing a network through which practices that drive success in similar settings can be disseminated.

Specifically, the recommended grant represents a first step toward this process of encouraging effective practices across the state, through:

- **Investment in two key strategic priority areas: data use and social-emotional learning.** Both have a broad footprint in school operations, from overall administration to classroom interactions, and both are described in more detail in the following section.
- **A competitive process is one way to surface and elevate more, and more diverse, examples of success in these strategic policy areas.** Schools and districts with the most potential to improve in these areas will provide the whole state with a richer picture of the conditions necessary for success.[43]
- **Prioritization of schools willing to maximize opportunities for staff impacted by the recommended grant to collaborate and to access embedded professional learning.** This sort of collaborative culture is described further in a following section.

A school's autonomy to fully design and implement a plan aligned with the school's unique context is also a critical feature of potential grantees. In addition, the study team recommends that a process of testing and refinement be established both for the grant overall and for the implementation process of each grantee individually. As outlined in Recommendation 5, a structured process of continuous improvement and evaluation is critical even at the earliest stages of development.

43 Emphasizing an applicant's "potential to improve," rather than demonstrated prior achievements, is especially important for gathering diverse examples of success. For effective practices to be scalable, how to implement the practices in settings that are not already primed for success must be clear, even in settings that are actively struggling to succeed.

Strategic Priorities

Strategic Priority 1. Establishment or expansion of data collection, maintenance, and use, including technology and staff capacity.

This study's case study sites use data to identify student gaps, and this data use guides many of their tiered supports. This type of data-driven approach first requires investments in the technology needed for student assessment and progress-monitoring.

Beyond the hardware and software tools required, staff capacity to analyze and interpret data is critical. In case study sites, this capacity was often supported and expanded by instructional coaches, counselors, and principals, who supported teachers' use of data to identify students in need of intervention. These support staff identify specific skill-based deficits in struggling students, and create small student groupings to monitor student progress. Particularly in the larger districts, some district-level staff were available to provide training and support for school-level use of data.

A successful proposal focused on data use would incorporate best practices, including technology investments paired with strong support for the use of the technology.

Strategic Priority 2. Expansion of social-emotional supports to schools, especially to allow for additional support staff and for training to integrate these supports into the schools' organizational structures and cultures.

Social-emotional supports for students were a priority in the case study sites. In several cases, the study team heard that districts increased the level of social-emotional support personnel available to schools in recent years, and heard about the positive impacts of this increase. The study team also heard that funds at the discretion of schools are often tapped to provide additional social-emotional support personnel. Although particular staffing allocations varied across case study sites, staff from all sites reported that student support resources were accessible when needed.

A successful proposal focused on social-emotional learning would draw on best practice to articulate a clear and coherent staffing plan and describe how resources would be effectively targeted according to needs as they arise.

Collaborative Culture

Another key finding from the case study sites was the collaborative nature of these schools. The study team found that case study schools are intentional about creating their school cultures to put student needs first, to be collaborative, to support teachers' professional growth, and to have a commitment to continuous improvement.

Such truly collaborative school cultures require some level of investment of time and resources. They are able to utilize professional development, professional learning communities, and/or other collaborative time in the school schedule to build and support the development of such cultures.

With this observation in mind, the recommended grant would also require that schools identify or establish policies and practices that maximize opportunities for school staff impacted by the recommended grant to collaborate and access embedded professional learning to support integrating implementation. Among the recommended criteria for identifying strong candidates for the grant would be that the candidates have dedicated staff time for these purposes.

Alternative Policy Options

There is one primary possible alternative approach to encouraging improvements in data use and social-emotional learning:

- **The USBE can develop and provide resources and support to districts and schools in these areas.** A potential benefit of this alternative might be the ability to bring best practices to more districts and schools quickly, through the USBE's existing infrastructure. However, an important downside to centralizing the process is that doing so, by definition, standardizes the approach to improvement and does not provide schools with opportunities to foster these areas of focus with autonomy, which have been critical to the case study schools' success.

This alternative approach might be best implemented after a more robust profile of successful efforts is available from a wider pool of schools across the state. Such a robust profile could be used to establish a consensus about programs to improve data use and social-emotional learning in Utah. Such a consensus may support progressing the recommended grant to the next stage of development, and ultimately scaling it to a wider population of schools and districts.

Detailed Modeling of Possible Implementation

The study team makes no specific recommendation about the amount of funding provided for the recommended grant, and has not modeled its impact. In general, given the emphasis of case study schools and their districts on autonomous development, and given the recommended grant's status as a new program, the grant program would likely be at too early a stage to warrant a large immediate investment. This point is not meant to suggest that the two strategic priorities do not require a substantial investment, only that, in order for such an investment to be effective, a period of development and refinement is critical before the investment in these important priorities reaches the necessary scale.

Conclusion

As the final phase of this study comes to a close, the results point to an opportunity for Utah to move forward by looking back. The Minimum School Program, the foundation of education funding, lays out clear principles that have broad resonance and ownership across all levels of the system. Although, at times, there may be tension between these principles, they nonetheless offer a clear map to guide policymakers. A return to these foundational principles offers the best opportunity to chart a path forward to an improved state funding formula.

This path includes opportunities to rebalance local communities' contributions to the system overall to pay their reasonable portion of the cost of a minimum program while preserving their right to contribute resources to go beyond the minimum program. It also includes opportunities to improve how the state accounts for important differences in resource needs of students, schools, and districts, given their unique contexts, and to better ensure that all children receive reasonably equal educational opportunities. Finally, it includes opportunities to better leverage programs beyond the Basic School Program to meet critical needs, and to refine the program mechanisms by which to do this.

Part 1: Ensuring Reasonably Equal Educational Opportunity

The primary purposes of the equity analyses described in Part 1 of this report are to analyze the impact of varying levels of local property tax assessments and state equalization aid, examine policies across the United States with respect to defining a local funding match, assess how costs vary by educational context, and use the results of these analyses to better understand the extent of equitable access provided through the state's primary funding program, the MSP.

In summary, the results of these analyses suggest that current efforts to mitigate the differences in local wealth and its impact on a community's capacity to raise local revenue are insufficient, and that the state's primary mechanism to define local contribution is out of step with national trends. Moreover, several important differences in the educational contexts of schools and districts can be better accounted for in the state funding formula.

Part 2: Successful Schools

The analyses described in Part 2 support a better understanding of how schools utilize resources effectively. These analyses were conducted through engagement with 10 schools, from across the state, that represent successful settings. In addition to this engagement, a survey was administered to all districts and charter schools in the state.

The results of these analyses suggest that the most important effective practices are likely familiar to districts and schools, and, crucially, that they are very difficult to replicate. The key findings for this part paint a picture of a high-functioning school environment that makes strategic investments and, more importantly, fosters a culture that positions the school to make the most of these investments.

Part 3: Policy Recommendations

Based on the results of the analyses in Phase 2 of the study and on findings in Phase 1, Part 3 offers six policy recommendations, organized into four domains of the state funding formula system: Funding Generation, Funding Distribution, Targeted Programs, and Effective Practices.

Funding Generation

Recommendation 1. Increase the Basic Property Tax Levy to rebalance the defined local share of the Basic School Program and minimize the fiscal impact of system improvements to funding distribution.

An increase to the Basic Property Tax Levy would bring the balance of state and local contributions more in line with national trends, and would likely concentrate more funding in the Basic School Program, the state's primary vehicle for ensuring equal educational opportunities.

Funding Distribution

Recommendation 2. Establish an add-on Weighted Pupil Unit for economically disadvantaged students in the Basic School Program, replacing existing programs targeted to these students.

This recommendation would more comprehensively address the additional resource needs of ED students than current programs do, and would ensure stability and appropriate adjustment of this funding program year-over-year by situating it in the Basic School Program.

Recommendation 3. Reform the Necessarily Existent Small Schools adjustment in the Basic School Program, drawing on study findings, to expand the scope and size of the funding, primarily to address issues of scale.

This recommendation would improve the state's adjustment for the impact of scale, and would improve the predictability of these funds, by consolidating the allocation process into a single formula.

Recommendation 4. Establish within the Basic School Program an adjustment for regional variation in the price of teacher labor, based on study findings.

This recommendation proposes adopting an adjustment that puts districts on an even playing field with respect to what they must spend to access the same resources, accounting for differences in the local cost of living and/or the desirability of their locations.

Targeted Programs

Recommendation 5. Reexamine the Related to Basic programs to optimize coherence, stability, continuous improvement, and balance with Basic School Program funds.

This recommendation offers considerations to policymakers for continually improving and optimizing Related to Basic programs as a whole, rather than specific changes to the existing set of programs. These considerations include optimizing coherence, stability, continuous improvement and evaluation, and balance with the Basic School Program.

Effective Practices

Recommendation 6. Establish a competitive grant focused on supporting schools to develop effective processes within two key strategic areas.

This final recommendation proposes a competitive grant program that would support and encourage schools across the state to develop highly successful environments suited to their contexts, especially with respect to data use and social-emotional learning.

Technical Appendix A: Equalization Analyses Methodology

Section A1. Measuring Local Wealth

The measure of local wealth, or fiscal capacity, used in all states includes local property wealth. As of 2015, all but eight states used local property values as the exclusive measure of local wealth. Six of these eight states included some measure of local income, while two states included a portion of the local sales tax base (Glenn et al., 2015). The measure of local wealth in Utah is the taxable assessed property value (TAV) of non-exempt real and personal property. In FY 2017–18, this TAV for all 41 districts totaled $252 billion.

Because property taxes are the primary source of discretionary funding for school district operations outside of the foundation program and for capital funding for most districts, a key measure of local fiscal capacity is the amount of TAV on a per-pupil basis. Analyzing assessed values on a per-pupil basis allows for adjusting for the size of jurisdictions in terms of the number of students across districts. A district with $500 million in TAV but with only 500 students has revenue-raising capacity of $1 million in TAV per pupil. By contrast, a district with the same TAV but with 10,000 students has a revenue-raising capacity of only $50,000 per pupil. This suggests that in order to raise the same amount of revenue per pupil, the second district must levy a much higher tax rate.

To account for differences among districts in local fiscal capacity, most states, including Utah, provide for revenue-raising equalization in their state funding formulas. For example, the state's basic foundation program annually establishes a foundation amount and Basic Property Tax Rate that applies to all school districts. A district's foundation revenue for FY 2019–20 equaled its Weighted Pupil Units (WPUs) multiplied by the foundation amount ($3,532). The district's local share of this revenue equaled its TAV multiplied by the Basic Property Tax Rate (0.001669). If the local share is equal to or exceeds the foundation revenue, the district receives no state foundation aid. If the local share falls short of foundation revenue, the district receives state aid to make up the difference. For example:

Foundation revenue: 1,000 WPUs × $3,532 = $3,532,000
Local share: $1,500,000,000 × 0.001669 = $2,503,500
State aid share: $3,532,000 – $1,669,000 = $1,028,500

In this example, the district's local share is less than its foundation amount, resulting in state foundation aid of $1,028,500.

Section A2. Constructing the Implied Assessed Value Per Pupil

There is very little research literature on the equity of capital funding formulas. Two approaches from the available literature informed this study. The first approach combines data on individual facilities conditions (for example, overcrowding, deferred maintenance) with local fiscal capacity data, to look for correlations between the condition of a district's facilities and its tax base (Arsen et al., 2005; Lowe, 1996). A system is inequitable if there is a moderate or strong negative correlation between facilities needs and local wealth. A second approach is to collect longitudinal data over a long period of time, such as 10 to 20 years, on capital and debt funding and local wealth, and then run standard equity statistics on these data (Glenn et al., 2006). The long time frame is needed because facilities spending tends to be relatively sporadic; spending spikes when major repairs or new construction take place and declines when major capital projects are unnecessary. Looking at revenues and expenditures over a long period of time will serve to smooth out these fluctuations.

For this study's analyses of capital funding in Utah (described in Sections 1c and 3a), the study team did not have access to data on the condition of facilities or longitudinal revenue and expenditure data beyond five years. As an alternative approach for assessing the impact of the state's capital equalization funding program, the study team analyzed how much state aid increased the fiscal capacity of a district. To do this, an "implied assessed value per pupil" amount was calculated for each district. This implied assessed value per pupil is calculated by dividing the sum of a district's capital and debt levies and capital foundation guarantee aid by its combined capital and debt tax rate. In essence, this approach estimates what a district's assessed value would need to be in order to raise the sum of its capital and debt levies and state aid, given its capital and debt levy tax rates. This approach draws on the concept of a guaranteed tax base (GTB) formula.

A GTB formula may be used to address unequal local tax bases by "guaranteeing" a minimum TAV per pupil, by providing sufficient state aid to districts with low TAV per pupil amounts to effectively raise their TAV per pupil to a specified level. For example, a state may guarantee that every district in the state will have a TAV per pupil equal to at least the median TAV per pupil in the state. Districts with a local tax base below the median amount receive the state aid amount that is needed to bridge the gap to the median value. The following is a simplified guaranteed tax base formula:

State aid = Local tax rate × (guaranteed tax base [the median tax base] – actual district tax base)

Thus, regardless of how small a district's local tax base is, its capacity to raise revenues is equivalent to that of a district with the median tax base in the state. Two states— Vermont and Wisconsin — currently use the GTB method as their primary school funding mechanism. For this study's capital funding analysis, the implied assessed value per pupil metric was used to determine how much the foundation guarantee program served to equalize tax bases across the state's districts, as described in Section 1c.

Technical Appendix B: Cost Function Analysis Methodology

The education cost function analysis conducted for this study has its foundation in the classic analysis of a firm's cost frontier, or a "minimum cost," given cost factors, inputs, and outputs. In this context, the "firm" is a public school; "cost factors" are aspects of educational context, including input prices; "inputs" are a school's expenditures; and "outputs" are the academic outcomes of students in that school. In simple terms, the cost function analysis uses historical data to estimate this minimum cost, taking into account how the minimum will vary depending on educational context (e.g., level of student need).

This study's cost function analysis follows the specific approach of Taylor et al. (2018), Gronberg et al. (2017), and others by using stochastic frontier analysis (SFA). An SFA allows for the cost efficiency to be estimated, and in particular, allows for the assumption that spending might exceed minimum cost, for one of two reasons: inefficiency or random shocks.[44] For example, a school might spend more than the minimum because it invested in a program that does not contribute to academic outcomes (inefficiency) and/or because there was a heat wave on a testing day, undercutting the ability for investments to impact outcomes (random shock). Formal equations available upon request.

Another key aspect of this cost function analysis is that school enrollment and outcomes are treated as independent variables, though both may be influenced by local administrative and programmatic decisions. This raises a concern of potential endogeneity, or the issue that both spending and these variables are correlated with an unmeasured aspect of local context, such as the demand for educational quality. For example, a community with demand for a higher-quality system will likely both spend more and produce better outcomes, but this will be because of this unmeasured demand, rather than the association between spending and outcomes.[45] This analysis also follows Taylor et al. (2018), Gronberg et al. (2015), and Gronberg et al. (2017) by adopting a control function approach (also known as two-stage residual inclusion) to address this potential source of bias.

Analysis Limitations

Although this study's cost function analysis is comprehensive in nature — drawing on administrative data on spending, outcomes, and cost factors —some important limitations exist and should be acknowledged.

The first of these is that this cost function analysis model is predictive and does not allow for causal inference. Put another way, although the model does predict the level of spending associated with a given set of outcomes in a variety of educational settings, this level of spending should not be interpreted as *causing* these

44 Specifically, it assumes that the random error consists of two parts: a standard two-sided random error that may be positive or negative and is zero on average and a one-sided error that is always positive or zero. The greater the one-sided error, the further a school is from the minimum, and the more inefficient the school is.

45 For example, see the discussions in Duncombe & Yinger (2005, 2011), Imazeki & Reschovsky (2004), and Gronberg et al. (2011a).

outcomes. The study team employed a variety of techniques to minimize the presence of bias that might distort the model predictions and the associations estimated by it, but the model can only simulate experimental conditions. Absent the opportunity to create such conditions, the study team has prepared the strongest alternative analysis to address the research questions, and sought complementary analyses, when applicable, to strengthen the overall conclusions of the study.

A second important limitation is the scope of the population included in the analysis. Utah has a diversity of settings in which students are educated aside from traditional public-school districts, including private schools, home schools, alternative settings, public charter schools, and virtual settings. In the view of the study team, nontraditional settings represent distinct contexts that differ from a traditional setting to a sufficient extent that including them in this analysis would be inappropriate. As such, this cost function analysis is limited to traditional public schools.[46]

Given the importance of the charter sector, the exclusion of this sector from this analysis is particularly impactful and thus warrants closer examination. Charter schools are intentionally distinct from the traditional school setting, in ways that the available data can measure and in ways that they cannot, and these differences are often specific to individual schools. This presents a challenge, since these differences may relate to both outcomes and spending and thus must be accounted for in a cost function. If they cannot be, as may be the case, this would result in a bias in the cost function analysis results.

In addition, differences in the charter sector are unlikely to be adopted for traditional school district settings. For example, if, as is often the case, some charter schools are uniquely able to optimize staffing to fit their enrollment, they can be expected to be impacted differently by economies of scale than traditional settings are. Importantly, the very policies that may be driving this difference likely cannot realistically be adopted statewide across sectors, or even at scale within a particular district. Unless the state could change all schools and districts to have the same ability to optimize staffing as charter schools, a model including both sectors would be difficult to interpret and apply to statewide policies.

The study team determined that this issue was significant enough to justify the exclusion of charter schools from the cost function analysis in this study.

Finally, the ability of this analysis to comprehensively analyze the traditional school population was limited to some extent by the availability of data. General exclusions due to missing data included the restriction to only the most recent three years of data: FY 2016–17 through FY 2018–19. As part of the robustness analyses conducted, which are summarized in Section B3 of this appendix, the study team took steps to assess the effect of this limitation. The minimal other exclusions due to missing or insufficient data are summarized in the following sections. It should also be noted that, although charter schools and some other alternative settings were excluded from the analysis due to their status as nontraditional school settings, missing data was also a significant issue for these schools and settings.

Ultimately, 78 percent of all schools in Utah were included in the analysis, and among traditional public-school settings, 99 percent of schools were included.[47] This amounted to the inclusion of about 85 percent of all students.

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46 Two schools within traditional school settings represent outliers with respect to the population of special education students — specifically, schools with more than 75 percent of their students identified as receiving special education — to a sufficient extent to effectively constitute a "nontraditional" context, and thus, these schools were excluded from the study population. Schools serving only preschool students were also excluded as nontraditional settings.

47 Names of specific excluded schools are available upon request.

Section B1. Data

The data used in this cost function analysis came primarily from administrative data collected and maintained by the USBE. The Project KIDS (Key Integrated Data Systems) program was another important source of data; these data are collected and maintained by the Utah State Auditor. In addition, various public data sources, including data collected by the National Center for Education Statistics (NCES), the U.S. Bureau of Labor Statistics (BLS), and the U.S. Census Bureau, were used in the analysis. As noted in the previous section, the data employed in the final analysis cover a three-year period of FY 2016–17 to FY 2018–19. Exhibit B1 summarizes the data sources used in the analysis.

Exhibit B1. Description of Data Sources, Including Agency of Origin

Data Source (Agency)	Description
Student Demographics (USBE)	Student-level data reporting student race/ethnicity, gender, economically disadvantaged (ED) status, English learner status, membership and attendance, and IEP data (if applicable).
Annual Financial Reports (USBE)	District-level data reporting expenditures by standard chart of accounts codes.
Student Assessment Data (USBE)	Student-level state assessment data, including scale scores by test and subject.
Student Graduation Cohort Exit Data (USBE)	Student-level data reporting a student's graduation four-year cohort and reason for exit (e.g., graduated, dropped out).
Staff Assignment CACTUS Data (USBE)	Staff-level data reporting personal characteristics, position, and course assignment.
Staff Salary Data (Office of the State Auditor)	Staff-level data reporting salary and benefits.
Common Core of Data (NCES)	School- and district-level data reporting demographics, directory, and membership data, among other things.
Comparable Wage Index for Teachers (NCES)	District-level measure of regional cost variation based on a comparable wage model (see Cornman et al., 2019).
Zip Code Business Patterns (Census)	Local business establishment counts by zip code reported within the North American Industry Classification System (NAICS) code.

Data Source (Agency)	Description
Gazetteer (Census)	District-level geographic area and location data.
American Community Survey (Census)	District-level annual survey data reporting on a variety of community characteristics.
Local Area Unemployment Data (BLS)	County-level unemployment statistics reported annually.

As noted in the prior section, the population of this analysis included only traditional public schools in Utah. All private schools home schools, alternative schools, charter schools, virtual schools, and other nontraditional schools were excluded. Schools serving only preschool students, and schools with more than 75 percent of students receiving special education, were also excluded.

In addition, schools that lacked reliable data on student performance (such as elementary schools that serve no students in tested grades, or very small schools) were also excluded, as were settings missing data required for the analysis. Exhibit B2 illustrates the process used to define the population of schools, and subsequent exclusions due to data issues, to define the analysis sample.

Exhibit B2. Schools in Administrative Data, Exclusions, and the Analysis Population and Sample (Unduplicated)

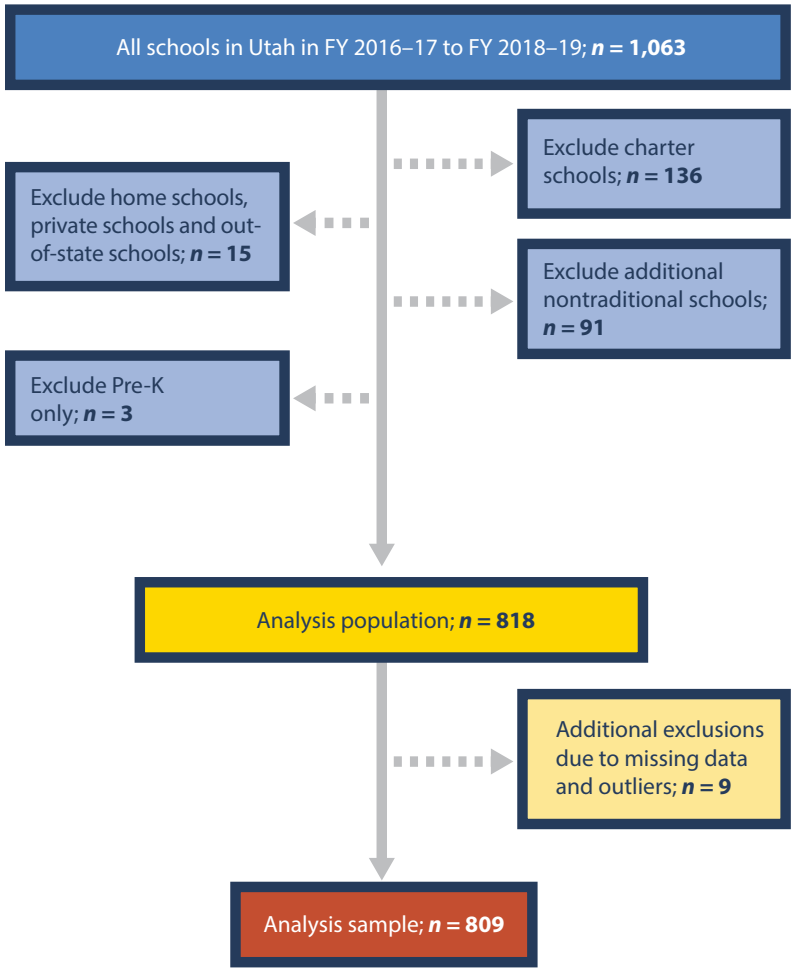


Exhibit B3 provides the mean, standard deviation, minimum, and maximum values for the variables included in this analysis, based on observations in the analysis sample. Each of these variables is discussed further in the following sections.

Exhibit B3. Summary Statistics for Model Variables in the Analysis Sample

Variable	Count	Mean	SD	Minimum	Maximum
School-Level Per-Pupil Expenditures (log)	2,398	8.86 (7,133)	0.21 (1,878)	8.39 (4,341)	10.03 (22,619)
School Average Normal Curve Equivalent Score	2,398	0.50	0.05	0.16	0.85
School Graduation Rate	2,398	0.88	0.07	0.62	1.00
School Enrollment (log)	2,398	6.37 (743)	0.82 (483)	1.39 (4)	8.11 (3,338)
District Enrollment (log)	2,398	10.03 (39,095)	1.33 (29,228)	5.32 (205)	11.34 (84,256)
Teacher Salary Index (log)	2,398	0.1 (1.11)	0.04 (0.04)	0 (1.00)	0.27 (1.31)
Miles to Nearest Metro/Micro Area	2,398	41.86	16.26	2.03	130.91
Economically Disadvantaged Students (%)	2,398	41%	24%	0%	100%
Special Education Students (%)	2,398	14%	5%	0%	43%
Expenditures Allocated (%)	2,398	42%	6%	14%	68%
Students Tested (%)	2,398	39%	22%	0%	93%
Herfindahl Index (log)	2,398	-1.06 (0.42)	0.61 (0.28)	-1.78 (0.17)	0 (1.00)

Source: Authors' calculations using data sources reported in Exhibit B1.
Note: Log transformed variables are provided untransformed in parentheses.

Key Model Variables

As summarized in Exhibit B3, several variables are included in the cost function analysis model. The dependent variable, school-level expenditures, is based on a combination of data sources; its construction is described in detail in this section. Student outcome measures and cost factors included in the model are also described in this section.

Dependent Variable: School-Level Expenditures Per Pupil

The first step taken to construct a measure of school-level expenditures was to isolate "operating expenditures." Individual-level compensation data were then used to estimate school-level spending within this category. This process, which follows the method used in prior analyses (e.g., Willis, Krausen, et al., 2019; Willis, Doutre, et al., 2019) is described in detail in the following section.

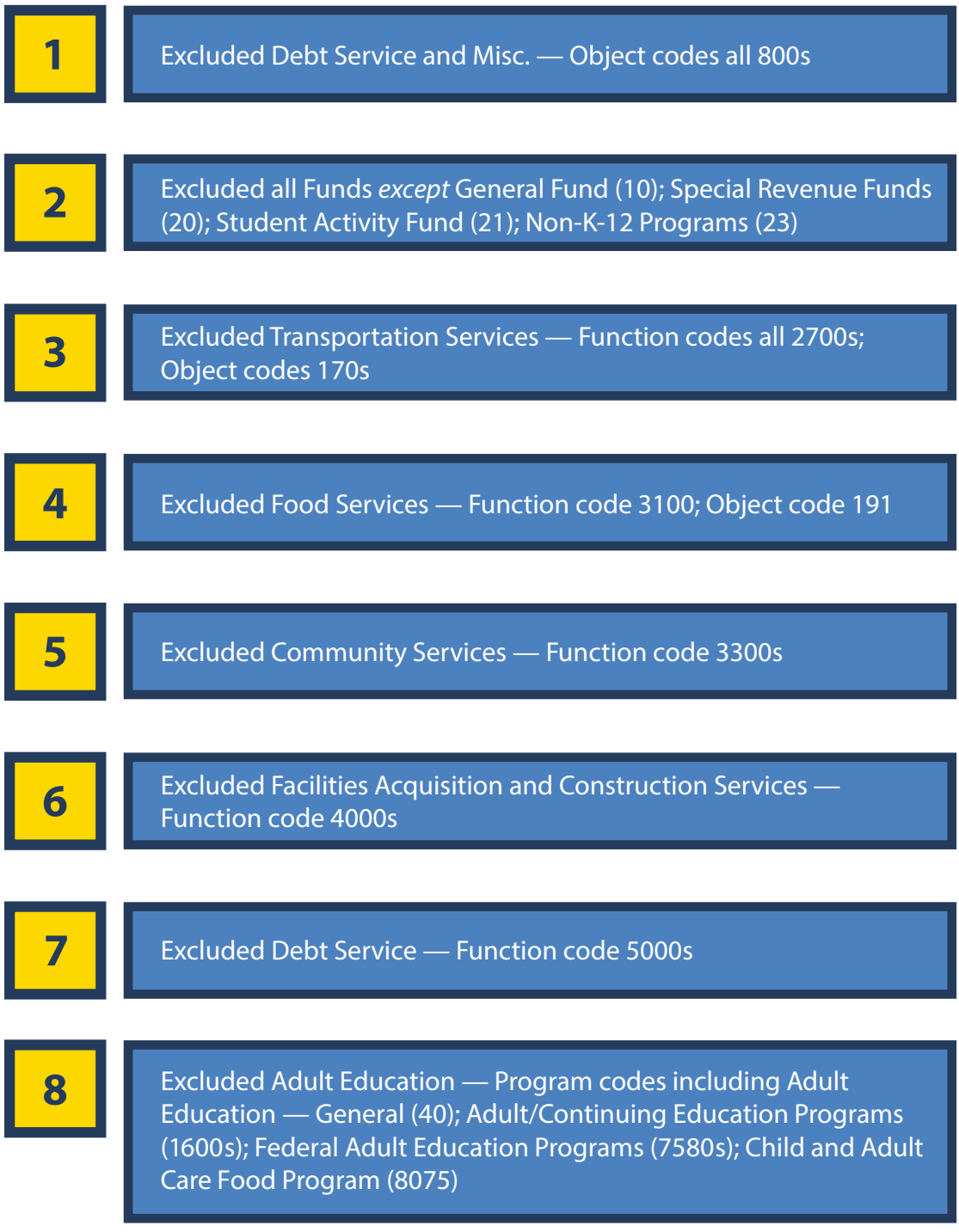
Identifying Operating Expenditures

Although all resources expended in the public education system serve an important purpose, only the categories of expenditures defined by the study team as "operating expenditures" were included in this analysis. The most significant exclusions from this subset of expenditures are transportation, food service, and capital outlay spending. These exclusions are based on the view that expenditures in each of these categories are intended to achieve outcomes distinct from the academic outcomes that are the focus of this analysis. Although each can certainly contribute to academic outcomes, the measure of their success is distinct from, and beyond the scope of, this analysis.[48]

Specific exclusions made to identify "operating expenditures" are detailed in Exhibit B4. All other categories of expenditures not listed in the exhibit were included as "operating expenditures."

48 For example, determining whether transportation expenditures are effectively spent arguably depends on factors such as efficiency of bus routes, timeliness of student pick-up and drop-off, and quality of transportation equipment. Thus, understanding the minimum spending required to reach a standard would entail an entirely different analysis, and likely many distinct cost factors.

Exhibit B4. Procedure Used to Identify Operating Expenditures



In the most recent year of data, FY 2018–19, "operating expenditures" amounted to roughly 74 percent of all expenditures reported in the data.

Constructing a School-Level Measure

As efforts to analyze fiscal equity evolve, the emphasis on school-level analyses has often grown at a faster rate than data reporting procedures have. With the passage of the Every Student Succeeds Act (ESSA), the

requirement for states to collect and report school-level expenditure data for all districts became federal law (see U.S.C § 6311(h)). In the years since its passage, states have worked to implement this provision, and, in many cases, created new requirements and policies. As such, access to historical records reporting school-level spending data is not always possible, limiting the years over which such an analysis can be conducted.

This data limitation is present in Utah and necessitated the study team's estimation of school-level spending through the combination of data sources — specifically, individual-level salary and benefit data collected by the Utah State Auditor through Project KIDS and staff assignment data from the USBE. At the advisement of USBE staff, Project KIDS compensation data were favored over the compensation data collected by the USBE. The following process was used to estimate school-level spending:

1. Allocate individual salary and benefit records to school site locations, based on assigned FTE.
    - For example, if Teacher A had .5 FTE allocated to School A and .5 FTE allocated to School B, these two sites would each be assigned 50 percent of her compensation.
2. Calculate total school-level compensation, based on individual-level allocations.
3. Aggregate these school totals to the district level and subtract them from the Annual Financial Report (AFR) district-level expenditure total (based on USBE AFRs).
4. Within this total difference, identify and sum non-labor district expenditures assigned to Special Education functions.
5. Allocate these Special Education expenditures to district member schools on a per-student-with-an-IEP basis.[49]
6. Allocate the remaining unallocated expenditures on a per-pupil basis.

An important test of the estimated school-level expenditures is a comparison with data from FY 2018–19, the one year with complete school-level expenditure data reported by the state. The estimated measure and the reported school-level data have a correlation coefficient of 0.9926 ($p < 0.001$). This suggests that the estimated measure does not differ from reported data in any meaningful way in that year and is likely similarly strong in the other two years of this analysis.

Student Outcomes

Within the U.S. education system, the conversation about measures used to determine whether a student is meeting the standard for achievement at any given point in their educational path, and about what type(s) of achievement are relevant, has certainly evolved over time. Most recently, the passage of ESSA introduced additional flexibility in how states must, at a minimum, evaluate success and hold districts accountable to a statewide standard. The law added to the prior list of acceptable measures a state-selected measure of academic success, as well as allowing for states to include other additional measures in their accountability systems (see U.S.C § 6311(c)). As the infrastructure for standardizing, validating, collecting, and maintaining new measures of success develops, researchers will be able to move beyond common outcome measures to create a more complete picture of student achievement and school and district success.

For this analysis, however, the common measures of student achievement are all that could be included. These measures have been thoroughly standardized and validated through state policy, and they determine a school

49 Steps 4 and 5 were taken to improve the allocation of special education expenditures to the school level, given the potentially high cost of special education services and the narrow scope of this spending. The study team sees these steps in the process as an improvement upon prior study methods.

and district's summative rating of quality. Moreover, they are well established as measures of school district output in the literature (e.g., Gronberg et al., 2011a, 2011b, 2017; Imazeki & Reschovsky, 2006).

Specifically, this analysis includes a measure of the *level* of quality and a *growth* measure of quality. The four-year cohort high school graduation rate is the level measure, while a normalized gain score of student performance on Utah's standardized annual assessments is the growth measure.

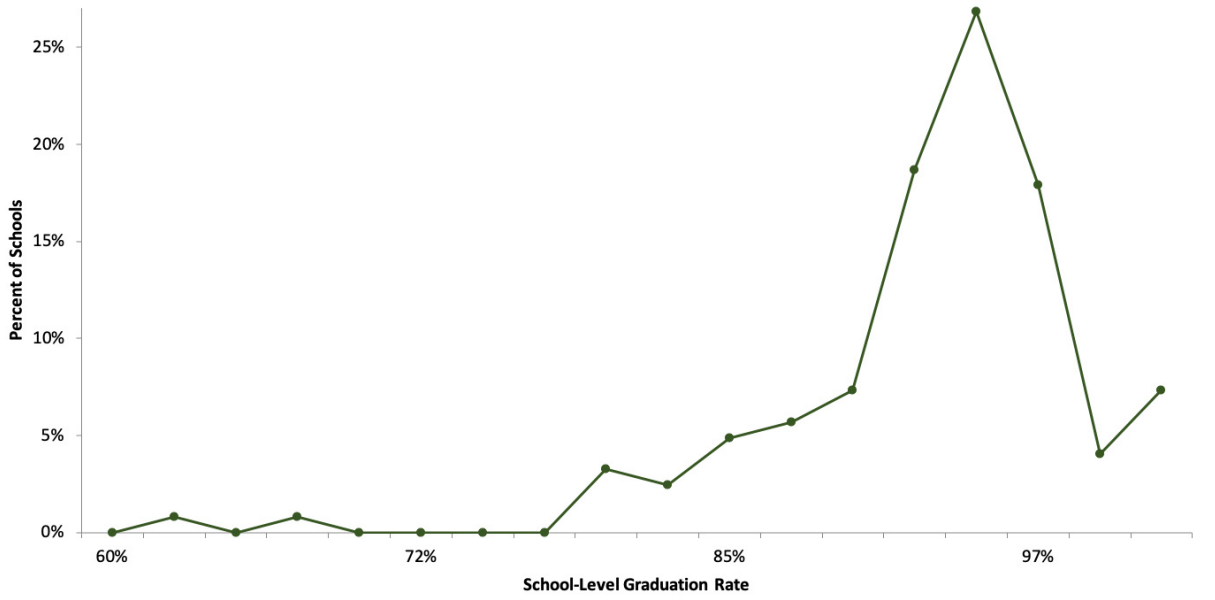
Graduation Rate

The study team used USBE student-level exit data to construct school-level cohort graduation rates. Simply put, each student in the data was identified as (1) in or out of the four-year cohort (denominator), and (2) among graduates within the four-year cohort (numerator). The school-level sum of students in the numerator and denominator was used to generate a rate as the quotient between the two.

Of course, graduation rates are only available for schools from which a student may graduate (generally, all high schools). The district-level graduation rate was applied to schools with no reported graduation rate (typically elementary and middle schools).[50]

Exhibit B5 displays the distribution of graduation rates for schools in the analysis sample for FY 2018–19, the most recent year analyzed.

Exhibit B5. Distribution of Graduation Rates for High Schools in the Analysis Sample, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit B1.

50 District-level graduation rates were also applied to some schools with irregular grade configurations that served high school grades but did not provide grade 12.

Academic Growth

The growth measure used in this analysis was a normalized gain score indicator of performance on state tests for FY 2015–16 through FY 2018–19.[51] This includes English language arts (ELA) and mathematics subjects and Student Assessment of Growth and Excellence (SAGE) tests in grades 3–8 and high school grades, as well as the new Readiness Improvement Success Empowerment (RISE) tests for grades 3–8 and Aspire Plus tests for high school grades.[52]

State assessments can be difficult to compare across years, grade levels, and test subjects, especially when the test provider changes, as was the case during the years of analysis. To address this issue, test scores are standardized, following Reback (2008), to yield gain score measures that are not biased by typical patterns of reversion to the mean.

The calculation of normalized gain scores proceeds in three steps. The first step is to transform the standardized scores of individual students into conditional z-scores. Simply put, students with the same prior-year scores are grouped together, and an individual student's deviation from the expected score within their group (i.e., the in-group mean) is calculated and adjusted for the variance in these expected scores. Formal equations available upon request.

For example, consider all grade 6 students who had a score of 500 on the prior year's grade 5 mathematics exam. For this subgroup of students with a grade 5 score of 500, the mean and standard deviations of the grade 6 scores for mathematics are calculated. The mean is the expected score in grade 6 for someone with a grade 5 score of 500, and a student with a score above that is deemed to be performing better than expected (i.e., growth). Transforming individual scores into z-scores in this way allows researchers to aggregate test data across different grade levels and test subjects, despite the differences in the scaling of the various tests.[53]

The second step is to calculate the average conditional z-score across all required ELA and mathematics tests for all of the students attending each school. An average conditional z-score of 1 indicates that, on average, the students at a school scored one standard deviation above the expected score for students with their prior test performance. An average conditional z-score of -1 indicates that, on average, the students scored one standard deviation below expectations.

Finally, for ease of interpretation, the z-scores are transformed into conditional normal curve equivalent (NCE) scores.[54] A conditional NCE score of 50 indicates that (on average) the students performed exactly as expected, given their prior test performance, and a conditional NCE score of 90 indicates that (on average) the students performed as well as or better than 90 percent of their peers. Exhibit B6 displays the distribution of school-level average conditional NCE scores in the analysis sample for FY 2018–19, the most recent year analyzed.

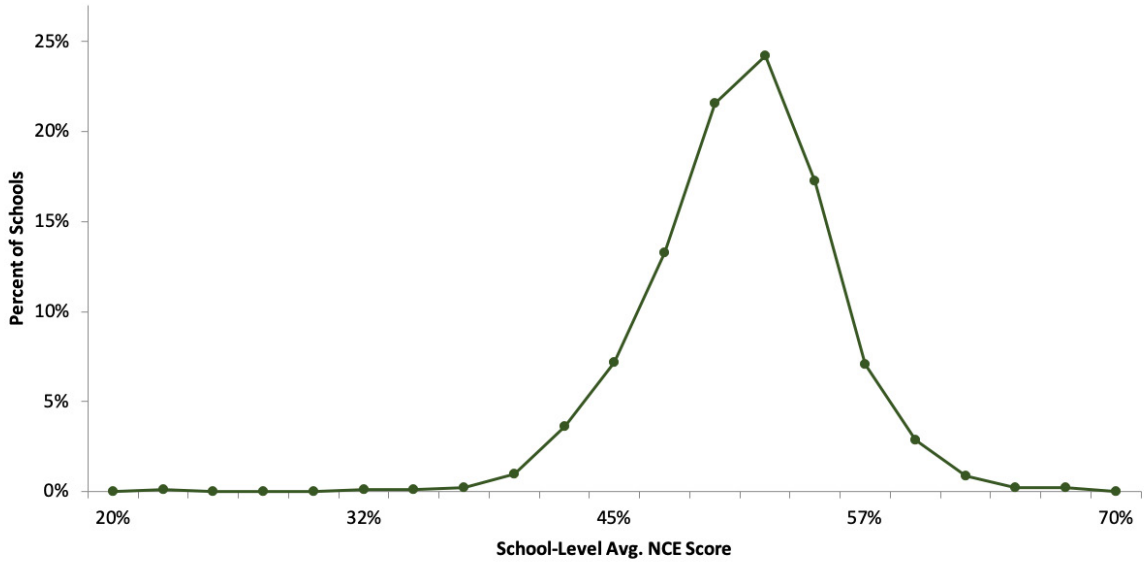
51 The use of FY 2015–16 data for student assessment scores was necessary to establish prior year scores for the first year included in the analysis, FY 2016–17.

52 Alternate assessment data could not be included in this analysis because performance on these tests is not reported as a continuous score and thus cannot be standardized and compared to other tests.

53 As part of this process, the study team identified students with unusual testing trajectories. All trajectories were included as long as the pattern occurred in at least 20 cases across the state. Generally, cases with nontraditional assessment order or very large gaps between current and previous test scores were excluded; such cases were very rare.

54 NCE scores — defined as 50 + 21.06 * z-score — are a monotonic transformation of z-scores. They are commonly used in the education literature and can be interpreted as if they were percentile ranks. This interpretation only holds if the scores are normally distributed. Given the large number of students tested each year in Utah, normality is a reasonable assumption.

Exhibit B6. Distribution of Average Normal Curve Equivalent Scores in the Analysis Sample, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit B1.

Input Prices

The price that a district must pay for its resources, and how this price varies relative to other districts, is a fundamental factor in the cost of education. The impact of prices is most significantly felt as a result of variation in the price of labor, since labor is by far the largest resource category. Teacher labor prices are especially significant given that teachers are the largest population of workers in the education system. Aside from teacher wages, other prices may vary by district and thus also need to be accounted for in the model.

Price of Labor

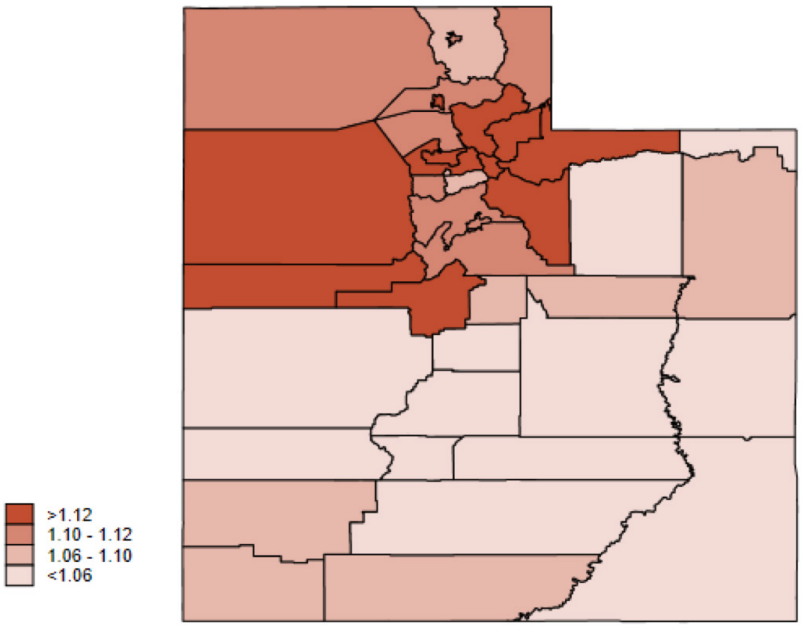
There are likely many reasons that teacher wages vary, but they generally fall into three categories: job responsibilities, teacher characteristics, and locational characteristics (Taylor, 2011). The last of these is the focus of this analysis, as it the category over which districts have the least amount of control. A district, through its local deliberative process, can generally control what a teacher will do on the job and who will be hired, but where the district is located and, thus, whom it serves, in traditional school settings are beyond its control. Nonetheless, teachers will demand wages that compensate for more expensive or less attractive settings.

With this in mind, a Teacher Salary Index (TSI) was constructed based on a hedonic wage model. The model predicts salaries that a district would pay, based on only the factors beyond their control, holding teacher characteristics and other factors over which they have control constant (see Technical Appendix C). The resulting index reflects the systematic variation in salary, relative to the minimum predicted amount. It ranges from 1.00 to 1.31, indicating that the price of teacher labor is estimated to be, at most, 31 percent higher in some parts of Utah than in others.[55]

55 It should be noted that, for ease of interpretation, the raw index is reported in this section, as opposed to the logged index reported in Exhibit B1.

To illustrate geographic variation in the price of labor, Exhibit B7 displays the average district-level TSI in the analysis sample for FY 2018–19, the most recent year analyzed. As shown in Exhibit B7, the price of labor is highest in the districts in the northwestern part of the state, which generally cluster around the Salt Lake City metro area.

Exhibit B7. Map of the Average District-Level Teacher Salary Index, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit B1.

Other Local Prices

Aside from teacher labor, schools and districts must purchase a variety of additional resources, the prices of which may also vary regionally. Ideally, these prices would be measured directly and incorporated into the cost function analysis model. However, for most of these resources, prices are set by a competitive market and are thus unlikely to vary by school; in general, they are mostly a function of school location. For example, a school that is very remote may pay more for some resources because of the difficulty in transporting the resources to its area. To account for this variation, the distance in miles from the nearest micropolitan or metropolitan area is included as a measure of a school's rural location or remoteness.

Student Need

Another critical factor in the cost of education is the level of need among a school's population of students. It is widely understood that a student's innate characteristics and access to out-of-school resources influence the resources required within the public-school setting to ensure that all students have equivalent educational opportunities. A student who comes from an ED background will likely need more in-school support than a student from a wealthy background would to reach the same outcomes. Likewise, a student with a disability will need specific services that are not necessary for peers without disabilities. These differences in required resources generally have cost implications, thereby changing the costs associated with different groups of students and making a school's overall level of student need a factor in its costs.

Generally, a few specific measures of need are commonly considered to be reflective of a school's overall student need — specifically, the proportions of students who are ED, students who are identified for an individualized education plan (IEP), and students who are identified as English learners. Although these measures do not encompass every way in which a student's needs impact a school's costs, they are thought to encompass the aspects of a student that most strongly influence cost and, importantly, that are strongly enough correlated with other measures of need to be comprehensive.

Only the school-level proportions of ED students and of students identified for an IEP are included in this analysis. This is because, in Utah, identification as an ED student is very strongly correlated with identification as an English learner.[56] At the student level, 82 percent of English learners are ED, compared to 31 percent of non-EL peers.[57] Considering this correlation at the school level yields similarly strong results, with a correlation coefficient of 0.80 ($p < 0.001$). A relationship this strong can pose a problem for a model of this type because of multicollinearity. In essence, a strong enough relationship between two factors can bias the results of the model because their unique effects on the outcome — in this case, spending — can be hard to separate. As a result of this issue, the percentage of English learners was not included in the model.[58]

It is also important to note that English learners are a very small population in Utah, even accounting for the tendency for these students to be clustered in particular regions of the state. The 90th percentile of school-level percentage of English learners in FY 2018–19 was 30 percent, meaning that 90 percent of schools had English learner populations below this level. In contrast, ED students are a much larger group, with a median of 38 percent at the school level, and thus, this group is more meaningful as a cost factor in Utah. However, in schools where the English learner population is significant, the results for ED students may be considered relevant to serving both those students and English learners. This is because, as previously described, these two categories effectively refer to the same group of students in these settings.

The following sections describe in detail the two measures of student need that are included in the model: the percentage of ED students and the percentage of students identified for an IEP.

Economically Disadvantaged Students

To identify ED students, the study team used student-level data provided by the USBE. The documentation provided for these data defines identification of "economically disadvantaged" students through either free or reduced-price school lunch eligibility or income eligibility applications (USBE, 2020c).[59]

With the changes, over the past five years, in how the federal government administers the National School Lunch Program, researchers have become concerned that free or reduced-price school lunch eligibility is a less appropriate measure for economic disadvantage than in prior years, and increasingly turned to other data

56 In this section, *English learner* refers to both students identified in the current year and those who have tested fluent in the past four years or longer and are being monitored. If only students currently identified were considered, however, the overlap with the ED population at the student level would be much the same.

57 This difference is statistically significant ($p < 0.001$).

58 Additional analysis of the effect of this exclusion is provided in Section B3 of this appendix.

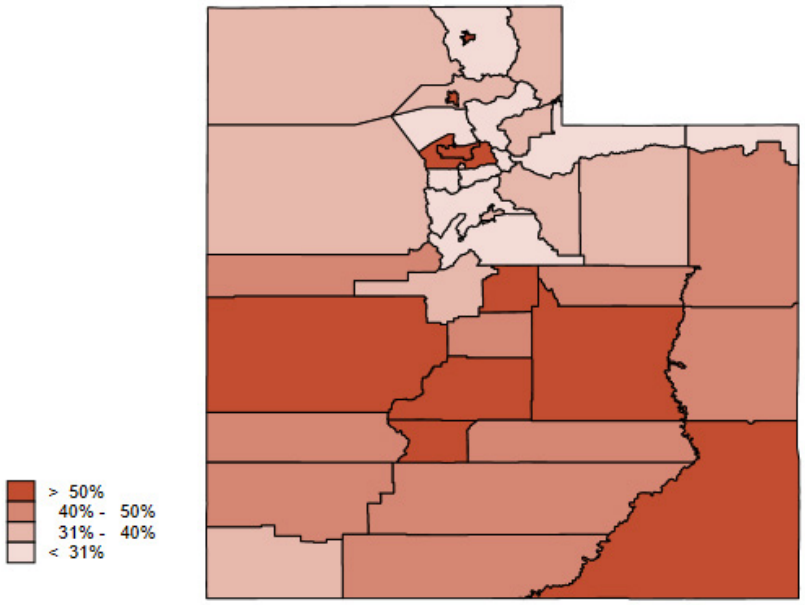
59 Specifically, "other income applications" are described as "students who are enrolled in a Community Eligibility Provision Resource Center (https://www.fns.usda.gov/school-meals/community-eligibility-provision-resource-center) and not accounted for as [free/reduced-price lunch eligible] themselves, or for students for whom a Declaration of Household Income is on file. See https://www.fns.usda.gov/school-meals/income-eligibility-guidelines for income eligibility guidelines" (USBE, 2020c, p. 34). This definition of ED students may also include "students who are eligible for a fee waiver or siblings of [free/reduced-price lunch eligible] students enrolled in a school that does not offer a lunch program and are not otherwise accounted for" (USBE, 2020c, p. 34).

sources. The decision to rely on the USBE identification is, in part, in deference to how the state identifies these students in its data.

In the interest of ensuring that this measure of ED students is appropriate, it was compared to an alternative measure, the statistics reported by the U.S. Census through the Small Area Income and Poverty Estimates (SAIPE).[60] In 2018, the district-level percentage of children 5 to 17 in the SAIPE data was highly correlated with the district-level percentage of students identified as ED in USBE data.[61] This suggests that this measure does not substantially differ from this common alternative, and that, given its availability at the school level, it offers a more granular reflection of variation in ED students.

Exhibit B8 illustrates the geographic variation in the district-level percentages of ED students in FY 2018–19, the most recent year analyzed.

Exhibit B8. Map of District-Level Percentages of Economically Disadvantaged Students, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit B1.

Students Identified for an IEP

The process of identifying a student for an IEP, based on a disability impacting the student's academic or functional performance in school, is a multi-step process.[62]

Despite the fact that the available data clearly identify students as having an IEP, the actual level of need within the group of students identified is somewhat more complex than other proxies of need. This is generally because of the wide range of reasons for which a student can be identified, as well as the potential costs associated with providing services associated with the specific identified needs.

60 For more information on SAIPE, see https://www.census.gov/programs-surveys/saipe.html.

61 The correlation coefficient was 0.9053 ($p < 0.001$).

62 For more information on the USBE's specific policies with respect to the provision of special education services, see https://www.schools.utah.gov/specialeducation.

The IEP itself can be thought of as a reflection of each student's specific needs and of the resources identified to address them. Specifically, an IEP team is charged with evaluating each student's individual needs, and thus, students with the same primary disability cannot necessarily be expected to require or receive the same services or be associated with the same costs. Moreover, each student is re-evaluated frequently to adjust services according to changes in the student's needs, potentially shifting resources allocated to the student. This type of adjustment happens for all students, to continually improve instructional programs, but the formal nature of the IEP process makes measuring the level of need for this population especially challenging.

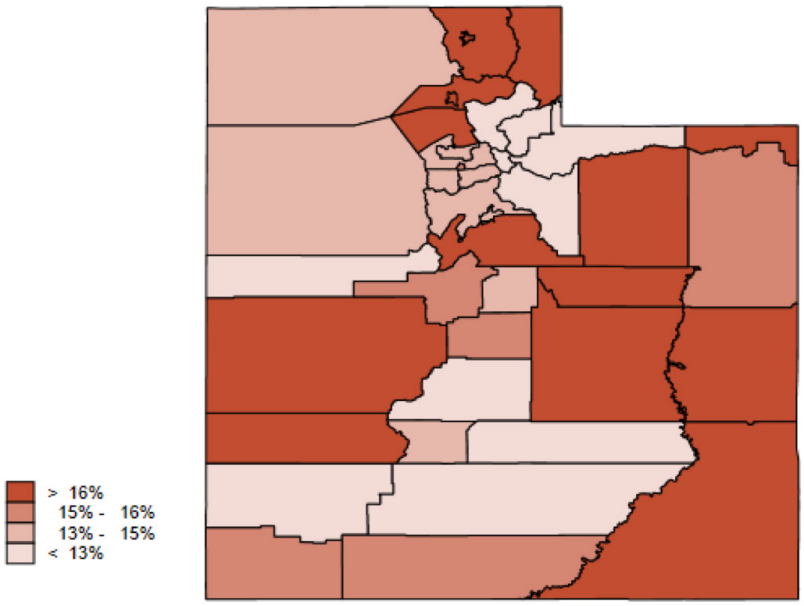
In addition, the determinations in an IEP are largely the result of subjective decisions by the IEP team that cannot easily be disentangled from the innate needs of a student. The cost factor is very specifically the needs that a student carries, as opposed to the services and resources that a district assigns to the student. For this reason, relying only on the IEP, notwithstanding its highly varied and continually adjusted nature, is not sufficient to measure student need among this population more precisely. In fact, it may introduce systemic bias associated with district preferences, some of which may have equity implications.[63]

Thus, capturing additional variation in the needs of this population, beyond merely identifying students who were or were not identified for an IEP, is difficult. However, it is important to note that Utah's population of students with IEPs who are served by traditional public schools is particularly homogeneous. In the analysis sample, on average, 72 percent of these students are identified within two disability categories: specific learning disability and speech or language impairment. Moreover, these two categories are often thought of as the least costly of all disability categories. Thus, it may be the case that the resource needs of this population in traditional public-school settings are less significant in Utah than in other states.

Ultimately, the study team chose to rely on a student's identification for an IEP as a proxy for student needs among this population. Exhibit B9 illustrates the geographic variation in the district-level percentages of students identified for an IEP in FY 2018–19, the most recent year analyzed.

63 For a more thorough discussion of equity and IEP determinations, see Willis, Doutre, et al. (2019).

Exhibit B9. Map of District-Level Percentages of Students Identified for an Individualized Education Plan, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit B1.

Other Environmental Factors

In addition to local prices and student needs, a few other environmental factors are commonly thought of as cost factors in education. These include measures of the scale of operations, such as district and school enrollment, and the context of the schooling level (i.e., elementary school, middle school, or high school). The inclusion of these cost factors in the cost function analysis model is discussed in the following sections.

Scale of Operations

An important cost factor that is typically accounted for in cost function analysis is the scale of operations. This is important because of the well-established economic theory of economies of scale. In brief, this theory refers to the tendency for per-unit cost to decline as the scale of production increases (Silvestre, 1987; Canback, 1998). This is believed to be the result of a firm's ability to produce more output with the same inputs and thus reduce the cost per additional unit of output. In the education context, this is illustrated, for example, by the fact that one teacher has the same salary cost whether the teacher instructs three pupils or 15, but the per-pupil cost is much lower with 15 pupils than with three.

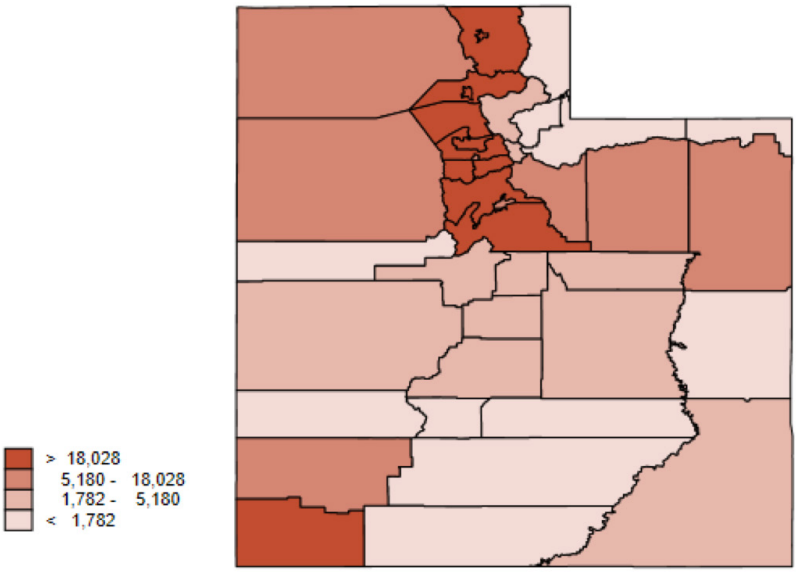
In some cases, diseconomies of scale are also observed. This refers to the opposite effect, of per-unit costs rising as scale increases. This effect is generally thought to be a result of increased costs to manage operations at an extremely large scale, and may occur in the educational context within very large school districts with complex bureaucratic functions (Robertson, 2007).

From an organizational standpoint, there may be different implications of scale at the district level of organization than at the school level. Prior studies have generally found evidence of economies of scale realized as the scale of district-level operations change, and, in some cases, have found evidence of diseconomies of scale in

the largest districts; results with respect to scale at the school level have been generally more mixed (Taylor et al., 2018; Willis, Doutre, et al., 2019; Willis, Krausen, et al., 2019).

The range of school and district sizes in Utah is quite large, relative to other states. As reported in Exhibit B1, district enrollment ranged from 205 to 84,256 in the study sample, with an average of 39,095. Enrollment is also generally clustered geographically, as is evident in Exhibit B10, which displays a map of district enrollment in FY 2018–19, the most recent year analyzed.

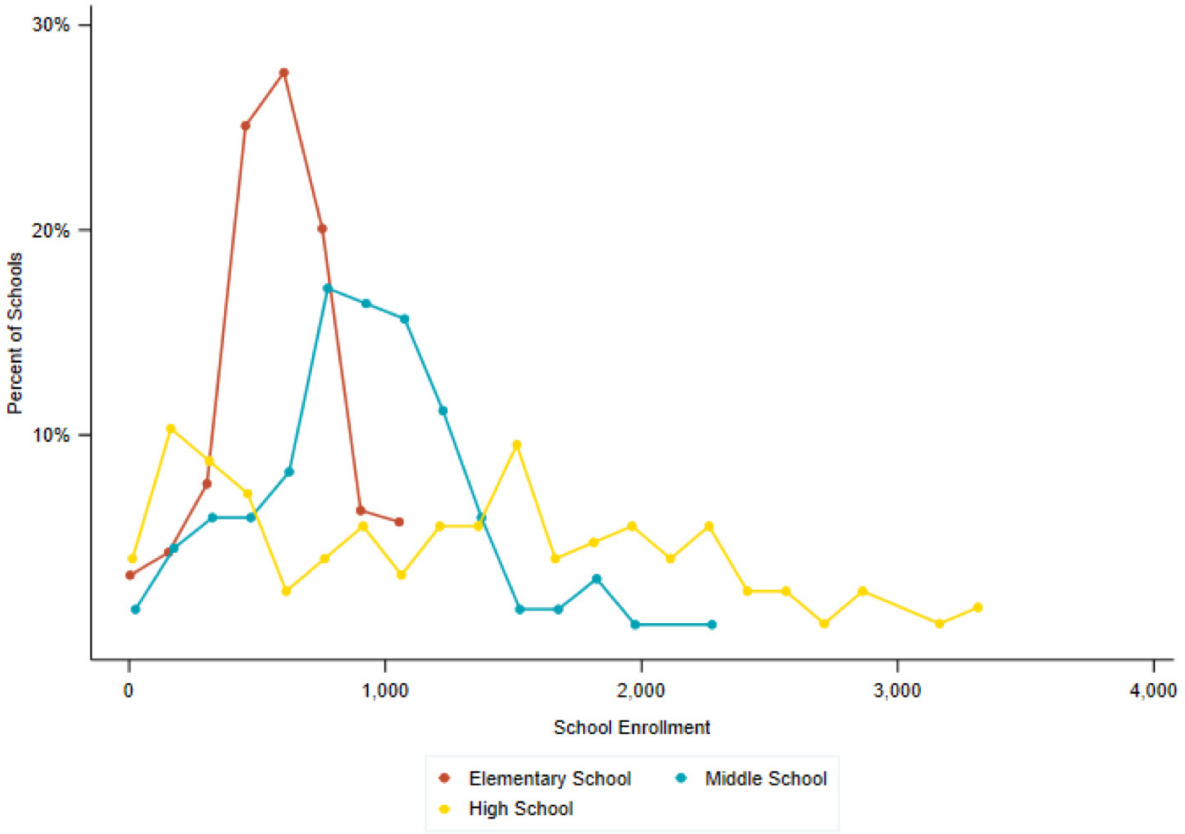
Exhibit B10. Map of District Enrollment, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit B1.

School enrollment in Utah varies less extremely and is less dependent on geographic region than district enrollment is. However, it does vary, as one might expect, systematically by schooling level. As illustrated in Exhibit B11, enrollment in elementary and middle schools tended to be smaller and less varied than enrollment in high schools in FY 2018–19, the most recent year analyzed.

Exhibit B11. Distribution of School Enrollment by Schooling Type, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit B1.

Schooling Level

In addition to the scale of school and district operations, schooling level is often taken into account in a cost function analysis, based on the notion that the means by which students may be educated (e.g., available technology) differ by grade level. For example, a high school generally must employ specialized instructional staff to teach departmentalized subjects (e.g., STEM, history, information technology, and foreign languages). Thus, the school may employ a mix of educational inputs highly targeted to particular student outcomes. Conversely, elementary settings usually have instructional staff with general knowledge of subject matter, and must therefore provide a more general curricular strategy. Middle schools represent a transition from one context to the other, and thus may reflect a hybrid of the two other settings. In any case, schooling level is likely to represent sufficiently differing contexts to be a factor in cost.

Efficiency Factors and Random Shocks

As described in the introduction to this appendix, the SFA cost function analysis approach allows for deviations from the estimated minimum cost to reflect variation in production efficiency (i.e., only positive, one-sided deviations) and random deviations or shocks (i.e., either positive or negative, two-sided deviations). Each type

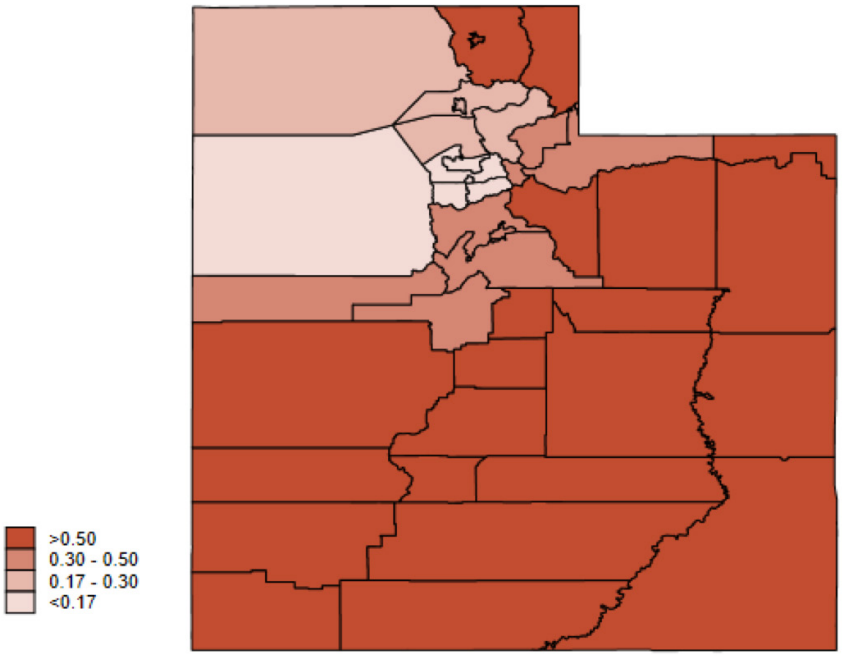
of deviation is estimated as a function of relevant explanatory factors. These explanatory factors and the basis for their inclusion in the approach are described in the following sections.

Efficiency Factors

The variance in production efficiency is modeled as a linear combination of two measures: market competitiveness and membership in Park City School District. The first of these measures draws on the literature demonstrating that competition can reduce inefficiency in public education (e.g., Belfield & Levin, 2002; Millimet & Collier, 2008; Gronberg et al., 2015). The specific measure employed is the Herfindahl index, an index of district enrollment concentration within a market. Defined as the sum of the squared district enrollment shares, the Herfindahl index increases as enrollment concentration increases, reflecting a descrease in competition. A Herfindahl index of 1.00 indicates a core-based statistical area (CBSA) with a single district (i.e., a monopoly); a Herfindahl index of 0.10 indicates a CBSA with 10 districts of equal size.[64]

As displayed in Exhibit B1, the mean value for the Herfindahl index in the estimation sample is 0.42, with a minimum value of 0.17 and a maximum of 1.00. The geographic distribution of the Herfindahl index in FY 2018–19, the most recent year analyzed, is displayed in Exhibit B12.

Exhibit B12. Map of the Herfindahl Index, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit B1.

The second explanatory factor is an indicator of whether a school is in Park City School District. The inclusion of this measure is motivated by the recognition of the extraordinary wealth and economic context of Park City schools. Not only was the TAV per pupil of this district more than four standard deviations above the state mean in FY 2017–18, but its local economy is unique in that it is a resort city dependent on seasonal tourism

64 In cases where a district is not found within a CBSA, the district's county is used to define the market. Consequently, 12 districts in Utah are identified as being in "monopoly" markets since they are in single-district counties.

as its economic driver. It is also small, relative to the state average district size: 5,180 students, compared to an average of 39,232, in FY 2018–19. These facts, in combination, suggest that the relatively small number of people residing in the community year-round may have had opportunities to allocate extraordinary resources to their children, without those driving economic gains (i.e., seasonal tourists) having any stake in the efficiency of this spending. It is possible that this context could drive the overall efficiency of spending in the district, making it a potentially powerful explanatory factor.

Factors in Random Shocks

With respect to random shocks resulting in either positive or negative deviations from the minimum cost estimate, the common source is measurement error. In particular, two sources of error have been identified: the share of school expenditures allocated from the district and the share of students tested in a given school.

Since the dependent variable in the analysis is an estimate derived from individual compensation records and assumed per-pupil allocation of non-compensation district expenditures, there is potential for error in the resulting variable. Moreover, the extent to which district expenditures were allocated based on the assumption of per-pupil allocation is likely to be a primary factor in this potential error, though the net effect of the error is unclear and likely varies in a generally random way. This makes it an appropriate explanatory factor in random error.

The share of students tested in a given school is also a likely source of error in the academic growth measure, in that the lower the proportion of students tested is, the less representative of overall school quality the measure is likely to be.

Instrumental Variables

A key aspect of this cost function analysis is the use of a control function to mitigate bias created by endogeneity in key independent variables, including student outcome measures and school enrollment. As noted in the introduction to this appendix, this endogeneity is thought to stem from unmeasured demand for educational quality and from local preferences with respect to school size.

A brief description of the particular method employed in the model is needed before the motivation for the specific instruments included in the model is described. This model uses a control function, or two-stage residual inclusion, approach. This approach is, to put it simply, intended to identify a measure that is independent of unmeasured preferences or conditions of traditional public schools and that does not affect school spending except through the measured endogenous variable. For example, for student outcomes, this measure would be something that affects spending only through its effect on student outcomes.

Human capital theory suggests that local labor market conditions can influence the demand for educational quality and the opportunity cost of staying in school, so, as in Gronberg et al. (2015) and Gronberg et al. (2017), this analysis uses labor market conditions in the vicinity of the school as instruments for the conditional NCE scores and graduation rates. It includes, in particular, a measure of demand for graduates: the 10-year average unemployment rate. Also included is a measure of the proportion of the population employed in the Armed Forces. This measure accounts for a unique impact on demand, as this population changes in a given community, perhaps as a result of the differing postsecondary expectations of families employed in the Armed Forces, the effect of the community having a larger population of these generally more transient families than other communities, or some combination of these and other effects of this population's size on demand.

In addition, the model includes an instrument for school size: population density. This reflects that school size can be optimized more easily in densely populated areas than in sparsely populated areas.

Section B2. Results

The final results of the cost function analysis are described in the main body of the report in the context of how they relate to and inform the study research questions. To add to this description, this section provides the detailed outputs of each stage of the regression, comprehensively reporting on all covariates and components of the model.

First Stage Results

The first stage of the modeling process establishes the strength of the instrumental variables employed, and calculates the residuals of these initial models in accordance with the control function method.

As illustrated in Exhibit B13, the instruments are well correlated with the endogenous variable set. Specific F-statistics are 11.8, 434.9, and 17.3 for academic growth (NCE score), graduation rate, and school enrollment, respectively.

Exhibit B13. First Stage Regression Results

Variables	School-Level Avg. NCE Score	School-Level Graduation Rate	School Enrollment (log)
District Enrollment (log)	0.0472 (0.100)	-0.0650 (0.088)	4.4439*** (1.036)
District Enrollment (log) sq	-0.0069 (0.011)	0.0044 (0.010)	-0.4369*** (0.121)
District Enrollment (log) cub	0.0003 (0.000)	-0.0001 (0.000)	0.0151*** (0.005)
Teacher Salary Index (log)	-0.1137 (0.193)	0.1068 (0.165)	-2.9331 (4.384)
Teacher Salary Index (log) sq	-0.1748 (0.879)	-2.4666*** (0.714)	3.3197 (22.401)
Miles to Nearest Metro/Micro Area	-0.0001 (0.000)	-0.0000 (0.000)	-0.0115*** (0.002)
School-Level ED Students (%)	-0.0477*** (0.006)	-0.0378*** (0.006)	-0.2867*** (0.109)
School-Level SPED sq (%)	-0.1351* (0.071)	0.2217*** (0.053)	-3.4070*** (0.889)
Other School Indicator	-0.0077 (0.005)	0.0030 (0.005)	0.2715*** (0.080)
Middle School Indicator	-0.0020 (0.003)	0.0088*** (0.003)	0.4407*** (0.038)
High School Indicator	-0.0224*** (0.004)	0.0466*** (0.004)	0.7491*** (0.065)
2017 Indicator (omitted)			
2018 Indicator	-0.0026 (0.002)	0.0009 (0.002)	-0.0750** (0.034)
2019 Indicator	-0.0030 (0.002)	0.0094*** (0.002)	-0.0629** (0.031)
Population Density	0.0000*** (0.000)	-0.0001*** (0.000)	0.0002*** (0.000)
County Chronic Unemployment Rate	-0.0025 (0.002)	-0.0111*** (0.002)	-0.0442 (0.034)

Variables	School-Level Avg. NCE Score	School-Level Graduation Rate	School Enrollment (log)
Population Employed in the Armed Forces (%)	-0.0840*** (0.017)	0.0772*** (0.016)	1.4430*** (0.245)
Population Employed in the Armed Forces sq (%)	0.0713*** (0.016)	0.0247 (0.015)	-1.4463*** (0.235)
Constant	0.4684 (0.294)	1.2409*** (0.254)	-8.7859*** (3.021)
F-statistic	11.83	434.91	17.27
Observations	2,398	2,398	2,398
R-squared	0.122	0.575	0.560

Source: Authors' calculations using data sources reported in Exhibit B2.
Notes: Robust standard errors are in parentheses.
** p < .05; ** p < .01; *** p < .001.*

Stochastic Frontier Analysis Results

The second stage of the analysis produced the main results, and is presented as a progression from the baseline specification to the preferred model. This baseline specification, the first model presented in Exhibit B14, is meant to reflect the most common general specification in economic literature. This general specification reflects costs as a function of measures of output, and reflects environmental factors as inputs, including scale, local prices, and level of resource needs. Quadratic terms are included for each of these inputs, as well as indicators of schooling level. This baseline specification is a variation on the common Cobb-Douglas production function, often a standard in economic literature.

The second model presented in Exhibit B14 is the study team's preferred specification, which makes changes to the independent variable set, based on the baseline results, to improve overall model fit.[65]

65 For model 1, the F-statistics in the first stage are similar to the preferred model and all are above the established threshold of 10.

Exhibit B14. Stochastic Frontier Analysis Results

Variables	Baseline	Preferred
Stochastic Frontier		
School-Level Avg. NCE Score	2.783*** (0.473)	2.860*** (0.520)
School-Level Avg. NCE Score* High School Indicator		-0.493*** (0.183)
School-Level Graduation Rate	0.540*** (0.119)	0.489*** (0.114)
School Enrollment (log)	0.130*** (0.0307)	0.290*** (0.0419)
School Enrollment (log) sq		-0.0171*** (0.00340)
School Enrollment (log)* High School Indicator		0.0178 (0.0111)
District Enrollment (log)	-3.181*** (0.266)	-3.315*** (0.267)
District Enrollment (log) sq	0.325*** (0.0295)	0.344*** (0.0300)
District Enrollment (log) cub	-0.0113*** (0.00109)	-0.0120*** (0.00112)
Teacher Salary Index (log)	-1.645*** (0.374)	-1.486*** (0.375)
Teacher Salary Index (log) sq	11.12*** (1.765)	12.35*** (1.865)
Miles to Nearest Metro/Micro Area	0.00388*** (0.000652)	0.00342*** (0.000314)
Miles to Nearest Metro/Micro Area sq	-6.33e-06 (7.28e-06)	
School-Level ED Students (%)	0.433*** (0.0761)	0.348*** (0.0355)
School-Level ED Students sq (%)	-0.0186 (0.0536)	-
School-Level SPED (%)	-0.183 (0.274)	-

Variables	Baseline	Preferred
School-Level SPED sq (%)	2.289*** (0.746)	1.659*** (0.177)
Other School Indicator	0.0569*** (0.0134)	0.0756*** (0.0121)
Middle School Indicator	0.0218 (0.0151)	0.0409*** (0.0122)
High School Indicator	0.0586** (0.0268)	0.215** (0.104)
2017 Indicator	-0.124*** (0.00515)	-0.125*** (0.00515)
2018 Indicator	-0.0491*** (0.00434)	-0.0463*** (0.00437)
2019 Indicator (omitted)	-	-
Residuals — Academic Growth	-2.639*** (0.482)	-2.624*** (0.528)
Residuals — Graduation Rate	-0.318** (0.142)	-0.217 (0.138)
Residuals — School Enrollment	-0.232*** (0.0300)	-0.212*** (0.0244)
Constant	16.40*** (0.614)	16.33*** (0.607)
One-Sided Error		
District-Level Herfindahl Index (log)	0.279* (0.164)	0.494*** (0.188)
Park City School District Indicator	4.459*** (0.126)	4.400*** (0.128)
Constant	-5.117*** (0.222)	-4.951*** (0.220)
Two-Sided Error		
School-Level Expenditures Allocated to Schools (%)	6.530*** (1.407)	5.312*** (1.554)
School-Level Students Tested (%)	-0.576* (0.308)	-0.480 (0.294)

Variables	Baseline	Preferred
Constant	-7.951*** (0.710)	-7.457*** (0.766)
Observations	2,398	2,398

Source: Authors' calculations using data sources reported in Exhibit B2.
Notes: Robust standard errors are in parentheses.
** p < .05; ** p < .01; *** p < .001.*

As illustrated in Exhibit B14, outcomes are positively associated with spending; district enrollment results suggest that economies of scale are present in Utah; spending is positively associated with changes in the estimated price of labor (i.e., the TSI); and spending is positively associated with greater levels of student need. These general findings are described in more detail in the main body of the report.

Section B3. Robustness Analysis

To test the robustness of the primary model specification, the impact of a few specific alternatives was tested.

Testing Outliers and Modeling Choices

The first set of tests was with respect to the extent to which removing outliers significantly changes the results. In this case, a significant change would suggest that the model findings are largely driven by the extreme settings, rather than reflecting a more general finding for the overall school population. Specifically, the model was estimated with the model with the largest district — Alpine School District, with more than 80,000 students — excluded. The model was also estimated with the smallest two districts — Daggett School District and Tintic School District, each of which has fewer than 320 students — excluded.

Similarly, the model was estimated excluding schools with unusual grade configurations, representing another unusual setting.

The second set of tests was focused on the extent to which modeling choices impact the model results. In particular, the impact of the choice to leave the school percentage of English learners out of the model due to its strong correlation with the ED student population was tested. Whether including a Park City School District indicator as a factor in efficiency changes the model results was also tested

Testing Possible Factors in Results With Respect to Students With Individualized Education Programs

The final test relates to a particular result in the model: findings regarding students with IEPs. As discussed in Section 2b in the main body of the report, the result suggests additional resource needs for this population, to ensure equal educational opportunity, but the magnitude of the result is notably smaller than other similar analyses (Taylor et al., 2018; Willis, Krausen, et al., 2019) and the pupil weight derived from the results is smaller than

the consensus weights generally expected for this population. Specifically, the derived pupil weight is about 0.49. Though these results are robust to the tests described previously in this section, their novelty points to the need for additional testing to better understand what might be driving them. Specifically, the study team examined three particular potential issues.

Potential Measurement Error

The first issue is the possibility that labor spending for students with IEPs might be subject to more error in the school-level estimate than overall spending is. As previously noted, non-labor centralized special education spending was allocated to schools per student with an IEP, rather than per all students. This was driven by a concern that since special education program resources are so specifically targeted to students with IEPs, allocating these dollars per all students would be inappropriate. This could also be an issue for labor spending, but unfortunately, available data do not allow for a similar approach to mitigating this issue. This is because some special program staff are already directly allocated to schools through their individual salary data, while some do not have sufficient data to be assigned in this way and thus are allocated from the district. It is not possible to determine the composition of these two groups in any given school without making several assumptions about how staff allocated their time between general and special education services.

With that said, if there were meaningful measurement error in the allocation of special program labor spending to schools, it would likely downwardly bias the results. This is because if students with IEPs are clustered in schools differently than students overall, schools with a higher share of students with IEPs than students overall would be allocated, in this estimate, fewer of the dollars they actually spent, while schools with fewer students with IEPs than students overall would receive more than they actually spent.

To test the extent of this potential issue, the study team first considered the extent to which the concentration of students with IEPs in schools within a district differed from the concentration of all students in schools within a district. To analyze this, a Herfindahl index was calculated to assess the concentration of school enrollment for both total enrollment and enrollment of students with IEPs. If the indices for students with IEPs were notably different than those for all students, it would suggest that students with IEPs are clustered differently, and allocation of these dollars may exhibit more error. However, results suggest that this is not the case. In general, the indices are very similar for these two groups, with a correlation coefficient of 0.9973 ($p < 0.001$). This suggests that if it were possible to allocate these dollars per special education pupil, the result would be very similar.

Another test conducted to examine the extent of this issue was to consider the proportion of special program dollars that, with better information, might be more accurately allocated to schools. One important thing to consider is that even when data are reported at the school level, some special program spending is still reported as centralized to the district, necessitating some assumed distribution of the resources to schools. Examination of financial data from FY 2018–19, the only year with complete reported school-level expenditure data, suggests that, on average, 32 percent of school-level special program spending would have to be allocated from the district to schools. Depending on how, and what proportion of, special program staff spending is already included in the individual salary data, there may be very little additional spending to be allocated more precisely to schools. Moreover, special program labor spending not allocated from the district in school-level data consists of about 5.5 percent of all spending. Some subset of this (i.e., the portion not already assigned to schools through the individual salary data) is the proportion of dollars, on average, for which allocation to the schools might be improved with better information.

Finally, due to limitations in data availability, the study team could not include two sources of funding for students with IEPs in the cost function analysis: School for the Deaf and Blind funds spent on behalf of school districts, and funding expended by the USBE on behalf of school districts. Based on conversations with USBE staff, the study team understands that these funds total about $44 million in FY 2018–19, or less than 1 percent of education funding in Utah. The study team has concluded that this relatively small amount of funding is unlikely to significantly change the analysis results. However, inclusion of these sources of funding is nonetheless ideal, and if sufficiently detailed data were available, the study team would test the impact of their inclusion.

Uniquely Homogeneous Population of Students With IEPs

The second possible issue considered is whether the population of students with IEPs in the study sample is uniquely homogeneous with respect to students' needs. Specifically, most students are identified in one of two disability categories: specific learning disability or speech or language impairment. These two categories make up, on average, 72 percent of a school's students with IEPs in our sample, compared to the average of 67 percent across all schools in Utah and to the national average of 53 percent.[66]

This larger share of students may be significant, because these disability categories are generally considered to be lower cost and more easily served through general education interventions. If the resource needs of these students are driving the results, then, a lower weight might be more in line with expectations for this particular subpopulation.

Limitations in the Estimation of Spending Efficiency

A final possible issue may be the feature of the cost model that estimates and accounts for inefficient spending. As noted in Section 2b in the main body of the report, if spending contributes to outcomes that are not included in the model and are uncorrelated with the outcomes in the model, it will contribute to spending beyond the minimum, or "inefficiency." However, in this context, this does not mean that all "inefficient" spending is wasteful spending. With respect to services to students with IEPs in particular, there may be many costly services that are not well correlated with the academic outcomes in the cost function analysis. In this case, it is especially likely that the associated spending would be identified as inefficient and would not be reflected in the primary results.

To test this issue an alternative model was run that included, as a factor in efficiency, the percentage of students with IEPs who are educated in a regular setting. If this is a significant factor and relates positively to efficiency, it would provide some evidence for this final issue.

The results of the robustness analyses described in this section are summarized in Exhibit B15. As illustrated, these changes to the underlying sample or model choices did not significantly change the overall findings, suggesting that the preferred model is generally robust to these changes.

Moreover, the results for the additional efficiency factor, percentage of regular-setting students with IEPs, are significant and suggest that as this population decreases, efficiency decreases, supporting the idea that services to non-regular-setting students tend to be identified as "inefficient." This suggests that the results with respect to students with IEPs are best interpreted as the additional resource needs of primarily regular-setting students, who often do not require the costliest services. This may further help explain the unique nature of the findings for this population.

66 National figures drawn from IDEA Section 618 data, specifically the 2018 Child County and Educational Environments file retrieved here: https://www2.ed.gov/programs/osepidea/618-data/state-level-data-files/index.html.

Exhibit B15. Robustness Analysis Results

Variables	Preferred	No Large Districts	No Small Districts	No Other Grade Config.	Add Percent EL	No Park City	Students with IEPs Efficiency Factors
Stochastic Frontier							
School-Level Avg. NCE Score	2.860*** (0.520)	3.392*** (0.445)	2.916*** (0.578)	2.976*** (0.560)	2.312*** (0.481)	2.995*** (0.519)	2.645*** (0.523)
School-Level Avg. NCE Score*High School Indicator	-0.493*** (0.183)	-0.453** (0.199)	-0.587*** (0.167)	-0.503*** (0.184)	-0.513*** (0.169)	-0.478*** (0.185)	-0.607*** (0.157)
School-Level Graduation Rate	0.489*** (0.114)	0.602*** (0.0804)	0.499*** (0.124)	0.453*** (0.126)	0.496*** (0.111)	0.521*** (0.115)	0.433*** (0.114)
School Enrollment (log)	0.290*** (0.0419)	0.325*** (0.0429)	0.298*** (0.0442)	0.299*** (0.0465)	0.269*** (0.0397)	0.301*** (0.0416)	0.297*** (0.0438)
School Enrollment (log) sq	-0.0171*** (0.00340)	-0.0197*** (0.00370)	-0.0175*** (0.00363)	-0.0177*** (0.00374)	-0.0162*** (0.00324)	-0.0178*** (0.00337)	-0.0192*** (0.00354)
School Enrollment (log)* High School Indicator	0.0178 (0.0111)	0.0275** (0.0118)	0.0210 (0.0131)	0.0178 (0.0115)	0.0215** (0.0104)	0.0208* (0.0110)	0.0250** (0.0112)
District Enrollment (log)	-3.315*** (0.267)	-3.465*** (0.274)	-3.552*** (0.420)	-3.393*** (0.275)	-3.226*** (0.248)	-3.343*** (0.264)	-3.155*** (0.268)
District Enrollment (log) sq	0.344*** (0.0300)	0.361*** (0.0313)	0.369*** (0.0461)	0.352*** (0.0309)	0.335*** (0.0279)	0.348*** (0.0297)	0.326*** (0.0301)
District Enrollment (log) cub	-0.0120*** (0.00112)	-0.0127*** (0.00118)	-0.0129*** (0.00168)	-0.0123*** (0.00116)	-0.0117*** (0.00104)	-0.0122*** (0.00111)	-0.0114*** (0.00113)
Teacher Salary Index (log)	-1.486*** (0.375)	-1.649*** (0.399)	-1.589*** (0.376)	-1.368*** (0.380)	-1.667*** (0.354)	-1.477*** (0.385)	-1.313*** (0.360)

Variables	Preferred	No Large Districts	No Small Districts	No Other Grade Config.	Add Percent EL	No Park City	Students with IEPs Efficiency Factors
Teacher Salary Index (log) sq	12.35*** (1.865)	14.39*** (1.965)	12.74*** (1.907)	11.81*** (1.884)	12.25*** (1.745)	12.79*** (1.906)	11.10*** (1.792)
Miles to Nearest Metro/ Micro Area	0.00342*** (0.000314)	0.00360*** (0.000273)	0.00344*** (0.000338)	0.00358*** (0.000347)	0.00325*** (0.000307)	0.00340*** (0.000305)	0.00323*** (0.000314)
School-Level ED Students (%)	0.348*** (0.0355)	0.372*** (0.0279)	0.356*** (0.0394)	0.358*** (0.0399)	0.227*** (0.0410)	0.346*** (0.0358)	0.334*** (0.0356)
School-Level SPED sq (%)	1.659*** (0.177)	1.545*** (0.169)	1.711*** (0.194)	1.629*** (0.177)	1.713*** (0.170)	1.613*** (0.179)	1.622*** (0.175)
School-Level LEP (%)					0.225*** (0.0347)		
Other School Indicator	0.0756*** (0.0121)	0.108*** (0.0124)	0.0755*** (0.0124)		0.0853*** (0.0124)	0.0742*** (0.0122)	0.0742*** (0.0123)
Middle School Indicator	0.0409*** (0.0122)	0.0400*** (0.0108)	0.0409*** (0.0132)	0.0410*** (0.0129)	0.0534*** (0.0121)	0.0392*** (0.0120)	0.0420*** (0.0122)
High School Indicator	0.215** (0.104)	0.145 (0.114)	0.239** (0.105)	0.224** (0.106)	0.205** (0.0917)	0.183* (0.109)	0.227** (0.0990)
2017 Indicator	-0.125*** (0.00515)	-0.132*** (0.00541)	-0.122*** (0.00501)	-0.123*** (0.00512)	-0.117*** (0.00492)	-0.126*** (0.00528)	-0.124*** (0.00511)
2018 Indicator	-0.0463*** (0.00437)	-0.0468*** (0.00468)	-0.0454*** (0.00446)	-0.0463*** (0.00443)	-0.0454*** (0.00423)	-0.0459*** (0.00440)	-0.0468*** (0.00435)
2019 Indicator (omitted)							
Residuals — Academic Growth	-2.624*** (0.528)	-3.118*** (0.454)	-2.685*** (0.586)	-2.725*** (0.570)	-2.063*** (0.488)	-2.782*** (0.527)	-2.401*** (0.531)

Variables	Preferred	No Large Districts	No Small Districts	No Other Grade Config.	Add Percent EL	No Park City	Students with IEPs Efficiency Factors
Residuals — Graduation	-0.217 (0.138)	-0.425*** (0.109)	-0.224 (0.151)	-0.150 (0.150)	-0.231* (0.130)	-0.239* (0.138)	-0.153 (0.139)
Residuals — School Enrollment	-0.212*** (0.0244)	-0.216*** (0.0201)	-0.216*** (0.0267)	-0.217*** (0.0266)	-0.205*** (0.0234)	-0.211*** (0.0241)	-0.193*** (0.0246)
Constant	16.33*** (0.607)	16.24*** (0.632)	16.98*** (0.940)	16.49*** (0.612)	16.47*** (0.585)	16.25*** (0.610)	16.06*** (0.601)
One-Sided Error							
District-Level Herfindahl Index (log)	0.494*** (0.188)	0.630*** (0.210)	0.517*** (0.193)	0.668*** (0.215)	0.552*** (0.182)	0.555*** (0.147)	0.435** (0.190)
Park City District Indicator	4.400*** (0.128)	4.318*** (0.136)	4.385*** (0.127)	4.496*** (0.143)	4.344*** (0.124)		4.365*** (0.145)
School-Level: Regular School Setting (%)							-10.54*** (1.709)
School-Level: Regular School Setting sq (%)							7.563*** (1.276)
Constant	-4.951*** (0.220)	-4.745*** (0.224)	-4.916*** (0.221)	-4.893*** (0.221)	-4.988*** (0.206)	-4.521*** (0.185)	-1.835*** (0.628)
Two-Sided Error							
School-Level Expenditures Allocated to Schools (%)	5.312*** (1.554)	4.008** (1.904)	5.362*** (1.609)	4.981*** (1.722)	5.409*** (1.337)	5.612*** (1.515)	5.139*** (1.497)
School-Level Students Tested (%)	-0.480 (0.294)	-0.527 (0.330)	-0.490* (0.296)	-0.437 (0.306)	-0.349 (0.285)	-0.486 (0.323)	-0.563* (0.302)

Variables	Preferred	No Large Districts	No Small Districts	No Other Grade Config.	Add Percent EL	No Park City	Students with IEPs Efficiency Factors
Constant	-7.457*** (0.766)	-6.874*** (0.946)	-7.482*** (0.786)	-7.296*** (0.850)	-7.591*** (0.640)	-7.689*** (0.737)	-7.352*** (0.741)
Observations	2,398	2,162	2,375	2,298	2,398	2,398	2,398

Source: Authors' calculations using data sources reported in Exhibit B2.
Notes: Robust standard errors are in parentheses.
** p < .05; ** p < .01; *** p < .001.*

Technical Appendix C: Estimating the Teacher Salary Index

One of the key cost factors in an analysis of the cost of education is the extent to which prices required to purchase educational resources vary from school to school. More specifically, since teacher salary represents the majority of school and district expenditures, variation in salaries required to hire teachers is of particular importance.

Reasons for this variation generally fall into three categories, as described in Taylor (2011): the person, the job, and the location. Individuals with stronger qualifications may be paid a higher wage, and jobs with more difficult working conditions may also require a higher wage. The extent to which wages vary according to these differences may depend on conditions beyond district control, bbut, in general, largely depend on district preferences and policies.

In contrast, the location of a district or school may require differing wages if a community has a higher cost of living and/or is a more or less desirable location for workers to reside in. Arguably, neither of these aspects of locational variation in wages are within a district's control. Addressing them is thus a matter of equity and fits well within the context of understanding how the cost of education varies based on educational context, as opposed to district preferences.

The literature includes three common methods used to estimate regional variation in teacher salaries: the use of a cost-of-living index, a comparable wage index, or a hedonic wage index. The advantages and disadvantages of each of these methods are discussed in more detail in Taylor (2011). For the purposes of accounting for regional variation in teacher salaries in this study, the hedonic wage analysis offers the most ideal method. Such an analysis allows for more granular estimates of regional variation than are possible in other methods, and accounts for both of the general sources of variation: cost of living and attractiveness of the location.

Aligned with the commonly understood reasons for variation in teacher salary, a hedonic wage analysis uses regression to analyze how this variation is explained by differences in teacher characteristics (such as educational attainment and years of experience), job characteristics (such as the assigned position or student characteristics), and locational characteristics (such as the local cost of living).[67] Moreover, the goal in developing a salary index is to isolate the variation in wage levels that is *outside school district control*.

The hedonic wage analysis model used in this study has its foundation in the approach taken by Taylor et al. (2018). It describes wages as a function of labor market characteristics, job characteristics, observable teacher characteristics, and unobservable teacher characteristics. Formal equations available upon request. The unobservable characteristics are accounted for by allowing for *individual* salary variation that is not explained by the observed characteristics to contribute to model estimates. This variation is assumed to follow an autoregressive pattern.[68]

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67 For more information about the use of hedonic wage models in education, see Chambers (1998), Chambers & Fowler (1995), Goldhaber (1999), Stoddard (2005), and Taylor (2010, 2011).

68 An autoregressive pattern to teacher salaries means that if a teacher earns more than the model predicts in one year, the teacher will also probably earn more than the model predicts in the next year. A Wooldridge test for the absence of autocorrelation was rejected at the 0.1 percent level ($p < .001$) (Wooldridge, 2002).

A key aspect of using this model to create a Teacher Salary Index (TSI) is the study team's identification of factors that districts can and cannot control. The index itself represents the model predicted salaries based only on factors beyond district control. Exhibit C1 summarizes how the model variables were divided into these two groups.

Exhibit C1. Controllable and Uncontrollable Model Variables

Controllable	Uncontrollable
Teacher experience, educational attainment, and assignment	Local housing costs, unemployment rate, urbanicity, cooling/heating degree days, students per district population, regional market indicator, district remoteness, school enrollment, and school type

Analysis Limitations

The primary limitations of this analysis are the limits of regression analysis in general. The resulting index depends on how a model is specified and on the variables ultimately included by the study team. Failure to create a robust model will undercut the validity of the index.

Another important limitation is the opportunity for researcher choice in which model variables are identified as controllable or uncontrollable. If a factor that districts can control is identified as "uncontrollable," the model will, in part, adjust according to district choices, rather than according only to factors related to location. This has the potential to confuse high-spending districts with high-cost districts, at least with respect to teacher salaries.

Finally, this modeling assumes that salaries are flexible and can respond to supply and demand in the labor market. However, several researchers have argued that teacher labor markets are not fully competitive, and thus that these assumptions may not be appropriate (Goldhaber et al., 2010).

Given these considerations, the robustness analyses described in Section C3 of this appendix are intended to test the strength of the specific model used for this study and the extent to which these potential limitations are mitigated.

Section C1. Data

The data used for this analysis came primarily from administrative data collected and maintained by the USBE. The Project KIDS (Key Integrated Data Systems) program was another important source of data; these data are collected and maintained by the Utah State Auditor. In addition, various public data sources, including data collected by the National Center for Education Statistics (NCES), the U.S. Bureau of Labor Statistics (BLS), the U.S. Census Bureau, the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Department of Housing and Urban Development (HUD) were used in the analysis. The data employed in the hedonic wage analysis cover the three-year period of FY 2016–17 to FY 2018–19. Exhibit C2 summarizes the data sources used in the analysis.

Exhibit C2. Description of Data Sources, Including Agency of Origin

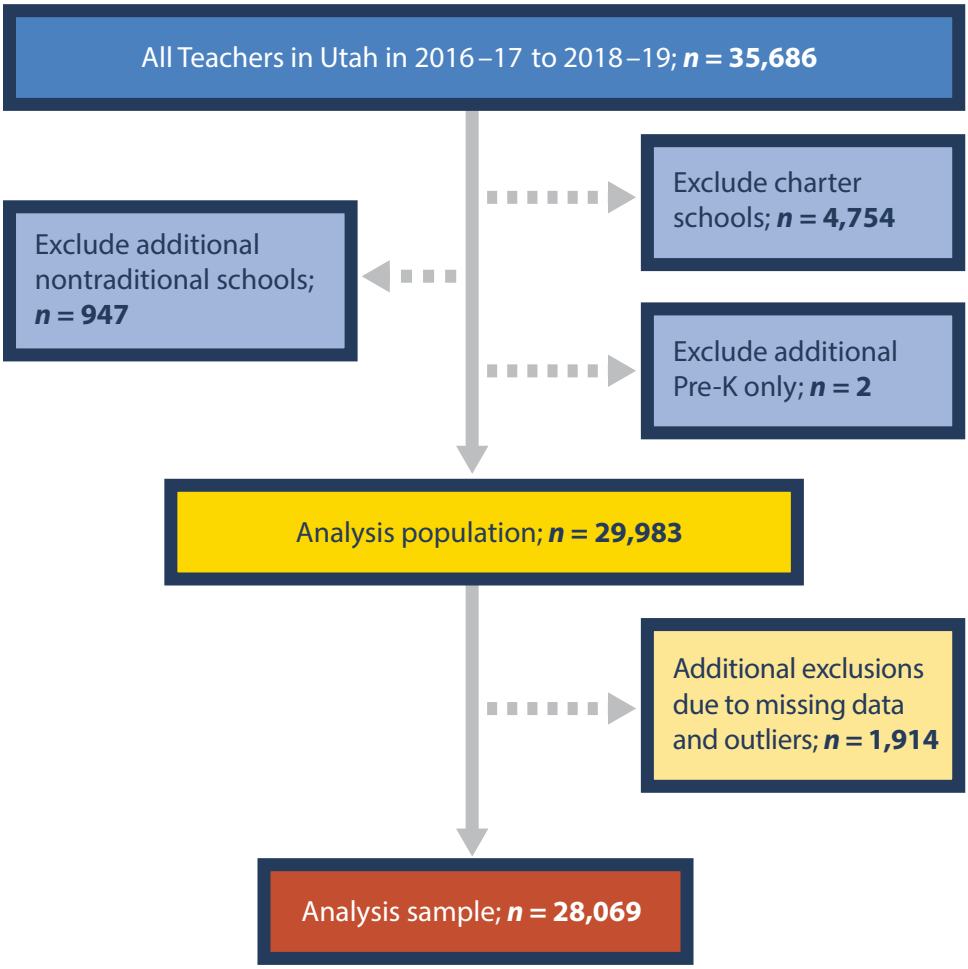
Data Source (Agency)	Description
Student Demographics (USBE)	Student-level data reporting student race/ethnicity, gender, ED status, English learner status, membership and attendance, and IEP data (if applicable).
Annual Financial Reports (USBE)	District-level data reporting expenditures by standard chart of accounts codes.
Student Assessment Data (USBE)	Student-level state assessment data including scale scores by test and subject.
Student Graduation Cohort Exit Data (USBE)	Student-level data reporting a student's graduation four-year cohort and reason for exit (e.g., graduated, dropped out).
Staff Assignment CACTUS Data (USBE)	Staff-level data reporting personal characteristics, position, and course assignment.
Staff Salary Data (Office of the State Auditor)	Staff-level data reporting salary and benefits.
Common Core of Data (NCES)	School- and district-level data reporting demographics, directory, and membership data, among other things.
Comparable Wage Index for Teachers (NCES)	District-level measure of regional cost variation based on a comparable wage model (see Cornman et al., 2019).
Gazetteer (Census)	District-level geographic area and location data.
American Community Survey (Census)	District-level annual survey data reporting on a variety of community characteristics.
Local Area Unemployment Data (BLS)	County-level unemployment statistics reported annually.
Climate Prediction Center (NOAA)	Heating and cooling degree days, computed based on data from the nearest weather station.
Fair Market Rents (HUD)	Data estimated by HUD to reflect variation in the cost of housing and used to determine standard payments for the Housing Choice Voucher Program.

The population for this analysis includes regular teachers at traditional public schools in Utah. To target this population, the following exclusions were made from the potential analysis sample: teachers from all private schools, home schools, alternative schools, charter schools, virtual schools, schools serving pre-kindergarten only, and nonregular schools were excluded from the population.

Teachers from schools that lacked reliable data on student performance (such as elementary schools that serve no students in tested grades, or very small schools) were also excluded, as were teachers within settings that were missing data required for the analysis. In addition, data on annual salaries below $25,000 or above $140,000 were deemed implausible, and the individuals with such salaries were excluded. Individuals working less than half time (i.e., under 0.50 FTE) or over 120 percent of full time (i.e., 1.20 FTE) were also excluded, as these individuals' assignment profiles deviate from a typical teacher assignment profile, represent outliers, and likely constitute a category of staff distinct from regular teachers, the population of the study. Finally, only teachers have been included in this analysis, as opposed to all school positions, and thus, the results specifically reflect the relative price of teacher labor.

Exhibit C3 illustrates the process used to define the population of schools, and subsequent exclusions due to data issues, to define the analysis sample.

Exhibit C3. Teachers in Administrative Data, Exclusions, and the Analysis Population and Sample (Unduplicated)



The final sample represents 94 percent of the teachers in the analysis population.

Exhibit C4 provides the mean, standard deviation, minimum, and maximum values for the variables included in this analysis, based on observations in the analysis sample.

Exhibit C4. Summary Statistics for Model Variables in the Analysis Sample

Variable	Count	Mean	SD	Minimum	Maximum
Teacher Salary (log)	66,253	10.88 (54,809)	0.25 (13,730)	10.13 (25,004)	11.84 (139,227)
Miles to Nearest Metro/ Micro Area	66,253	40.87	13.59	2.03	130.91
Miles to Nearest Metro Area	66,253	49.03	18.75	2.03	140.77
School-Level ED Students (%)	66,253	0.37	0.23	0.00	1.00
School Enrollment (log)	66,253	6.73 (991)	0.59 (613)	1.39 (4)	8.11 (3,338)
Teacher Experience (log)	66,253	2.04 (11)	0.99 (9)	0 (1)	3.74 (42)
Fair Market Rent — 2-Bedroom (log)	66,253	6.8 (902)	0.14 (119)	6.48 (650)	7.08 (1,183)
Unemployment Rate	66,253	0.03	0.01	0.02	0.08
Cooling Degree Days	66,253	991.95	455.81	2.00	2,604.00
Heating Degree Days	66,253	5,801.25	996.91	2,986.00	11,375.00
Students Per District Population	66,253	0.38	0.10	0.19	0.54

Source: Authors' calculations using data sources reported in Exhibit C2.
Note: Log transformed variables are provided untransformed in parentheses.

Key Model Variables

As summarized in Exhibit C1, several variables are included in the hedonic wage analysis model. The dependent variable, teacher salary, is based on a combination of data sources; its construction is described in detail in this section. Covariates included in the model are also described in this section, organized by their identification as controllable or uncontrollable.

Dependent Variable: Teacher Salary

As described earlier in Section C1 of this appendix, two data sources were used to prepare the teacher salary variable and integrate it into the model. The Project KIDS data collection was the primary basis of the salary

information. This source was preferred over USBE-collected salary data, based on the recommendation of USBE staff that this alternative source was the most reliable available source.

A few complications arose as a result of favoring this data source, including, in particular, limitations on the available years of data with sufficient complete information, and mismatch between USBE data sources and the Project KIDS records.

The first issue represents a broad exclusion of years prior to FY 2016–17 from the analysis, due to lack of available Project KIDS data for whole districts in these earlier years.

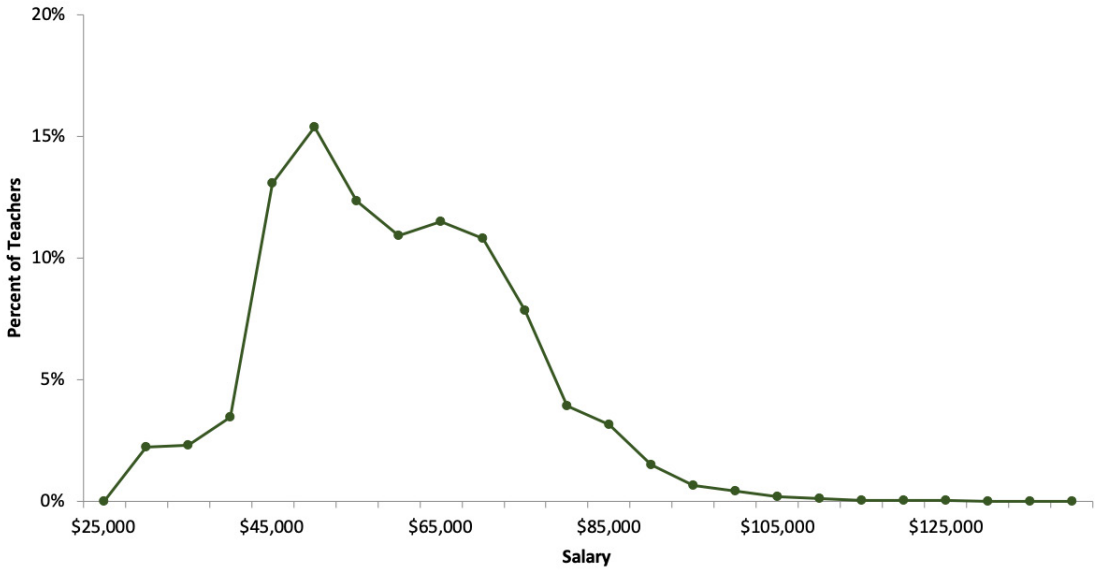
The second issue is less broad, but still required some effort to mitigate. When combining the Project KIDS files with USBE staff assignment data at the individual level, the study team discovered that several individuals found in the USBE data were not found in the Project KIDS files, based on using USBE unique staff IDs to join files. Based on conversations with Project KIDS and USBE representatives, the study team understands the primary reason for this apparent mismatch to be a result of differences in the scope of the two collections. The most impactful difference is that Project KIDS does not include charter schools in its data collection, and thus does not report salary data for these schools. Although this explains a large portion of the mismatch, it does not represent a meaningful issue because these school sites are not a part of the analysis population.

Other reasons for the mismatch relate to whether or not Project KIDS received USBE unique IDs for all staff. In some cases, it did not. In these cases, the IDs were filled in, when possible, for individuals with course assignments only. As a result, some individuals did not have a unique ID allowing for their salary to be joined with the staff assignment data.

To mitigate these issues, the study team joined these two data sources in stages, using all available information to improve the overall match between files. Specifically, the team merged the data based on the USBE unique ID. Taking into account all schools, this left 18 percent of individuals in the USBE file without salary data. Next, an individual's name and district location were used to match additional individuals across data sources. This added information for 28 percent of those who had been without salary data, decreasing the overall percentage of individuals missing data to 13 percent. Finally, the team used a "fuzzy match" that drew on all information common to both files and would allow for misspellings or alternate spellings to be accounted for. This did not improve upon the existing matches in any meaningful way. Thus, the team was unable to provide salary information for 13 percent of the individuals in the USBE staff assignment file. However, of the individuals assigned to locations included in the analysis sample, 98.64 percent could be included, greatly diminishing the significance of the match issues.

The distribution of salaries within the final analysis sample is displayed in Exhibit C5. As shown in the exhibit, most salaries center around $50,000, and significantly fewer teacher salaries are higher than $75,000.

Exhibit C5. Distribution of Teacher Salaries in the Analysis Sample, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit C2.

Controllable Model Variables

The model variables that are identified as controllable by school districts and schools are teacher experience, educational attainment, and assignments.

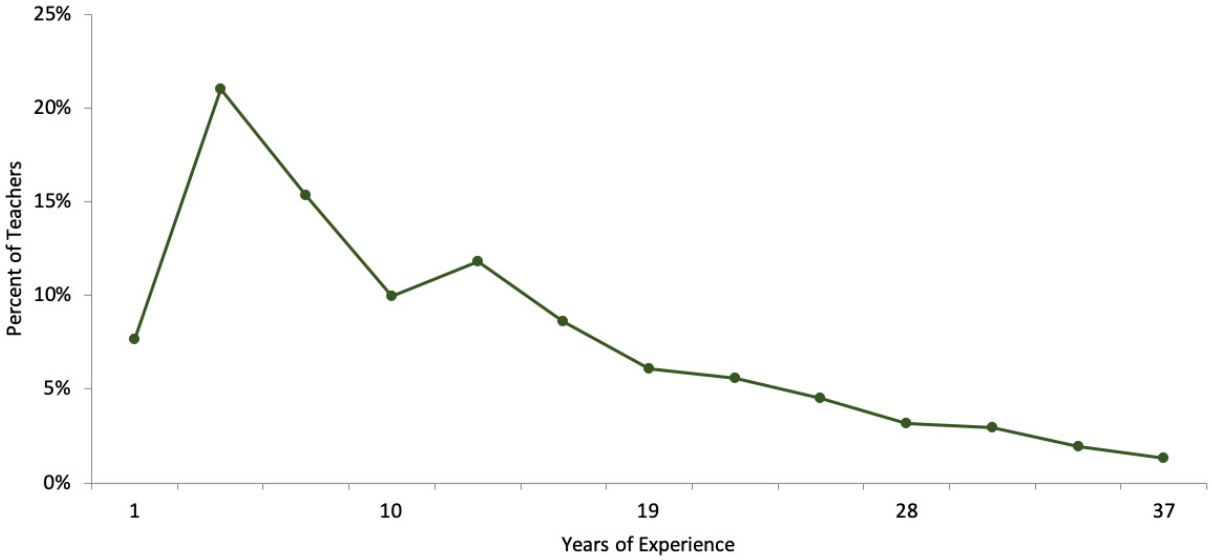
Teacher experience and educational attainment are significant to teacher salaries, often, in fact, *determining* a teacher's salary, according to a salary schedule. Thus, they are important factors in any model predicting teacher salary.

To some extent, teacher assignments also relate to salary, in that the skill set required for a particular assignment can influence, through competitive pressure, the salary that a teacher with the requisite skills has available to them or will accept. An assignment requiring a more common skill set that is relatively less marketable will command a lower salary than one requiring less common skills. Thus various types of assignments are important as factors in this model.

All three of these variable categories reflect staffing decisions, which are generally within the control of school districts. They reflect a complex balance of unique district demand preferences and available supply, and, importantly, how districts choose to strike that balance. As such, the characteristics of teachers in a given school or district, and how those characteristics are associated with salaries, are a reflection of district decision-making, rather than a reflection of price.

Exhibit C6 illustrates the distribution of experience in the analysis sample in FY 2018–19, the most recent year analyzed. As shown in the exhibit, most teachers have between 1 and 15 years of experience, with less representation at higher experience levels.

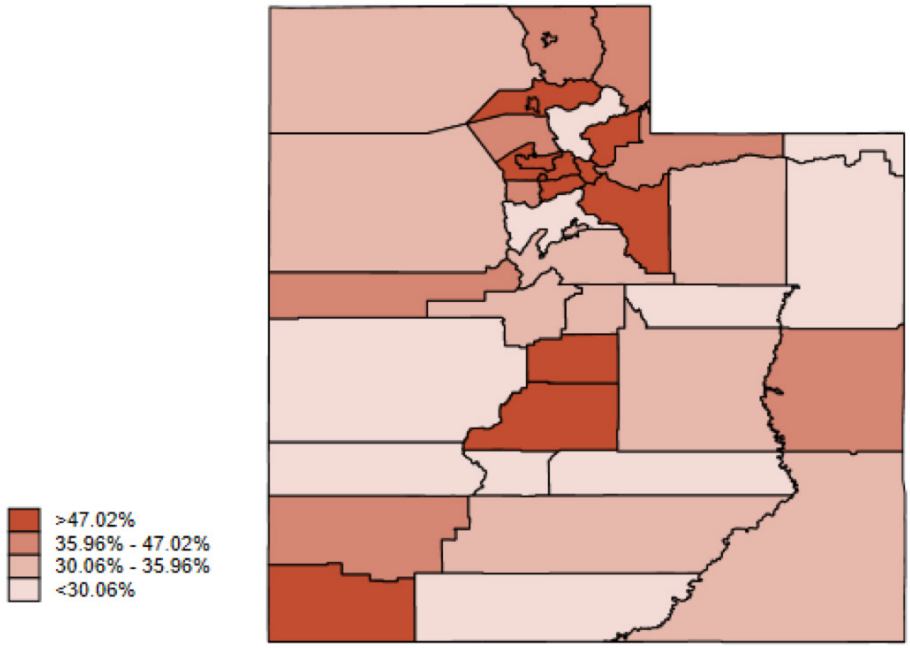
Exhibit C6. Distribution of Teacher Experience in the Analysis Sample, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit C2.

The map in Exhibit C7 reflects the geographic distribution of teachers by educational attainment, displaying the district-level percentages of teachers with an advanced degree (i.e., master's degree or doctorate) in FY 2018–19, the most recent year analyzed.

Exhibit C7. Map of the District-Level Percentages of Teachers with Advanced Degrees, FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit C2.

Uncontrollable Model Variables

Model variables identified as uncontrollable can generally be divided into two categories: local market conditions and compensating differentials.

Local Market Conditions

The economic conditions of a given school or district are relevant to salaries because they reflect, as discussed earlier in this appendix, factors related to the cost of living in a community. In general, it is reasonable to assume that these aspects of a district's community are beyond its control.

In the analysis model, local market conditions included county-level fair market rent for a two-bedroom apartment, to account for housing costs; unemployment rate, as a reflection of local supply; urbanicity, to account for differences in costs related to locale; cooling and heating degree days, to account for the additional infrastructure costs of extreme local weather; students per district population, to capture the density of students; and an indicator for the region of the state surrounding Salt Lake City and including significant amenities through local ski resorts and recreation. The basis for including an indicator for these particular districts is that these communities are uniquely attractive in that they are close to a major metro area as well as to ski resorts and associated recreational activities. Given the unique local market, individuals living in these communities might be willing to accept a slightly smaller salary than otherwise, all other relevant factors being equal.

All of these variables, except for the regional indicator, are typical of hedonic analyses (Taylor, 2011; Goldhaber et al., 2010).

Compensating Differentials

Compensating differentials refers to differences in salary that are meant to compensate for differences in the attractiveness of a given job assignment. These may include factors in job conditions, as well as attractiveness of the community in which the job is found. Crucially, these variables are only factors that are beyond district control.

In the analysis model, compensating differentials included the distance in miles from the nearest micropolitan or metropolitan area, as a measure of the remoteness of a community, to capture availability of local amenities; school size, and school type. All of these variables are also typical to hedonic analyses (see Taylor, 2011; Goldhaber et al., 2010).

Section C2. Results

Exhibit C8 reports the results of the hedonic wage analysis, including two models progressing to the final preferred specification (Model 3). The first model includes only variables within district control and year fixed effects. The second model adds compensating differentials, and the final, preferred model adds local market conditions.

As the additional variables are added to the model, the results for the baseline models change very little. This illustrates that the model is quite robust to the additions of variables beyond district control. This makes sense because the first model explains 54 percent of the variation, and the addition of uncontrollable variables only increases this percentage to 56 percent. Put another way, salaries are largely within the control of districts, and the final index reflects the marginal aspects of salary that are not within district control and can be attributed to locational variation.

Exhibit C8. Hedonic Wage Model Estimates

Variables	Model 1	Model 2	Model 3
Teacher Experience			
Teacher Experience (log)	-0.215*** (0.0153)	-0.220*** (0.0153)	-0.225*** (0.0152)
Teacher Experience (log) sq	0.170*** (0.00862)	0.172*** (0.00859)	0.175*** (0.00854)
Teacher Experience (log) cub	-0.0223*** (0.00145)	-0.0227*** (0.00145)	-0.0231*** (0.00144)
First Year Teacher Indicator	-0.131*** (0.00769)	-0.133*** (0.00768)	-0.135*** (0.00766)
Teacher Educational Attainment			
Bachelor's Degree Indicator	-0.00896* (0.00374)	-0.00867* (0.00373)	-0.00990** (0.00371)
Master's Degree Indicator	0.101*** (0.00407)	0.0994*** (0.00405)	0.0963*** (0.00403)
Doctorate Degree Indicator	0.167*** (0.00970)	0.163*** (0.00963)	0.155*** (0.00955)
Degree Unknown Indicator (omitted)			
Teacher Assignment			
Multiple School Assignments Indicator	0.0348*** (0.00450)	0.0385*** (0.00450)	0.0372*** (0.00449)
Assignment: ELA	-0.00993*** (0.00286)	-0.0122*** (0.00293)	-0.0114*** (0.00291)
Assignment: Foreign Language	-0.0149** (0.00578)	-0.0178** (0.00575)	-0.0178** (0.00570)
Assignment: Math	0.0209*** (0.00320)	0.0198*** (0.00324)	0.0210*** (0.00322)
Assignment: Science	0.00730* (0.00367)	0.00718 (0.00367)	0.00761* (0.00363)
Assignment: Social Studies	0.0128*** (0.00379)	0.0113** (0.00380)	0.0118** (0.00377)
Assignment: Fine Arts	-0.0372*** (0.00419)	-0.0388*** (0.00418)	-0.0381*** (0.00414)

Variables	Model 1	Model 2	Model 3
Assignment: CTE	0.0225*** (0.00366)	0.0203*** (0.00370)	0.0212*** (0.00367)
Assignment: Health	0.0149*** (0.00418)	0.0130** (0.00418)	0.0136** (0.00415)
Assignment: Info. Tech.	-0.0252 (0.0393)	-0.0220 (0.0392)	-0.0205 (0.0392)
Assignment: Elementary	-0.0459*** (0.00267)	-0.0225*** (0.00447)	-0.0230*** (0.00444)
Assignment: Pre–K	-0.0114 (0.0213)	0.00433 (0.0214)	0.00191 (0.0213)
Assignment: Special Education	-0.0297*** (0.00348)	-0.0175*** (0.00394)	-0.0181*** (0.00390)
Assignment: Other Assignments	0.0836*** (0.0143)	0.0715*** (0.0143)	0.0672*** (0.0142)
Year Fixed Effects			
2017 Year Indicator	-0.0907*** (0.000961)	-0.0920*** (0.00101)	-0.0729*** (0.00172)
2018 Year Indicator	-0.0320*** (0.000845)	-0.0319*** (0.000845)	-0.0235*** (0.00120)
2019 Year Indicator (omitted)			
Compensating Differentials			
Miles to Nearest Metro/Micro		0.000128 (0.0000803)	0.000274* (0.000116)
Miles to Nearest Metro		-0.000116* (0.0000587)	-0.000589*** (0.0000985)
School-Level ED Students (%)		0.0689*** (0.00390)	0.0693*** (0.00442)
School Enrollment (log)		-0.0871*** (0.0172)	-0.109*** (0.0172)
School Enrollment (log) sq		0.00932*** (0.00134)	0.00975*** (0.00133)
Elementary School Indicator		-0.00395 (0.00464)	-0.00864 (0.00463)

Variables	Model 1	Model 2	Model 3
Middle School Indicator		-0.00117 (0.00228)	0.00190 (0.00228)
High School Indicator		-0.00251 (0.00325)	0.00695* (0.00329)
Other Schooling Level Indicator (omitted)			
Local Market Conditions			
Fair Market Rent — 2 bedroom (log)			0.200*** (0.0125)
Annual Avg. Unemployment Rate			-0.00728*** (0.00218)
Metropolitan Area Indicator			0.0173** (0.00613)
Micropolitan Area Indicator			0.0212** (0.00726)
Annual Avg. Cooling Degree Days			-0.0000151** (0.00000566)
Annual Avg. Heating Degree Days			0.00000822*** (0.00000242)
Salt Lake City/Ski Resort District Indicator			-0.0411*** (0.00302)
Students Per District Population			0.0296* (0.0130)
Constant	10.80*** (0.00876)	10.93*** (0.0571)	9.670*** (0.105)
Observations	66,341	66,253	66,253
R-Squared — Overall	0.542	0.550	0.560

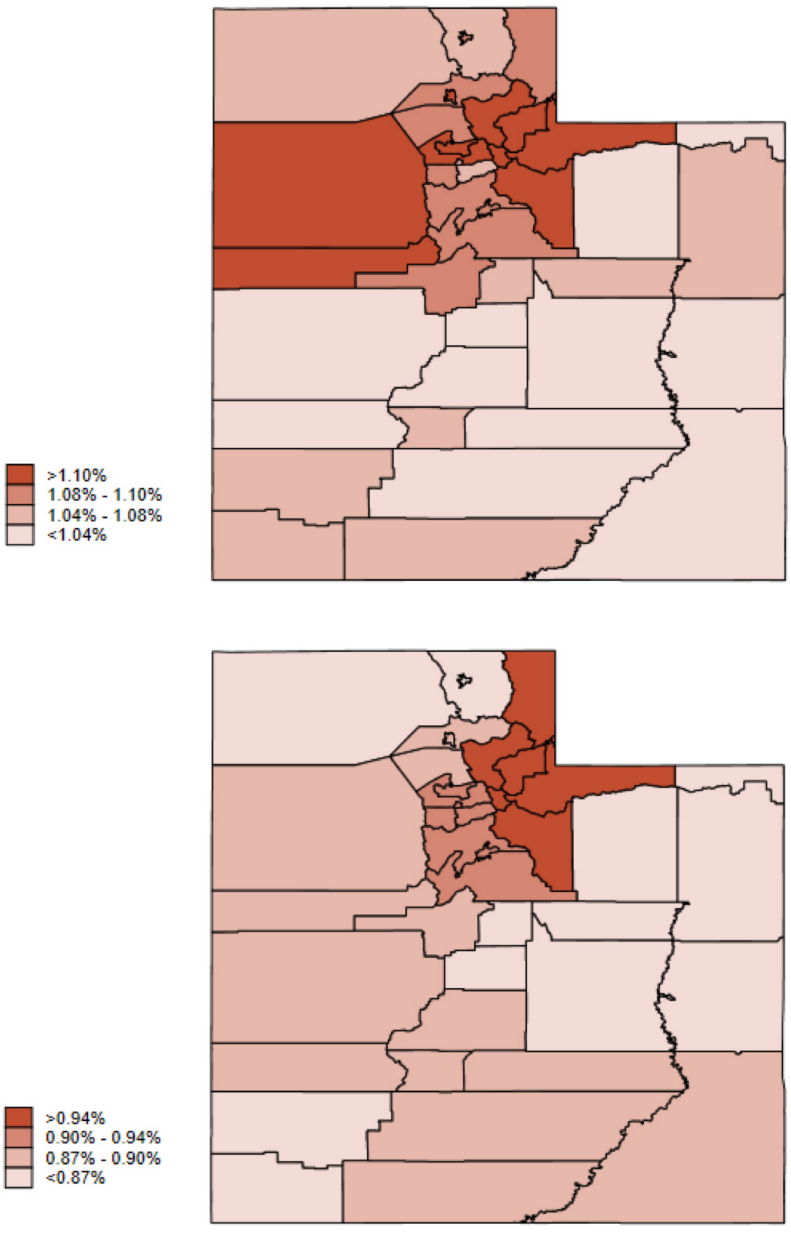
Source: Authors' calculations using data sources reported in Exhibit C2.

Notes: Robust standard errors are in parentheses.

** p < .05; ** p < .01; *** p < .001.*

The following maps (Exhibit C9) illustrate how this study's TSI compares to an alternative measure, the Comparable Wage Index for Teachers (CWIFT). The CWIFT has less variation than the TSI, but the patterns of local prices for teacher labor are generally consistent.

Exhibit C9. Average District-Level Teacher Salary Index (Pictured First) and Comparable Wage Index for Teachers (Pictured Second), FY 2018–19



Source: Authors' calculations using data sources reported in Exhibit C2.

Section C3. Robustness Analysis

To test the robustness of the main model, a few additional models were tested, adjusting aspects of the main model to ensure that it is stable to these changes. Specifically, additional outliers in salary were removed, including teachers with more than $100,000 in salary. An alternative specification of the rent variable was also tested, including a squared and cubed term.

As can be seen in Exhibit C10, these changes do not change the primary results significantly, suggesting that the model is stable to changes in modeling choices or underlying extremes in the data.

Exhibit C10. Hedonic Robustness Analysis Results

Variables	Main	Outliers Removed	Quad and Cubed Rent Terms
Teacher Experience			
Teacher Experience (log)	-0.225*** (0.0152)	-0.222*** (0.0151)	-0.226*** (0.0152)
Teacher Experience (log) sq	0.175*** (0.00854)	0.174*** (0.00846)	0.176*** (0.00852)
Teacher Experience (log) cub	-0.0231*** (0.00144)	-0.0230*** (0.00142)	-0.0232*** (0.00143)
First Year Teacher Indicator	-0.135*** (0.00766)	-0.134*** (0.00757)	-0.136*** (0.00763)
Teacher Educational Attainment			
Bachelor's Degree Indicator	-0.00990** (0.00371)	-0.00929* (0.00367)	-0.0113** (0.00370)
Master's Degree Indicator	0.0963*** (0.00403)	0.0960*** (0.00398)	0.0947*** (0.00402)
Doctorate Degree Indicator	0.155*** (0.00955)	0.154*** (0.00948)	0.150*** (0.00953)
Degree Unknown Indicator (omitted)			
Teacher Assignment			
Multiple School Assignments Indicator	0.0372*** (0.00449)	0.0364*** (0.00444)	0.0375*** (0.00447)
Assignment: ELA	-0.0114*** (0.00291)	-0.0112*** (0.00288)	-0.0115*** (0.00290)
Assignment: Foreign Language	-0.0178** (0.00570)	-0.0186*** (0.00565)	-0.0181** (0.00568)

Variables	Main	Outliers Removed	Quad and Cubed Rent Terms
Assignment: Math	0.0210*** (0.00322)	0.0211*** (0.00319)	0.0212*** (0.00321)
Assignment: Science	0.00761* (0.00363)	0.00722* (0.00360)	0.00723* (0.00362)
Assignment: Social Studies	0.0118** (0.00377)	0.0114** (0.00374)	0.0112** (0.00376)
Assignment: Fine Arts	-0.0381*** (0.00414)	-0.0384*** (0.00411)	-0.0385*** (0.00413)
Assignment: CTE	0.0212*** (0.00367)	0.0204*** (0.00364)	0.0219*** (0.00366)
Assignment: Health	0.0136** (0.00415)	0.0132** (0.00412)	0.0129** (0.00414)
Assignment: Info. Tech.	-0.0205 (0.0392)	-0.0209 (0.0387)	-0.0236 (0.0390)
Assignment: Elementary	-0.0230*** (0.00444)	-0.0226*** (0.00440)	-0.0232*** (0.00443)
Assignment: Pre-K	0.00191 (0.0213)	0.00248 (0.0211)	0.00386 (0.0213)
Assignment: Special Education	-0.0181*** (0.00390)	-0.0175*** (0.00387)	-0.0182*** (0.00390)
Assignment: Other Assignments	0.0672*** (0.0142)	0.0640*** (0.0147)	0.0640*** (0.0142)
Year Fixed Effects			
2017 Year Indicator	-0.0729*** (0.00172)	-0.0729*** (0.00172)	-0.0674*** (0.00174)
2018 Year Indicator	-0.0235*** (0.00120)	-0.0235*** (0.00120)	-0.0187*** (0.00122)
2019 Year Indicator (omitted)			

Variables	Main	Outliers Removed	Quad and Cubed Rent Terms
Compensating Differentials			
Miles to Nearest Metro/Micro Area	0.000274* (0.000116)	0.000300** (0.000115)	0.000316** (0.000115)
Miles to Nearest Metro Area	-0.000589*** (0.0000985)	-0.000598*** (0.0000977)	-0.000126 (0.000101)
School-Level ED Students (%)	0.0693*** (0.00442)	0.0681*** (0.00438)	0.0665*** (0.00441)
School Enrollment (log)	-0.109*** (0.0172)	-0.108*** (0.0171)	-0.107*** (0.0172)
School Enrollment (log) sq	0.00975*** (0.00133)	0.00969*** (0.00132)	0.00962*** (0.00133)
Elementary School Indicator	-0.00864 (0.00463)	-0.00856 (0.00458)	-0.00961* (0.00461)
Middle School Indicator	0.00190 (0.00228)	0.00231 (0.00225)	0.000643 (0.00228)
High School Indicator	0.00695* (0.00329)	0.00588 (0.00326)	0.00546 (0.00328)
Other Schooling Level Indicator (omitted)			
Local Market Conditions			
Fair Market Rent — 2 bedroom (log)	0.200*** (0.0125)	0.199*** (0.0124)	-9.674*** (0.493)
Fair Market Rent — 2 bedroom (log) sq			0.728*** (0.0363)
Fair Market Rent — 2 bedroom (log) cub			
Annual Avg. Unemployment Rate	-0.00728*** (0.00218)	-0.00713*** (0.00216)	-0.0118*** (0.00219)
Metropolitan Area Indicator	0.0173** (0.00613)	0.0165** (0.00608)	0.0447*** (0.00627)
Micropolitan Area Indicator	0.0212** (0.00726)	0.0209** (0.00720)	0.0307*** (0.00726)

Variables	Main	Outliers Removed	Quad and Cubed Rent Terms
Annual Avg. Cooling Degree Days	-0.0000151** (0.00000566)	-0.0000144* (0.00000562)	-0.00000205 (0.00000568)
Annual Avg. Heating Degree Days	0.00000822*** (0.00000242)	0.00000838*** (0.00000240)	(0.00000241)
Salt Lake City/Ski Resort District Indicator	-0.0411*** (0.00302)	-0.0424*** (0.00300)	-0.0518*** (0.00306)
Students Per District Population	0.0296* (0.0130)	0.0334** (0.0129)	0.0980*** (0.0134)
Constant	9.670*** (0.105)	9.672*** (0.104)	43.07*** (1.671)
Observations	66,253	66,246	66,253
R-Squared — Overall	0.560	0.560	0.563

Source: Authors' calculations using data sources reported in Exhibit C2.
Notes: Standard errors are in parentheses.
** p < .05; ** p < .01; *** p < .001.*

Technical Appendix D: Case Study and Survey Supplemental Materials

Case Study School Summaries

Case Study Summary: Castle Heights Elementary School

Background

Castle Heights Elementary School, in Carbon School District, serves close to 500 students in kindergarten through fifth grade. The school is located in a relatively affluent neighborhood in a generally rural area, and most students live close enough to walk to school. Castle Heights is located about a mile from the middle and high schools. The primary industries in the area are mining, electronics, and technology. Utah State University's Eastern campus is located in town.

The school typically has around 40 percent ED students, right around the threshold to qualify as a Title I school. It has a very small population of English learners (ELs). There is low student mobility in terms of students leaving the district and the school receives frequent transfer requests from families looking to move to the community. The school has not seen significant changes in enrollment or demographics recently. Castle Heights has average class sizes of around 25 students.

Exhibit D1. Castle Heights Elementary School Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	476
Economically Disadvantaged %	36%
English Learner %	1%
Special Education %	15%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

The school is led by Principal Wendy Fluckey, who is in her second year as principal at the school. Her school leadership team includes a representative from each grade level, a special education teacher, the school counselor, and the school's instructional coach. The leadership team brings feedback from grade-level teams to the

table for discussion. Responsibilities of the school leadership team include determining school-specific goals for each school year.

The school culture at Castle Heights is described by staff as welcoming and kids are happy to learn there. Teachers are collaborative and feel supported; school administrators point to the school's teachers as the key to the school's success. The school emphasizes a strong foundation of literacy in kindergarten through second grade. District leadership reported that Castle Heights's families have great pride in their school, and believe it is the best school in the district and invest their time volunteering and contributing to the success of the school.

Instruction, Interventions, and Assessment/Data Use

Most grades at Castle Heights have three classrooms. In assigning students to classes, Castle Heights leadership seeks to balance the level of student need across the classes — in terms of number of students on IEPs or with 504 plans, those with behavior issues, and those with academic need. The daily schedule is set by the principal, in consultation with the leadership team.

Castle Heights's curriculum is selected in partnership with district staff — the district will bring leaders from all district schools together to discuss curricular resources, and when there is agreement on particular resources, the district will fund those textbooks or supplies districtwide. Schools can expend their school budget resources on other curricula of their choosing.

The district has established goals around improving reading, and the school developed its own aligned school-specific reading goals. The school uses data-driven strategies to target students who are struggling and provide the appropriate support. The principal believes strongly in the use of research-based intervention. Students are identified for intervention at the beginning of the school year, using assessment results. Castle Heights uses the Acadience assessment as well as an early elementary checklist to indicate if students are ready to engage in certain content areas.[69] The school also uses a Kid Reading A-Z assessment, in addition to teacher-developed classroom assessments, to determine the beginning-of-the-year intervention groups, based on reading levels.[70]

The principal and instructional coach do most of the data analysis from these assessments and relay the results to faculty and staff during professional learning communities (PLCs). Students are then sorted into groups for instruction at their level during intervention time offered during the school day for those who require it. A 45-minute intervention period is built into the schedule two days per week, when the intervention groups are instructed by teachers, while students not requiring intervention are overseen by aides. These groups are reassessed every four weeks to see which students should be moved to different groups.

Students who aren't making gains in the small groups are moved to Tier 3 and receive one-on-one instruction in targeted skill areas. The school utilizes an instructional aide, who is in the process of becoming a licensed teacher, to do one-on-one tutoring with students for two hours a day, as well. The EL students at the school, a relatively small number, receive individualized instructional strategies based on their specific needs. The school has access to district-based EL support and resources as needed.

Castle Heights does not currently offer summer school programming; however, some teachers volunteer to provide before- and after-school support to students. The school's emphasis on narrowing of goals, with the top priority around literacy, has supported the school's overall success.

69 More information on Utah state assessments can be found at https://www.schools.utah.gov/assessment/assessments?mid=1173&tid=1.

70 More information about the Reading A-Z assessments can be found at https://www.readinga-z.com/assessments/.

Staffing and Professional Development

In the study team's view, Castle Heights has strong, dedicated, and knowledgeable teaching staff who are open to improving their instructional practice. The school's teacher turnover is relatively low and teacher vacancies are often due to retirements rather than teachers leaving for other positions. When vacancies occur, the school has autonomy over hiring. Only one staff member, the speech teacher, is shared with another school. Teachers are assigned to classrooms based on teacher strengths.

Teachers have 120 minutes per week in paid preparation periods, when students attend special classes, including music, library, art, PE, and computer. Across grade levels, teachers have common prep periods. On early release Mondays, 90-minute PLC meetings are held, and the principal usually attends all grade-level PLC meetings. Additionally, the district schedules four pupil-free days for professional development throughout the year.

Topics for professional development are determined by the Castle Heights leadership team; topics may vary based on the grade level and areas of need identified through the student data. The instructional coach leads much of the school-based professional development, and in the past year sessions have included a particular focus on using data to guide teacher instruction.

Student Support Services

Castle Heights provides services to support student well-being beyond just instructional needs. The school employs a full-time counselor and a part-time behavioral aide. These positions are funded in part through school-directed funds such as School LAND Trust and Teacher and Student Success Account (TSSA), showing the priority the school places on students' social-emotional health. The school also has established a Behavior Team, which meets weekly to check in on students who are considered high risk or who are exhibiting behavioral or emotional concerns. This team includes the principal, counselor, behavioral aide, and special education teacher, and works to ensure students receive the services they need.

Additional Monetary and Nonmonetary Support

In terms of monetary supports, the school has a strong Parent Teacher Association (PTA) that raises funding for student activities, but not at a level significantly higher than other elementary schools in the district. Castle Heights is also a Title I school, so it has access to funding non–Title I schools don't; a key use of Title I funds in the past has been securing Chromebooks for students. Aside from those funds, the school does not have access to funds beyond its district allocation.

Castle Heights's leadership believes its parent engagement contributes to the success of the school. Parents are supportive and volunteer in school — some parents volunteer to help teach art programming, and others, particularly in the younger grades, support classroom teachers in a variety of ways, including working one-on-one with students on reading and mathematics when appropriate. Castle Heights's leadership estimated that parents volunteer a total of about 10 hours per day across all grade levels.

District-Level Funding and Support

Carbon School District leadership view their role as setting expectations for schools and providing the support necessary for them to meet those expectations. The Carbon Growth Cycle is the heart of these expectations, which provides a timeline and framework for reflecting on data, establishing goals, and monitoring progress

throughout the school year. Each school is then responsible for developing its specific goals and following the growth cycle to continue to monitor progress toward goals.[71]

The district provides a base funding amount to each school, with an additional allocation per student in smaller schools. Staffing full-time equivalents (FTEs) are determined based on student enrollment figures. An additional per student amount is added to each school's budget for supplies and day-to-day materials. The district covers custodial expenses systemwide and pays for most professional development and textbook costs. Principals have discretion to utilize their school budgets for additional professional development and curricular resources.

The district values providing schools with a lot of school-level autonomy. For example, each school has a positive behavior support system, but the exact program or approach is determined by the school. Staff hiring is done by schools with input from the district if it is requested. Schools have complete control over their discretionary budgets. Carbon School District does not employ a lot of district-based staff. Instead, an instructional coach is assigned to each school, who serves as the heart of the professional development for the school. The district ensures each school has its own full-time counselor, a position that was often shared between schools in years past. This year, it added district-level digital learning professional development to better support schools in their e-learning efforts, with funding allocated to mitigate the impact of COVID-19.

Carbon School District was notably awarded an Intergenerational Poverty Grant (Utah Code Annotated § 53F-5-207) that has had a significant impact. This districtwide program is in its sixth and final year and provides funding for a full-time staff member to run an after-school program with additional part-time staff. The program is targeted toward low-income students, but inclusive of all students. The program is very popular in the district and has a large wait list of students each year.

Case Study Summary: Crimson Cliffs Middle School

Background

Crimson Cliffs Middle School is a new school (opened in the fall of 2018) in Washington School District, serving approximately 800 students in grades 8–9. The school is the most affluent school in the district, and it receives a lot of support from its community. The school is in demand with many families trying to enroll their students. The primary industry in the district is tourism; there are also medical services, including a Level II trauma center, and the area is a transportation hub with manufacturing, warehouse, and associated shipping from Family Dollar and Walmart.

The school is fairly low need: 15 percent of students are eligible for free or reduced-price lunch, 1 percent are ELs, and 8 percent are identified for IEPs.

71 More information about the Carbon Growth Cycle can be found at https://sites.google.com/carbonschools.org/carbon-growth-cycle/home.

Exhibit D2. Crimson Cliffs Middle School Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	819
Economically Disadvantaged %	15%
English Learner %	1%
Special Education %	8%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

While new schools may have to work to establish a school culture, Crimson Cliffs Middle benefited from having a well-liked, veteran principal from another school in the district, who brought some veteran teachers from his prior school to seed the school. About half of the families also came from the prior school. Leadership described the school as having a family-type culture, one that is very collaborative and engaged. The leadership model is team-oriented, with the leadership team, department heads, and counselors helping to run the school. Commitments and goals are set by the school and faculty and are based upon school leadership's research into best practices found in the top schools across the country.

The principal emphasizes to staff the maxim that "if you don't love the kids, then this is probably not the place for you." Every kid should be treated the same way a staff person would treat their own child or want their child to be treated. The expectation is that staff love and help all students, to ensure that they feel how much the staff cares and know that staff want them to succeed. District leadership described that the culture of the school is based upon the belief that no student is going to fail; instead the school will provide targeted support to students to intervene before failure. The school also recognizes and awards student academic success.

Instruction, Interventions, and Assessment/Data Use

Crimson Cliffs Middle is focused on collectively supporting its students. Teachers do not differentiate between kids in a teacher's class and other students; all students in the school are their students. As a result, Crimson Cliffs Middle focuses on ensuring students learn the same essential skills in every class. Teaching teams have broad autonomy to determine how they will implement the curriculum. Teachers meet as collaborative teams and determine what is the most essential in the curriculum, then use the same common formative assessments — developed by staff — to identify students needing support and which teaching practices lead to the best results. Teams have two hours on Friday to work as a team, share best practices, and look at the data. The school also has an intervention team and an intervention specialist to assist in determining appropriate supports and strategies for struggling students.

The school day is structured so that all students have time to do their homework, 60 mins every two days. There is also a system for teachers to have kids referred to their class during homeroom to get extra help for as many days of the week as needed. Interventions are tailored to the student. These interventions include students receiving double instruction blocks, meeting with teachers during homeroom, or working with the intervention specialist. The school recently hired a position that just tracks eighth grade students' progress. This person is in close communications with parents and will adjust student schedules to replace electives with

additional core instruction if needed. Currently, every eighth grader is taking English language arts (ELA) every day rather than every other day. The school also has specific help for special education classes and to support EL students.

Staffing and Professional Development

As previously noted, the school's principal was brought in from another school in the district and brought some veteran teachers with him from the prior school. There has been little staff turnover since Crimson Cliffs Middle opened, and, districtwide, teacher turnover tends to be very low. Teachers usually have two prep periods per day, but the principal often "buys out" one of their prep periods to offer more class sections.[72] There are also several shared elective positions in the school (e.g., choir, band, orchestra, dance, and theater).

Crimson Cliffs Middle, like other schools in the district, follows a PLC framework in which teachers regularly meet in teams to collaboratively review data and improve instructional practice. The district also has a principal collaboration program in which it has hired principal leaders who serve as mentors to the principals in the district.

The district as a whole has adopted the PLC model. About once a month the school engages as a whole team in professional development around critical questions that have been identified by staff so they can collaboratively learn and address these questions systematically. Crimson Cliffs Middle has elected to utilize some of its School LAND Trust funding to regularly send teams of teachers to attend conferences on implementing PLCs. Other professional development is primarily at the district level during the summer, after hours, and sometimes during the school hours, when needed.

Student Support Services

The school has two full-time counselors and one part-time counselor. One of the counselors also happens to be a licensed clinical social worker (LCSW). The school sees a great benefit to having its LCSW work directly with students during the school day. There is also support from an outside mental health service group, where someone comes in once a week to lead group counseling based upon risk needs identified through a risk survey.

Additional Monetary and Nonmonetary Support

Similar to other schools in Utah, the school has access to and directs the use of School LAND Trust funding, and also receives some money from the PTA for various purposes (e.g., lunch tables, tablecloths, library books, etc.). The PTA also runs some after-school activities, but otherwise there is not a lot of volunteer support during the school day.

District-Level Funding and Support

Washington School District has set up a number of funding ratios and formulas to distribute staff and funds to schools. For example, the district looks at enrollment projections for each school and allocates FTEs at a 30.5:1 ratio, and then an additional 4 FTEs per grade level. School administrators have the flexibility to use their allocated FTE to make staffing decisions as they would like. There are also at-risk funds for middle schools to pay for additional teachers to help support students who are at-risk or have behavioral issues, for example. The district provides a Principal, an Assistant Principal, and a School Resource Officer (SRO) for each intermediate, middle, and high school (SROs are police officers from the town the school is located in). Each school in the

72 In this context "buy out" refers to instances in which teachers are provided additional compensation to teach a course during a scheduled prep period.

district gets the same resources. The remainder of the school's budget is for instructional supplies, custodial supplies, textbooks, library materials, technology, and contracted services, all of which are reviewed and approved by the district.

Each school's principal has authority over hiring, though the recruitment process is managed by the district. Also, middle school principals and teachers collectively select their curriculum. Goal setting occurs within the broader framework of the district's objectives and Consolidated School Improvement Plan. However, though Crimson Cliffs Middle's goals are aligned with district goals, and are developed, after consulting with their community, to be specific to the school.

The district has staff to support schools around assessments, data, and professional development. Secondary schools are also provided extra funding to pay for an aide/secretarial-level person or teacher as extra duty to handle assessments.

Case Study Summary: Fillmore Middle School

Background

Fillmore Middle School serves 379 students in fifth through eighth grade in Millard School District. The school is in a rural area and enrolls students from seven nearby towns. Fillmore, where the school is located, sits off Interstate 15, and the nearest city is about an hour and a half away. Over half the students in the school are ED students, and about 6 percent are ELs. The school's enrollment is pretty steady; Fillmore Middle hasn't seen much change in overall enrollment figures or the demographics of students in the school in recent years. The school community is well established, and as it has been successful for a long time, an expectation of academic success exists in the community and affects the level of effort everyone puts in to ensure the school's success continues.

Exhibit D3. Fillmore Middle School Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	379
Economically Disadvantaged %	54%
English Learner %	6%
Special Education %	15%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

The culture among staff in the school is very positive; Fillmore Middle has been described as an "awesome" place to work. There is very little contention within the school, as staff members tend to enjoy each other and the teams they work with. Similarly, the students are generally on good terms with each other; coming from a small rural community, everyone in each grade knows everyone else by name. Most of the students have grown up attending school together since kindergarten, have played sports and participated in extracurricular

activities together, and are a tight-knit group. Teachers also interact with students outside of school because the teachers and staff reside in the community, too.

In terms of school leadership, the school principal and the school counselor have traditionally worked together to lead the school. This year, they have formally established a broader school leadership team, which includes department heads. The leadership team meets monthly and is looking forward to working collaboratively to continue to contribute to the school's success.

Instruction, Interventions, and Assessment/Data Use

There are essentially two school models operating within Fillmore Middle. The fifth and sixth grades operate in a model more akin to elementary school, with grade-level classrooms. The seventh and eighth grades follow a secondary school approach, with departmentalized teachers who are each responsible for a specific content area. In each model, the school seeks to balance class composition so there is a mix of high- and low-performing students, students identified for IEPs, and EL students in each class.

The principal and the counselor are the primary resources to help teachers interpret student assessment data. The RISE assessment is one major source of data for the school. Fillmore Middle also uses its own interim and formative assessments to track student progress and identify areas that need additional focus. As data become available during the school year, collaborative PLC time is used to look at the data and identify the implications of those assessments. Each year, the counselor will break down student assessment data from the prior year into the current year's classrooms, so teachers have the benefit of easily seeing where their new students are with respect to performance and can use those data to provide individualized instruction. The counselor also shares a report with teachers that looks at a variety of indicators over the past three years —including student academic outcomes, demographics, attendance rates, and high school graduation rates — to identify and target students who may need additional intervention to continue progressing.

For fifth and sixth graders, in addition to utilizing small reading groups during ELA periods, the school has introduced a couple of weekly rotations for mathematics and reading intervention support into the schedule. Scheduled intervention time for seventh and eighth graders is primarily for students identified for IEPs, however beginning this school year, the school is offering a study skills class to students struggling academically during the second quarter.

Fillmore Middle also offers Homework Club, where students can stay after school and work with a teacher on homework assignments or on skills and concepts they are struggling with. Teachers recommend students for Homework Club based on assessment data and classroom performance and encourage those students to attend. The after-school sessions can also be used for credit recovery purposes. Similarly, Fillmore Middle also runs a summer school program, usually a week after the school year ends, for about 20 days. Separate sessions are run for elementary and secondary levels. Students are recommended for summer school by teachers and/or the counselor and are encouraged to attend.

The school has a relatively small number of ELs and is just starting to formalize a program targeted to these students. The school's EL specialist works directly with students and will conduct some weekly pull-out sessions with them. These sessions will tend to be focused more on helping students with their work than on language acquisition skills. The EL specialist is also starting a class specifically for seventh and eighth grade EL students, to teach reading skills.

Staffing and Professional Development

Teacher turnover is quite low in the school, with a steady staff. When vacancies occur, the school administration has autonomy in making hiring decisions. Most employees are full-time staff members; currently two employees are shared with the high school. As previously noted, the school operates both an elementary model and a secondary model within the school. Since it is a small school, class sizes can vary based on enrollment. Current class sizes are approximately 25 students in fifth grade classrooms, 23 in sixth (this is an unusually large class, with one more section than the other grades), and seventh and eighth grades average 23 students per class.

Teachers at Fillmore Middle each have one scheduled planning period of 48 minutes, plus 30 minutes before and after school each day, for a total of one hour and 48 minutes. Every Wednesday the school has a late start and teachers have 45 minutes for collaborative/PLC time. The district typically schedules a total of four pupil-free days for professional development, three of which are prior to the start of the school year. Professional development topics are identified based on school-level needs; they are not mandated by the district, and the principal typically leads professional development activities at the school.

Student Support Services

The primary on-site student support staff member is the school's counselor. In addition to working with students one-on-one, the counselor spends time in each classroom, teaching units on topics such as bullying, suicide prevention, and college and career exploration. The counselor schedules time with teachers across all grades in the school. The school community as a whole sees the value of this outreach and welcomes the counselor into classrooms. The district purchases the Hazelden curriculum, which the counselor utilizes in many of his lessons.[73]

The school does not have a social worker on site but is able to refer students to therapists who can be scheduled into the building through the local education cooperative. Additionally, the school counselor serves on several community outreach coalitions, which provide access to additional community resources.

Additional Monetary and Nonmonetary Support

Fillmore Middle doesn't seek grants or similar sources of direct monetary support — though occasionally the district will obtain grants for various purposes that are then distributed to the schools. It does host an annual school fundraiser, which typically raises about about $10,000 and is often used to support quarterly student incentives, performance-based incentives, and citizenship awards.

The community as a whole is supportive of the school. Fillmore Middle does have a small amount of parent volunteerism in the school, though there is greater parental involvement at the elementary school. The Community Council is particularly active in helping set school and district goals.

District-Level Funding and Support

Millard School District has a relatively small district-level staff. The district sees its role as to provide overall direction and support the schools as they work to make progress on school-level goals that are aligned with the district's improvement plan. The superintendent spends a good deal of time in the schools, working with administrators and staff. The directors of elementary education and secondary education each wear multiple hats in the district, and they are the district-level staff who provide direct support to the schools. They each work to

73 More information on Hazelden curriculum can found at https://www.hazelden.org/web/public/lifelines.page.

support student instruction and spend a lot of time in the schools to understand the school staff's concerns and to identify ways the district can better support the education professionals in the schools. The director of secondary education also serves as the pupil services director and works with school-level administration and counselors to analyze student assessment data. In recent years, the district has helped support the schools' desire to have counselors present in every school, to serve as an immediate resource when needed.

Millard School District has a total student enrollment of around 3,000 students and aims to be as fair as possible when allocating funds to schools within the district. District funding allocation to schools begins with class sizes. Millard seeks to maintain certain class size ratios — around 19 students in kindergarten through second grade, 19–21 in grades 3–5, under 24 in middle school, and less than 26 on average in high school classes — so it allocated staffing to schools to maintain those sizes, based on enrollment. The district seeks input from its schools on core subject area curriculum, and then does a districtwide adoption of curriculum. All prospective Millard School District employees apply for positions through a centralized district system. After that initial application, though, hiring decisions are school led. Principals create their own hiring committees that then make hiring decisions entirely. District staff seldom participate on school hiring committees, unless requested by the principal.

Case Study Summary: George Washington Academy

Background

George Washington Academy is an independent charter school in St. George. The school has around 1,000 students in grades K–7. St. George is a high-growth community, growing in size and diversity. The city is a health care hub for the area, has a university, and a number of other large employers.

The students in the school often come from middle-class families with parents who are professionals, but the demographics are shifting. Success with EL students has grown and word of mouth about this success has resulted in a nearly ten-fold increase of EL students. The number of ED students is also increasing.

The school is in a part of St. George experiencing rapid growth, which contributes to the demand for the school. Entrance into the school is based on a lottery with 200–300 students on the waitlist at any time. Families come from as far as 40 miles away to attend the school and no busing is provided.

Exhibit D4. George Washington Academy Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	998
Economically Disadvantaged %	22%
English Learner %	4%
Special Education %	7%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

George Washington Academy emphasizes that all students can learn, while holding high expectations for students. The school seeks to meet all students where they are academically, so it can provide the supports to get them where they need to be. Students are celebrated for both academic and nonacademic accomplishments. In addition, students are provided with leadership opportunities and development through the Leader in Me seven habits.[74]

The school leadership works hard on staff culture, including sending out surveys to measure areas of success and need. George Washington Academy puts dollars behind staff-building activities. Survey data show that 98 percent of staff feel supported, valued, and appreciated. When a teacher expresses a need for help, the leadership team meets with the teacher to create a plan to support them. Moreover, George Washington Academy values the mental health of staff and provides health insurance that supports this commitment.

The leadership team includes the executive director, two assistant directors, and an instructional coach. George Washington Academy tries to be very focused and deliberate, working to be effective and efficient. Teachers are provided with autonomy in running their classrooms, with support from administration. Leadership team members are in classrooms and will even co-teach lessons. Monthly meetings are held between the grade-level teams and the leadership team.

Instruction, Interventions, and Assessment/Data Use

George Washington Academy runs a more traditional elementary program in grades K–5 and a middle school style program in sixth and seventh grades. As a charter school, George Washington Academy maintains control and decision-making over its staffing, curriculum, interventions, and assessments beyond state-mandated assessments. There is a lot of energy put into creating successful classrooms. In the spring of each year, teachers provide data on students into a class creator system that includes academic, behavior, and other needs information. These data are used a starting point, after which school staff spend six weeks of time setting classrooms for the coming school year.

The school provides Tier 1 instruction to all students and places an emphasis on Tier 2 instruction. Teachers identify the challenges that students have and create plans on how to address these issues. Tier 2 time has been built directly into the schedule for all grade levels, every day, and teachers provide Tier 2 instruction within the mathematics and ELA blocks.

The school provides after-school tutoring two times a week for 40 minutes, as well as "patriot time" during the school day. The after-school program focuses on students who did not qualify for intervention during the school day but still need targeted help. "Patriot time" is a time when remediation, intervention, and extension take place for all students.

Additionally, the school uses a number of assessments, including Reading Through Language Arts, Scholastic Reading Inventory, and Acadience, to monitor student progress.[75]

74 More information on the Leader in Me seven habits can be found at https://www.leaderinme.org/the-7-habits-of-highly-effective-people/.

75 More information on the Reading Through Language Arts assessment can be found at https://ged.com/about_test/test_subjects/language_arts/; more information on the Scholastic Reading Inventory assessment can be found at http://teacher.scholastic.com/products/product_info/pdf/SRI_Research%20Summary_Revised.pdf; and more information on Utah state assessments can be found at https://www.schools.utah.gov/assessment/assessments?mid=1173&tid=1.

Staffing and Professional Development

George Washington Academy has high teacher retention, at around 94 percent, with 98 percent teacher attendance. All teachers are organized by grade-level teams, and sixth and seventh grade teams have content specialists. Teachers have 40 minutes per day of planning during the school day and 25 minutes per day after school. Teachers are provided with autonomy in running their classrooms.

Each grade level has a single mandated PLC meeting each week, though many meet twice per week. There is a common schoolwide PLC template that is used for each meeting. Each member of the leadership team has two grade-level teams that they meet with throughout the school year. PLC meetings are student focused. Student needs are raised, and plans are set to meet the needs. When gaps are identified within teams, coaching is identified that can support the team.

George Washington Academy provides time for staff to talk about how they are feeling; this was done even before the impact of COVID-19. The goal is to slow down the momentum of the school day. Professional development is focused on a number of areas, including how to use technology, the social-emotional needs of students, and classroom/behavior management.

Student Support Services

The school has a student support team that includes a social worker and a school counselor. Team members use "students of concern" forms to identify students who need direct support. The counselor spends half of their time in the classroom providing social-emotional work and the other half of their time providing small-group support. The social worker focuses on family support. There is a wellness room, staffed by an aide, that students can visit when needed. The sixth and seventh grade students can be on the HOPE Squad, which works on kindness in the community and suicide prevention, among other areas.

Additional Monetary and Nonmonetary Supports

George Washington Academy budgets with a focus on what will improve student performance, first identifying the programmatic needs and then designing the budget to support these needs. The school's governing board is involved in budgeting, through the finance committee, and there is between $1 and $2 million each year that can be spent on target school goals. A large part of the budget is for professional development and the school has three in-house substitutes to provide flexibility to meet school staffing needs.

The school has been very successful in receiving grants that it applies for — close to a 95 percent success rate — and the school is frequently applying for grants. The business manager identifies the grants to apply for. Additionally, the Parent Teacher Organization (PTO) raises between $60,000 and $80,000 per year, with much of this funding going toward capital needs.

George Washington Academy has a partnership with a few colleges/universities, including Dixie Tech, where seventh graders have done internships. The school has also been able to get teachers in training from these institutions of higher education, which can help with the teacher pipeline. Lastly, students also have participated in a large community service project in conjunction with the city of St. George.

The school has high parent participation, especially in the early grades. At times it can be difficult to manage all the parents that want to volunteer, and the PTO assists in managing this. Parents sit on most school committees and the school can tap professional expertise in the community when specific needs arise. Parents have a strong connection to the community.

Case Study Summary: Mountain Green Elementary School

Background

Mountain Green Elementary is a school located in Mountain Green, in Morgan School District, with over 500 kindergarten through fourth grade students. After the construction of a new middle school, the fifth grade at Mountain Green Elementary moved to the new middle school. The school is located in a "bedroom community" right next to a mountain, and about eleven miles from Morgan City. People in the community are active within the school. The members of the community are also on the higher end of the socioeconomic scale, and tend to be professionals (e.g., doctors, dentists, and mortgage brokers).

Ten percent of Mountain Green Elementary students are ED, the school has no EL students, and 14 percent are students identified for IEPs. Though enrollment at the school has changed slightly over time, the school is still seeing an increasing population. There is little mobility — a majority of the students stay at the school from kindergarten through fourth grade. The average class sizes in the school are about 17–18 students in kindergarten, 19 students in first grade, 23 in second grade, 25–26 in third grade, and 21 in fourth grade.

Exhibit D5. Mountain Green Elementary School Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	539
Economically Disadvantaged %	10%
English Learner %	0%
Special Education %	14%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

Mountain Green Elementary is a close-knit school community. The teachers and the principal love their students, and they work very closely together to ensure they offer the supports students need. Parents and community members have high expectations for student performance, which contribute to the school's expectation to support each student's growth.

The leadership structure of the school is very flexible. While the principal ultimately has the final decision-making authority, she highly values staff input into decision-making and seeks staff feedback and input at every opportunity. PLC teams meet weekly and are an integral part of maintaining the collaborative culture of the school, with the entire staff focused on working together to support all students at the school, not just those assigned to each teacher's class.

Instruction, Interventions, and Assessment/Data Use

The school creates a School LAND Trust plan that requires the school to utilize midyear scores to develop and supplement instruction to ensure the school is monitoring goals based on student progress. The plan is used

as a guiding document that seeks to contribute to student achievement gains. Additionally, the school board approves these plans after the goals are set with the community council.

The principal takes into account many different factors when assigning students to classrooms, including input from the prior-year assigned teacher and parent requests/input. If the student is an IEP student, the principal gets input from the special education teacher. Additionally, the principal knows each student well enough to know where a student will be a good fit with certain students and staff. The final step is to make sure the next year's teacher feels comfortable with the grouping. The goal in assigning students to classrooms is to have balanced student needs across classrooms.

Mountain Green Elementary uses multiple student assessments, including Acadience reading for first through third grade which is required by the state.[76] Additionally, to assess reading, the school uses i-Ready, which produces three diagnostics tests.[77] Mathematics is assessed utilizing the Go Math! Curriculum's beginning, midyear, and end-of-year assessments.[78]

Struggling students are identified through teacher observations and the previously mentioned formal assessments throughout the year. Weekly PLCs are used as an opportunity to discuss students and get input and advice from other teachers. This collaborative PLC time has even led to teachers other than the assigned teacher instructing struggling students when they believe they might be able to help with particular interventions. Interventions are built to provide a double and triple dip of concepts for students, and typically occur during regularly scheduled content periods. Reading tutors will assist with small groups during reading periods, allowing the teachers to provide additional targeted Tier 2 intervention in small groups.

Teachers, along with the instructional coach and the principal, are able to choose the interventions used; there is no district-mandated intervention program. This ensures that students are receiving additional exposure and support in the specific areas they are struggling with.

Staffing and Professional Development

Mountain Green Elementary has very low teacher turnover, with the majority of the staff being the same for the eight years that the principal has been there. The few teachers that have left have done so due to personal reasons. The school does not share a lot of staff with other schools. It used to share a counselor, but now has a full counselor FTE. The majority of the staff teach the same grades they have taught for the last eight years, though there was a slight change in classes when the fifth grade got moved to the middle school.

Professional development is offered through both the school and the district. The district outlines key districtwide priorities and goals, and each school develops its own aligned goals and strategies to implement them. Most of the teachers collaborate by grade level on Fridays. There is also occasional vertical alignment discussion for end-of-year expectations. Each teacher receives forty minutes a day for individual planning and

76 More information on Utah state assessments can be found at https://www.schools.utah.gov/assessment/assessments?mid=1173&tid=1.

77 More information about i-Ready assessments can be found at https://www.curriculumassociates.com/products/i-ready/i-ready-assessment#:~:text=i%E2%80%91Ready%20Diagnostic%20is%20an,need%20for%20multiple%2C%20redundant%20tests.

78 More information about Go Math! Curriculum's assessments can be found at https://www.hmhco.com/programs/go-math.

five days of additional teacher planning time. In addition to PLCs and individual planning, every new teacher to the school receives a mentor teacher for three years, regardless of previous teaching experience. The principal emphasizes assignment of the best teacher in the grade level to be a mentor.

Student Support Services

There are multiple student supports at Mountain Green Elementary offered through district staffing allocations. A school social worker and a psychologist are each at the school one day a week, which is paid for with district funding. There is also a full-time counselor at the school. The school usually deals with issues on an individual basis, with administration and support staff looking at the individual needs of the student. When teachers or the principal identify a similar need across a larger group of students, the counselor will offer larger-group meetings or classroom-based sessions.

Additional Monetary and Nonmonetary Support

Mountain Green Elementary school receives a lot of support from parents in the community. The school's PTO has one fundraiser per year, which raises about $17,000 to $25,000. The money raised goes to support field trips and transportation. While this additional funding provides a clear benefit to the school, other schools in the district tend to raise similar amounts — the overall district community is generous in sharing resources with its local schools.

Additionally, parents will make donations to and volunteer in their children's classrooms. Many teachers have regular parent tutors in their classrooms, which helps free up teachers' time to provide targeted interventions. While the school doesn't often seek grant funding on its own, the district will apply for specific grants and then spread out that grant money across schools in the district.

District-Level Funding and Support

Morgan School District's central office is very lean — it chooses to provide more support personnel directly to the schools, rather than housing a lot of personnel at the district level. The district provides each school, including Mountain Green Elementary, with an instructional facilitator. The district's technology director handles the districtwide one-to-one device program. This program allows all testing to be administered on Chromebooks, so schools have access to their assessment data as soon as testing is complete.

Most district funding (88 percent) is distributed through a specific staffing allocation process. The district looks at staffing positions based on enrollment, targeting a 20:1 ratio in elementary school, a 23:1 ratio in middle school, and a 25:1 ratio in high school. Any additional per-pupil funding the district receives based on student or school characteristics is distributed as required/directed by each funding stream.

In addition to giving schools discretionary authority over some funds, the district gives schools a lot of control with as little district interference as possible. The district believes its schools know what is best for them. For example, principals have flexibility in utilizing their staffing FTEs, and can choose to hire three part-time teachers versus one full-time if it makes the most sense for the school to structure that way. The district does not develop or adopt its own curriculum that must be used by the schools. Each school can choose its curriculum. However, the curriculum must be approved by the curriculum committee to ensure that it is aligned with state

standards. In addition to choosing their own curriculum, schools also choose their own programmatic interventions, professional development, schedules, and school goals.

Case Study Summary: Nebo View Elementary School

Background

Nebo View Elementary School serves 319 students in kindergarten through fifth grade in Juab School District. Situated in a rural area of approximately 4,000 residents, this school is one of three elementary schools in the district. The school is located in a small town, on the Interstate 15 corridor, so it includes gas stations and hotels, but is primarily a farming community, with additional industries such as a nearby power plant. The school's student population is mostly white, nearly half are eligible for free or reduced-price lunch, and the school does not have any EL students.

Nebo View Elementary does have some student mobility, particularly among its ED students, but doesn't see wide fluctuations in its student population throughout the school year. One of the smaller schools in the district, it has two classes per grade, except first grade, which has three classes due to a higher number of students in that grade. In kindergarten through second grade the class size maximum is 22 students, while in third through fifth grades the maximum is 25 students.

Exhibit D6. Nebo View Elementary School Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	319
Economically Disadvantaged %	45%
English Learner %	0%
Special Education %	15%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

Nebo View Elementary's staff is described as a close, tight-knit, family-like environment. Staff enjoy working at the school and with each other. There is little turnover in faculty, and typically new hires are due to retirements or the occasional move out of the state or area, not due to competition from other schools or districts. Teachers trust each other and are willing to go to each other for help. The school's administrative leadership team is composed of the principal, the instructional coach, and representatives from the upper- and lower-grade teams. This leadership team meets to discuss any particular needs or priorities before bringing them to the whole faculty for its input.

The principal is in his fourth year at the school and is noted for disrupting the school culture when he arrived, bringing a particular vision around student achievement. First was a deliberate focus on relationships, personalities, and understanding why people act and react the way they do, helping the staff to understand each other and their students better. Next was an enhanced focus on data — looking at the needs of students and changing the structure

and focus of PLCs to be data-driven. Previously, all teams held PLCs at the same time. Principal Albrecht shifted the times throughout the day, so he could attend them all.

Instruction, Interventions, and Assessment/Data Use

The school has autonomy over its schedule within some parameters that the district sets. For example, one district parameter focuses on the amount of time for literacy instruction for students. Nebo View Elementary provides between two and three hours of literacy instruction and one hour of mathematics instruction to all students every day. The school has the flexibility to structure its instruction and choose specific interventions based on its understanding of what best serves student needs. There is a 30-minute block within the ELA and mathematics periods each day for interventions. The school has moved away from having a lot of whole-group instruction and is focusing on small-group work, even for Tier 1 instruction.

Aides are utilized to help with small-group instruction and reteaching of concepts is used to limit the amount of Tier 2 intervention needed. Still, Tier 2 supports are a priority for the school, using aides that are highly trained in the curriculum and interventions to assist teachers. Nebo View Elementary has also implemented a push-in program for special education instruction, with special education staff supporting students with the classroom content. Staff then also pull students out as needed.

In addition to the daily 30-minute intervention, the school utilizes School LAND Trust and Title I funding to provide after-school programming. It is a very targeted program, with limits on busing influencing the number of students that can participate. Nebo View Elementary also provides extensions for students to gain new experiences after school.

The school uses state Acadience reading assessments and RISE assessments but has also created school-based common assessments.[79] The common assessments are used to evaluate the students' progress on the school's identified power standards. These are the standards he staff feel are key for students' success, and the staff have collaborated to create rubrics with step-by-step processes to get to the power standards. The school-based assessments can be very short and targeted and might include a student assignment. Nebo View Elementary is working to align these school-based assessments to the RISE assessments.

Staffing and Professional Development

Nebo View Elementary's teaching staff have been stable over the long term, but in recent years about half the staff has turned over. This coincided with the change in leadership in the school. Nonetheless, the staff are very tight knit and enjoy celebrating each other's successes, in and out of the school. There is a culture of success and student achievement in the school. Nebo View Elementary has a full-time learning coach, a position that started in the previous school year. Having this coaching support available to teachers on a daily basis has made an impact in terms of teachers having the support they need to implement change and best practices in the classroom.

The school uses data to target the skills that students need to work on. This has been an intentional culture shift within the school. Grade levels have a minimum of two common planning times a week, though some use more. One of the common planning times is used for PLCs, and a member of the leadership team is part of each of those PLC meetings. The PLC work includes a focus on student data and providing embedded

79 More information on Utah state assessments can be found at https://www.schools.utah.gov/assessment/assessments?mid=1173&tid=1.

professional development. In addition to the school-level professional development, three nonstudent contract days are used for professional development.

As previously mentioned, the school's highly trained aides provide direct support to students daily. The principal provides a weekly 30-minute training for paraprofessionals/aides, focused on what they are teaching and instructing and to answer their questions. Aides also have a planned time to meet with the teachers weekly for a half hour. This level of training, support, and coordination has enabled Nebo View Elementary's aides to be more effective in their work with students.

The district is a personalized learning district and teachers are provided with autonomy to implement the components of personalized learning in their classrooms.

Student Support Services

Nebo View Elementary leadership believes in social-emotional connectivity and takes student engagement very seriously. Still the school seeks to improve upon what it already provides. Currently, Nebo View Elementary has access to a counselor one day a week and support from an aide who is a skills coach. The school leverages this staffing to ensure that each class has at least one period with either the counselor or the aide weekly, providing classroom-led sessions on anti-bullying and other social-emotional topics. The counselor is also able to provide one-on-one services to students for half a day a week.

Additional Monetary and Nonmonetary Support

The school primarily relies on the district to support grant funding options, though the PTA does raise up to $5,000 each year. This funding is given to teachers as extra supply money. Parents are brought in as partners in learning and staff hold families accountable to support students and to do what is needed for the school. Overall, the school does not rely heavily on volunteers.

District-Level Funding and Support

Juab School District is highly supportive of its schools but also provides site-level autonomy. The district has developed, with the input of stakeholders, the Juab Portrait of a Graduate. The Portrait provides strategic direction for student learning experiences in Juab School District, but schools have latitude in how they ensure students acquire the knowledge, skills, and dispositions outlined in the Portrait. District staff supporting schools include a personalized learning support person and an innovation specialist. The district provides an instructional coach for each school, who works with the principal but reports to the district innovation specialist. The elementary director oversees all school data and is able to help schools align assessment with the vision of the school. In addition, the data for all three elementary schools in the district can be analyzed to find common areas of need throughout the district.

Juab School District has a strong, supportive, and involved school board, and budgeting decisions begin with the board. The board understands that it can do anything it prioritizes but can't do everything it might want to, so it sets the budget priorities that the district business administrator and the superintendent use to set the budget. Functionally, the budget is about 90 percent personnel, and the district initiates the allocation process with an FTE budgeting system targeting class sizes of 24–26 students.

Schools hire everyone in their building and work in collaboration with district staff to set professional development goals for staff. The schools have set their own schedule within the transportation guidelines and choose the interventions they use with students.

Case Study Summary: North Summit High School

Background

North Summit High School is in Coalville, about 20 miles from Park City and 40 minutes from Salt Lake City. North Summit High serves more than 300 students in grades 9–12. The school is predominantly white, with a small Hispanic/Latino student population (14 percent). About a third of students in the district are ED students (29 percent), with a small EL population (2 percent) and 8 percent of students have been identified for IEPs. Student enrollment at the school has been steady, without any big shifts in student demographics in recent years.

A small district of just over 1,000 students, North Summit School District has three schools: an elementary school, a middle school, and a high school. The school district is the town's largest employer, with about 160 staff and faculty members. Many homegrown teachers work in the district, promoting a sense of pride in students and the community. There is a rich knowledge of the background and history of the community and of individual students, leading to a vested interest in their success.

Exhibit D7. North Summit High School Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	324
Economically Disadvantaged %	29%
English Learner %	2%
Special Education %	8%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

Given the small size of the community, students grow up looking forward to attending North Summit High. The district's schools are the center of the community, with traditions that bridge generations. The supportive community and high educational expectations of students are named as key reasons for the school's success. The school culture is described as very collaborative and tight knit. The size of the district allows teachers to identify and focus on students who are struggling.

The high school's leadership team includes Principal Wade Murdock, Assistant Principal Devin Smith, High School Counselor Lance Pace, and Instructional Coach Julie Marsh. North Summit High's leadership team makes decisions based on the best interests of students. The team is supportive of school staff and faculty and consistently aims to support innovative efforts. While final decision-making authority rests with the principal, the team seeks teacher input in decision-making whenever possible.

Instruction, Interventions, and Assessment/Data Use

North Summit High operates on a traditional seven-period day, with teachers teaching six of seven periods. Students have the option to opt out of one period per day for religious instruction, which many students take advantage of. Teachers work closely with students to ensure all course requirements are being met for graduation.

The high school credits a focus on literacy skills at the elementary and middle school as an important factor in the school's success, as reading and literacy skills are critical foundational skills. North Summit High also focuses on learning supports for freshman and sophomore students, particularly in mathematics, which is believed to be the most challenging subject taught at the high school. This support is provided through a series of extra intervention sessions, both in school, during an elective mathematics study hall, and after-school. The goal is to identify students on the lower end of proficiency and provide support before they fail. Optional after-school sessions are funded through school-directed School LAND Trust funds. The high school also offers a study-hall elective, focused on literacy, that the English teacher runs for students needing additional help.

The district uses trends in data to inform instructor support. The district's instructional coach and teachers work collaboratively to analyze the data and identify student needs. The coach also works with teachers on how they can more effectively teach in areas the data show gaps.

The district's EL Director is positioned to directly support EL students and works one-on-one with teachers to help them support EL students in their classes. The EL Director also serves as the liaison between schools and home for parents who do not speak English, working to strengthen the school's relationship with EL students' families. North Summit High offers the Latinos in Action program, a program that "offers an asset-based approach to bridging the graduation and opportunity gap for Hispanic/Latino students."[80]

North Summit High also offers career and technical education pathways, as well as offering a program to students who want to earn an associate's degree alongside their regular coursework. The district values student athletics and extracurriculars, seeing these activities as an extension of the classroom. The high school offers a robust set of options for students, such as Future Farmers of America (FFA), which competes at a national level.

Each student has use of a technological device, and this commitment to technology is described by district leadership as "head and shoulders above other districts." The school board and district has been proactive in this effort, along with the district's IT Director, and this focus on the use of technology has meant that the district was well positioned for remote learning during the current pandemic.

Staffing and Professional Development

School and district administrators alike are quick to point out that the teachers and staff at North Summit High are the reason they are successful. The school has low teacher turnover year-to-year, with most movement due to retirement or family situations. In fact, North Summit School District doesn't tend to lose teachers to neighboring districts. Approximately four or five staff members per year are shared between the high school and the other two schools in the district, typically career/technical, language, and other elective teachers. The middle school is across the street, so managing split schedules for these staff members is relatively easy to accommodate.

Teachers meet regularly to support one another and receive professional development. Structured weekly meetings allow teachers to receive professional development to collaborate on any challenges they are facing, and to feel supported in their work. The high school has established a rotating weekly schedule for the collaborative time it has on Mondays. The first Monday of the month is generally focused on technology, the second is for departmental collaboration, the third is whole-school faculty meetings and professional development, and the fourth is individual time. Professional development offered to teachers is informed by the interests and needs of teachers. The district provides paraprofessionals to teach classes twice a year so that the school can offer centralized professional development.

80 More information on Latinos in Action can be found at https://latinosinaction.org/.

Student Support Services

District administration noted that social-emotional experiences are as important as academic experiences, and seeks to ensure social-emotional supports are in place in the three district schools. North Summit High employs a full-time counselor, who provides students with support for academic needs, 504 plans, and general counseling support. The school's counseling office has an open-door policy for students to walk in without an appointment any time during the school day. Additionally, two countywide therapists are available to all districts in the county; they are available twice a week in North Summit School District.

School administration reports that this has been a positive resource for its students. Further, school administration meets monthly to discuss students who may be struggling socially, academically, or behaviorally, and will assign staff to work with these students one-on-one to help them feel supported. The school can also refer students who need support beyond the school-based social-emotional resources to an outside therapist or psychiatrist.

Additional Monetary and Nonmonetary Support

North Summit High's monetary support beyond the district allocation includes community-partner donations, PTO fundraising, and state grants controlled entirely by schools such as School LAND Trust and TSSA, college and career readiness programming (CCR), and HOPE Squad, which is used for drug-use and suicide-prevention efforts within the county.

Businesses and community members donate time and experiences to the school's internship program, which provides business-based learning opportunities. North Summit School District also runs a career fair for middle and high school students and, in alternating years, a program called Reality Town, a simulated day in "real life" where students are assigned a job and salary and experience the challenges that are common in daily adult life. Each of these events requires many volunteers, and members of the community to make these events happen. Most parent volunteering at the high school is centered around special events or activities, rather than daily help. The high school has highly engaged parents who are supportive and care deeply about students.

District-Level Funding and Support

North Summit School District uses student enrollment and staffing levels to inform school-level budgeting. The district prioritizes instructor salaries and benefits, followed by textbooks and other instructional materials. When determining instructor salaries, the school board tries to balance smaller class sizes with the highest raise possible to address student needs and teacher morale. Because the needs for instructional materials can shift year-to-year, the district allocates funding among the three schools based on individual need. Schools also understand and expect budgetary trade-offs, so the amount of funding provided to each school may vary year-to-year. With only three schools in the district, school-based funding needs are generally known and understood by all, and principals work together to coordinate and prioritize needs. The district provides capital projects, transportation, food service, and custodial staff out of its budget. Principals have broad discretion to spend their school budget how they see fit, within acceptable uses of funds.

North Summit School District administrative team is three people — the superintendent, the business administrator, and the administrative assistant. The small size of the district allows for ample collaboration between the superintendent, the business administrator, and school staff. The district sets high standards and expectations for staff working with students. The administrative team is in regular contact with school leadership to understand specific school-based needs and offer support. When something can be feasibly done to support a school, it is made possible. The district's school board is known to be trusting and supportive and to work well with people in the district.

Case Study Summary: Provost Elementary School

Background

Provost Elementary School serves 464 students in kindergarten through sixth grade in Provo School District. Located in southeast Provo in a diverse community with many Hispanic/Latino families, the school has one of the higher concentrations of EL students in the district. A Title I school, 57 percent of Provost's students are ED students, 23 percent are ELs, and 11 percent are identified for IEPs. The school population was described by district leadership as a real balance of demographic groups. Though the neighborhood was once one of Provo's more affluent areas, it currently contains numerous properties rented by local university students, and there are several large apartment complexes where clusters of low-income families live. Provost Elementary students all live within walking distance of the school and there is no busing.

The school is known throughout the community for its music immersion program, and a long-time aspirational goal of the school has been that all Provost Elementary students will go to college. Several years ago, Provost Elementary was recognized as a national Title I School of the Year. The music program was developed during the long tenure of the previous principal and built a belief in the community that every student should have the opportunity to experience music as part of their educational experience. The student mobility rate is around 20 percent and overall attendance is very good — there is a community culture around coming to school and being engaged.

Exhibit D8. Provost Elementary School Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	464
Economically Disadvantaged %	57%
English Learner %	23%
Special Education %	11%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

Provost Elementary recently had a change in principal leadership, with the current principal joining the school toward the end of the previous school year, replacing a long-time principal. As such, there is both a historical culture at the school and a current shift in school leadership approach this year, putting the school in a place of reflection and growth. The previous principal invested a lot of time in making selections for new hires and hired exceptional teachers. Teachers took on a lot of leadership roles within the school, and while teachers did collaborate with one another, they had a lot of autonomy over their individual classes. This included, for example, setting their own schedules for covering content during the day. Ultimately each teacher was responsible for the academic growth of their students, and there has been pressure to maintain the high level of student success.

The current principal and the Title I coordinator now serve as the primary leadership team for the school. The school maintains its high academic expectations and the music immersion program. Provost Elementary

is intentional about its goals and making progress on school improvement plans, while ensuring teachers feel supported in their individual work and are working collaboratively toward school goals.

Instruction, Interventions, and Assessment/Data Use

As previously mentioned, Provost Elementary has a long history of high expectations within both the school and the community. The school has prioritized mathematics, literacy, and science, with a substantial block of time allocated daily to literacy. As a music immersion school, every student has access to a music experience each year. In the earliest grades, the experience may be singing; then piano, guitar, and band are introduced. By the upper elementary grades, a full orchestra experience is available. This focus on music, while celebrated within the school and community, has at times been a source of tension among teachers looking to balance the benefits of the music program with additional opportunities for core instruction.

Data use has been central to maintaining a focus on student excellence. The primary assessments used at Provost Elementary are Acadience, i-Ready, RISE, and formative assessments linked to the curriculum.[81] The school's reading and mathematics curriculum includes built-in assessments to assist with progress monitoring. The principal and the Title I coordinator collect the assessment data and work with each teacher to review the student-level data, with a focus on identifying students making less growth than expected.

Intervention and support for students requiring additional assistance has been a long-standing priority. Provo School District has an organized intervention program, which schools are expected to follow. Schools do have some leeway to supplement the district program with school-determined interventions. Teachers are able to utilize paraprofessionals to assist with push-in interventions for students who need extra support. Given the school's relatively high percentage of EL students, Provost Elementary has both push-in and pull-out interventions for EL students and utilizes small-group instruction as a key strategy. Provost Elementary does also offer after-school programs, but they tend to be enrichment focused (with lots of music and drama offerings), rather than academic intervention periods.

Staffing and Professional Development

Provost Elementary enjoys low teacher turnover and has many long-serving teachers — some teachers are now teaching the children of their former students. Many teachers live within the community and know the families whose children attend the school. Typically, Provost Elementary staffs two or three classes per grade per year, depending on the enrollment numbers. Most teachers are teaching in the grade level they prefer, and with little turnover, teachers have not moved across grades much historically. Teachers have a minimum of 30 minutes per day for individual planning time and 90 minutes of collaborative time every Friday. The district typically schedules three pupil-free days for professional development throughout the school year.

Professional development is delivered monthly and is mostly school-specific rather than district-directed. At Provost Elementary, professional development has been very data-driven — selected topics are based on the areas of need identified through student assessment and data. Each year the principal, the school's instructional facilitator, and several teacher leaders meet to review the data and the overall focus for that school year.

81 More information on Utah state assessments can be found at https://www.schools.utah.gov/assessment/assessments?mid=1173&tid=1; more information about i-Ready assessments can be found at https://www.curriculumassociates.com/products/i-ready/i-ready-assessment.

Student Support Services

Provost Elementary is able to leverage its school-based student support personnel, along with district resources, to offer a robust set of student support services. The school has a full-time health clerk, with support from a nurse one day per week, to attend to students' health needs. It also employs a social worker, who is shared with another school.

District support services are very responsive to the needs of the schools. In addition to school-based staff, student success team meetings can leverage other district support personnel such as behavior specialists, special education facilitators, school psychologists, and SROs. The purpose of student success team meetings is to help find root causes of student behavior issues and identify the appropriate supports and interventions.

Additional Monetary and Nonmonetary Support

As Provost Elementary has developed its music immersion program over the years, the school has found ways to access resources that other schools in the district may not have. This came in the form of direct support from the PTA, community partnerships, donations of artwork for the school, and instruments and other music-related donations for the program. The former principal was a vocal advocate for the school in the community and district, and sought additional resources at every opportunity.

The community as a whole feels a strong connection to the school, and that is reflected in nonmonetary support the school receives, such as donations of items. Community members want the school to succeed and like helping the school. Donations to the school come from parents and the broader community alike. The current principal noted that it seems success bred success in this area and helped established a culture of donations. Community members — from all socioeconomic groups — regularly bring unsolicited donations to school. Recent examples include donations of masks, printer paper, and supplies.

District-Level Funding and Support

Provo School District sees its role as a dual role — to both support and lead. The district provides funding to schools based primarily on an FTE allocation, mostly based on class sizes. The district has established class size targets of 26.5 per class in the primary level, 27.5 per class in the intermediate level, and 28.5 per class in the high school level, although the actual class sizes have been well below the targets for the past several years. Beyond that base level of funding, the district looks at the needs of each school, based on the demographics. Where specific student need populations exist, the district tries to be transparent and equitable in how it makes allocations.

For schools, such as Provost Elementary, that qualify for federal at-risk student funding, the district ensures those funds are allocated appropriately. The district does expect that all Title I schools utilize common interventions, though schools they may use some of the Title I discretionary funds to do other activities, as long as these activities are aligned with district goals and included in the school's plan.

The district's leadership role is exemplified in the goal-setting process, where the district will set several goals for the district as a whole, and then principals develop their own school-specific goals that are aligned with the district goals. Likewise, a mix of district-led and site-based professional development occurs throughout the district, but schools are expected to coordinate their individual professional development plans with district staff.

In the supportive role, the district is service-oriented and organized to handle things for schools, with the goal of freeing up school staff to focus on teaching and serving their students' needs. For example, the district provides each school building with a health clerk to focus on student health needs and prevent health-related

issues from unnecessarily taking up time from administrators or front-office staff. The district's Student Services department funds a family liaison in each school, who is trained and able to intervene and help when difficult family/school interactions occur. The two-person Assessment department provides support to schools on using data from assessments and provides training to school assessment coordinators (which are often add-on, part-time, or stipend positions).

Case Study Summary: Timpanogos High School

Background

Timpanogos High School serves around 1,500 students in Alpine School District. Located in the middle of Utah Valley, in the northeast corner of Orem, it has a mix of low-income and wealthier families. Traditionally a white, religious community (primarily the Church of Jesus Christ of Latter-Day Saints), the demographics have changed significantly over the past 20 years. Timpanogos High is one of the most highly impacted schools in the district, with about a third of students qualifying for free or reduced-price lunches, above the district average of 19.5 percent. The school's EL student population (8 percent) is about twice the district average, and the school is currently about 30 percent minority students. The school has performed well academically for many years, and families in the area are very supportive of Timpanogos High.

Exhibit D9. Timpanogos High School Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	1,519
Economically Disadvantaged %	34%
English Learner %	8%
Special Education %	9%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

Timpanogos High's principal is in his fifth year at the school, and the school's leadership team follows a distributed leadership model, involving a large number of faculty and staff in decision-making. The leadership team described itself as "the group leading the group," and the principal is just one member of the leadership team.

The school has a truly collaborative culture, and the leadership team has worked very intentionally over the years to build that culture. There is a cohesive and well-defined vision, so teachers are on the same page, but they also have high levels of autonomy in their classrooms and can take their own approaches. In this collaborative culture, teachers look to support and help each other as thinking partners with a growth mindset. Teachers are free to try new strategies and approaches, knowing some of them will fail, and are encouraged to share those lessons with their peers. Timpanogos High gives space for teachers and students to connect in an authentic way, building relationships, and ultimately leading to student success.

Students are enthusiastic about coming to school, and generally have good relationships with teachers and leaders at the school. Student feedback is valued, and the school often conducts student surveys to gain feedback. The school culture of encouragement to take on stretch goals extends to students as well, as exemplified by the lack of gatekeeping for advanced courses. Rather, the school encourages students to try these challenging courses and to see how they could be supported to be successful.

Instruction, Interventions, and Assessment/Data Use

The Timpanogos High schedule is set by the district and is a traditional high school eight-period day. Average class size is between 30 and 40 students. Teachers are contracted to teach six of the eight periods; however, 30–40 percent of teachers have one prep period "bought out" and teach seven of eight periods.[82] Students work with school counselors to select courses and ensure they are meeting high school graduation requirements.

Timpanogos High has kept consistent goals for several years, and believes that this contributes to the success of the school. In the past, goals would change every year, making it hard to maintain progress and focus over time. The current goals are to deliberately foster connection and well-being and to develop deep learning. These goals are aligned with Alpine School District's goals but are specifically set and defined by and for Timpanogos High.

In meeting these goals, teachers tend to focus less on the standardized test data and make more use of classroom-level data. They believe that, when they focus on deep engagement with the curriculum, standardized test scores will take care of themselves. Teachers set specific goals for their classes and identify the related data that will demonstrate progress toward those goals. These data are regularly shared with the teacher's collaborative team.

For struggling students, Response to Intervention (RTI) for struggling students is a primary focus. Timpanogos High is deliberate about carving out time during the day for RTI; RTI is most often provided during regular class periods. Specific interventions for students are determined by the school — the district does not mandate specific intervention strategies or curriculum. Timpanogos High also offers opportunities for additional instruction two days per week for 35 minutes before and after school; these sessions are open to all and students self-select to attend.

Given the school's high percentage of ELs, it employs several teachers with English as a Second Language (ESL) endorsements and offers ESL classes. School counselors closely monitor EL students and work with their teachers to ensure they are receiving the interventions needed. Timpanogos High's primary approach is to make deep learning the target for all students. A group of students gives voice to EL student needs and acts as an advocate for all EL students in the school. The school also recently hired advocates to engage parents of higher-risk students, to help families engage with the school when they might not otherwise know how to navigate the school setting.

Staffing and Professional Development

Timpanogos High has a strong PLC culture. PLCs are regularly scheduled for one hour every Monday by district requirement; however, the leadership team noted that if collaboration is only happening during that period, it is a sign that teachers are not truly collaborating. Teachers regularly collaborate outside the assigned block. PLC

82 As described previously, this refers to instances when teachers are provided with additional compensation to teach a course during a scheduled prep period.

teams are content specific, and often by course level. "Singleton" teachers without content-area peers in the school meet in cross-district teams. Less formal collaborative teams have also been developed around topic areas of interest.

In terms of formal professional development, the district schedules three professional development days per year. Some are led by district staff, while others are left to the schools to determine. Timpanogos High staff believe strongly that professional development should not be a single-day occurrence; rather, they believe that it should be an ongoing process. Through its culture, Timpanogos High has built an ongoing, reflective, and collaborative professional growth process.

Student Support Services

Timpanogos High's leadership team noted that it has increased student support services in recent years, with an increased focus on students' social-emotional needs. Some additional state-level funding helps support this increased effort. The school's nurse is shared among five schools. Its counselors provide a base level of support for the school. Timpanogos High also receives regular support from a state-funded social worker, who is shared among three schools, for students requiring additional support services. The previously mentioned advocates work with school administrators and counselors to track high-risk students, and work with students and families directly.

Additional Monetary and Nonmonetary Support

Timpanogos High does not have a significant level of additional monetary or nonmonetary support. It will occasionally receive grants — for example, it recently received a grant to help support mathematics tutoring. The school's PTA contributes several thousand dollars each year to support the school's needs. The school doesn't actively pursue community partnerships.

Extracurricular activities, including sports, are only about 10 percent funded through the school budget, so most of the school's fundraising is focused on student activities, as for many students, fundraising is the only avenue they have to participate in extracurriculars. General parent volunteerism is lower at this school than at other schools in the district, but parents are highly involved with the activities their children are involved in. The community as a whole values education and is supportive of the school.

District-Level Funding and Support

Alpine School District is a large school district with more than 81,000 students. It seeks to distribute funds to schools in an equitable manner. Schools receive preliminary funds for textbooks and school supplies on a per-student basis, using official district enrollment projections for the upcoming October 1 enrollment count. After the October 1 count, budget adjustments occur if the enrollment is higher than projected. Schools are held harmless for the current year if the official student count for the school decreases. Textbook funds can be carried over year-to-year, but school supplies budgets may not be carried over.

The district provides staffing to schools through an FTE allocation. The district has an FTE formula that determines the base level of staffing allocated to each school. It is based on student enrollment but begins by calculating a 10-year average October 1 head count to daily membership ratio. Similar to the other funds, if the calculated head count growth within the FTE formula shows a decline in student enrollment, the school is held harmless in its FTE allocation for one year. Special education, counselors, and media specialists are funded in addition to the base FTE calculation. Counselor FTEs are calculated based on a 350:1 ratio. Schools can request

a bank of targeted FTEs in addition to their allocation, which may be used to target additional curricular offerings, or to reduce large class sizes. Timpanogos High receives an additional 3.5 FTEs to ensure it can provide a full, comprehensive high school offering.

Principals have flexibility in how they use their allocated FTEs. Principals may use portions of FTEs to "buy out" teacher prep periods to provide additional course offerings when it doesn't make sense to hire additional staff. Principals may also choose not to hire an allocated FTE and convert that FTE into dollars that can be used for other school needs. Any FTE savings cannot be carried over to the following school year.

The district's executive team works to ensure that schools are appropriately supported. It uses the FTE model in part so principals can staff based on the needs of the school community, without worrying about the costs associated with the staff they hire. The district's departments seek to support schools' academic growth. The Research and Evaluation Department assists schools with data needs. The Curriculum Department encompasses curriculum and professional development resources. The district supports a coaching model and schools have a variety of coaches — instructional coaches, PLC coaches, and innovative learning coaches — with the goal of helping teachers improve instruction. Alpine School District values, and has created, dedicated collaborative time, with the expectation that teachers learn from one another, look at data, and work to exemplify the vision of learning during the contract day. The district offers professional development to teachers, and much of the learning is from and with teacher peers within the district.

Case Study Summary: Westland Elementary School

Background

Westland Elementary School serves 560 students in kindergarten through sixth grade in Jordan School District. It is one of the most northeastern schools in the district, located in an older, more established community.

The school was built in the 1970s. The school boundary is geographically small; there is no busing of students to or from the school. The school's enrollment has been steady over time, although the number of EL students has steadily increased in recent years. Approximately one third of students are ED students. The school overall has low mobility and typical attendance rates.

Westland Elementary operates one of the district's Advanced Learning Placement for Students (ALPS) programs, a program for gifted students. Students must test into the program; currently about one third of the school's students are in the ALPS program. Kindergarten through sixth grade each have three sections; in first through sixth grades, one section per grade is for the ALPS program and the other two sections are general education classrooms. Class sizes are typically 20–24 students per class, although the ALPS program enrollment can vary, which in turn impacts the size of the other two grade-level classrooms.

Exhibit D10. Westland Elementary School Demographics, FY 2019–20

Measure	School-Level Value
Enrollment	560
Economically Disadvantaged %	30%
English Learner %	9%
Special Education %	8%

Source: Authors' calculations based on FY 2019–20 data maintained by the USBE.

School Leadership and Culture

Westland Elementary has a veteran faculty and staff — most have been at the school for a long time. The school itself is described as having a caring culture, where people have a tight bond and work together. The school culture has been very collegial and is now also becoming truly collaborative for student success. The community supports the school, and many aide positions are filled by parents who choose to work at the school.

The school's administrative leadership team is comprised of the principal, the assistant principal (a new, half-time position that began in the previous school year), the instructional coach, and a representative from each grade-level team and the resource team. The recent focus of the leadership team has been working on PLCs and building collaborative processes throughout the school. The instructional coach, whose salary is funded through a combination of district funding and school-directed TSSA funds, and PLC training from an outside consultant to help everyone speak a common language and understand what it means to be a truly collaborative school were identified as important factors contributing to the school's success.

Instruction, Interventions, and Assessment/Data Use

The school has autonomy to set its daily master schedule, and within the school, grade-level teams can set their own schedules for when they teach content areas during the day. The schedule affords multiple opportunities to provide targeted intervention to students who need it — recently teams have worked hard to accommodate more push-in mathematics intervention, so that students are being pulled out of class less. The primary assessments used at Westland Elementary are Acadience, RISE, district-level benchmark testing, and common formative assessments developed by grade-level teams.[83]

Classroom teachers work to identify each student's specific skill deficits and their component parts, and interventions are targeted to those specific skill deficits. During special rotations, teachers pull small groups of individual students for quick (5-to-10-minute) review or intervention. During a typical school year, STEM Thursdays, when teachers send small groups to a STEM lab, provides additional small-group intervention time for teachers, and a mathematics specialist funded through school-directed School LAND Trust funds is also available to do small-group intervention.

83 More information on Utah state assessments can be found at https://www.schools.utah.gov/assessment/assessments?mid=1173&tid=1.

Reading/literacy intervention, particularly in the lower elementary grades, is a key focus. Teachers use Acadience assessment data to help identify students who are struggling. The school's reading aide works with students in the lower grades on literacy skills, and classroom aides will conduct pull-out sessions for reading intervention.

Westland Elementary teachers have a lot of autonomy in structuring the specific interventions used with students. During collaborative time, teachers discuss students' needs and decide how to intervene, including pulling groups of students across classes to work on common skills. The school noted that the district has resources available to teachers through its Teaching and Learning department. Use of specific intervention resources is not mandated by the districts, but teachers are able to access district-level resources and supports as needed. Similarly, though the district has adopted specific curricula — such as Journeys reading program, Math Expressions, and Foss science materials[84] — and the expectation is that those resources are used, teachers have autonomy in how they implement them in the classroom.

Staffing and Professional Development

Westland Elementary enjoys low teacher turnover, and only shares a few staff positions with other schools: the assistant principal and the music teacher. At the time of the case study review, the school psychologist was also shared with another school; however, since that time, the psychologist is now full time at Westland Elementary. Teachers all have their own classrooms; they are not departmentalized by content areas. Teachers have a daily individual planning period. In a typical school year, teachers have two collaborative 40-minute periods per week to work with other teachers.

Quarterly, the leadership team attends a district-led training specifically for school-based leadership teams. This training helps with the collaborative process, and with school goal setting. Westland Elementary has been building processes to get better data and improve student results, and this focus has continued throughout teachers' collaborative time.

Student Support Services

A key piece of Westland Elementary's student support services is its school psychologist, which is funded half time through the district. The school psychologist provides age-appropriate whole-class instruction, consulting with teachers to tailor presentations to any specific classroom needs, in addition to providing individual sessions for high-need students. Westland Elementary leadership noted that the district also provides services to the school — its Wellness Department has resources available to teachers, and its staff will come to the school as needed. The district also employs behavior specialists who are available to schools. Westland Elementary accesses those behavior specialists as needed, particularly to work with students with severe behavior issues.

Additional Monetary and Nonmonetary Support

Westland Elementary does not have access to additional monetary support beyond what is available to similar schools in the district, as well as the support the school's PTA typically provides. It does not have additional community partnerships or grant funding. However, there are high expectations of school and student success

84 More information about the Journeys reading program can be found at https://www.hmhco.com/programs/journeys; more information about Math Expressions can be found at https://www.hmhco.com/programs/math-expressions; more information about Foss science materials can found at https://www.fossweb.com/what-is-foss.

from the community, and Westland Elementary does see a high level of parental volunteers. Many volunteers help with one-on-one intervention with students, with direction from the classroom teacher.

District-Level Funding and Support

Jordan School District uses a student allocation funding model, where general funding amounts are determined based on the October 1 enrollment for each school. Funding is allocated to schools in categories, and principals have flexibility to move funds between certain categories, with some limitations. For example, some funds can be used for personnel, while others cannot. Principals have flexibility within personnel allocations to convert some teacher positions to aides. When hiring, the district tells schools to hire the best person available, so the principal's focus is on filling open positions with the best candidate and isn't concerned about hiring a person whose salary will fit a predetermined staff allocation dollar amount. Every school in the district has an instructional coach, whose salary is partially provided for through the district's Teaching and Learning Department. Coaches receive weekly training through the district.

Jordan School District sees its role as to support schools. District-level directors see themselves in supportive and problem-solving roles and believe it is important to have a culture where people feel comfortable expressing weaknesses or areas of concern and can then work together to identify ways to improve. Schools within the district have high levels of autonomy. While the district may designate school start and end times, each school designs its own master schedule. The district's Teacher and Learning department adopts textbooks for elementary ELA and mathematics. Beyond that, the district provides recommended curricular materials but ultimately schools are able to choose how they implement instruction. In addition to the school-based instructional coaches referenced previously, the district also employs content-area specialists who are available to provide professional development and additional coaching supports to schools. The district also has curriculum design, health and wellness, culture, diversity, and EL supports available for schools to access. Rather than requiring schools to implement district resources, the district seeks to work in partnership with schools to identify challenges and available resources, and to be a consistent resource to schools.

Utah Case Study Interview Protocol – District Administrators

Background and School Culture

1. Introductions: How long have you worked in your district? In your current role? With this particular school?

2. Please tell us more about the case study school we have identified:
    a. What is the community like?
    b. What is the leadership like?
    c. What is the culture like?
    d. What is teacher turnover like? Low

3. What factors do you think have contributed to the success of the case study school?
    a. Any specific non-monetary resources that have contributed to the success of the school?
    b. Do these non-monetary resources vary for the case study school compared to other schools in your district?

4. How is your district organized to support schools?
    a. What staff are responsible for working with schools directly to improve instruction or otherwise support student success?
    b. How does your district support school staff to use the data from assessments? Do you have a data specialist or similar position that works with schools?
    c. Are there specific school-level initiatives or programs that you have implemented district wide that you believe have contributed to this school's success? Are they tied to district goals?
        i. Any specific supports for struggling or ELL students?

5. Please describe your district's budgeting procedures for schools:
    a. Does the district use a specific allocation process?
        i. Weighted Student Formula
        ii. FTE Allocation
        iii. Other

6. To what extent does the district determine for each school:
    a. Their school budget(not including school level programs like Teacher Student Success Act and SITLA)?
    b. Staff selection?
    c. Selecting curriculum?
    d. Programs or specific interventions?
    e. Determining professional development?
    f. Setting schedule?

g. Setting school goals?

7. What percentage of a school's budget is at the discretion of the school administrator?

8. What percentage of total district operational funding is allocated to schools?

9. Are there additional resources available to this school that are not allocated by the district?
   a. Grants
   b. Community partner donations
   c. PTA/PTO fundraising
   d. Other fundraising

10. Does the amount generated through these sources vary between schools in your district? What is the estimated range in how much additional funding is generated through these sources for schools?

11. Is there anything else you think is important for us to know in terms of understanding how resources are allocated to schools in your district?

Utah Case Study Interview Protocol – School Administrators

Background and School Culture

1. Introductions: How long have you worked at this school? In your current role?

2. Can you tell me a little about the community in which your school is located? Who are your students? Their parents? Major industries or employers?

3. Since we cannot visit you yet in person, please tell us more about your school. Is it on a shared campus, in town, near other schools or post-secondary institutions, etc?
    a. Has your school changed in recent years? Declining enrollment? Increased enrollment? Changes in demographic (SES, race/ethnicity, ELL)?
    b. What is student mobility and attendance like?
    c. What are average class sizes? Do these vary by grade?

4. How would you describe the culture at your school? What's it like to work here? What do you think it's like to be a student here?

5. How would you describe the leadership structure of the school?

6. What do you believe has been most important to your school's success with students? Any specific strategies, programs or resources?

Instruction and Interventions

1. What is your daily schedule? Does the school or district set?
2. How is the school day structured? How are students assigned to classes?
   Probe for flexible groups (groups that change based on student need) vs. static groups (groups that stay the same over long time periods).

3. What specific instructional strategies are in place for struggling students?
    a. What kinds of extra help do you have in your school? When is extra help provided, for how long, and by whom?
    b. Probes: Does the school provide an after school/extended day? Summer School?
    c. How are students who are struggling identified and monitored?
    d. Are these strategies selected by the school or are they district strategies?

4. What specific instructional strategies are in place for ELL students?
   Probes: pull out/push in strategies, sheltered instruction, co-teaching

5. Are there specific student or school improvement goals that contributed to these achievement gains in the school? *OR:* Which school or improvement goals were most helpful in advancing student learning?
    a. How are these goals set (e.g., district, school administrators, or school personnel)?

Staffing and Professional Development

1. What is teacher turnover like in this school?

2. Do you share any staff positions with other schools?

3. How are teachers organized for instruction? How are teachers assigned to classrooms? In high school, to courses? *Probes: Are teachers assigned to their own classrooms or in collaborative teams? What kinds of collaborative teams are there? How are new teachers assigned and mentored?*

4. How is professional development delivered in your school? How are topics for PD determined? How much autonomy does the school have on determining professional development? *Probes: is delivery school based? ongoing versus one shot; what kinds of follow-up is provided?*

Type	Time Allocated	Notes
Individual planning		
Collaborative Work with other teachers		
Pupil-free days for PD		

Student Support Services

1. What additional student support services do you offer students? *(Probes: counseling, social worker/therapist support, advising/mentoring, health services)*
    a. Are these resources paid for by the school, district, or community partnership?
    b. Any specific student mental health strategies or initiatives that you believe have been beneficial to students?

Assessments and Data Use

Elementary schools:

1. What assessment(s) do you use with students in grades K-2? *(Possibilities: ISIP, NWEA/MAP, Star, i-Ready)* How often do you assess these students?

2. How do you used the data from the RISE summative assessments for grades 3-8
    a. Do you use any additional interim or formative assessments in grades 3 and up?

3. How do staff use the data from these assessments? Do you have a data specialist or similar position?

Secondary schools:

1. In addition to using the Utah Aspire Plus in grades 9 and10 and ACT in grade 11, do you also use interim assessments? What assessment and how often is it administered?
    a. Do you use any additional interim or formative assessments?

2. How do staff use the data from these assessments? Do you have a data specialist or similar position?

Additional Monetary and Non-Monetary Support

1. Does your school have access to additional grants, corporate contributions, PTA support or other fundraising?
    a. Are levels different than other district schools?

2. Do you have any community partnerships?

3. Does the school receive non-monetary support from the community, such as volunteer hours or donations?
    a. Are volunteers mostly parents or others from the community?

4. Are there specific characteristics of the community that you believe impact the success of the school?

Wrap Up

1. Is there anything else you think is important for us to know in terms of understanding how your school achieves learning gains?

Funding Survey Administered to School Districts and Charter LEAs

School Districts

In the Fall of 2019 USBE retained WestEd to conduct a study evaluating Utah's school funding system to determine the extent to which current state funding formulas meet their intended purposes and provide equitable access to education in the state.

As part of this study WestEd has engaged with local stakeholders including district superintendents, business administrators, and charter administrators. This survey is a part of this engagement process. In the first phase of the study we engaged with district stakeholders, and this is an extension of that engagement process to gather additional in-depth information. We sincerely appreciate you taking the time to complete this survey and contribute information about your district's work to the study.

We encourage you to address each question below, but if you would prefer not to address any question please still submit the survey with the responses you are willing to provide. The only question we are requiring an answer to is your district name so we can integrate your information with other available information about your community. However, WestEd will not provide district-specific survey responses to USBE.

While this survey is intended to capture key information, it is not comprehensive and we expect some topics will be left underexplored or unexplored. If there is anything about your district not explicitly covered here that you would like to share to inform the study, please don't hesitate to reach out to abergja@wested.org to provide this additional information.

Finally, the information provided here will only be used for the purposes of informing the WestEd study.

1. What is your district name? _____

2. How is your district organized to support schools?

    a. What staff are responsible for working with schools directly to improve instruction or otherwise support student success or achievement? [Please select all that apply.]

        - ☐ Instructional Support/Coaching
        - ☐ Curriculum Support/Coaching
        - ☐ Interventionist
        - ☐ Media Specialist/Technology Facilitator
        - ☐ Paraprofessional
        - ☐ Guidance Counselor
        - ☐ Student Support Services Staff
        - ☐ School-Based Specialists
        - ☐ Community Outreach
        - ☐ Other (please describe): _____

    b. Does your district support school staff in their use of assessment data by: [Please select all that apply.]

        - ☐ Employing a full-time district-level data specialist?
        - ☐ Employing a part-time district-level data specialist?
        - ☐ Providing a common student data system?
        - ☐ Providing district-level data training or professional development?
        - ☐ Allowing time for teacher collaboration through professional learning communities or a similar structure?

3. Please describe your district's budgeting procedures for schools:

    a. Does the district use a specific allocation process? [Please select the option that best addresses the question.]

        - ☐ Weighted Student Formula
        - ☐ FTE Allocation

☐ Per Student Allocation

☐ Some Combination or Other (please describe): _____

4. To what extent does the district allow flexibility for each school to control:

   Their school budget (excluding school-level programs like Teacher Student Success Act and SITLA)

   ☐ 1 ☐ 2 ☐ 3 ☐ 4

   No flexibility — Total flexibility

   Staff selection

   ☐ 1 ☐ 2 ☐ 3 ☐ 4

   No flexibility — Total flexibility

   Selecting core curriculum

   ☐ 1 ☐ 2 ☐ 3 ☐ 4

   No flexibility — Total flexibility

   Selecting programs or specific interventions

   ☐ 1 ☐ 2 ☐ 3 ☐ 4

   No flexibility — Total flexibility

   Determining professional development

   ☐ 1 ☐ 2 ☐ 3 ☐ 4

   No flexibility — Total flexibility

   Setting schedules

   ☐ 1 ☐ 2 ☐ 3 ☐ 4

   No flexibility — Total flexibility

   Setting school goals

   ☐ 1 ☐ 2 ☐ 3 ☐ 4

   No flexibility — Total flexibility

5. Is there anything else not covered in the prior question that you would like to share about the extent to which your district allows flexibility for school control?

6. On average, what percentage of total district operational funding (i.e. excluding transportation, food service, capital) is expended centrally as opposed to for site-specific activities?

7. To what extent are additional resources available to schools to address needs not addressed by resources allocated by the district?

   Grants

   ☐ all schools ☐ most schools ☐ some schools ☐ no schools ☐ unknown

   Community partner donations

   ☐ all schools ☐ most schools ☐ some schools ☐ no schools ☐ unknown

   PTA/PTO fundraising

   ☐ all schools ☐ most schools ☐ some schools ☐ no schools ☐ unknown

   Other fundraising

   ☐ all schools ☐ most schools ☐ some schools ☐ no schools ☐ unknown

   If Other, please describe: _____

8. How significant would you say the additional funding generated through these sources is for schools?

   ☐ very ☐ moderately ☐ minimally ☐ not at all ☐ unknown

9. Does your process for making strategic resource allocation decisions include: [Please rank available options according to the extent an activity is a part of this process.]

   __Stakeholder engagement/community involvement?

   __Data analysis?

   __Continuous improvement process?

   __ Monitoring and evaluation of prior investments?

   __ Other (please describe): _____

10. Are there specific characteristics of the district or community that you believe impact your success?

    a. Are there specific non-monetary resources that impact your success? [Please select all that apply.]

       ☐ Parental volunteering and engagement

       ☐ Civic or religious educational support

       ☐ Donated resources/activities from local businesses

☐ Other (please describe): _____

b. Do these non-monetary resources vary between schools in your district?

☐ high variation

☐ moderate variation

☐ low variation

☐ no variation

11. Is there anything else you think is important for us to know in terms of understanding how resources are allocated to schools in your district or your strategic use of resources?

Charter LEAs

In the Fall of 2019 USBE retained WestEd to conduct a study evaluating Utah's school funding system to determine the extent to which current state funding formulas meet their intended purposes and provide equitable access to education in the state.

As part of this study WestEd has engaged with local stakeholders including district superintendents, business administrators, and charter administrators. This survey is a part of this engagement process. We sincerely appreciate you taking the time to complete this survey and contribute information about your charter school to the study.

We encourage you to address each question below, but if you would prefer not to address any question please still submit the survey with the responses you are willing to provide. The only question we are requiring an answer to is your charter school name so we can integrate your information with other available information about your community. However, WestEd will not provide school-specific survey responses to USBE.

While this survey is intended to capture key information, it is not comprehensive and we expect some topics will be left underexplored or unexplored. If there is anything about your school not explicitly covered here that you would like to share to inform the study, please don't hesitate to reach out to abergja@wested.org to provide this additional information.

Finally, the information provided here will only be used for the purposes of informing the WestEd study.

1. What is your charter school name? _____

2. How is your school organized to provide support to students?

    a. Aside from teachers and administrators, what staff are responsible for working directly to improve instruction or otherwise support student success or achievement? [Please select all that apply.]

        ☐ Instructional Support/Coaching

        ☐ Curriculum Support/Coaching

        ☐ Interventionist

        ☐ Media Specialist/Technology Facilitator

        ☐ Paraprofessional

        ☐ Guidance Counselor

        ☐ Student Support Services Staff

        ☐ School-Based Specialists

        ☐ Community Outreach

        ☐ Other (please describe): _____

    b. Do you support the use of assessment data by: [Please select all that apply.]

        ☐ Employing a full-time data specialist?

        ☐ Employing a part-time data specialist?

        ☐ Providing a common student data system?

        ☐ Providing data training or professional development?

        ☐ Allowing time for teacher collaboration through professional learning communities or a similar structure?

3. Are additional resources available to address needs not addressed by resources allocated by the state?

    Grants

    ☐ yes ☐ no

    Community partner donations

    ☐ yes ☐ no

    PTA/PTO fundraising

☐ yes ☐ no

Other fundraising

☐ yes ☐ no

If Other, please describe:

4. How significant would you say the additional funding generated through these sources is to your school?
   ☐ very ☐ moderately ☐ minimally ☐ not at all ☐ unknown

5. Does your process for making strategic resource allocation decisions include: [Please rank available options according to the extent an activity is a part of this process.]
   __Stakeholder engagement/community involvement?

   __Data analysis?

   __ Continuous improvement process?

   __Monitoring and evaluation of prior investments?

   __ Other (please describe): _____

6. Are there specific characteristics of your culture or community that you believe impact your success?

   a. Are there specific non-monetary resources that impact your success? [Please select all that apply.]
      ☐ Parental volunteering and engagement
      ☐ Civic or religious educational support
      ☐ Donated resources/activities from local businesses
      ☐ Other (please describe): _____

7. Is there anything else you think is important for us to know in terms of understanding your strategic use of resources?

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