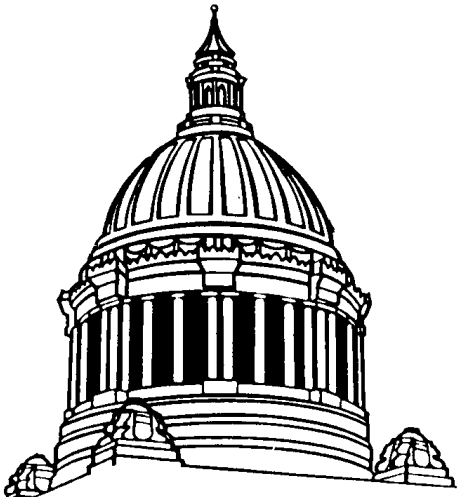

State of Washington
Joint Legislative Audit
and Review Committee

K-12 Finance and Student Performance Study

Report 99-9

September 15, 1999

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Established by Chapter 44.28 RCW, the Joint Legislative Audit and Review Committee (formerly the Legislative Budget Committee) provides oversight of state funded programs and activities. As a joint, bipartisan legislative committee, membership consists of eight senators and eight representatives equally divided between the two major political parties.

Under the direction of the Legislative Auditor, committee staff conduct performance audits, program evaluations, sunset reviews, and other types of policy and fiscal studies. Study reports typically focus on the efficiency and effectiveness of agency operations, impact of state programs, and compliance with legislative intent. As appropriate, recommendations to correct identified problem areas are included. The Legislative Auditor also has responsibility for facilitating implementation of effective performance measurement throughout state government.

The JLARC generally meets on a monthly basis during the interim between legislative sessions. It adopts study reports, recommends action to the legislature and the executive branch, sponsors legislation, and reviews the status of implementing recommendations.

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K-12 FINANCE AND PERFORMANCE STUDY

Summary

OVERVIEW

This study responds to a legislative mandate to examine issues relating to finance and performance in K-12 schools in Washington State. Major conclusions are:

- Washington's system of funding school districts is equitable, as is the distribution of resources by districts to individual schools. While districts and schools have different levels of funding, they tend to spend their money in the same way. For example, nearly all districts spend about 60 percent of their funds on instruction, regardless of their size or spending level.

- The level of teacher education and experience is lower in small districts and schools and those having higher percentages of students with special needs. However, student-teacher ratios are lower (i.e., classes are smaller) in these districts. Nevertheless, Washington's student-teacher ratio is one of the highest nationwide (i.e., classes are among the largest). This is due to higher than average staff compensation costs and per pupil expenditures that are about the national average.

- External forces beyond the control of educators, such as family income and parent education, have more influence on student performance than education-related factors. Having smaller classes can lead to better student performance in the early grades, although improving teacher quality may improve student performance more, and be more cost-effective, than reducing the student-teacher ratio. Reorganizing the use of school time and resources is also a cost-effective means of improving student performance.

- Districts report considerable information related to their district and school operations to the state, although they are not required to report data on expenditures or certain student groups at individual schools. Collecting school expenditure data would be difficult and may not be very useful. However, collecting data on certain student groups that most districts already maintain would facilitate analyses of schools that share similar student populations as well as support education reform and accountability efforts.

BACKGROUND

Nearly half the state's General Fund is spent on K-12 operations

The Washington State Constitution specifies that funding of the common schools is the "paramount duty" of the state. In the 1999-2001 Biennium, nearly half of the state's General Fund budget (almost $9.5 billion) will be spent on K-12 education operations. School districts receive about 75 percent of their total operating funds from the state, one of the highest percentages in the country.

State funding is allocated to the school districts, which provide funds to individual schools. Districts have broad discretion over how the funds are spent and allocated to individual schools. Districts provide the Office of the Superintendent of Public Instruction (OSPI) with a great deal of data on their operations. Some data are reported for the district, while some data are reported for schools.

The 1998 Supplemental Appropriations Act mandated the Joint Legislative Audit and Review Committee (JLARC) to study various aspects of the K-12 education system. The study is based on district and school data from school year 1996-97, the most recent available. Most of the data used for the study was obtained from OSPI. Specifically, this report responds to the legislative mandate with information in four areas:

- Patterns of district and school (building) revenues and expenditures related to the General Fund (Chapter 2);

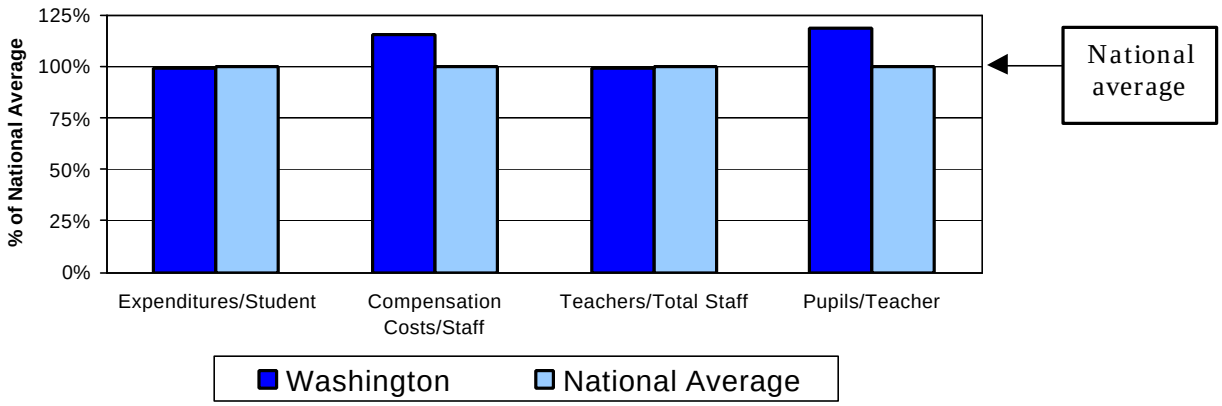
- Characteristics of students and staff among districts and schools and the ratio of students to teachers and other personnel (Chapter 3);

- How student and teacher characteristics, student-teacher ratios, and other factors affect student performance (Chapter 4); and

- The availability of data needed to conduct education-related analyses and district reports that are easily understood by the public (Chapter 5).

Exhibit 1 shows how Washington compares nationally on four measures. Washington is about average in the amount spent per student and its percentage of staff who are teachers. Staff compensation costs and the pupil-teacher ratio are above average. (See Appendix 13 for a glossary of terms used in this report.)

Exhibit 1
How Washington Compares to the Nation



Source: JLARC analysis of U.S. Dept. of Education data for school year 1995-96.

REVENUE ALLOCATION PATTERNS

Most state funds are allocated to districts based on student enrollment in the district and the education and experience of the certificated staff (staff with teaching and other professional certificates). Additional funds are provided for special student populations, staff salary increases and health benefits, support costs (e.g., pupil transportation), and smaller schools. Districts generally allocate funds to schools in the same manner, based on student enrollment and the education and experience of the certificated staff. Additional funds are also provided for special student populations and support costs.

State and district funding systems are equitable in Washington

Funding Systems Are Equitable in Washington

Washington has one of the more equitable funding systems in the nation,[1] even though very small districts receive considerably more funding per pupil.[2] The funding gap between the wealthiest and poorest districts in Washington is relatively small because of (1) the high share of funding provided by the state, (2) the additional amount of funding that is provided to students with special educational needs (e.g., bilingual, special education), and (3) the limits that the state has placed on raising local revenues.

We found that districts also allocate funds to their schools in a relatively equitable manner. In an analysis of 114 schools in six districts,[3] we found schools with higher levels of special needs students received more funding per pupil than schools with lower levels of such students. Additional analyses of all schools in the state confirm this trend.

EXPENDITURE PATTERNS AMONG DISTRICTS AND SCHOOLS

Districts report all their expenditures to OSPI in three different ways, by activities, objects, and programs. *Activities* include instruction, instruction support, administration, pupil transportation, food services, maintenance and operations, and other support services. *Objects* include salaries, benefits, supplies and materials, etc. *Programs* include regular instruction, special education, vocational and compensatory education, other

[1] In other words, the revenues available to districts in Washington had little relationship to a district's wealth and the funding gap between wealthy and poor districts in Washington was one of the smallest in the nation. District wealth was measured in terms of assessed property value per student. This study did not analyze how equity or student performance are affected if an individual district does not pass a local levy.

[2] The 101 districts with fewer than 500 students receive only about 3 percent of the total revenue in Washington. The 19,500 students in these districts represent about 2 percent of total student enrollment.

[3] OSPI does not collect revenue or expenditure data for individual schools. The six case study districts that provided JLARC with information on their resource allocation methods and school expenditures were selected to represent a range in size and geographic location. Each had more than 1,000 students.

programs, and various support services. We analyzed these expenditures among districts and selected schools.

Expenditures Among Districts

Due to the larger amounts of per pupil funding small districts receive, there is a wide range in the *amount* of funding districts spend per student. However, there is relatively little variation in the *pattern* of district expenditures, regardless of district size or the amount of funding available. Analyses of district spending found that districts spend their funds in roughly the same way.

Districts spend their money in similar ways

- About 60 percent of *activity* expenditures are spent for instruction, with the remaining 40 percent spent on other activities (e.g., instruction support, pupil transportation, food services, administration).[4] Spending on central administration averaged about 7 percent and varied little.

- Spending on *objects* is also similar across districts. About 82 percent is spent on staff compensation (63 percent for salaries, 19 percent for benefits) and 18 percent on other items. Spending on salaries tends to increase slightly as the size of a district increases.

- *Program* expenditures among districts show a bit more variation, although they are still more similar than different. The largest and highest spending districts tend to spend less on regular instruction and more on compensatory instruction and support services.

Expenditures Among Selected Schools

Expenditures among schools varied a bit more than at the district level, although our analysis of these expenditures was limited. OSPI does not collect school-level expenditure data, and only about 70 percent of district expenditures were tracked to schools in the six districts we examined.[5] Of these expenditures, we found the following:

[4] This 60/40 split is typical of school district spending nationwide.

[5] The rest of the districts' expenditures were not coded to school buildings. This does not mean that the remaining amount was spent on central administration. Districts find it easier to code some expenditures, such as

High schools spend the most per student

- Expenditures per student are highest in high schools and lowest in elementary schools.
- On average, about 70 percent of *activity* expenditures was for instruction. Such expenditures were lowest in high schools and highest in elementary schools. School administrative costs averaged 9 percent.
- *Program* expenditures for regular instruction averaged 56 percent. Again, these expenditures were lowest in high schools and highest in elementary schools. Spending on other types of instruction (e.g., vocational, compensatory, and special education) averaged about 26 percent.
- The percentage of *object* expenditures for staff salaries and benefits was nearly identical among elementary, middle, and high schools.

Differences Between High and Low Spending Districts and Schools

Staff compensation represents about 82 percent of total expenditures and varies little, both in Washington and nationwide. As a result, schools, districts, and states that have higher expenditure levels usually have three common staff-related characteristics: more staff per pupil (i.e., smaller student-staff ratios), higher staff compensation costs, and a smaller percentage of staff who are teachers. Thus, most of the variation in expenditures among schools, districts, and states can be explained by variations in these three factors.

STUDENT AND STAFFING PATTERNS

Different types of students and staff are found among Washington's districts and schools. Various types of students with higher costs include those receiving bilingual, vocational, or

itinerant teaching expenses as well as costs for school utilities, food service, and transportation, to a central code, even though the funds may be spent at schools. There is no requirement to code school expenditures in any particular manner. We found that district expenditures for central administration averaged about 6 percent and varied little among all districts.

special education, lower-income students (those eligible for free or reduced-price meals), and those who qualify for the Learning Assistance Program (LAP).[6] Staff are categorized in two general groups: certificated staff and classified staff.[7] Among the certificated staff are many different types of teachers, who may teach different subjects in various types of schools.

Student Patterns

Districts and schools have varying proportions of students with special needs. The greatest variation among districts relates to LAP and lower-income students: the smallest districts have the highest proportions of these students, with mid-sized districts having the lowest proportions. There are also higher percentages of lower-income students among smaller school buildings and among districts that spend the most per pupil.

The smallest districts and schools have higher proportions of low-income students

Other types of students with higher costs are distributed more evenly among districts. The proportion of bilingual students tends to be slightly higher in the largest districts and in districts with the highest spending levels. Vocational and special education students tend to be distributed fairly evenly among districts, regardless of size or spending level.

Staff Patterns

The mix of the staff employed in districts tends to be very similar. Larger districts have a slightly higher percentage of certificated staff (and a lower percentage of classified staff). Individual schools have higher proportions of both certificated staff and teachers than the district as a whole. Larger schools tend to have higher proportions of teachers.

[6] Each student who scores in the bottom quartile (25th percentile or below) of the state's standardized tests generates extra funding for a district through the state's Learning Assistance Program (LAP). In school year 1996-97, the extra amount was $378 per such student.

[7] Certificated staff include all types of teachers, administrators, and other staff (e.g., librarians, counselors) who have a certificate. Classified staff are those who do not have a certificate, regardless of their function (e.g., instructional aides, food service and clerical staff, bus drivers, some professional staff).

Schools with lower socioeconomic levels have teachers with slightly less education and experience . . .

The average teacher experience and education among districts and schools of different socioeconomic status varied little from the state average. Washington teachers average 13.5 years of experience and about 50 percent had at least a Master's degree. There is a slight decline in both teacher education and experience as the socioeconomic level of a school declines. High schools have more experienced and educated teachers than other types of schools.[8] Thus, market forces and the hiring authority that districts delegate to schools result in a teaching force that is slightly more educated and experienced in better socioeconomic areas and in the higher grades. Nevertheless, the differences among schools are small.

Student-Teacher Ratios

The ratio of students to staff can be measured in many ways because of the number of different types of students and staff reported to OSPI. The student-teacher ratio is often used as a proxy for class size, although this ratio understates the number of children in an average classroom.[9] Washington averaged 19.4 students per teachers in school year 1996-97, while the ratio closest to the class size experienced in a typical classroom is for certificated staff providing instruction for regular education (23 to 1).[10]

The smallest student-teacher ratios are found among the smallest districts (fewer than 1,000 students) and districts that have

[8] These averages obscure wide ranges in teacher education and experience that may exist within a school.

[9] This ratio includes teachers who either provide instruction for special student populations outside the regular classroom or who may not have full-time teaching assignments. Classes are usually 33-40 percent larger than the ratio.

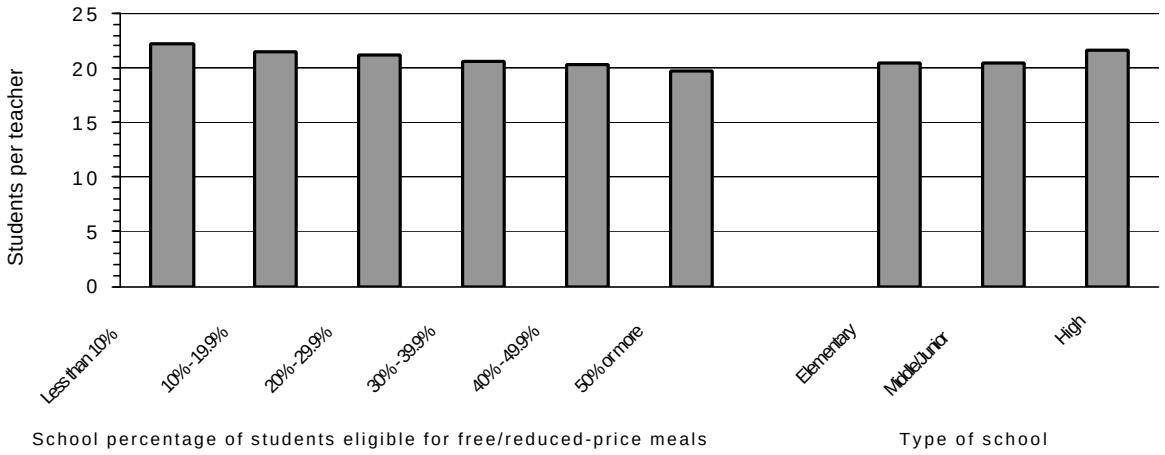
[10] A *teacher* is defined by OSPI as any certificated teacher in elementary and secondary education, regardless of the type of school where instruction occurs or the subject matter taught. This category includes teachers for special education students and other students who receive specialized instruction. *Regular education* is defined as basic education program 01, a fiscal category for state funding purposes. This excludes teachers for special and vocational education, other specialized instructional programs, and excludes support programs. Ratios are slightly higher when the number of students enrolled (headcount) is used in the ratio instead of using full-time equivalent (FTE) students. For example, there were 20.3 students enrolled for every teacher in the fall of 1996, rather than 19.4 FTE students for every teacher. These averages obscure larger and smaller ratios that exist in some schools.

higher per pupil spending levels. High schools have the highest ratio. The ratio also gradually gets smaller as the socioeconomic status of a district or school declines (see Exhibit 2).

. . . but also have smaller pupil-teacher ratios

Exhibit 2

Washington Student-Teacher Ratios
By Socioeconomic Level and Type of School



Source: JLARC analysis of OSPI data.

Explaining Washington's Student-Teacher Ratio Ranking

Washington's student-teacher ratio is one of the highest in the nation, despite steps the state has taken to reduce the ratio in grades K-3 over the years.[11] The ratio is relatively high in part because other states have also reduced their ratios. Washington's ranking is also linked to its ranking on three other measures:

- Per pupil expenditures
- The percentage of staff who are teachers
- Staff compensation costs.

Higher per pupil expenditures enable more teachers to be hired, which would reduce the ratio and improve a state's ranking. Hiring a greater percentage of teachers would also help reduce the ratio and have a similar effect on the ranking. Higher staff

[11] The Washington Legislature changed the funding formula in its 1999-2001 biennial budget to reduce the ratio in grade 4 as well. (SSB 5180, Part V, Section 502.)

compensation costs would decrease the funds available to hire teachers, which would increase the ratio.

In school year 1995-96, Washington's per pupil expenditures and percentage of teachers were slightly below the national average, while total staff compensation costs were about 16 percent above average.[12] As a result, Washington had a higher than average student-teacher ratio. Other states in the West have similar patterns of spending and compensation, and they have higher than average student-teacher ratios as well. The cost-effectiveness of reducing the ratio is discussed in the next section.

FACTORS AFFECTING STUDENT PERFORMANCE

Reducing the student-teacher ratio in the early grades is a popular initiative among states that can improve student performance. Many other factors affect student learning as well. Some factors are external to the school setting and are beyond the control of educators. For example, the home and community environments influence learning, as do student motivation and student characteristics, such as having a disability or limited English proficiency. Policymakers and educators have control over other factors that can influence learning, including the size of classes, how education funds are used, and the quality and percentages of teachers and other staff in the school.

External Factors Influence Student Performance the Most

External factors have the strongest influence (either positive or negative) on student performance.[13] Districts and schools in

[12] Compensation for school district employees in Washington is similar to other states in the West, and the cost of living in Washington is above the national average. Compensation levels are largely a function of the level of teacher education and experience on the statewide salary schedule, which is determined by the legislature. Since some states calculate and report these indicators in different ways, the differences between states are estimates.

[13] Our analyses of Washington data used the results from the state's required norm-referenced tests (e.g., Comprehensive Test of Basic Skills) for 4th, 8th, and 11th grades as the measure of student performance. The Washington Assessment of Student Learning (WASL), the new criteria-referenced test, was

Washington with lower student performance had more students from families with lower economic status, lower parent education, limited English proficiency, and higher mobility. Conversely, districts and schools with higher student performance had fewer families with low-income students, greater levels of students with higher parent education levels and English proficiency, and less mobility.

Education factors have different levels of influence on student performance

When controlling for these external factors, we found that some education-related factors are often associated with better student performance while others appear to have less influence. In some cases, what appears to help in a particular grade has the opposite effect in other grades.

- Higher levels of teacher education and experience were usually associated with higher student test scores.
- Elementary and middle schools with smaller student-teacher ratios had higher student test scores, but smaller ratios made little difference at the high school level.
- Elementary and middle schools with a higher proportion of staff who are teachers had higher average test scores. At the high school level, however, the proportion of staff who were teachers was not as important.
- District spending patterns, which show little variation, had little or no effect on student scores.[14]
- Smaller schools and districts are associated with higher test scores in the primary grades, but larger schools and districts were associated with higher student test scores in high schools.

Exhibit 3 illustrates the relative influence of various factors on 8th grade test scores. External factors have the most influence, while the student-teacher ratio and school size have less influence compared to the other factors. This pattern of influence is typical

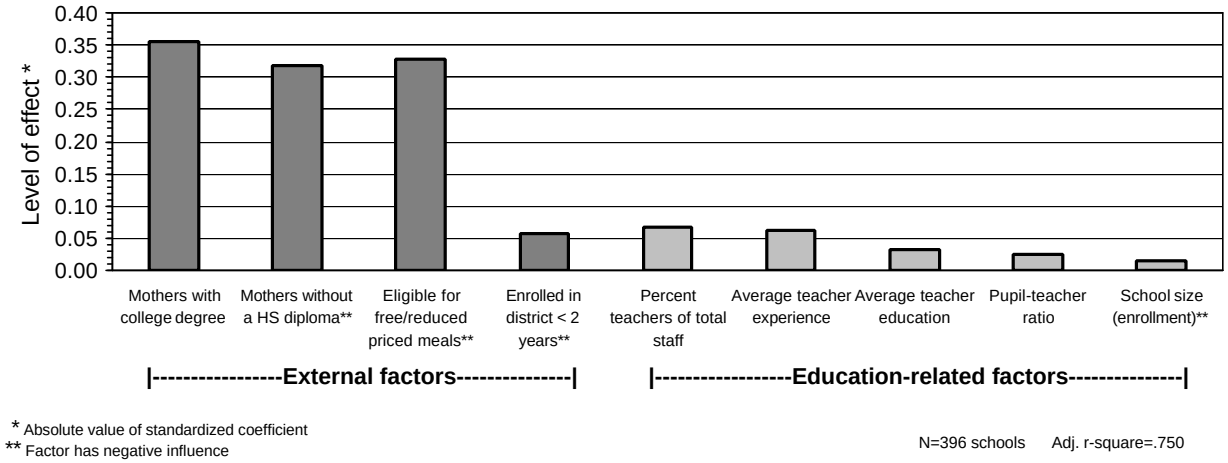
not used because only 4th graders had been tested. Many other studies have found that external factors have the most influence on student learning.

[14] We did not analyze how school building expenditures affect student performance because expenditure data are not available from OSPI at the school level.

of those found for other grades as well. (See page 115 in Appendix 8 for results of 4th and 11th grade analyses.)

Exhibit 3

Relative Influence of Factors Affecting Test Scores
(8th Grade Battery, Washington Schools, School Year 1996-97)



* Absolute value of standardized coefficient
** Factor has negative influence

N=396 schools Adj. r-square=.750

Source: JLARC analysis of OSPI data.

Effectiveness And Cost Of Reducing Student-Teacher Ratios

Recent research has concluded that smaller classes can improve student performance, particularly in the primary (K-3) grades and for disadvantaged students. There is no agreement on the optimum class size,[15] and after examining many studies on class size, several researchers reported that it takes large reductions to substantially improve performance.[16] Thus, reducing the ratio from 24 to 22 may not have much discernable effect.

Large reductions in the student-teacher ratio are costly. While reconfiguring existing staff can create more teachers at the

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[15] Estimates of the ideal class size range from as low as 15-17 students per class up to 23-25 students per class.

[16] Odden, A. (1990), Class Size and Student Achievement: Research-Based Policy Alternatives, *Educational Evaluation and Policy Analysis*, 12(2), 213-227; Hanushek, E. (1999), Some Findings From an Independent Investigations of the Tennessee STAR Experiment and From Other Investigations of Class Size Effects, *Educational Evaluation and Policy Analysis, 21(2), 143-164.*

expense of other positions, in most cases, reducing the ratio dramatically means hiring more teachers and increasing capital costs. Smaller reductions would be less costly but may not improve performance much. As shown above, when compared to other education-related factors, smaller student-teacher ratios do not have as much influence on student test scores as do higher levels of teacher experience and education and the percentage of staff who are teachers. Researchers who recently analyzed 60 well-designed studies found that increased teacher education and experience had a greater impact on student test scores per dollar spent than did lowering the student-teacher ratio.[17] Finally, class size reduction efforts become progressively more expensive as the student-teacher ratio decreases.

Improving teacher quality and restructuring resources can be more cost-effective

Restructuring how time and existing resources are used can also improve student learning at relatively little or no additional cost. Researchers have found substantial gains in student performance at schools that have implemented various school-wide reform models, which typically involve organizing the school day differently to give students more time with teachers or reassigning existing staff. Two recent studies of schools in Washington found that student performance improved when such restructuring took place.[18] Thus, education reform efforts can lead to achievement gains.[19]

Adding more funds for teacher training without a targeted approach may not lead to increased student performance. Traditional professional development has been criticized for lacking a connection with the challenges teachers face in the classroom. A 1995 JLARC report found few controls to ensure that the higher education credits teachers receive to move up the

[17] Greenwald, R., Hedges, L.V., and Laine, R.D. (1996), The Effect of School Resources on Student Achievement. *Review of Educational Research.* 66(3), 361-396.

[18] Fouts, J. (1999), *School Restructuring and Student Achievement in Washington State: Research Findings on the Effects of House Bill 1209 and School Restructuring on Western Washington Schools.* Seattle Pacific University; Lake, R., Hill, P., O'Toole, L. and Celio, M. (1999), *Making Standards Work: Active Voices, Focused Learning.* Center on Reinventing Public Education, University of Washington Graduate School of Public Affairs, Seattle, WA.

[19] Current efforts at educational reform in Washington began formally in 1993 with the passage of the Washington State Education Reform Act (ESHB 1209).

state salary schedule in Washington are relevant to their work.[20] Since then, stronger controls have been established on allowable credits, and the legislature funded (for 1999-2001) three additional learning improvement days for teacher development that are linked to education reforms.

Washington students score above the national average

We did not study the *combined* effects of recent initiatives that the Washington Legislature has enacted and that districts and schools have implemented to improve student performance. However, results of the 1997 statewide standardized tests show that at the elementary, middle, and high school levels, students in Washington generally scored 3 to 6 percentage points above the national average. Test results from 1999 show Washington students generally performing even further above the national average.[21]

DATA AVAILABILITY ISSUES

Various types of data are needed to evaluate an educational system and the operations of districts and schools. Data are needed on revenues and expenditures, enrollment by types of students (e.g., bilingual or special education), staff types and characteristics (e.g., teacher education), and selected demographic factors that are beyond the control of the education system. Data are also needed on desired student outcomes (e.g., test scores) to understand how they are linking with resources (inputs).

OSPI collects many types of district and school data

OSPI collects and maintains most of these data at both the district and school levels. Districts provide the public with certain types of district and school information, as required by Washington law. Some districts provide information in a form

[20] JLARC (1995), *K-12 Inservice Education Study*, Report 95-01. The study examined individual academic and inservice credits teachers take to move up the state salary schedule. It did not review new teacher training efforts associated with additional state funding for education reform.

[21] The fall 1997 results are for the Comprehensive Tests of Basic Skills in grades 4 and 8, and the Curriculum Frameworks Assessment System for grade 11. The spring 1999 results are for the Iowa Test of Basic Skills for grades 3 and 8, and the Iowa Test of Educational Development for grade 11. Results of the1998 National Assessment of Educational Progress (NAEP) reading tests for 4th and 8th grades show that Washington students score above the average of states taking the test. NAEP tests in other subjects in other years show similar results.

that is relatively easy to understand. However, the public is generally more interested in school data than district data, more interested in student outcomes and teacher characteristics than in fiscal information.

School-level expenditure data are not needed for state funding purposes, so OSPI does not collect school-level expenditure data. At the district level, we found that expenditure patterns varied little across the state, potentially masking more significant differences in resource allocation and use at the school building level. Some experts believe that having school expenditure data would determine if large differences exist within a district, help solve the controversy about how spending affects student performance, and have other uses as well. However, a number of problems and issues would need to be addressed to make school expenditure data available and usable. We encountered some of these obstacles when analyzing school expenditures in six districts, and our survey of all districts in Washington found that many districts do not keep track of school building expenditures. Moreover, analyses of the data may not provide answers to policy-related questions.[22] School expenditures in Washington are determined mainly by the number of teachers and teachers' education and experience levels. Because the state maintains this information at the school level, existing data available at OSPI can be used to approximate school-level expenditures.

OSPI should collect more data on some student groups

OSPI does not collect school-level enrollment data for certain student groups (e.g., bilingual and special education students). We found a majority of districts currently collect and maintain school-level enrollment data on student groups and aggregate them to the district level for reporting purposes.

The consensus in educational research is that external factors such as student characteristics strongly influence student performance. Having more data on student characteristics from individual schools could help analyses control for these factors, facilitate meaningful analyses of schools that share similar student populations, and support education reform and accountability efforts. Washington's new accountability system

[22] There has been little research using building-level fiscal data. The few researchers that have examined such data have found little difference in school spending patterns, even between efficient and inefficient schools.

calls for school comparisons and will require student information for individual schools.[23]

RECOMMENDATIONS

Consistent with state laws for education reform and accountability, we recommend that OSPI collect enrollment data at the school building level for bilingual, special education, and highly capable students. Most districts already have this information at the school building level.

While having school-level expenditure data may serve useful purposes, the state does not need to start collecting this data or establish a statewide school expenditure accounting system. If policymakers and educators desire to understand school-level expenditures, existing staffing data at the school building level, which is collected by OSPI, can be analyzed.

AGENCY RESPONSE

OSPI and the Office of Financial Management concurred with the report's recommendations, and OSPI provided additional comments. The text of their responses and the auditor's comments on their responses are provided in Appendix 2.

ACKNOWLEDGMENTS

We appreciate the cooperation provided to us by the staff of the Office of Superintendent of Public Instruction (OSPI) and the Legislative Evaluation and Accountability Program Committee (LEAP), as well as the school district officials who provided school-level data and information about data they collect.

This study was conducted by JLARC staff members Pete Bylsma and Larry Brubaker. The National Conference of State Legislatures and the Northwest Regional Educational Laboratory conducted research for the study. Lawrence Picus, Director of the Center for Research in Education Finance at the University of Southern California, and Gregory Weeks, an economist at The Evergreen State College, provided technical assistance and

[23] See SSB 5418, Chapter 388, Laws of 1999.

conducted additional research for the study. Pete Bylsma was the team leader and Ron Perry was the project supervisor.

Thomas M. Sykes
Legislative Auditor

On September 15, 1999, this report was approved for distribution by the Joint Legislative Audit and Review Committee.

Senator Georgia Gardner
Chair

RECOMMENDATIONS

Summary

Recommendation 1

Consistent with state laws for education reform and accountability, we recommend that the Office of Superintendent of Public Instruction collect enrollment data at the school building level for bilingual, special education, and highly capable students.

Legislation Required:	No
Fiscal Impact:	Minimal
Completion Date:	School Year 1999-2000

Recommendation 2

While having school-level expenditure data may serve useful purposes, the state does not need to start collecting this data or establish a statewide school expenditure accounting system. If policymakers and educators desire to understand school-level expenditures, existing staffing data at the school building level, which is collected by the Office of Superintendent of Public Instruction, can be analyzed.

Legislation Required:	No
Fiscal Impact:	None
Completion Date:	None

INTRODUCTION

Chapter One

BACKGROUND

The Washington State Constitution specifies that funding of the common schools is the "paramount duty" of the state. Nearly half of the state's General Fund budget, almost $9.5 billion in the 1999-2001 Biennium, is spent on K-12 education operations. School districts receive about 75 percent of their total operating funds from the state, which is the 2nd highest percentage of state funding in the country.[24]

In addition to the constitutional mandate to support K-12 education, the legislature has other reasons to monitor the public education system. For example, the legislature has passed laws to improve student performance, including the establishment of a new accountability system.[25] Additionally, numerous legal decisions have affected state funding of education over the past few decades, and changes in the funding formula and the effects of the formula are an issue of discussion and debate.

State funding is allocated to the school districts, which allocate funds to individual schools. Within certain statutory guidelines, school districts have discretion over how funds are spent and how funds are allocated to individual schools. School districts are required to provide a great deal of data to the state. Some of this data (e.g., finance, staffing, and student enrollment data) are used to allocate funds to school districts. Other data (e.g., student

[24] According to data from the U.S. Department of Education for school year 1995-96, the state of Hawaii provided 90 percent of total funding for public K-12 education. Nationally, state funding averaged about 47 percent of the total.
[25] SSB 5418, Chapter 388, Laws of 1999.

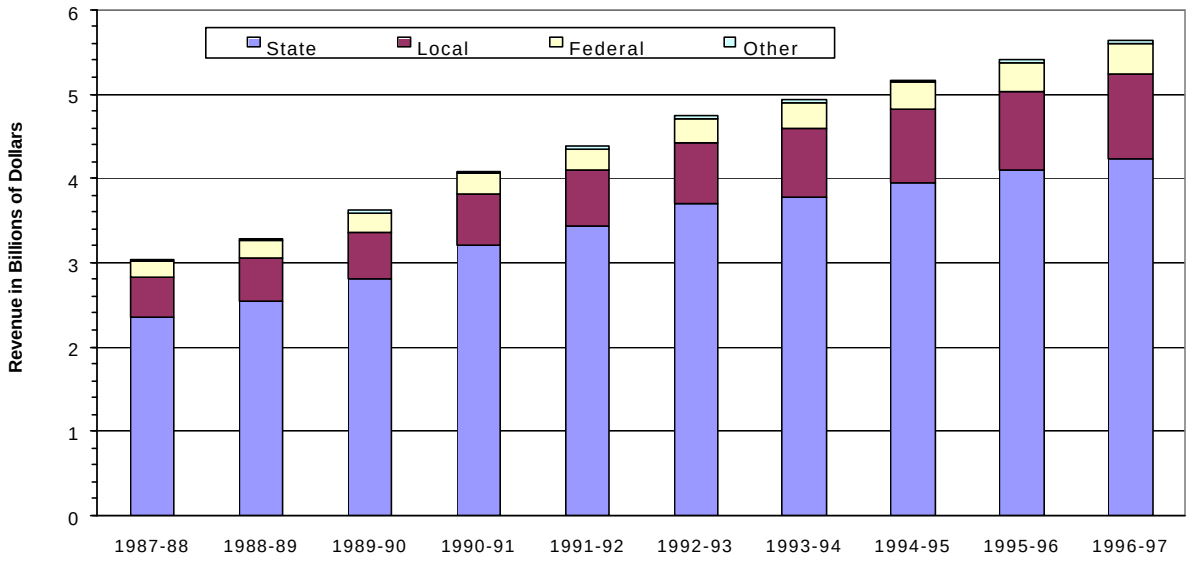
test scores) are used to compile information on the effectiveness of the education provided in Washington schools. Some data are reported for the district as a whole, and some data are reported on individual schools.

GROWTH IN K-12 REVENUE OVER TIME

Total revenues from all sources for K-12 operations have increased from about $3 billion in the 1987-88 school year to over $5.5 billion in the 1996-97 school year, as illustrated by Exhibit 4. However, after taking into account inflation and growth in the number of students, the actual growth in revenue per student after inflation is considerably less. The constant dollar (after inflation) revenue per student has increased from about $5,500 per student to $6,000 per student between the 1987-88 and 1996-97 school years (see Exhibit 5). Nearly all of the growth in revenue per student occurred between 1987-88 and 1992-93. Since then, total revenue per student after inflation has stayed about the same, and the state's share of the total has declined slightly.[26] (See Appendix 4 for exhibit data.) Nevertheless, the state's share of total revenue remains one of the highest in the nation.

[26] While state revenues per pupil have lagged slightly behind after 1992-93, it is likely that inflation, measured by the implicit price deflator, was greater than the increase in cost to provide an equivalent level of resources per student during the same time period. Staff compensation comprises 82 percent of school district expenditures and increases in staff compensation are determined and funded by the legislature. The legislature funded increases in staff compensation that lagged inflation between 1992-93 and 1996-97, and therefore state revenue per student lagged inflation. However, the cost to school districts to provide an equivalent amount of staff resources per student also lagged inflation.

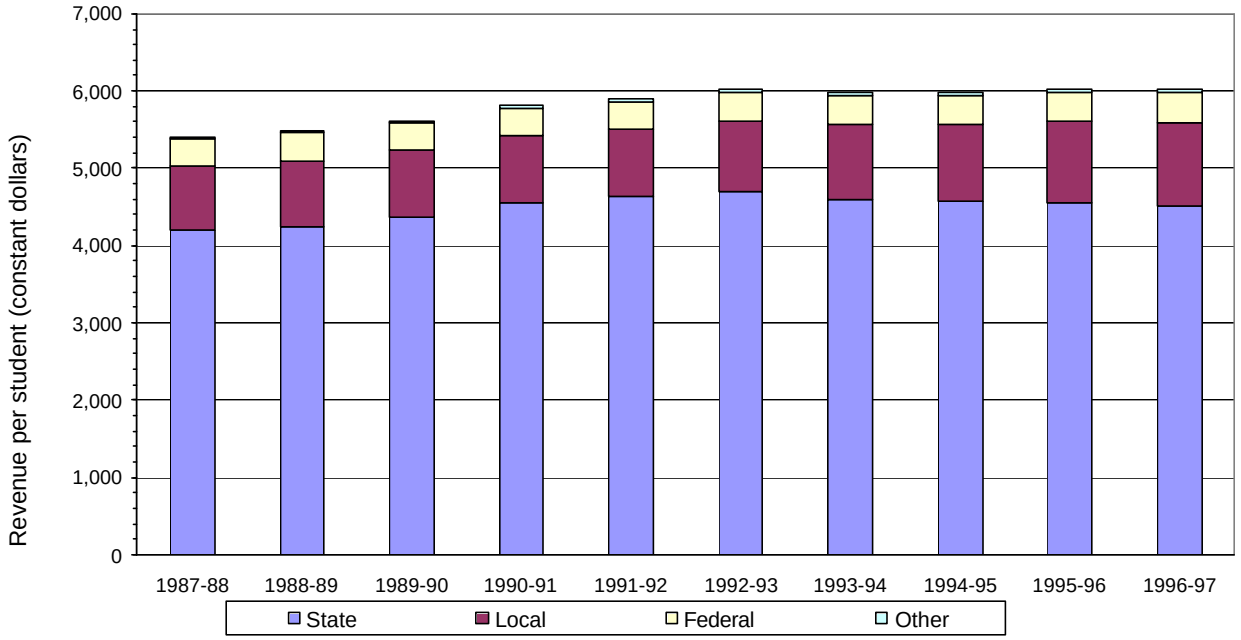
Exhibit 4
Growth in K-12 Operating Revenue in Washington (in nominal dollars)



Source: JLARC analysis of OSPI data.

Exhibit 5

Growth in Revenue per Student (in constant 1996-97 dollars)*



*Nominal dollars per student deflated using the Implicit Price Deflator

Source: JLARC analysis of OSPI data.

SOURCES OF REVENUE FOR SCHOOL DISTRICTS

Approximately 75 percent of operating revenue for school districts in Washington State is provided by the state. Of the remaining 25 percent of revenue, 18 percent is raised locally through property tax levies, and 6 percent is from the federal government. About 1 percent of school district revenue is from other sources. The following briefly describes the sources of revenue for K-12 operations.

- State funding is allocated to school districts for several purposes and through different formulas (see Exhibit 6 and 7).
- Local funding is raised by districts through local property tax levies to enhance state funding. The state limits the amount of local funding that can be raised.[27]
- Federal funding to school districts is primarily for student populations with special needs.
- Other funds come from student fees and other miscellaneous funds.

Exhibits 6 and 7 provide an overview of how the state has allocated nearly $10 billion of state funds in the 1999-2001 biennium among the 296 school districts. In general, most state funds are allocated to districts based on student enrollment, and the education and experience of the certificated staff (staff with professional certificates) in the district. Additional funds are provided for special student populations, staff salary increases, and support costs (e.g., pupil transportation).

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[27] State law sets the districts' maximum levy authority percentage for "excess general fund levies" (also known as maintenance and operations levies). Most districts have a maximum levy authority of 24 percent. For 1996 levies, 91 districts had a higher maximum levy authority (up to 34 percent) as a result of a "grandfather clause" in the law. Levies are for 1 to 4 years and must be approved by at least 60 percent of those voting. According to OSPI, 260 districts passed levies, 11 failed to pass their levies, and 25 did not submit a levy to voters for 1996. The 36 districts that did not pass or submit a levy had a total of 34,162 FTE students, which was 3.6 percent of the state total.

Exhibit 6
Amount of State Funding by Component, All State Revenue Sources

Funding Component	1997-99 Biennial Appropriation (in millions)		1999-2001 Biennial Appropriation (in millions)	
I. Ongoing Components of State Funding		**$8,374**		**$8,743**
• Basic Education Apportionment		$6,855		$7,097
• Extra Funding for Special Student Groups		$ 981		$1,057
Special Education	$ 749		$ 785	
Learning Assistance Program	$ 121		$ 146	
Bilingual Education	$ 64		$ 72	
Institutional Education	$ 35		$ 42	
Highly Capable Programs	$ 12		$ 12	
• Funding for Support Services		$373		$383
Pupil Transportation	$ 351		$ 361	
Traffic Safety Education	$ 16		$ 16	
School Food Service	$ 6		$ 6	
• Local Effort Assistance (levy equalization)		$165		$206
II. Enhancements to Ongoing Funding		**$ 340**		**$ 666**
• Employee Compensation Adjustments		$ 194		$ 536
• Local Enhancement Funds		$ 105		$ 61
• Education Reform Programs		$ 41		$ 69
III. Miscellaneous Grant Funds Provided to Districts		**$ 86**		**$ 45**
Total State Funding for School Operations		**$ 8,800**		**$ 9,454**
IV. Funding for School Construction		**$ 289**		**$ 327**
Total State Allocations to School Districts		**$9,089**		**$9,781**

Source: 1997-99 and 1999-2001 Appropriations Acts.

Note: Does not include funds appropriated to OSPI, Commission on Student Learning, or Educational Service Districts. Not all school districts receive funds from each category.

Exhibit 7
Summary Description of Current State Funding Allocation Methodology

Funding Component	General Description Of Purpose And Allocation
I. Ongoing Components of State Funding	
Basic Education Apportionment	The apportionment formula provides funding for certificated, and classified staff based on a state defined ratio of staff per pupil enrolled in each district. The dollar amount provided per certificated staff member varies with the education and experience of the certificated staff in each district. The formula also provides a fixed amount per student for non-employee costs. The formula provides for a smaller student-teacher ratio in grades K-4, and in secondary vocational education programs. There are also enhancements in funding for small school districts.
Special Education	The special education formula provides an additional 93 percent of the basic education amount per student for each special education student enrolled in the district, up to a cap of 12.7 percent of total enrollment. For enrollment above 12.7 percent, districts may apply for safety net funds.
Learning Assistance Program (LAP)	Provides additional funds to school districts with a high percentage of students with low test scores and/or a high percentage of students eligible for free and reduced-price meals, to support learning assistance programs in grades K-11.
Bilingual Education	Provides a fixed amount per eligible student to support bilingual education.
Institutional Education	Provides funds for education of students in state institutions. Funds are allocated to school districts that educate institutionalized students on the basis of enrollment and cost.
Highly Capable Programs	Provides a fixed amount per student for up to 2 percent of the enrollment in each district for highly capable programs.
Pupil Transportation	Funds for transportation operations are allocated to school districts based on the number of pupils eligible for transportation and the distance each student must be transported. Also includes funds for replacement of school busses.
Traffic Safety Education	Fixed amount per student completing a school traffic safety education program.
School Food Service	State matching funds for federal child nutrition program.
Local Effort Assistance	Provides additional funds to those school districts that require higher than average property tax levy rates in order to raise 10 percent of their total revenue from property taxes. Also known as levy equalization.
II. Enhancements to Ongoing Funding	
Employee Compensation Adjustments	Funding for increases in employee salaries and benefits.
Education Reform Programs	Funds various school district activities related to education reform including readiness to learn grants, the mentor teacher program, improvements in technology infrastructure, etc.
Local Enhancement Funds	Funding for learning improvement grants are allocated to school districts based on enrollment. Funding for local education program enhancements are allocated to school districts based on enrollment.
III. Miscellaneous Grant Funds	Provides funds for various purposes to school districts. Some of the major components include technology grants, instructional supplies, the Volunteer Tutor and Mentor Program, and School Safety.
IV. School Construction	Provides state matching funds for construction of school buildings. Matching percentage varies with district wealth, projects are prioritized according to need.

HOW WASHINGTON FINANCES COMPARE WITH OTHER STATES

Exhibits 8 through 11 compare K-12 measures in Washington with other states and the national average. Expenditures per pupil in Washington were slightly less than the national average in 1995-96 (Exhibit 8).[28] The average student-teacher ratio was much higher in Washington than in most other states (Exhibit 9). The total compensation cost per staff (both certificated and classified) was higher in Washington than in most other states[29] (Exhibit 10). The proportion of total K-12 staff that are teachers was slightly less in Washington than the national average (Exhibit 11). We discuss the relationship between these variables in Chapters 2 and 3 of this report. (See Appendix 4 for data on all states.)

These comparisons are based on data from the U.S. Department of Education's National Center for Education Statistics (NCES) for school year 1995-96, the most recent and complete set of data available for all indicators for all states. Some states calculate and report these indicators in different ways, which can affect a state's rankings. Hence, comparing states using these data should be done with caution.

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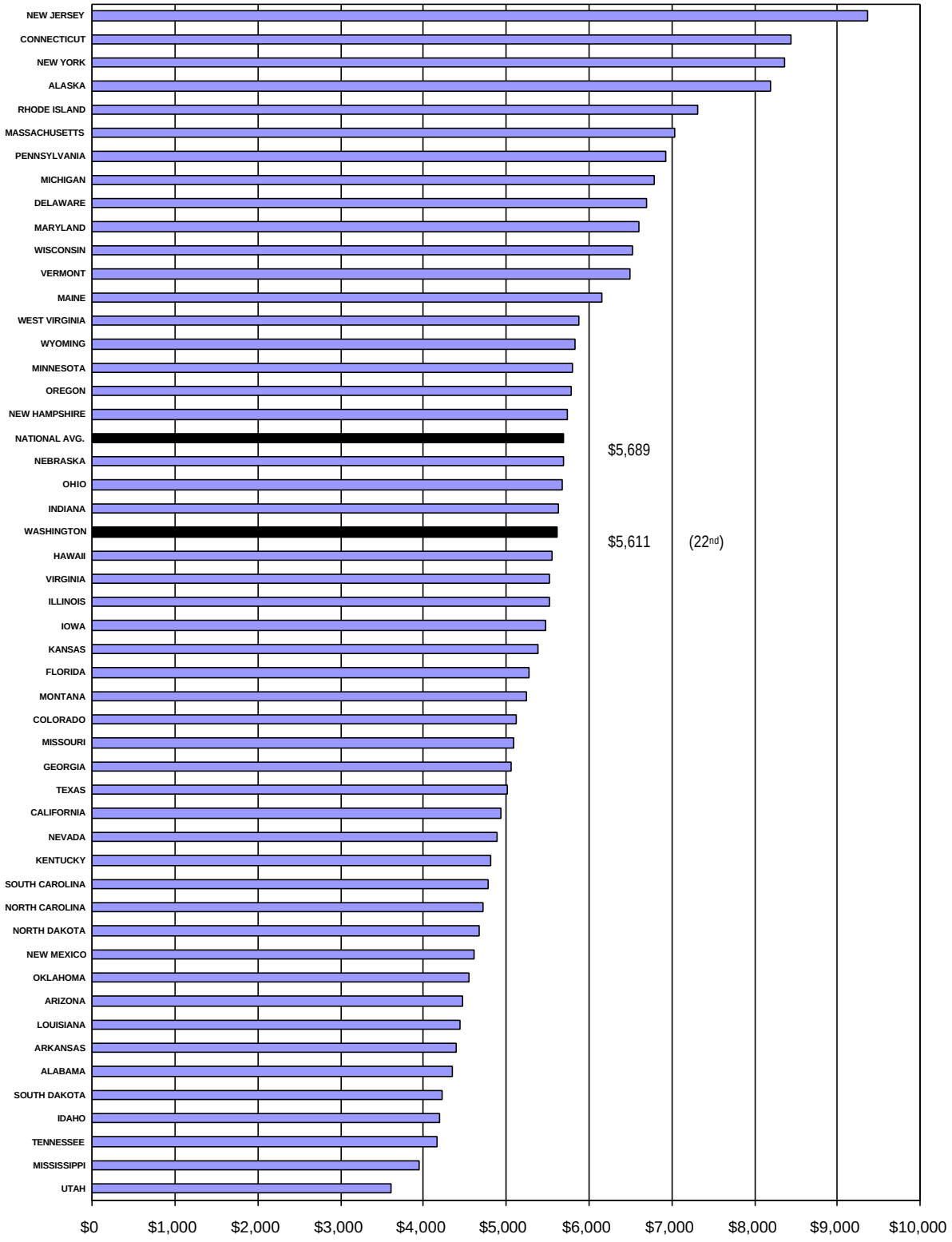
[28] The NCES data used in the national comparison of expenditures per student portrayed in Exhibit 8 indicate Washington spent about $5,600 per pupil in 1995-96. Exhibit 5 used OSPI data and indicates Washington spent about $6,000 per pupil in 1995-96. The difference is primarily explained by differences in pupil counts. NCES data uses a headcount of pupils as of October 1 in each school year. OSPI counts average pupil FTEs throughout the school year. The average pupil FTEs throughout the school year results in a lower number of pupils than the October headcount. Therefore, OSPI's count of pupils is smaller and expenditures per pupil using OSPI numbers is higher than using NCES numbers.

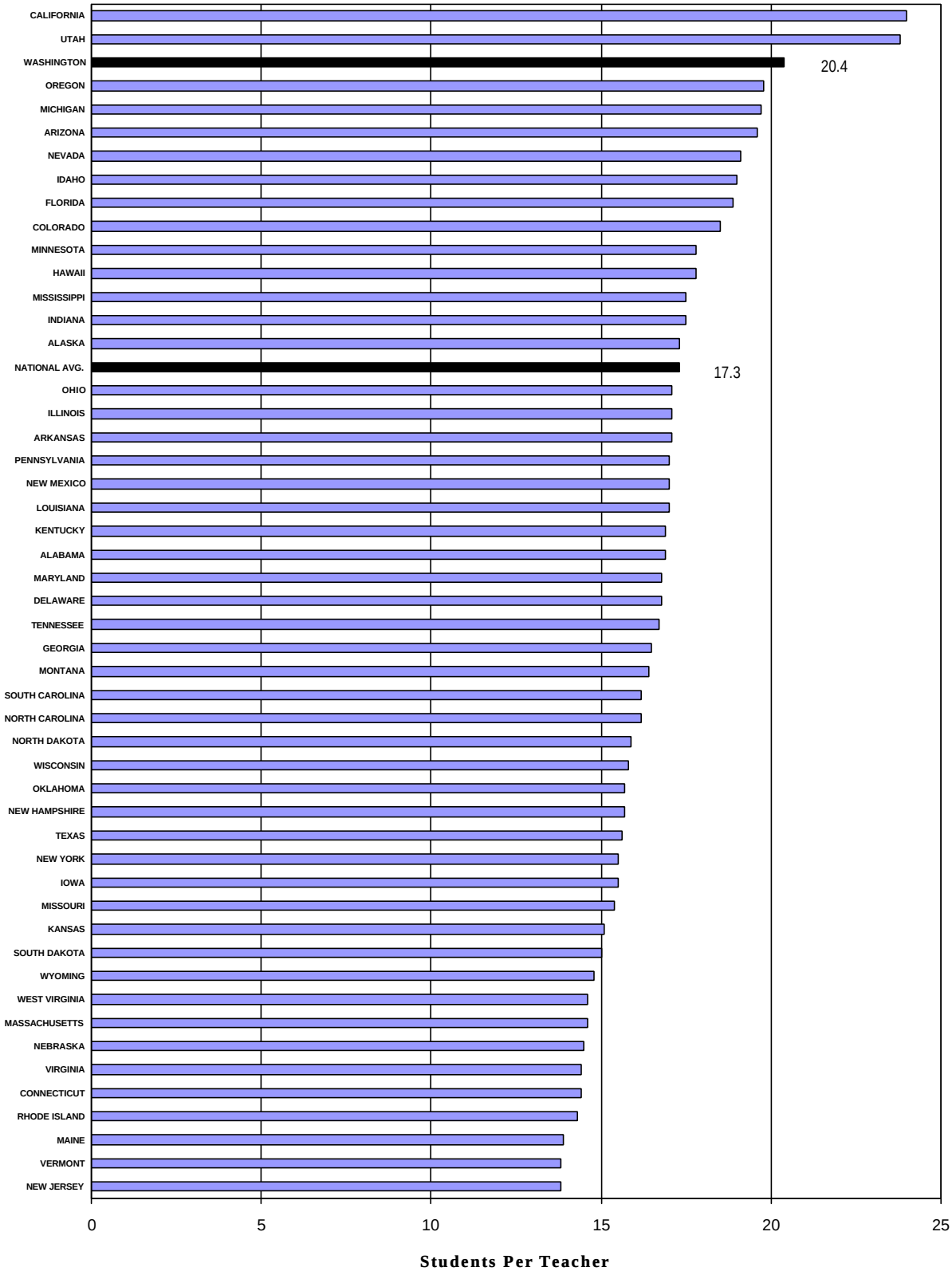
[29] Total compensation includes both salaries and benefits for both certificated and classified staff. Some publications indicate that teachers' salaries in Washington are less than the national average, although this reflects only the base salaries of teachers and does not include supplemental contracts or benefits or any compensation for classified staff or other types of certificated staff. Total compensation costs per staff in Washington is similar to those in other Western states, and the cost of living in Washington is also above the national average. Compensation levels are largely a function of the level of teacher education and experience on the statewide salary schedule.

Exhibit 8
1995-96 National Rankings - Expenditures/Student



Source: Data from the Department of Education National Center for Education Statistics (NCES). These costs are not adjusted for differences in the cost of education among the 50 states.

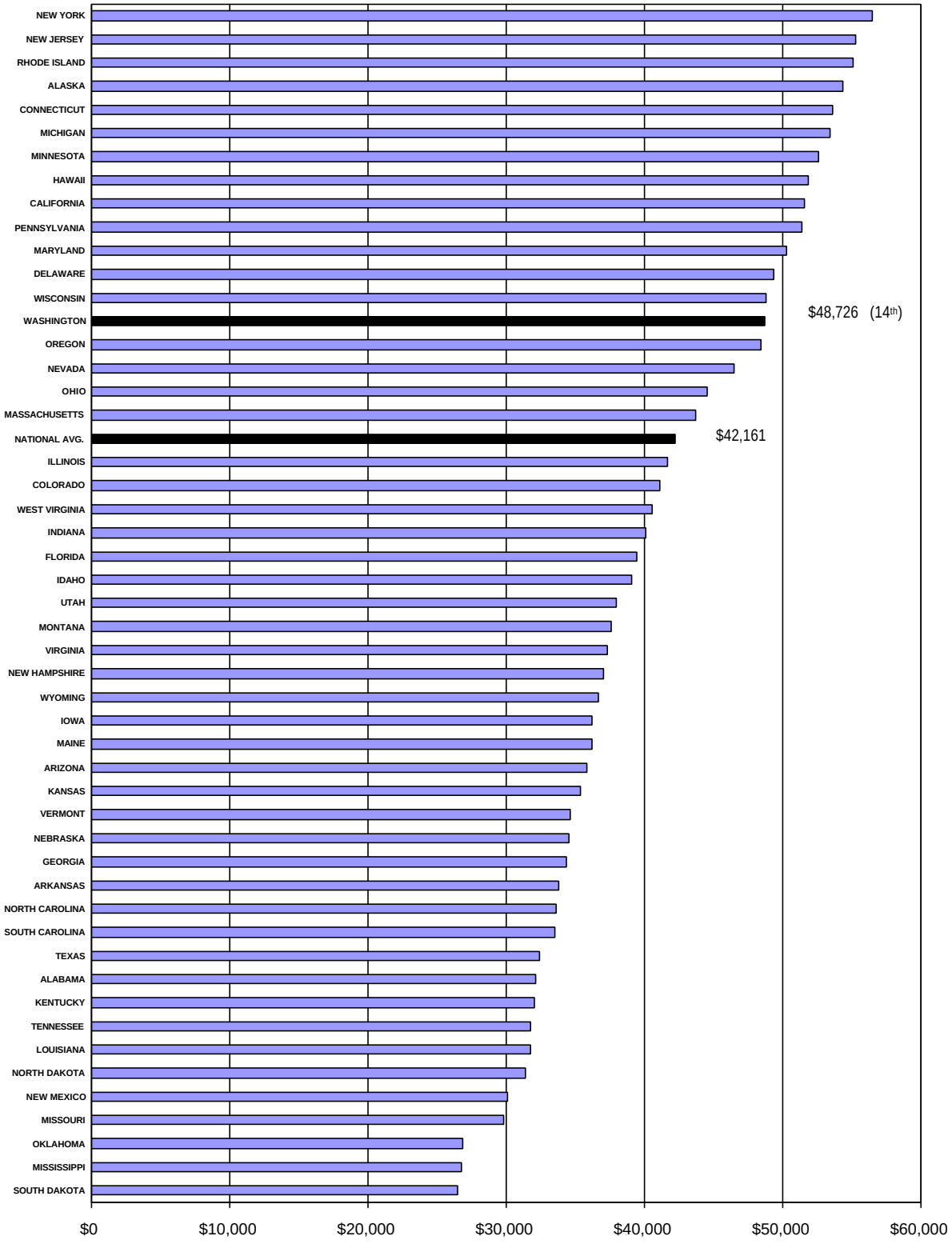
Exhibit 9
1995-96 National Rankings – Student-Teacher Ratio



Source: Data from the Department of Education National Center for Education Statistics (NCES).

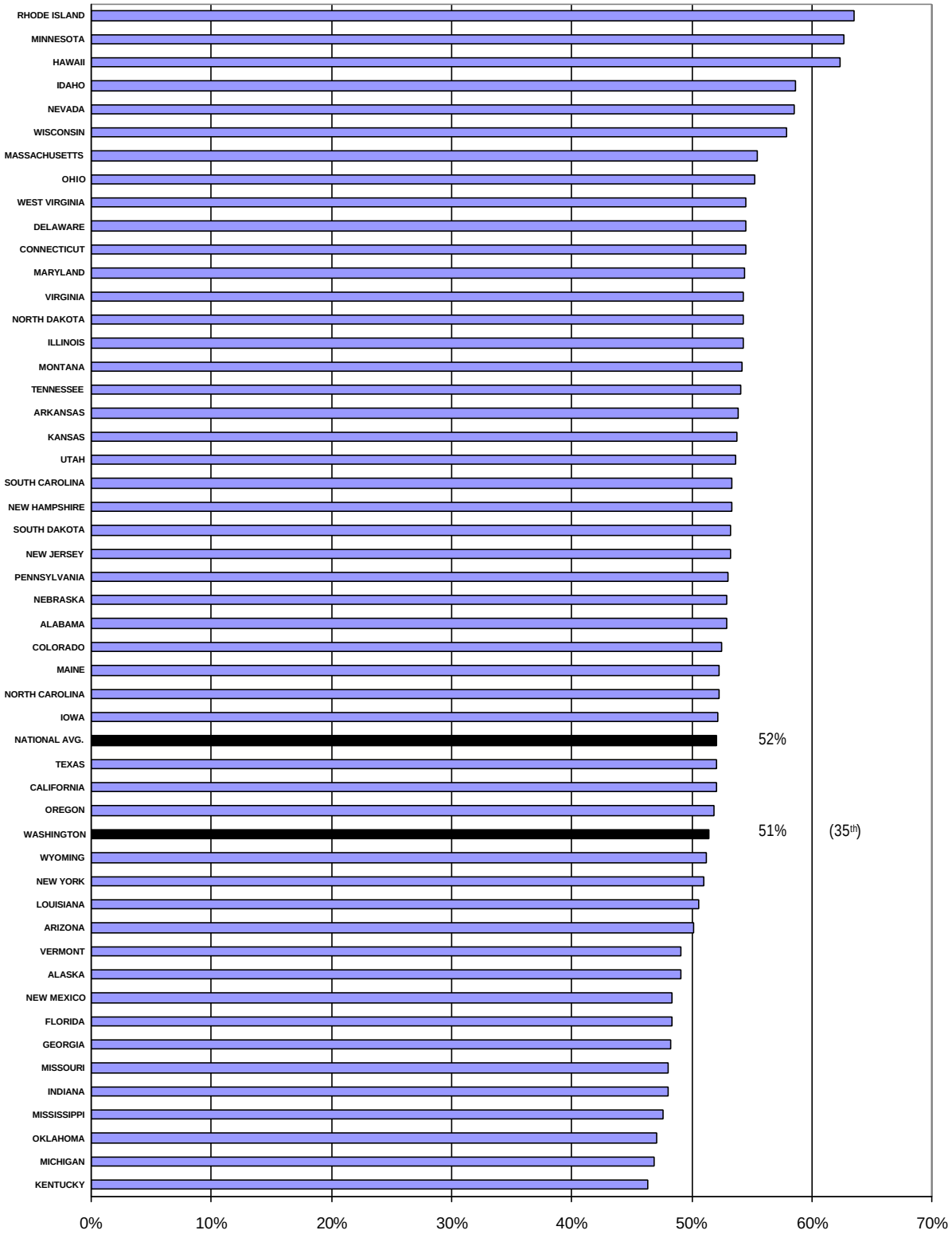
Exhibit 10

1995-96 National Rankings - Compensation Cost/Staff *



*Total compensation costs (including salaries and benefits) for all certificated and classified staff. These costs are not adjusted for differences in the cost of education among the 50 states.
Source: Data from the Department of Education National Center for Education Statistics (NCES).

Exhibit 11
1995-96 National Rankings - Teacher Percent of Total Staff



Source: Data from the Department of Education National Center for Education Statistics (NCES).

OBJECTIVES AND METHODOLOGY

The 1998 Supplemental Appropriations Act mandated the Joint Legislative Audit and Review Committee (JLARC) to conduct a study of various issues of the K-12 education system. Specifically, this report focuses on four main issues:

- Patterns of district and school (building) revenues and expenditures[30] (Chapter 2);
- Characteristics of students and staff among districts and schools and the ratio of students to teachers and other personnel (Chapter 3);
- How student and teacher characteristics, student-teacher ratios, and other factors affect student performance (Chapter 4); and
- The availability of data needed to conduct education-related analyses and district reports that are easily understood by the public (Chapter 5).

The study is based on district and school data from school year 1996-97, the most recent available. Data for the study were obtained from the Office of the Superintendent of Public Instruction (OSPI) and in some cases, school-level data were provided by districts. We obtained school-level student and financial data from six districts because this data is not collected by OSPI. JLARC relied on the Legislative Evaluation and Accountability Program (LEAP) Committee, which was directed to assist JLARC with the study, to obtain and prepare district and school data. In addition, JLARC contracted with outside agencies and consultants to conduct research for parts of the study and to provide advice on technical issues.[31]

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[30] The state provides revenues for K-12 education from several sources – the General Fund, ASB special revenue, capital projects, debt service fund, and fiduciary fund. In this study, we examined revenues and expenditures from only the General Fund.

[31] JLARC contracted with two agencies and two consultants to assist in the study. The National Conference of State Legislatures conducted a national survey on which states collect school-level data and analyzed how three states use such data. The Northwest Regional Educational Laboratory (NWREL)

See Appendices 1 and 3 for more information on the study mandate, scope and objectives. More information on our analysis methods and results is found in the other appendices.

assessed the efforts of school districts in making financial information understandable and available to lay audiences and identified exemplary efforts of local districts. Lawrence Picus, Professor and Director of the Center for Research in Education Finance at the University of Southern California, provided advice on various methodological issues and conducted research for the study on class size issues and the collection and use of school-level data in Oregon. Gregory Weeks, an economist at The Evergreen State College, conducted hierarchical modeling analyses to determine factors affecting student performance in Washington State. The reports developed for JLARC by these agencies and consultants are available from JLARC staff upon request. For more information on these reports, see Appendix 12.

REVENUES AND EXPENDITURES

Chapter Two

OVERVIEW

- The distribution of revenue among Washington school districts is equitable. Districts with low and high property values receive relatively equal amounts of revenue. School districts in Washington also appear to distribute revenue to individual schools in an equitable manner.

- Small districts receive the most funding per pupil, and thus spend the most per student. While the *amount* of expenditures can vary, the *pattern* of expenditures in districts is similar. For example, all districts spend about the same proportion of their funds on instruction and staff compensation, regardless of their size or funding level. Individual schools in Washington also appear to spend money in similar ways, with high schools spending more per pupil and elementary schools spending a higher proportion of their funds on instruction.

- Schools, districts, and states that spend more per pupil use their additional funds primarily on hiring more teachers or other types of staff, additional staff compensation, or both. These factors explain most of the differences in per pupil expenditures. Administrative spending is relatively unimportant in explaining differences in spending amounts.

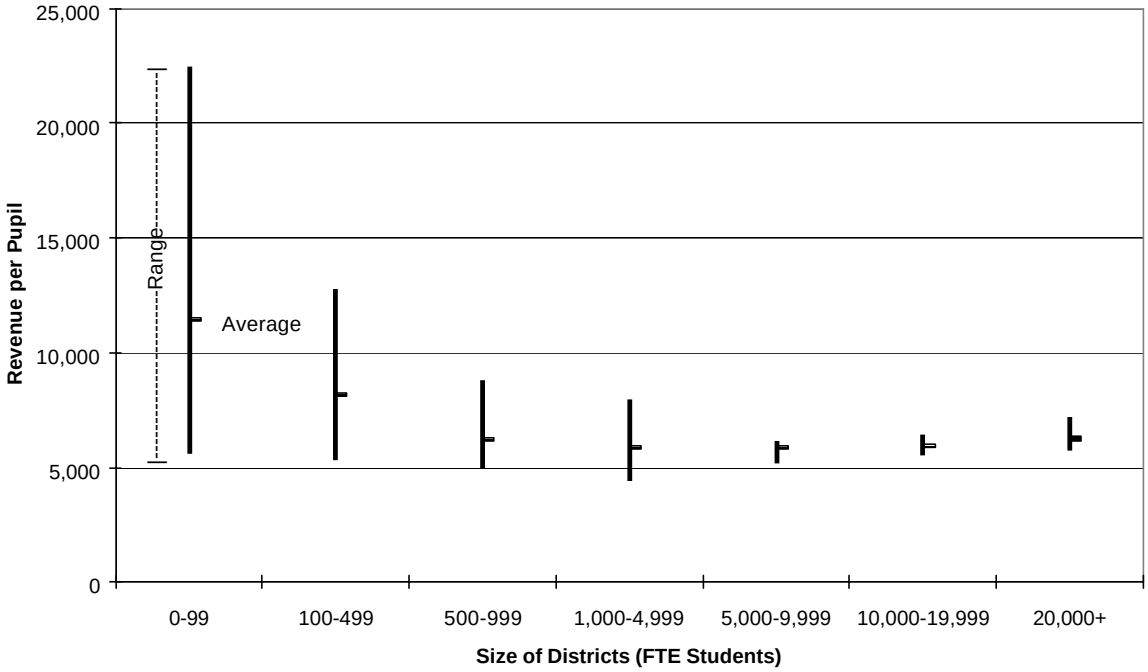
REVENUE ALLOCATIONS TO SCHOOL DISTRICTS

Total revenue per student in Washington varied from as much as $22,496 per student to as little as $4,389 per student in school

year 1996-97. The difference is due mainly to funding enhancements in the state funding formula for very small districts. A wide variation in revenue is only seen among the smallest districts, which account for a tiny fraction of total spending and pupils among Washington school districts (see Exhibit 12).[32] Once a district approaches 1,000 students, the amount of variation in revenue per pupil is much smaller and the level of funding is about the same.

Exhibit 12

Revenue Amount and Variation Decreases as District Size Increases



Source: JLARC analysis of OSPI data.

Washington's Funding System is Equitable

Washington has one of the most equitable funding systems in the nation.[33] The funding gap between the wealthiest districts and

[32] The 101 districts with fewer than 500 students spend only 3 percent of the total spending in Washington. The 19,500 students in these districts represent 2 percent of total enrollment.

[33] Two recent U.S. General Accounting Office studies used complex methods to study the effect of K-12 education funding systems on equity in all states. One

less wealthy districts[34] in Washington is relatively small because of (1) the high share of funding provided by the state, (2) the additional amount of funding that is provided to students with special educational needs (e.g., bilingual, special education), and (3) the limits that the state has placed on raising local revenues. The equitability of the system is important because many states have lost court cases because of inequities in their K-12 funding systems and have had to revise their systems in the aftermath of these cases.

While the funding system is equitable overall, local choices can affect the amount of funding in an individual district. If voters do not approve a local levy, the district will have less total funding than similar districts that pass a levy.[35] A district may also have less local funding if their levy amount is less than the maximum allowed. Districts that under law are allowed a higher maximum levy authority can raise more local revenue if their voters pass levies at higher levels.

Exhibit 13 illustrates the effect of Washington's funding system on equity using data from school year 1996-97. The exhibit shows that there is almost no difference in state funding across all quintiles of district wealth.[36] The highest wealth districts raise more than twice the local revenue as the lowest wealth districts. This funding gap is partially offset by greater federal funding to

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study found that the revenues available to districts in Washington had little relationship to a district's wealth and a very small funding gap between wealthy and poor districts. The other study found a very small funding gap between low-poverty and high-poverty districts. These gaps were among the smallest in the nation. See School Finance: State Efforts to Reduce Funding Gaps Between Poor and Wealthy Districts (GAO/HEHS-97-31, Feb. 5, 1997) and School Finance: State and Federal Efforts to Target Poor Students (GAO/HEHS-98-36, Jan. 28, 1998).

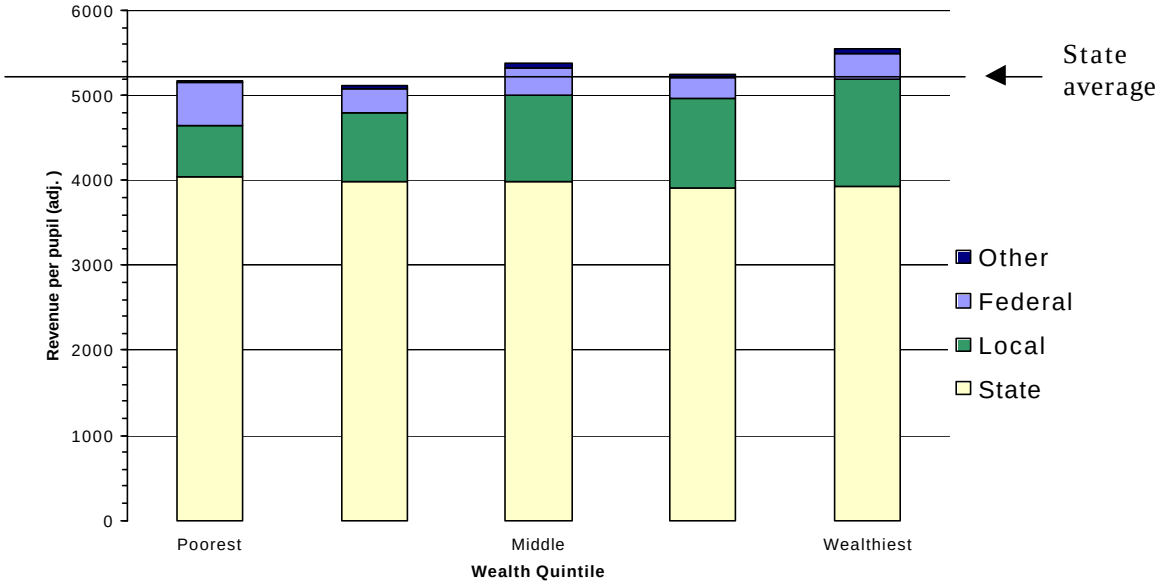
[34] District wealth is measured in terms of assessed property value per student.

[35] Districts eligible to receive local effort (levy equalization) assistance funding from the state do not receive this funding if district voters do not pass a local levy. In 1996, 29 eligible districts did not pass a maintenance and operations levy. An analysis of how equity and student performance are affected by a failed levy was outside the scope of this study.

[36] Each quintile bar represents approximately 20 percent of the students in the state, arranged by district in increasing order of district wealth, measured in terms of assessed property value per student. Revenues have been adjusted to account for differences in student need among districts. See Appendix 6 for more information about the analysis method.

the lowest wealth districts. Other funding makes little difference in the overall funding level.

Exhibit 13
Revenue Distribution by District Wealth



Source: JLARC analysis of OSPI data.

REVENUE ALLOCATIONS TO SCHOOLS

The amount of revenue allocated to individual schools depends on the total revenue available to the district and the district's policy for allocating funding to individual schools. Districts have different methods of allocating funds to schools, but most appear to allocate funds to schools using a method similar to the way the state allocates funds to districts (i.e., funding is allocated based on enrollment in the school and the education and experience of the teachers, with additional funding provided for special student groups). We obtained school-level financial data from six districts because school-level financial data are not collected by the state.[37]

[37] We originally selected a sample of 32 districts to collect school-level financial data for this study. Because of difficulties in collecting this data, we collected expenditure data from eight school districts. Two of these eight districts were eliminated from our analysis because they coded only a small proportion of their expenditures to individual schools.

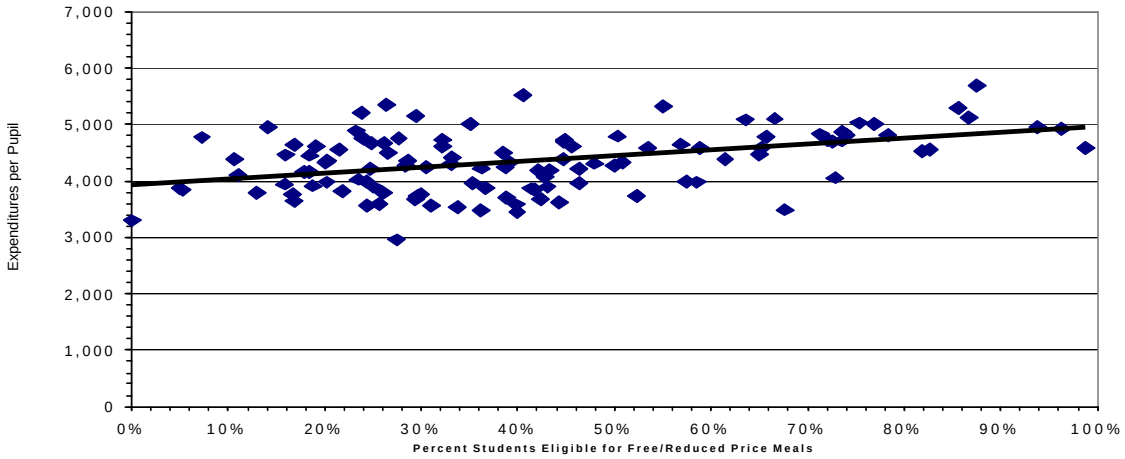
Our analysis of these six districts focused on 114 schools (81 elementary schools, 17 middle schools, and 16 high schools).[38]

Equity of Revenue Allocation to Schools

We found that the allocation of revenue from districts to individual schools appears to be relatively equitable. Schools with higher proportions of lower-income students (i.e., higher proportions of students eligible for free and reduced-price meals) received similar or more funding than schools with lower proportions of such students.[39] This finding is based on school-level financial information from the 114 schools (see Exhibit 14). In addition, our analysis of all Washington schools found that the student-teacher ratio gets smaller as the percentage of lower-income students increases. (The relationship between the percentage of lower-income students and student-teacher ratio is discussed further in Chapter 3.).

Exhibit 14

School Expenditures Increase as School Socioeconomic Status Decreases



Source: JLARC analysis of financial data for schools from six Washington school districts.

[38] These 114 schools had a total of about 74,000 students, about 8 percent of the state total. Each of the six districts selected had at least 1,000 students.

[39] Within some districts, schools with higher proportions of low-income students receive less funding. For example, a study of school-level financial information for the Los Angeles Unified School District study found that schools in poorer areas of the district received less money from the district than schools in wealthier areas, primarily because higher-paid teachers tended to teach in schools in wealthier areas.

PATTERNS OF DISTRICT EXPENDITURES

The amount of school district spending per pupil is a function of the amount of revenue per pupil, so the smallest school districts spend the most per student. While there can be considerable variation in the *amount* of expenditures per student at the district level, there is much less variation in the *patterns* of expenditures.

Districts report all their expenditures to OSPI in three categories: activities, objects, and programs.[40] *Activities* include instruction, administration, pupil transportation, maintenance and operations, and other support services. *Objects* include salaries, benefits, supplies and materials, etc. *Programs* include regular instruction, special education, vocational and compensatory education, other programs, and various support services. (Appendix 5 describes how we categorized expenditures.)

We found districts' spending patterns are generally the same, regardless of the amount of funding available or the size of the district. For example:

- About 60 percent of *activity* expenditures are for instruction, with the remaining 40 percent spent on other activities (e.g., instruction support, pupil transportation, food services, administration).[41] Spending on central administration averaged about 6 percent and varied little.

- Spending on *objects* (salaries, benefits, and non-employee items) is also similar across districts. About 63 percent is spent on salaries, 19 percent on benefits, and 18 percent on the other items. Spending on salaries tends to increase slightly as the size of the district increases, with non-employee expenses decreasing at about the same rate as district size increases.

- *Program* expenditures among districts also tend to be more similar than different. The most significant variation is that the largest and highest spending districts tend to spend less

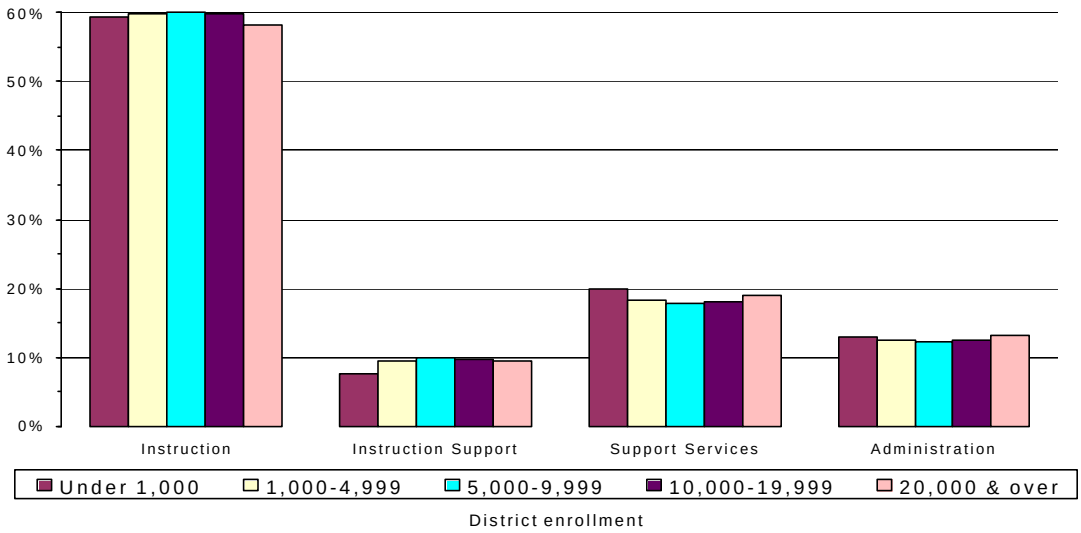
[40] Data on these expenditure groups are aggregated at the district level – expenditures at individual schools are not reported to OSPI.
[41] This 60/40 split is typical of school districts nationwide.

on regular instruction and more on compensatory instruction and support services.

The proportions of district expenditures for various activities, objects, and programs do not vary much, regardless of a district size, as shown in Exhibits 15 to 17. How money is spent by districts in Washington is consistent with the pattern of expenditures for school districts nationwide.

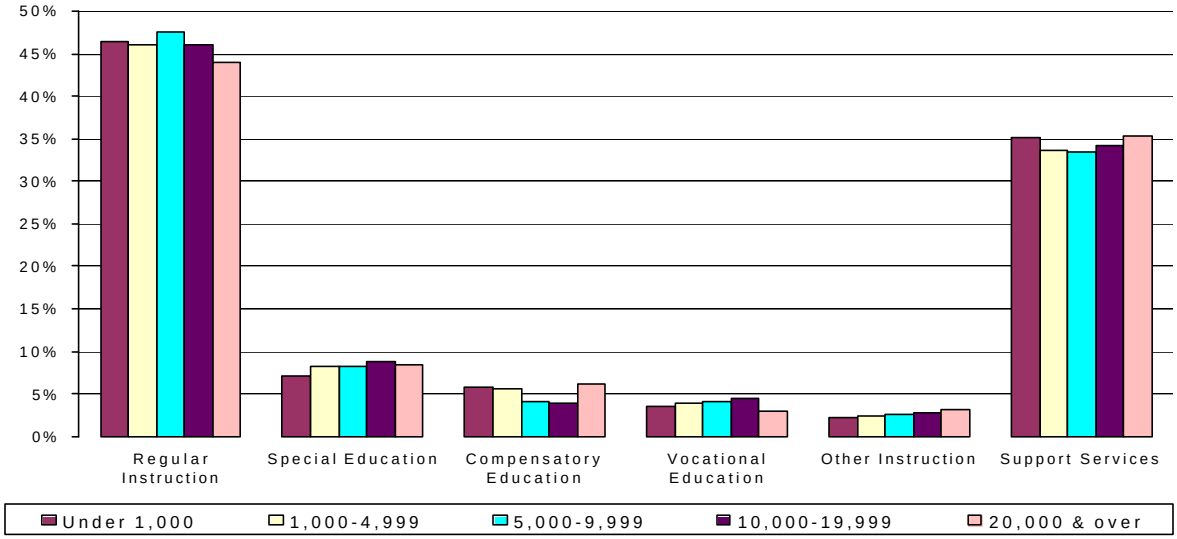
Exhibit 15

Activity Spending is Consistent Regardless of District Size



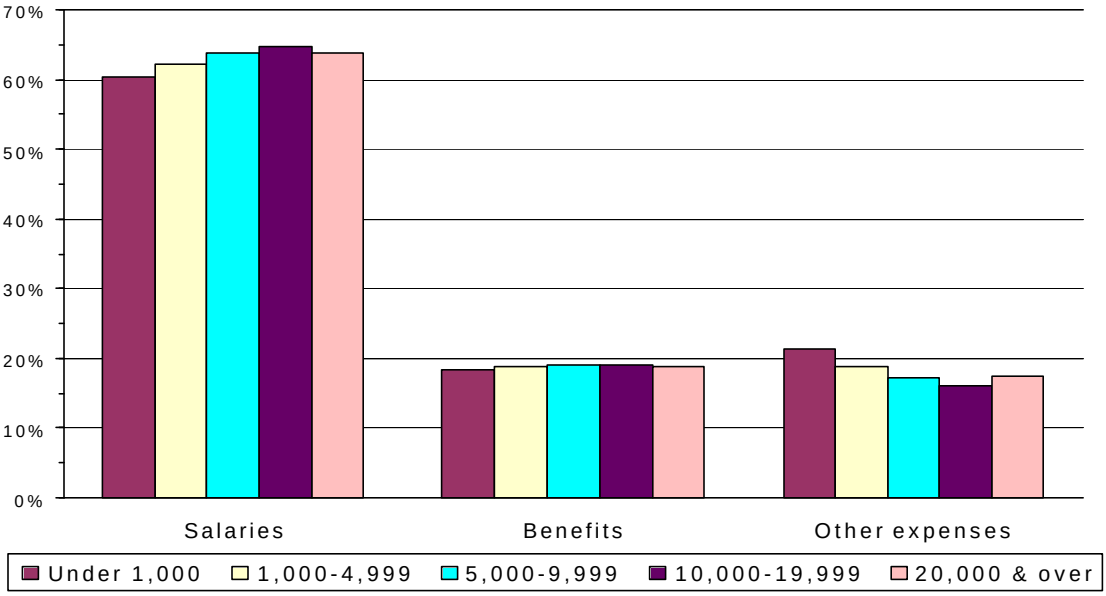
Source: JLARC analysis of OSPI data.

Exhibit 16
Program Expenditures Do Not Vary Much by District Size



Source: JLARC analysis of OSPI data.

Exhibit 17
Object Expenditures Are Relatively Consistent



Source: JLARC analysis of OSPI data.

PATTERNS OF SCHOOL EXPENDITURES

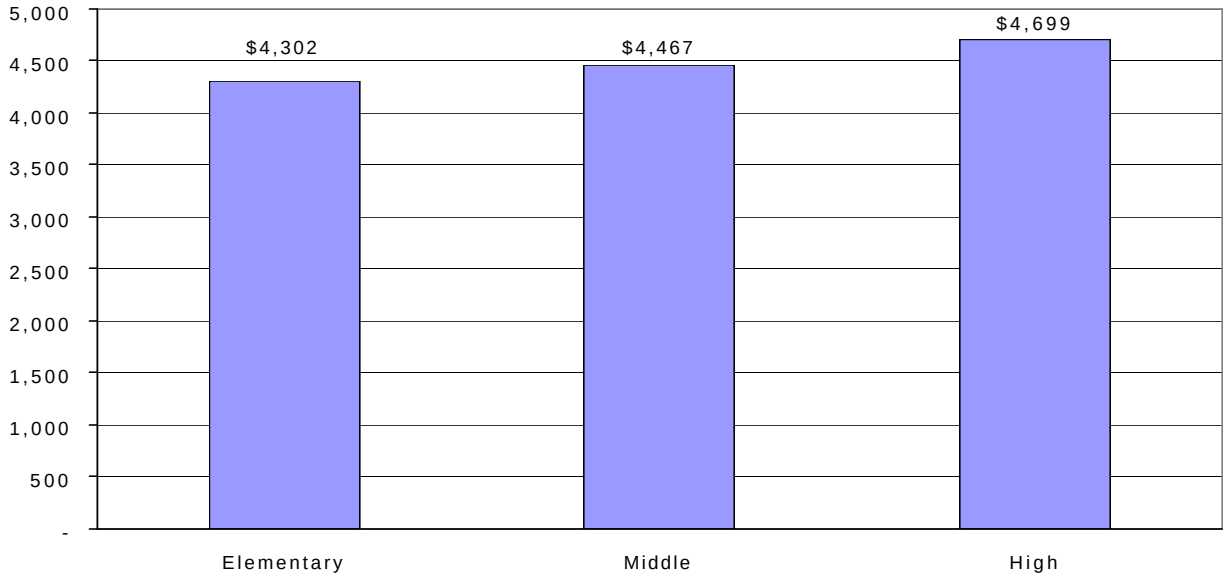
Expenditures among individual schools also tend to be more similar than different. While the *amount* of expenditures can vary substantially, the *pattern* of expenditures varies much less. The variations occur mainly between different types of schools (elementary, middle and high schools).

Our analysis of school expenditures was more limited because OSPI does not collect school-level expenditure data and only about 70 percent of district expenditures were tracked to schools in the six districts we examined.[42] Of the 70 percent of total district expenditures tracked to the 114 schools, we found the following patterns (see Exhibits 18 to 21).

- Expenditures per student are highest in high schools and lowest in elementary schools.
- On average, about 70 percent of *activity* expenditures was for instruction. Such expenditures were lowest in high schools and highest in elementary schools.
- *Program* expenditures for regular instruction averaged 56 percent. Again, these expenditures were lowest in high schools and highest in elementary schools. Spending on other types of instruction (e.g., vocational, compensatory, and special education) averaged about 26 percent.
- The percentage of *object* expenditures for staff salaries and benefits was nearly identical for the three types of schools. On average, staff compensation accounted for 90 percent of total expenditures at the school level.

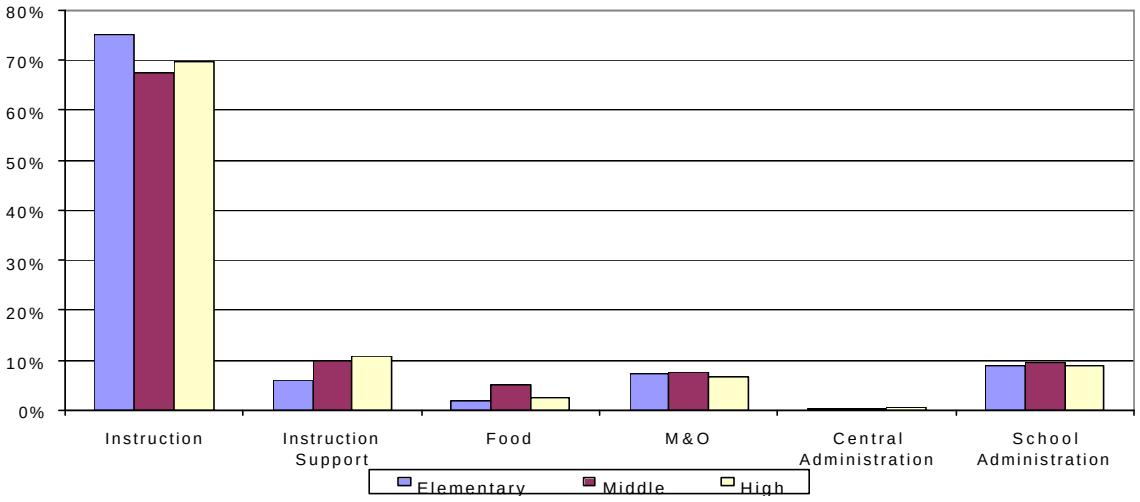
[42] The rest of the districts' expenditures were not coded to school buildings. This does not mean that the remaining amount was spent on central administration. Districts find it easier to code some expenditures, such as itinerant teaching expenses as well as costs for school utilities, food service, and transportation, to a central code, even though the funds may be spent at schools. There is no requirement to code school expenditures in any particular manner. We found that district expenditures for central administration averaged about 6 percent and varied little among all districts.

Exhibit 18
Average Expenditures per Student for 114 Schools by School Type



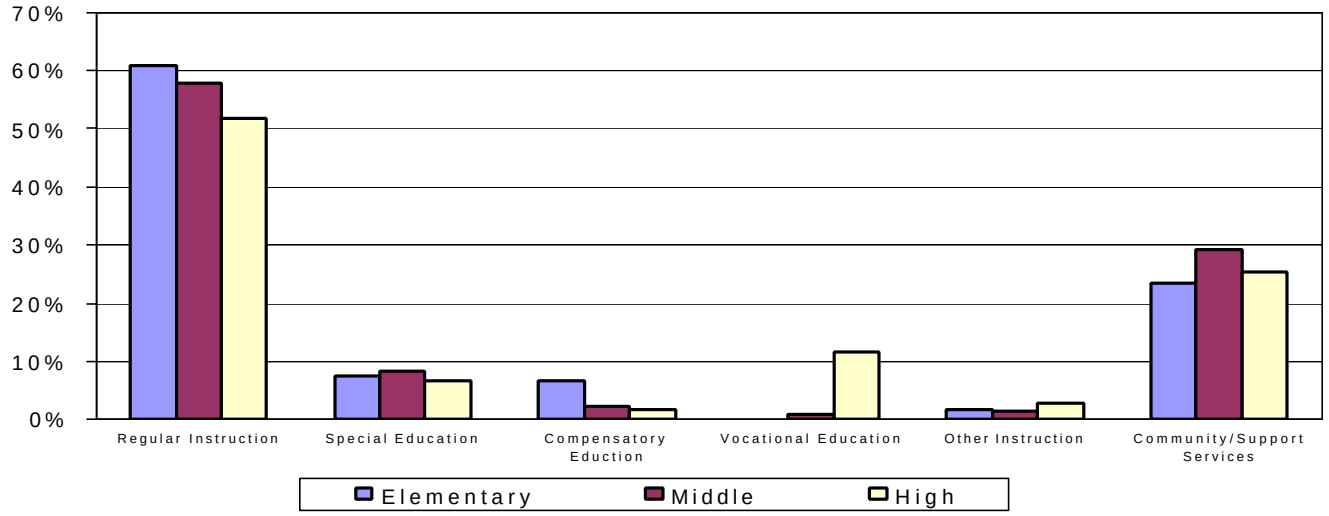
Source: JLARC analysis of financial information from six Washington school districts. Includes only the portion of district expenditures that is coded to individual schools.

Exhibit 19
School Activity Expenditures by School Type



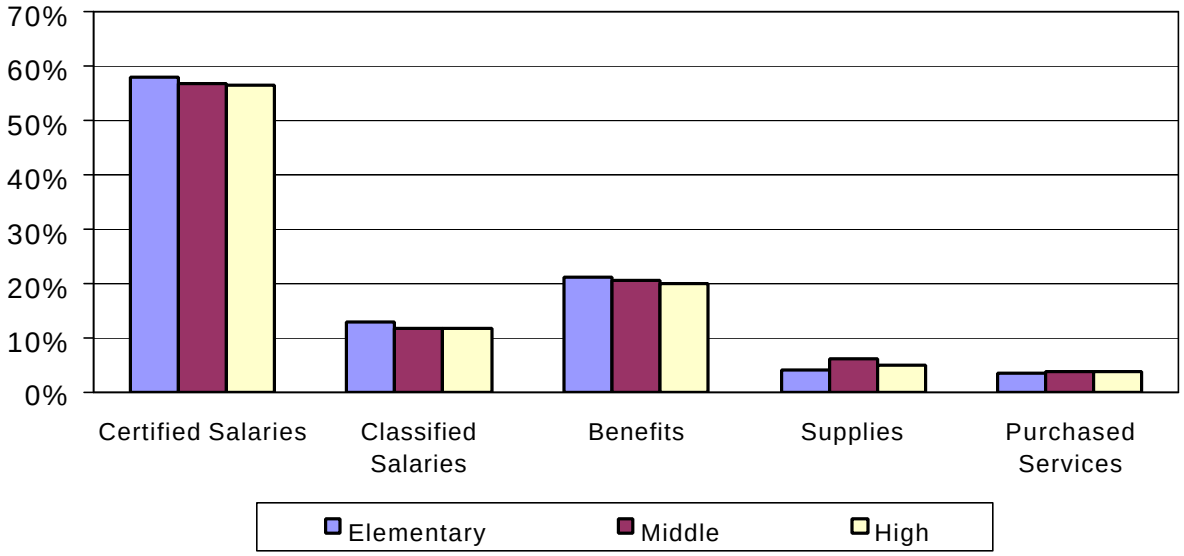
Source: JLARC analysis of Financial information from six Washington school districts. Includes only the portion of district expenditures that is coded to individual schools.

Exhibit 20
School Program Expenditures by School Type



Source: JLARC analysis of financial information from six Washington school districts. Includes only the portion of district expenditures that is coded to individual schools.

Exhibit 21
School Object Expenditures by School Type



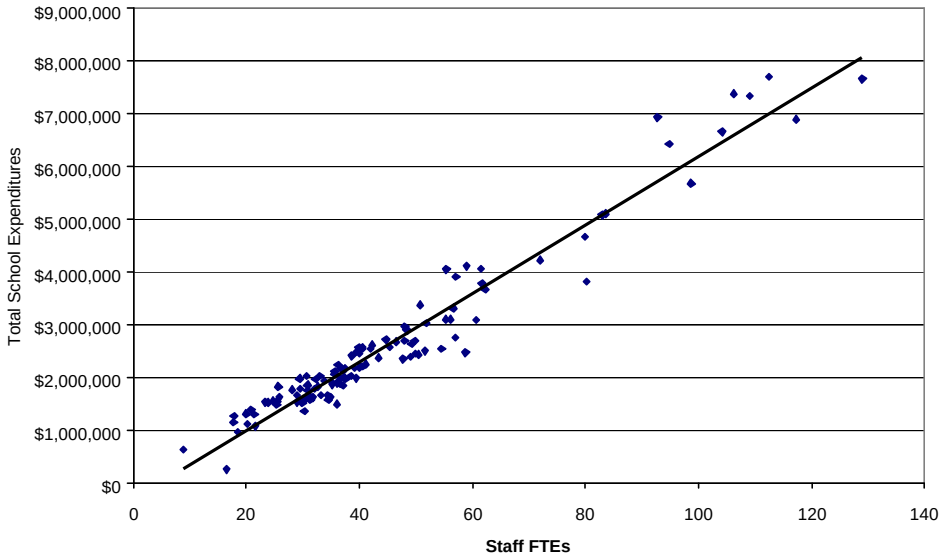
Source: JLARC analysis of financial information from six Washington school districts. Includes only the portion of district expenditures that is coded to individual schools.

DIFFERENCES BETWEEN HIGH AND LOW SPENDING SCHOOLS AND DISTRICTS

Expenditure levels among schools are largely related to staffing. In fact, the level of staffing explains over 95 percent of the variations in expenditures among the 114 schools. This relationship is illustrated by Exhibit 22. In the absence of school-level financial data, the amount of staff at a school would be a good proxy for the amount of expenditures at a school.

Exhibit 22

Amount of Expenditures in Case Study Schools is Closely Related to the Number of Staff

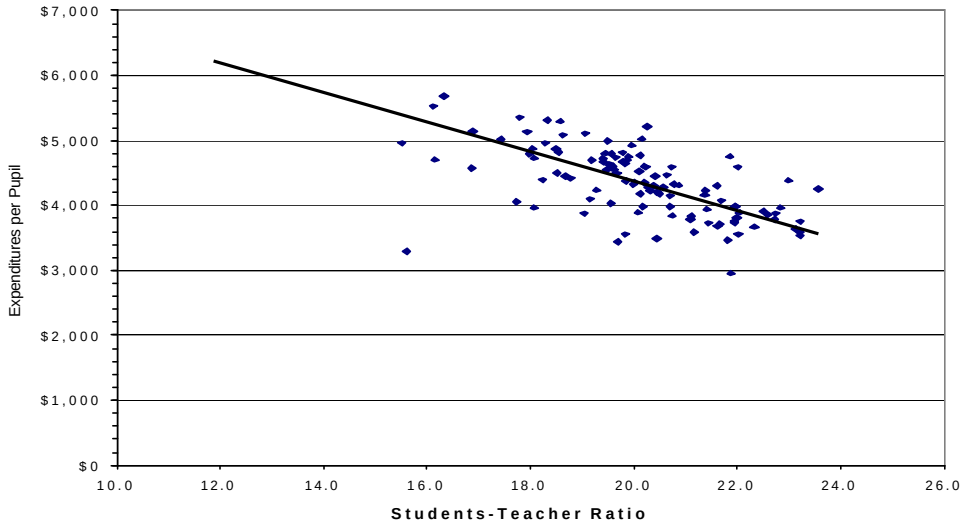


Source: JLARC analysis of OSPI data.

Since staff compensation accounts for 90 percent of total expenditures at the school level, the amount of total expenditures *per pupil* is also largely a function of the number of staff *per pupil* (or conversely, the number of pupils per staff). Exhibit 23 illustrates the relationship between per pupil expenditures and the ratio of students to teachers, the largest category of staff. Per pupil expenditures increase as the student-teacher ratio decreases (that is, as more teachers are hired).

Exhibit 23

Per Pupil Spending Declines as the Student-Teacher Ratio Increases



Source: JLARC analysis of financial, staffing, and student information from six Washington school districts.

With such a high proportion of expenditures spent on staff compensation, we found that schools, districts, and states with higher expenditure levels usually have three common staff-related characteristics:

- More staff per pupil (i.e., smaller student-staff ratios)
- Higher staff compensation costs
- Smaller percentages of staff who are teachers

Most of the variation in per pupil expenditures among schools, districts, and states can be explained by variations in these three factors.[43] Compared to these three factors, variations in administrative expenditures per student had relatively little effect in explaining variations in total expenditures per student.

[43] Differences in student-teacher ratios, compensation per staff, and the percentage of staff who are teachers explains 88 percent of the variation in per pupil spending among the 114 schools in our case study, 81 percent of the variation in per pupil spending among all 296 school districts in Washington, and 96 percent of the variation in per pupil spending among the 50 states.

STUDENT AND STAFF CHARACTERISTICS IN DISTRICTS AND SCHOOLS

Chapter Three

OVERVIEW

- The smallest districts have the highest proportions of lower-income and LAP students. These districts also have the highest per pupil spending levels. Other types of students with special needs are spread relatively evenly among districts of all sizes and spending levels.

- The level of teacher education and experience is lower in districts and schools having higher percentages of lower-income students. However, student-teacher ratios are lower in these districts and schools. Thus, districts and schools with higher levels of lower-income students have smaller classes but less experienced and educated teachers.

- Washington's per pupil expenditures and percentage of teachers are close to the national average, while total staff compensation costs are about 16 percent above average. These factors largely explain Washington's higher than average student-teacher ratio.

STUDENT CHARACTERISTICS

Districts have varying levels of special needs students, such as those receiving bilingual or special education, lower-income students (those eligible for free or reduced-price meals), and those who qualify for the Learning Assistance Program (LAP).[44] Using

[44] Each student who scores in the bottom quartile (25th percentile or below) of the state's standardized tests generates extra funding for a district through the

data for school year 1996-97, we examined the enrollment patterns for these types of students among districts and for lower-income students among individual school buildings.[45]

The greatest variation in special needs students among districts is in the level of LAP and lower-income students. The smallest districts have the highest proportions of these students, with mid-sized districts having the lowest.[46] There are also higher proportions of lower-income students among smaller school buildings.[47] Districts with the highest proportions of low-income students spent the most per pupil.[48]

Other types of students with higher costs are distributed more evenly among districts. The largest and highest spending districts have slightly greater proportions of bilingual students. Vocational and special education students tend to be distributed fairly evenly among districts, regardless of a district's size or spending level.

Exhibits 24 to 26 show these student enrollment patterns. Appendix 7 provides more detailed information for these and other exhibits in this chapter.

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state's Learning Assistance Program (LAP). In school year 1996-97, the state provided an extra $378 for each of these students. However, districts can use these funds in any way.

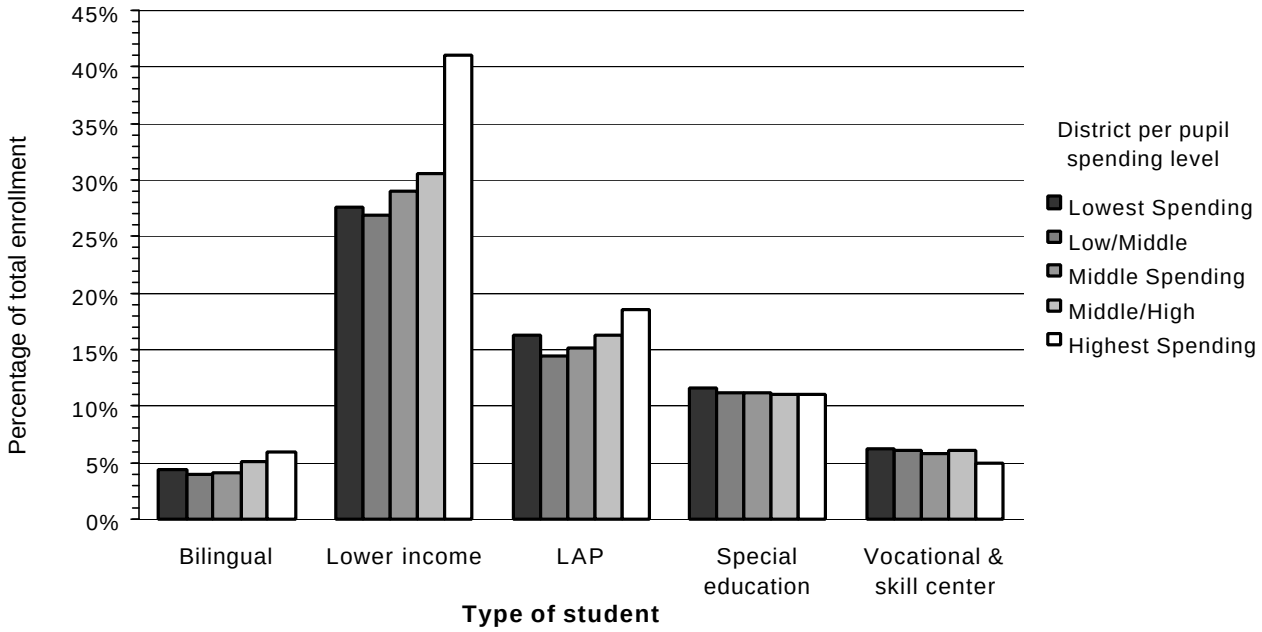
[45] Data on other types of special needs students are not available at the school building level.

[46] The enrollment pattern of LAP and lower-income students among districts is nearly the same, regardless of district size. This is consistent with the very strong relationship that exists between a district's socioeconomic level and its percentage of LAP students (correlation of .86 out of a possible 1.00). A district's LAP percentage is generally half of its percentage of students eligible for free or reduced-price meals.

[47] See Appendix 7 for information about how we defined school size.

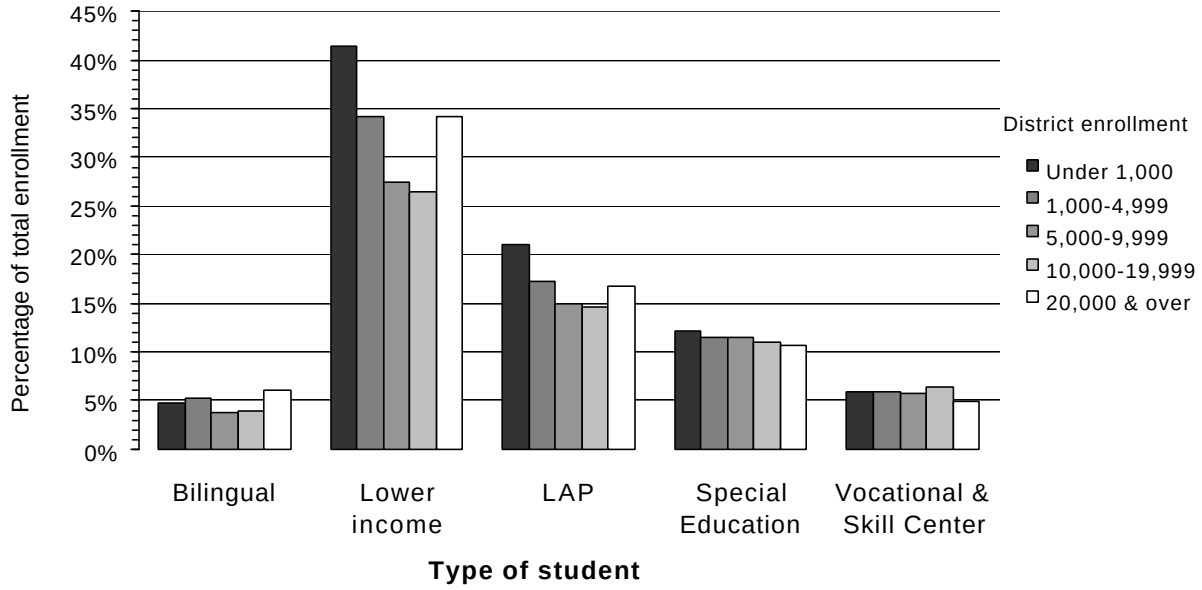
[48] Per pupil spending groups are based on quintiles, with approximately 20 percent of the state's students in each group.

Exhibit 24
Student Characteristics by District Spending Level



Source: JLARC analysis of OSPI data.

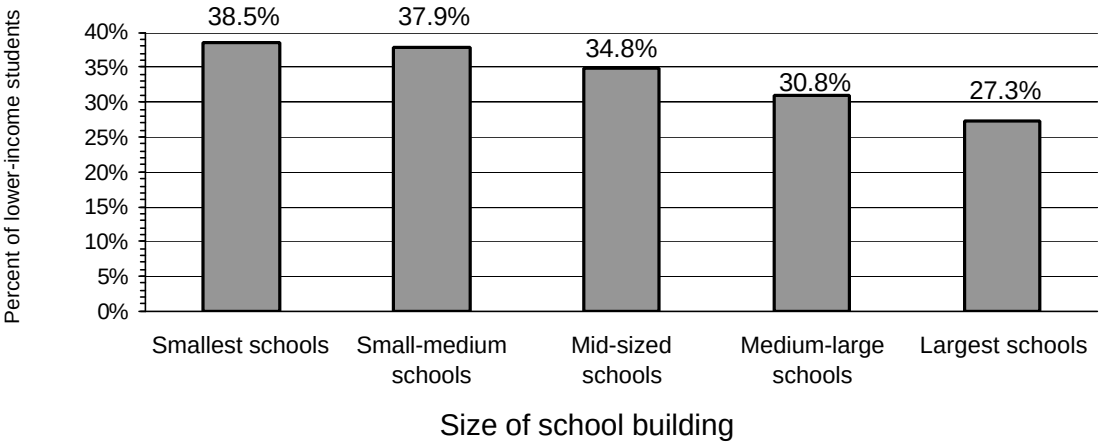
Exhibit 25
Student Characteristics by District Size



Source: JLARC analysis of OSPI data.

Exhibit 26

Smaller Schools Have Higher Levels of Low-Income Students



Source: JLARC analysis of OSPI data.

STAFFING CHARACTERISTICS

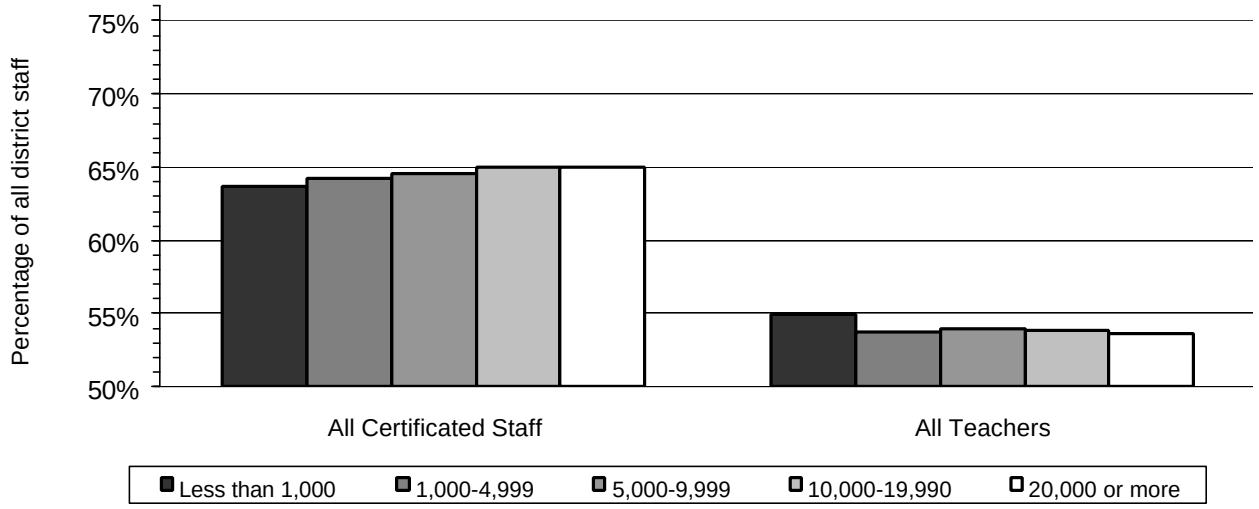
Staff in Washington are categorized in two general groups, certificated staff and classified staff.[49] Among the certificated staff are many different types of teachers, who may teach different subjects in various types of schools.

The mix of staff employed in districts tends to be very similar (see Exhibits 27 and 28). The larger the district, the more likely it will have a slightly higher percentage of certificated staff (and lower levels of classified staff). Compared to districts, individual schools have higher proportions of both certificated staff and teachers because central administration staff are not located in schools. Larger schools tend to have higher proportions of teachers, which means they have lower proportions of certificated staff in support positions (e.g., librarians, counselors, administrators). This reflects economies of scale in larger schools.

[49] Certificated staff include all types of teachers, administrators, and other staff (e.g., librarians, counselors) who have a certificate. Classified staff are those who do not have a certificate, regardless of their function (e.g., instructional aides, food service and clerical staff, bus drivers, some professional staff).

Exhibit 27

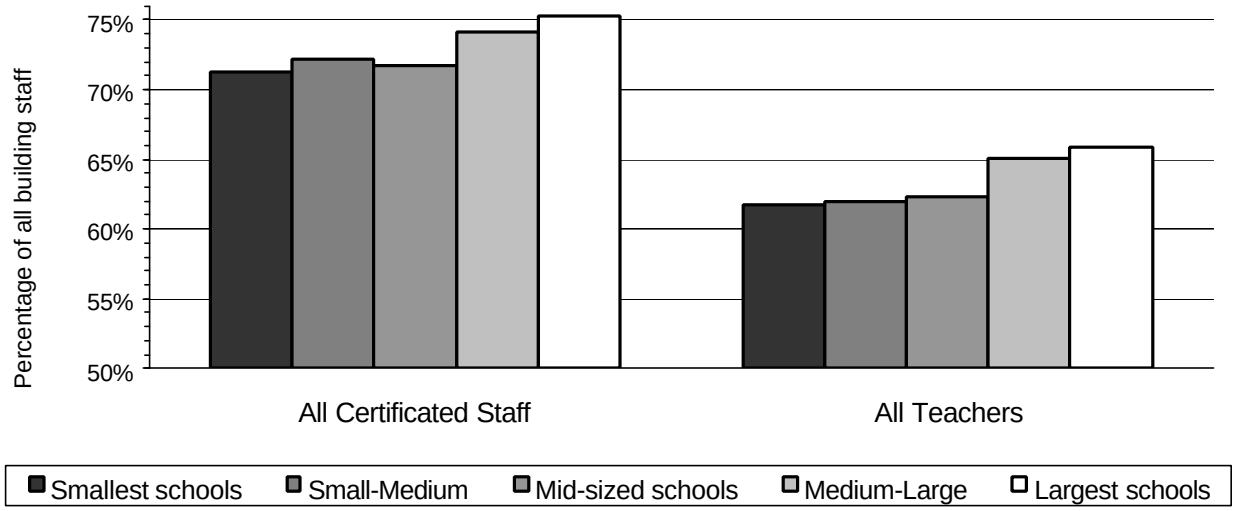
Staffing Patterns by District Size



Source: JLARC analysis of OSPI data.

Exhibit 28

Staffing Pattern by School Building Size

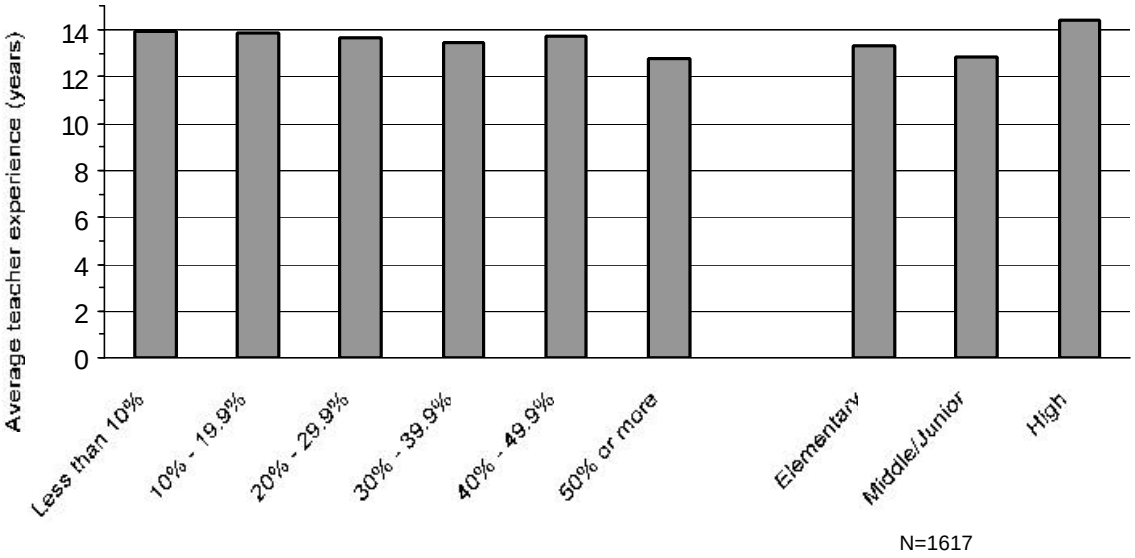


Source: JLARC analysis of OSPI data.

The average teacher experience and education among districts and schools of different socioeconomic status is very similar to the state average. The average teacher in Washington had 13**2** years of experience and 50 percent had at least a Master's degree in school year 1996-97. Analyses of Washington schools (Exhibits 29 and 30) found a slight decline in both teacher education and experience as the socioeconomic level of a school declines. High schools have more experienced and educated teachers than other types of schools. However, these averages may obscure wide ranges in teacher education and experience that exist within a school.

Exhibit 29

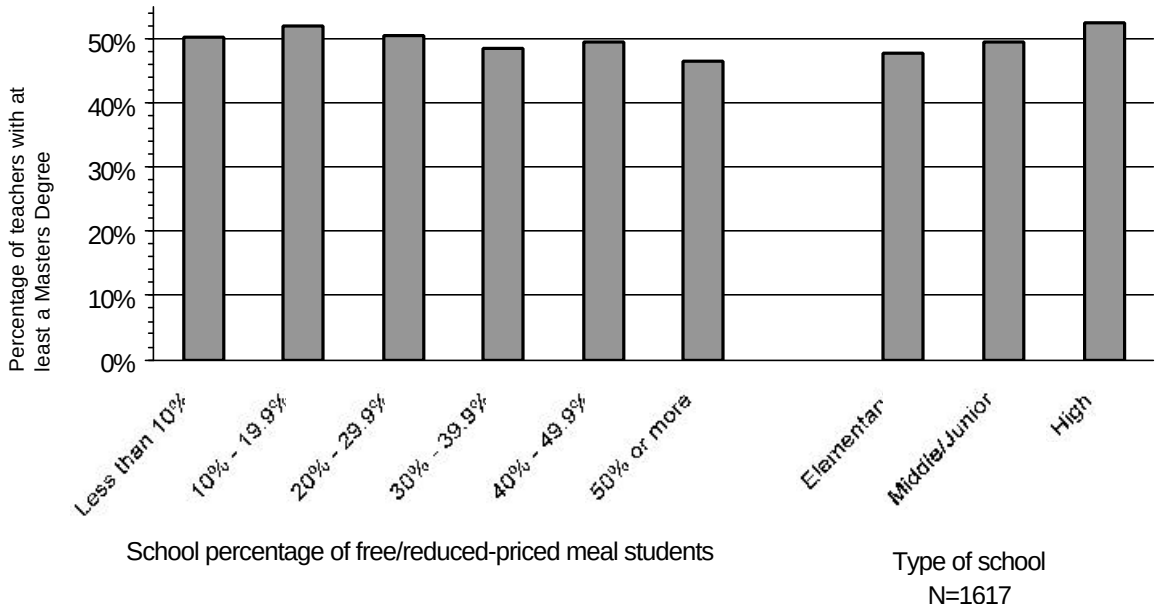
Teacher Experience by School Socioeconomic Status and Type



Source: JLARC analysis of OSPI data.

Exhibit 30

Teacher Education Declines as School Socioeconomic Status Declines and Increases as Grade Level Increases



Source: JLARC analysis of OSPI data.

STUDENT-STAFF RATIOS

The legislature mandated JLARC to study the ratio of students to teachers and other staff. The ratio of students to staff can be calculated in various ways because of the number of different types of students and staff reported to OSPI (see Appendix 13 for a list of staff definitions). One of these, the student-teacher ratio, is often used as a proxy for class size, although the two are not the same. This ratio includes teachers who either provide instruction for special student populations outside the regular classroom or who may not have full-time teaching assignments. Hence, the ratio understates the number of children in a typical classroom—according to national research, the average class size is usually 33-40 percent larger than the student-teacher ratio.[50]

[50] Picus, L. (1994), Estimating the Determinants of Pupil/Teacher Ratios: Evidence from the Schools and Staffing Survey, *Educational Considerations* 21(2), 44-52; Lewit, E. and Baker, L. (1997), Class Size, *The Future of Children*, 7(3), 112-121.

Exhibit 31 shows various student-staff ratios for school year 1996-97. The ratio rises as the definition of staff narrows.[51]

- Washington averaged 16.2 pupils per certificated staff, while the ratio increased to 16.3 pupils per instructional staff.

  Certificated staff are defined as all staff who have an education certificate, including all teachers, various instruction support staff (e.g., librarians, counselors, curriculum specialists), and administrators who have certificates. *Instructional* staff are any staff (certificated or classified) who provide instruction, and includes aides as well as teachers. However, it does not include certificated staff who are not providing instruction, such as counselors and administrators.

- The ratio of students to teachers was 19.4 to 1, while the ratio of students to all staff (both certificated and classified) providing instruction for regular education was 21.7 to 1.

  A *teacher* is defined as a certificated teacher for elementary and secondary education, regardless of the type of school where instruction occurs or the subject matter taught. This category includes teachers for special education students and other students who receive specialized instruction. *Regular education* is defined as basic education program 01, a fiscal category for state funding purposes. This excludes teachers for special and vocational education, other specialized instructional programs, and excludes support programs.

- A ratio closer to the actual class size experienced in a typical classroom is for certificated staff providing instruction for regular education (23 to 1).[52]

These ratios are slightly higher if the number of students enrolled (headcount) is used in the ratio instead of using FTE students.

---

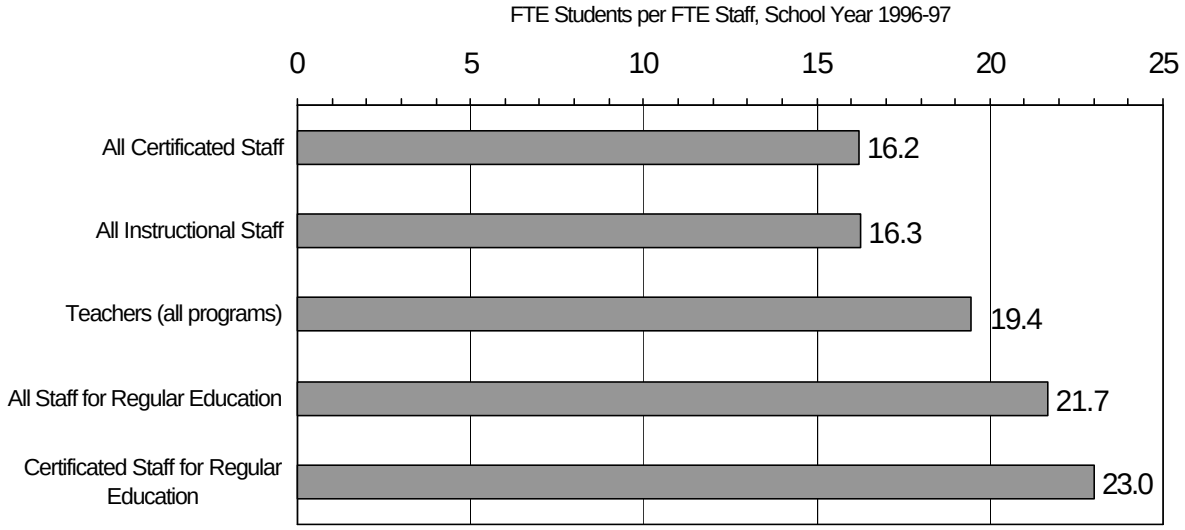
[51] As the denominator of a ratio gets smaller, the ratio increases. In this case, as the staff category narrows, the number of staff in that category gets smaller, which increases the student-staff ratio.

[52] The ratio of all FTE students to all FTE teachers in regular education (duty codes 31-33 for program 01) is 23.2 to 1. However, not all students are enrolled in regular education classrooms.

For example, there were 20.3 students enrolled for every teacher in the fall of 1996, rather than 19.4 FTE students for every teacher.[53]

Exhibit 31

Different Student Staff Ratios in Washington

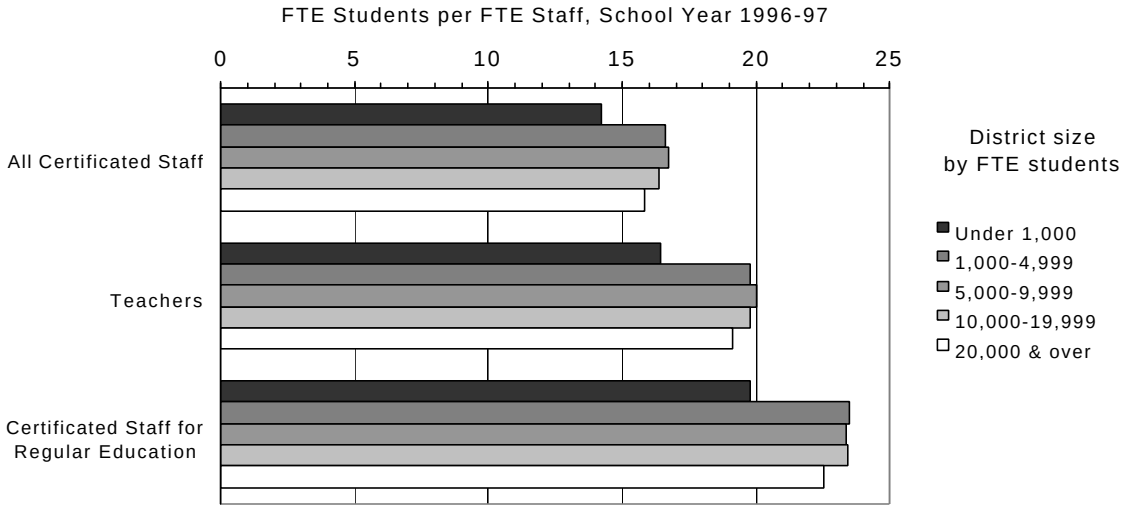


Source: JLARC analysis of OSPI data.

Exhibits 32 and 33 show how the ratio varied among Washington's 296 districts. The smallest districts (fewer than 1,000 students) have the smallest ratios, regardless of how the ratio is measured. Districts with higher per pupil spending levels also have lower student-staff ratios. For Washington schools, Exhibit 34 shows that the student-teacher ratio gets smaller as the proportion of lower-income students in a school increases. This ratio is also highest among high schools.

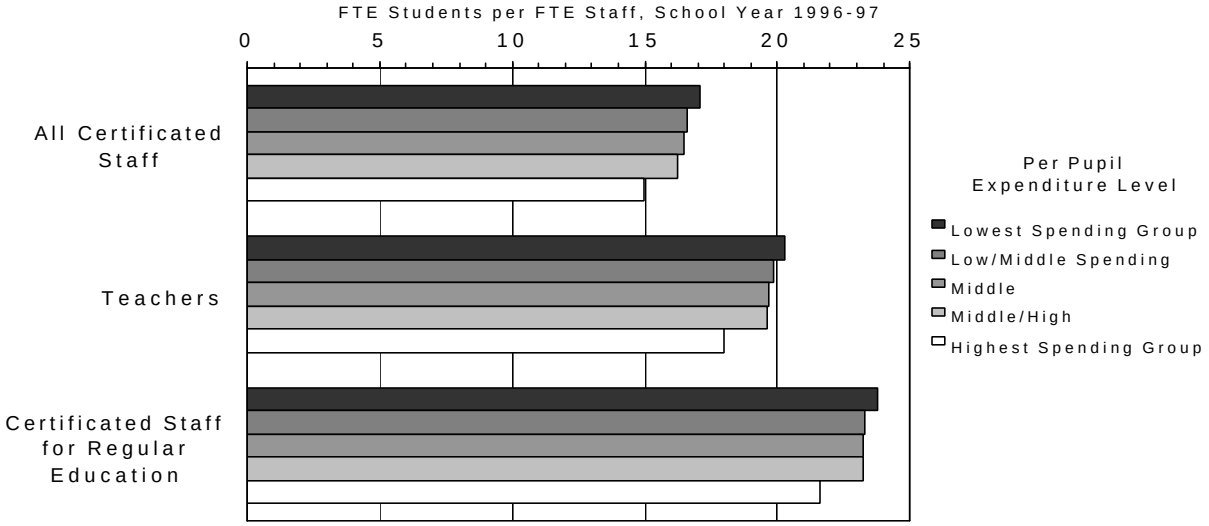
[53] The number enrolled is different from the FTE because some students do not attend school the entire day (e.g., one half-day kindergarten student is considered .5 FTE).

Exhibit 32
Small Districts Have the Lowest Student-Staff Ratios



Source: JLARC analysis of OSPI data.

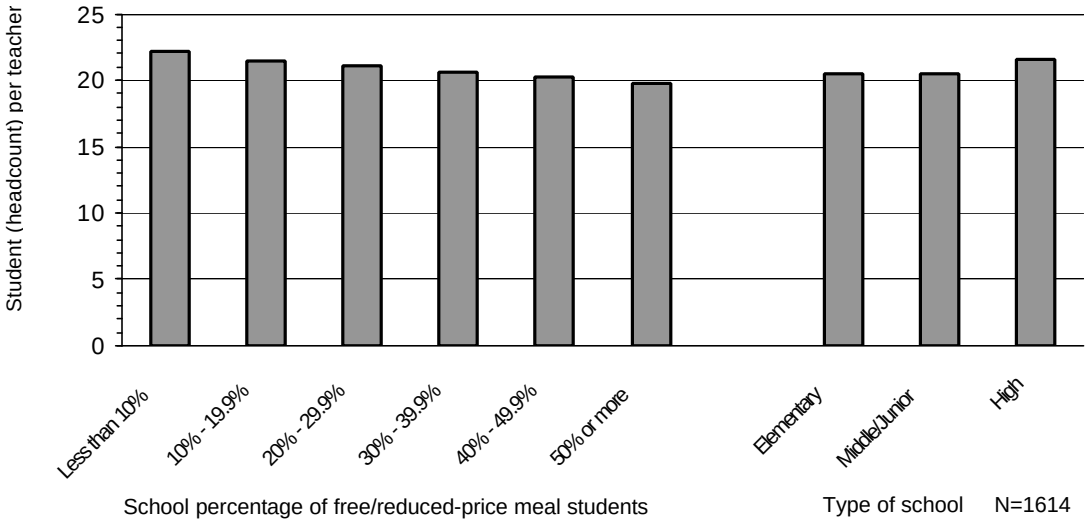
Exhibit 33
Student-Staff Ratios Decline With Greater Per Pupil Spending



Source: JLARC analysis of OSPI data.

Exhibit 34

Student-Teacher Ratios Get Smaller as School Socioeconomic Status Declines, High Schools Have Higher Ratios



Source: JLARC analysis of OSPI data.

EXPLAINING WASHINGTON'S STUDENT-TEACHER RATIO RANKING

Washington's student-teacher ratio is one of the highest in the nation, despite steps the state has taken to reduce the ratio over the years. Between the 1987-89 Biennium and 1991-93 Biennium, the state funding formula was changed to reduce the student-staff ratio in grades K-3 from 21.7 students per certificated instructional staff member to 18.4.[54] The formula was changed again in 1999 to reduce the ratio in grade 4.[55] The

[54] The 1996-97 formula allocated staff per 1,000 students, which inverts the ratio. The ratio of 54.3 certificated instructional staff per 1,000 students is the same as 18.4 students per certificated instructional staff. These staff are teachers and educational staff associates (ESAs) such as counselors, librarians, psychologists, and social workers. It does not include certificated administrative staff.

[55] The Washington Legislature changed the funding formula in its 1999-2001 biennial budget to reduce the ratio in grade 4 (SSB 5180, Part V, Section 502). The formula relies on both a mandate and an incentive (funding for additional staff is provided if districts spend the funds on certificated staff who work with students in grades K-4).

formula also provides funding for certificated administrative staff.

Despite these efforts, Washington's student-teacher ratio is still high in part because other states have reduced their ratios as well. According to the federal government's National Center for Education Statistics (NCES), the student-teacher ratio in the United States has declined from nearly 27 to 1 in 1955 to 17.3 to 1 in 1997.[56] Many other states have also mandated smaller classes in elementary grades or established incentive programs to finance smaller classes. Most of these efforts focus entirely on the primary grades, generally K-3, and typically set the average K-3 class size at about 20 students. For example, California recently initiated an effort to reduce the size of all K-3 classrooms from about 29 to no more than 20 students.

Washington's high national ranking can be explained by its relative ranking on three other indicators: per pupil expenditures, the percentage of staff who are teachers, and the level of total staff compensation costs.[57] In Chapter 2, we noted the close relationship between the student-teacher ratio and these other indicators. Higher per pupil expenditures enable more teachers to be hired, which would reduce the ratio and improve a state's ranking. Hiring a greater percentage of teachers would also help reduce the ratio and have a similar effect on the ranking. Higher staff compensation costs would decrease the funds available to hire teachers, which would increase the ratio and worsen the ranking. Using NCES data, we found that a state's student-teacher ratio ranking is related mainly by how these three indicators compare with the national average and each other. (See Appendix 4 for these data for all states.)

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[56] Some of this decline is due to the increased availability of special programs for children in which a teacher works with children individually or in small groups. However, real declines have occurred in the average number of children in most classrooms across the nation. See Barro, S. (1992), *What Does the Education Dollar Buy? Relationships of Staffing, Staff Characteristics, and Staff Salaries to State Per-Pupil Spending*, Washington, DC: SMB Economic Research.

[57] These three factors – total per pupil expenditures, the percentage of staff who are teachers, and total compensation per staff – explain 96 percent of the variation in the student-teacher ratios among the 50 states.

- If a state's per pupil expenditures and staff compensation cost levels are about the same, the student-teacher ratio will likely be about the national average.
- If per pupil expenditures are high relative to staff compensation, the ratio will likely be below the national average (i.e., smaller than average class sizes).
- If per pupil expenditures are low relative to staff compensation, the ratio will be above the national average (i.e., larger than average class sizes).
- A higher percentage of teachers than the national average would improve the ratio.

Washington's per pupil expenditures and percentage of teachers are slightly below the national average, while total compensation costs are about 16 percent above average.[58] Thus, per pupil expenditures are low relative to staff compensation, which results in a higher than average student-teacher ratio.[59] Other states in the West have similar patterns of spending and compensation and thus have higher than average student-teacher ratios.[60]

Exhibits 35 and 36 illustrate these relationships for Washington and other selected states.[61] Regardless of the spending and

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[58] National Education Association (NEA) publications indicate that teachers' salaries in Washington are less than the national average. However, this figure reflects only the base salaries of teachers and does not include supplemental contracts or benefits. It also excludes any type of compensation for classified staff or other types of certificated staff. The NCES data we analyzed includes all salaries and benefits for all staff, which is a more comprehensive measure of total staff compensation costs. Due to differences in state reporting practices, differences between states are estimates.

[59] JLARC's analysis of NCES data and survey of 10 states' reporting practices found no support for the proposition that Washington reports its data differently than other states, which could result in the relatively high student-teacher ratio.

[60] The comparison of compensation per staff in Washington with the national average is not meant to suggest that Washington school districts are paying staff too much. Compensation for school district employees in Washington is similar to other states in the West, and the cost of living in Washington is also above the national average. Furthermore, compensation levels are largely a function of the level of teacher education and experience on the statewide salary schedule, which is determined by the legislature.

[61] The percentage of staff who are teachers is not included in the figure because the percentage does not vary much.

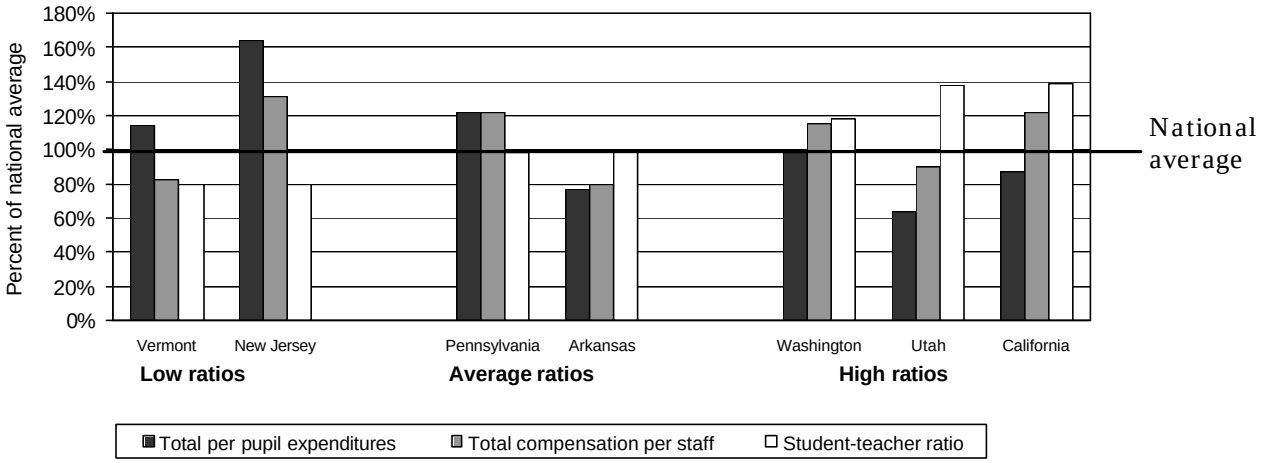
compensation levels, the student-teacher ratio depends mainly on the relationship between the national percentages for total per pupil expenditures and total compensation per staff.

- Vermont and New Jersey have the lowest student-teacher ratios in the country, even though they have different expenditure and compensation levels. In both states, total per pupil expenditures is ranked higher relative to total compensation for staff, resulting in lower student-teacher ratios.

- Pennsylvania and Arkansas spend different levels on students and staff, but within each state, these levels have about the same ranking. Thus, both states have student-teacher ratios about the national average.

- Washington, Utah, and California have the three highest ratios in the country. Despite having different expenditure and compensation levels, each state's ranking of compensation per staff is higher than its ranking of expenditures per pupil. Thus, each has a student-teacher ratio above the national average.

Exhibit 35
Factors Affecting Student-Teacher Ratio Rank



Source: JLARC analysis of NCES data.

Exhibit 36

State Data on Factors Affecting Student-Teacher Ratio Ranking
(School Year 1995-96)

State	Total expenditures per pupil	Total compensation per staff	Teachers as a percentage of total staff	Student-teacher ratio
Vermont	$6,488	$34,627	49.1%	13.8
New Jersey	9,361	55,276	53.2%	13.8
Pennsylvania	6,922	51,341	53.0%	17.0
Arkansas	4,401	33,796	53.8%	17.1
Washington	**5,611**	**48,726**	**51.4%**	**20.4**
Utah	3,604	37,903	53.6%	23.8
California	4,937	51,587	52.0%	24.0
National avg.	*5,689*	*42,161*	*52.0%*	*17.3*

	As a Percent of the National Average			
	Total expenditures per pupil	Total compensation per staff	Teachers as a percentage of total staff	Student-teacher ratio
Vermont	114.0%	82.1%	94.3%	79.7%
New Jersey	164.6%	131.1%	102.2%	80.0%
Pennsylvania	121.7%	121.8%	101.8%	98.7%
Arkansas	77.4%	80.2%	103.4%	99.3%
Washington	**98.6%**	**115.6%**	**98.7%**	**118.2%**
Utah	63.4%	89.9%	103.0%	138.0%
California	86.8%	122.4%	99.9%	139.0%

Source: JLARC analysis of NCES data.

In order for Washington's student-teacher ratio to equal the national average, there needed to be about 8,700 more teachers than the approximately 48,000 that were working in school year 1996-97. The effect and cost of reducing the ratio is discussed in the next chapter.

CONCLUSION

Districts and schools of lower socioeconomic status tend to have slightly smaller student-teacher ratios. However, districts and schools of lower socioeconomic status also have teachers with slightly less education and experience. Market forces and the local hiring authority that districts have and the authority they delegate to schools result in a teaching force that is somewhat

more educated and experienced in the better socioeconomic areas. Nevertheless, these differences are rather small.

WHAT AFFECTS STUDENT PERFORMANCE

Chapter Four

OVERVIEW

- Many factors influence student learning, with external forces, such as family income and parent education, having the strongest influence on student performance. Smaller classes and higher levels of teacher education and experience generally have a positive effect on performance.

- Improving teacher quality may improve student performance more, and be more cost-effective, than reducing the student-teacher ratio. Reorganizing the use of school time and resources is also a cost-effective means of improving student performance.

- Given the influence of external forces beyond the control of policymakers and educators on student performance, any educational intervention to improve student performance faces significant obstacles in districts and schools with high proportions of families with low income and little education.

EXTERNAL FACTORS HAVE THE STRONGEST INFLUENCE

Many factors affect student learning, many of which are external to the education environment and thus are beyond the control of educators and policymakers. For example, much research has found that the home and community environments influence learning, as do student motivation and student characteristics, such as having a disability or limited English proficiency.

Educators and policymakers have control over other factors that can influence learning. For instance, reducing class size is a popular educational policy initiative to improve student performance. According to recent polls, a majority of adults believe reducing class size would lead to big improvements for public schools, and a majority of teachers and principals believe classes should be smaller.[62] Other education-related factors affecting student performance include how education funds are used, the quality and percentages of teachers and other staff, the school and classroom environment, and the curriculum. When analyzing the impact of education-related factors on student outcomes, the external factors need to be taken into account.

In each of our analyses of all Washington districts and schools, we found that external factors had the strongest influence on student performance.[63] Districts and schools with lower student performance had more students from families with lower economic status, lower parent education, limited English proficiency, and higher mobility. Conversely, districts and schools with higher student performance had fewer families with low-income students, greater levels of students with higher parent education levels and English proficiency, and less mobility.

Exhibit 37 shows an example of how one external factor – family income – relates to 4th and 8th grade test scores for all schools in Washington. As a school's percentage of lower-income students increases, test scores decline. This pattern is also found among school districts as well.[64]

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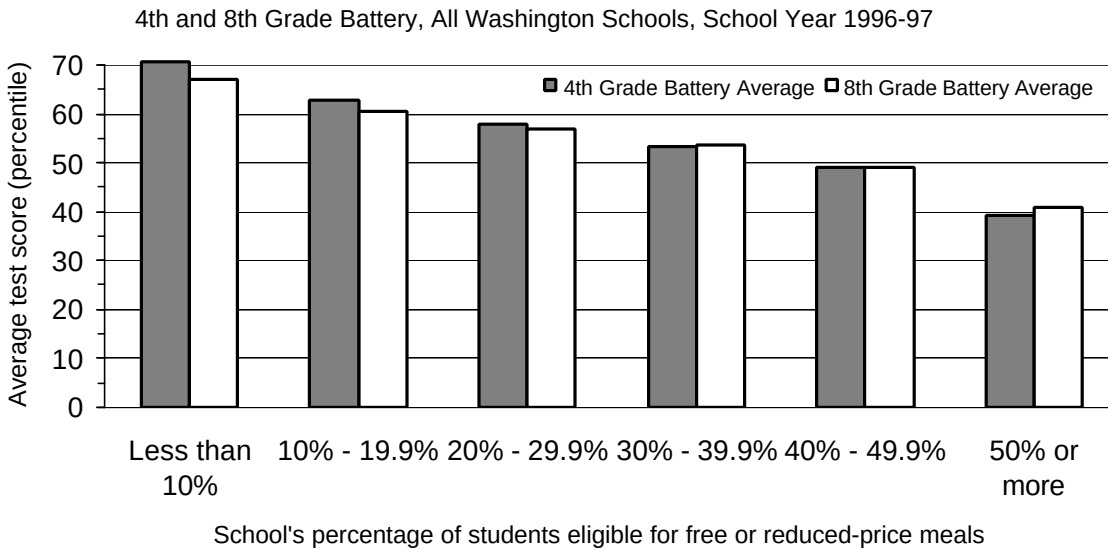
[62] A 1997 *Education Week* survey found that 83 percent of teachers and 60 percent of principals believed classes should not exceed 17 students. See Bell, J.D., "Smaller = Better?" *State Legislatures*, June 1998.

[63] Each analysis of Washington data used the results of the state's norm-referenced tests (e.g., Comprehensive Test of Basic Skills) for 4th, 8th, and 11th grades as the measure of student performance. Separate multiple linear regression analyses were conducted using district and school data. See Appendix 8 for a summary of these analyses. In addition, we used student, school, and district data in a hierarchical linear model to further verify our conclusions.

[64] A strong relationship exists between a district's level of lower-income students and its percentage of low-performing (LAP) students (.86 correlation). As discussed in Chapter 3, the pattern of districts' percentages of lower-income and LAP students is nearly the same. We did not conduct school-

Exhibit 37

Test Scores Decline as Socioeconomic Status Declines



Source: JLARC analysis of OSPI data.

EDUCATION-RELATED FACTORS ALSO AFFECT STUDENT PERFORMANCE

Various education-related factors also can influence student performance. We controlled for the external factors noted above and examined the relationship between student performance and factors that educators and policymakers can influence: student-teacher ratios, teacher education and experience, teacher-staff ratios, district expenditure patterns, and the size of districts and schools. Our analyses found that some of these factors are often associated with better student performance, while others appear to have less influence. In some cases, what appears to help in a particular grade or subject has the opposite effect in other grades or subjects.

- Higher levels of teacher education and experience were usually associated with higher test scores.

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level analyses using data on LAP students because these data are not available at OSPI.

- Smaller student-teacher ratios were associated with higher student test scores at the elementary and middle school levels, but made little difference at the high school level.

- Elementary and middle schools with a higher proportion of staff who are teachers had higher average test scores. However, at the high school level, the proportion of staff who were teachers was not as important.

- District spending patterns, which show little variation, had little or no effect on student scores.[65]

- Smaller schools were associated with higher test scores in the primary grades. The opposite was true for high schools: larger high schools were associated with higher test scores. The results for middle schools were mixed, depending on the type of analysis conducted.[66]

When comparing the education-related factors to each other, teacher characteristics (i.e., experience and education) and the percentage of staff who are teachers had a stronger influence on test scores than smaller student-teacher ratios.

Exhibit 38 illustrates the relative influence of various external and school-related factors on 8th grade test scores for schools in Washington.[67] The patterns are typical of those found for other grades. Family education and socioeconomic status have the most powerful influence, while the student-teacher ratio and school size have less influence compared to the other "teacher-

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[65] We could not analyze how school building expenditures affect student performance because expenditure data are not available at OSPI for individual schools. However, as noted in Chapter 2, the number of staffing is a good proxy for school expenditures and the student-teacher ratio is a good proxy for expenditures per pupil. Therefore, the effect of student-teacher ratio could be considered a good proxy for the effect of per pupil spending on student performance. See Chapters 2 and 5 for more information on this issue.

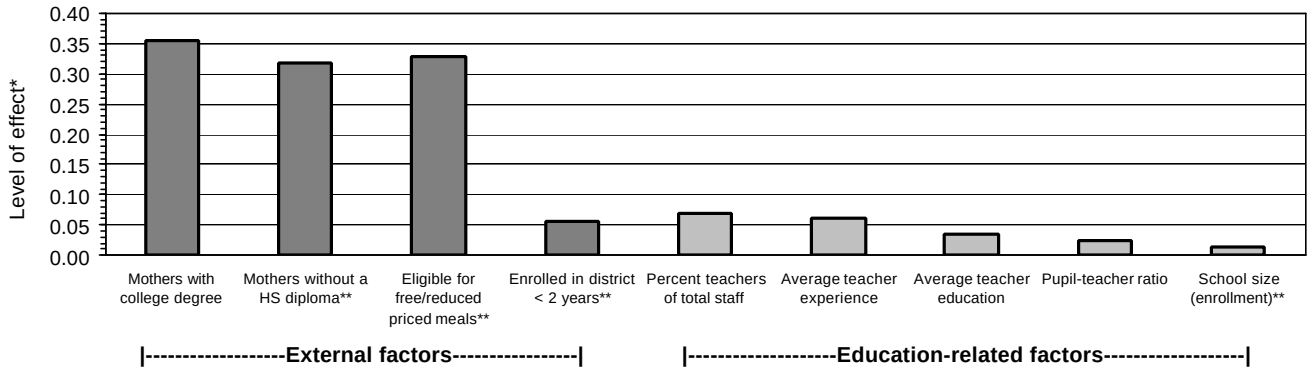
[66] One method (hierarchical modeling) found larger middle schools had higher test scores, while another method (the multiple linear regression analyses described in Appendix 8) found that larger middle schools had lower scores.

[67] The multiple regression models were weighted by student enrollment to prevent smaller districts or schools with fewer student from having a disproportionate effect on the results. Test scores for about 95 percent of the state's 8th grade enrollment were included in the analysis. See Appendix 8 for a more detailed discussion of the methodologies and results for other tests.

quality" factors. Some factors have a negative influence on performance. For example, schools with higher proportions of parents without a high school diploma have lower average test scores.

Exhibit 38

Relative Influence of Factors Affecting Test Scores
(8th Grade Battery, All Washington Schools, School Year 1996-97)



* Absolute value of standardized coefficient
** Factor has negative influence

N=396 schools Adj. r-square=.750

Source: JLARC analysis of OSPI data.

RELATIVE EFFECTIVENESS AND COST OF REDUCING STUDENT-TEACHER RATIOS

These results related to student-teacher ratios may appear somewhat surprising, given the other research on the effects of class size. Most of the recent research has used sophisticated statistical techniques to control for external factors influencing student performance and has focused on class size in the elementary grades. This research concludes that smaller classes in the primary (K-3) grades can produce lasting improvements in student performance, particularly for disadvantaged students.[68]

[68] For example, the Tennessee Student-Teacher Achievement Ratio (STAR) experiment, the only research using a true experimental design to study the impact of smaller classes, found that student performance improves in smaller classes in the primary (K-3) grades, with the gains enduring through later years. After one year in kindergarten, classes with about 15 students performed 5-8 percentile points better on standardized tests than students in classes with 22-24 students. However, increases were not as dramatic in the

However, many of these studies did not compare the relative effects of smaller classes with other educational factors.

There is no agreement on the optimum class size. Estimates of the ideal class size range from as low as 15-17 students per class up to 23-25 students per class.[69] In addition, after examining many studies on class size, several researchers reported that it takes large reductions to substantially improve performance.[70] Thus, reducing the ratio from 28 to 26 or from 24 to 22 may not have much effect.

Reducing Student-Teacher Ratios Can Be Costly

Large reductions in student-teacher ratios are costly. While reconfiguring existing staff can create more teachers at the expense of other positions, in most cases, reducing the ratio dramatically means hiring more teachers. Moreover, the addition of more teachers becomes progressively more expensive as the student-teacher ratio decreases (see Exhibit 39). A hypothetical district that seeks smaller classes for 10,000 students would need to add about 22 teachers to move from 22 to 21 students per teacher (a 4.5 percent reduction). However, it would take about 42 more teachers, nearly twice the amount, to move from 16 to 15 students per teacher (a 6.3 percent reduction).

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following years, in part because some of the students departed and new students entered the classes in later years. The presence of an instructional aide in the classroom did not result in statistically significant gains. Recent evaluations of Wisconsin's class size reduction efforts found that students in smaller classes had better test scores than similar students in larger classes. For more information on the effects of class-size reductions, see the paper described in Appendix 12 and the summer 1999 issue of *Educational Evaluation and Policy Analysis (Vol. 21, No. 2)*.

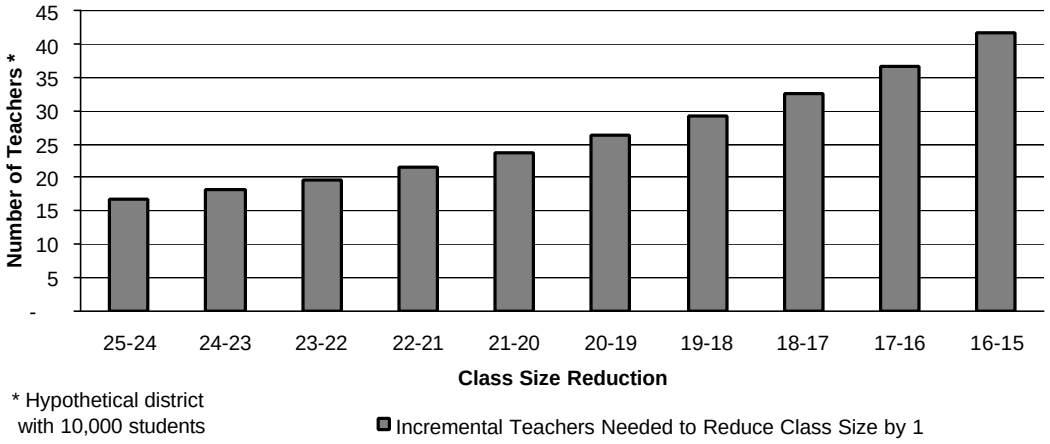
[69] Odden, A. (1990), Class Size and Student Achievement: Research-Based Policy Alternatives, *Educational Evaluation and Policy Analysis*, 12(2), 213-227; Ferguson, R. and Ladd, H. (1996), How and Why Money Matters: An Analysis of Alabama Schools, in Ladd, H., *Holding Schools Accountable*, Washington, DC: Brookings; Odden, A. and Busch, C. (1998), *Financing Schools for High Performance*, San Francisco, CA: Jossey-Bass.

[70] Odden (1990); Hanushek, E. (1999), Some Findings From an Independent Investigations of the Tennessee STAR Experiment and From Other Investigations of Class Size Effects, *Educational Evaluation and Policy Analysis, 21(2), 143-164*.

In addition to teacher costs, more facilities and a different use of space might be required to accommodate the extra classes, which could require additional capital costs. For example, California's class size reduction program provides an additional $800 per student for children in K-3 classrooms with 20 or fewer students and provides additional funds for school and classroom construction. To make substantial reductions in the actual class sizes (from a state average of nearly 29 to 20 or fewer students in grades K-3), districts in California have turned libraries, gyms, and other spaces into classrooms and have purchased portable classrooms to provide space for more classes.

Exhibit 39

Incremental Reductions in the Student-Teacher Ratio Get More Costly



* Hypothetical district with 10,000 students

Large reductions can also have mixed consequences if they are not implemented carefully. According to several recent studies,[71] California's class-size reduction program has resulted in an increase in uncertified teachers, a shortage of substitute and bilingual teachers, movement of more experienced teachers to schools and districts perceived to have better teaching environments, and a shift of teachers from secondary to primary schools and from special education to regular education.

[71] Bohrnstedt, G., Stecher, B., et al. (1999), *Class Size Reduction in California, 1996-98: Early Findings Signal Promise and Concerns,* CSR Research Consortium; Policy Analysis for California Education (PACE) and WestEd (1998), *California's Class Size Reduction: Implications for Equity, Practice, & Implementation*, Univ. of California at Berkeley; Travers, J., (1998), *Funding the Class-Size Reduction Program in California,* Harvard University.

Cost-Effective Ways To Improve Student Performance

Policymakers and educators need to decide how best to use available resources, so the cost-effectiveness of alternatives, not just their effectiveness, needs to be examined. Our analyses did not determine the relative costs of the different factors associated with improving student performance, but other research has found that steps other than reducing the class size can improve student performance at less cost.

First, *restructuring how time and existing resources are used* can improve student learning at relatively little or no additional cost, even in schools with high levels of students from low-income families. Researchers have found substantial gains in student performance at schools that have implemented various school-wide reform models, which typically involve organizing the school day differently to give students more time with teachers or reassigning existing staff.[72] Two recent studies of schools in Washington found that student performance improved when a variety of reforms took place that changed the "school culture" rather than changing a specific school or classroom practice.[73] The types of restructuring efforts that make a difference include more cooperative learning and community involvement, recognition programs for effective teachers, various staff development activities, different use of technology, and changes in course scheduling. Thus, educational reform efforts can lead to achievement gains.[74]

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[72] Miles, K. and Darling-Hammond, L. (1997), *Rethinking the Allocation of Teaching Resources: Some Lessons from High Performing Schools.* Philadelphia, PA: Consortium for Policy Research in Education; Odden, A. and Busch, C. (1998), *Financing Schools for High Performance*. San Francisco, CA: Jossey-Bass.

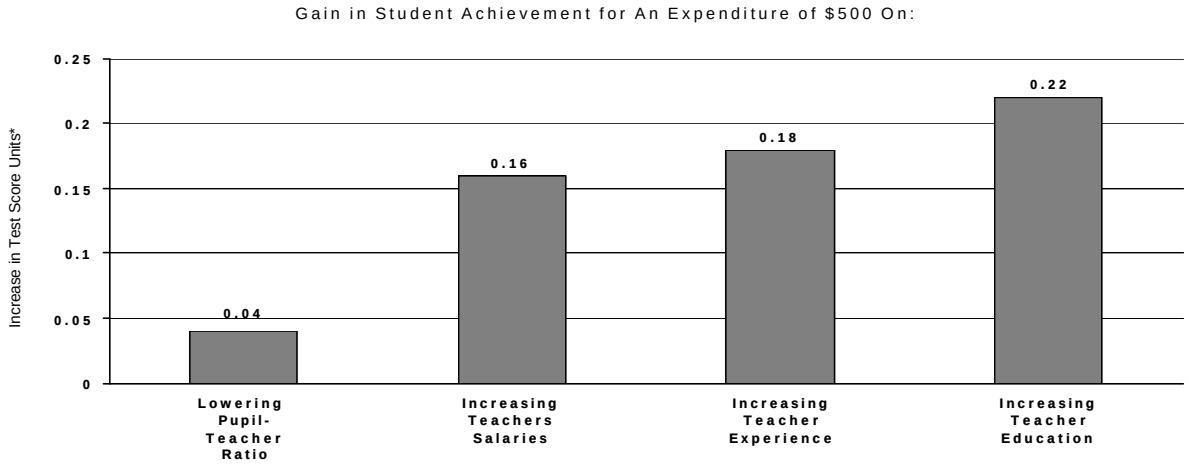
[73] Fouts, J. (1999), *School Restructuring and Student Achievement in Washington State: Research Findings on the Effects of House Bill 1209 and School Restructuring on Western Washington Schools.* Seattle Pacific University; Lake, R., Hill, P., O'Toole, L. and Celio, M. (1999), *Making Standards Work: Active Voices, Focused Learning.* Center on Reinventing Public Education, University of Washington Graduate School of Public Affairs, Seattle, WA.

[74] Current efforts at educational reform in Washington began formally in 1993 with the passage of the Washington State Education Reform Act (ESHB 1209).

Second, smaller classes give students greater time with teachers, but the *quality of the teacher in the classroom* is also important in helping students learn. An analysis of 60 well-designed studies found that increased teacher education, teacher experience, and teacher salaries all had a greater impact on student test scores per dollar spent than did lowering the student-teacher ratio (see Exhibit 40).[75] According to one researcher, "Teachers who know a lot about teaching and learning and who work in settings that allow them to know their students well are the critical elements of successful learning."[76] Given limited funds to invest, this research suggests considering efforts to improve teacher access to high quality professional development. A recent national survey of teachers found that many do not feel well prepared to face future teaching challenges, including increasing technological changes and greater diversity in the classroom.[77]

Exhibit 40

Cost-effectiveness of Investments to Improve Student Performance



Source: Greenwald, Hedges, and Laine (1996).

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[75] Greenwald, R., Hedges, L.V., and Laine, R.D. (1996), The Effect of School Resources on Student Achievement. *Review of Educational Research.* 66(3), 361-396.

[76] Darling-Hammond, L. and Ball, D. (1998), *Teaching for High Standards: What Policymakers Need to Know and Be Able to Do*. Philadelphia, PA: Consortium for Policy Research in Education and National Commission on Teaching and America's Future.

[77] U.S. Department of Education (1999), *Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers.* Washington, DC: National Center for Education Statistics.

The legislature's approach to funding K-12 education is consistent with JLARC and national research. The legislature has provided additional funding for teacher salaries, staff development, and smaller classes, with more funding going to support teachers and less for reducing the student-teacher ratio.

Simply adding more funds for teacher training without a targeted approach may not lead to increased student performance. Traditional professional development has been criticized for lacking a connection with the challenges teachers face in the classroom. A 1995 JLARC report found few controls to ensure that the higher education credits teachers receive to move up the state salary schedule in Washington are relevant to their work.[78] Since then, stronger controls have been established on allowable credits.[79] In addition, the legislature has provided additional learning improvement days for teacher development. The 1999-2001 biennial appropriations act includes funding for three learning improvement days to be included in the basic contract of each employee. The purpose of the days is to provide time for teachers, other certificated instructional staff, and administrators to work together to plan and implement education reforms designed to increase student achievement, such as curriculum changes and new assessment strategies.

WASHINGTON STUDENTS SCORE ABOVE THE NATIONAL AVERAGE

We did not study the combined effects of recent initiatives that the Washington Legislature has enacted and that districts and schools have implemented to improve student performance. However, recent results of various norm-referenced tests show that Washington students score above the national average in nearly all subjects at all grade levels.[80]

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[78] JLARC (1995), *K-12 Inservice Education Study*, Report 95-01. The study examined individual academic and inservice credits teachers take to move up the state salary schedule. It did not review new teacher training efforts associated with additional state funding for education reform.

[79] See RCW 28A.415.023 and WAC 180-85-075.

[80] For more information on how Washington students performed on various tests, see Appendix 8 and OSPI's website: http://assessment.ospi.wednet.edu/.

- Results from the fall of 1997 (Comprehensive Tests of Basic Skills for 4th and 8th grades, Curriculum Frameworks Assessment System for 11th grade) reveal that students in Washington average 3 to 6 percentage points above the national average. Of the 20 sets of test results, Washington students were at or above the national average on all but three.[81]

- Washington students generally performed even better in the spring of 1999 on a different set of norm-referenced tests (Iowa Tests of Basic Skills for 3rd and 8th grades, Iowa Tests of Educational Development for 11th grade). Of the 9 sets of test results, Washington students scored above the national average on all of them.

- Results of the 1998 National Assessment of Educational Progress (NAEP) reading tests for 4th and 8th grades show that Washington students score above the average of states taking the test. NAEP tests in other subjects in other years show similar results.

Nevertheless, many Washington students score well below the national average. In school year 1996-97, nearly 100 Washington schools had an average student score that was in the bottom 25th percentile. The results of the 1999 Iowa Tests mentioned above found that 20 percent of the Washington students tested scored in the bottom quarter of students nationally. The state's new accountability system, which is discussed in the next chapter, will put more attention on districts and schools that have relatively large numbers of students who do not reach the state's new academic standards.

CONCLUSION

Reducing class sizes is a popular initiative that can improve student performance, especially in the early grades for disadvantaged students. Investing in teacher expertise and

[81] The average spelling score was below the national average for Washington students in both 4th and 8th grades. Washington students in the 11th grade scored below the national average in history/social studies.

school restructuring may provide cost-effective alternatives to improving student performance. Nevertheless, given the power of various external factors beyond the control of educators that can affect student performance, any educational intervention to improve student performance faces significant obstacles in districts and schools where there are high proportions of families with low income and little education.

DATA AVAILABILITY ISSUES

Chapter Five

OVERVIEW

- Different types of district and school data are needed to support education reform and new accountability efforts and to evaluate districts and schools. Districts provide OSPI with considerable data that can be used for these purposes. However, districts do not report enrollment data for certain student groups at the school level, although most districts have such data. Districts also do not report expenditure data for individual schools, and many districts do not maintain much expenditure data for their schools.

- Collecting school enrollment data on more student groups would facilitate analysis of schools sharing similar student populations and support the state's new accountability system. While having expenditure data on individual schools has merit, major obstacles would have to be overcome before such data could be collected and made useful. We encountered some of these obstacles when collecting and analyzing school expenditure data from six case study districts. Moreover, the public has less interest in school expenditures than in other types of data, and existing staffing data can be used to estimate school expenditures.

- We recommend OSPI collect data on the number of bilingual, special education, and highly capable students at the school level. However, the state does not need to start collecting school-level expenditure data because other data can be used to estimate these expenditures.

DATA NEEDED AND AVAILABILITY

In its 1999 Session, the legislature approved a new accountability system that makes districts and individual schools the focus of analysis while also recognizing the differences that exist among the students in districts and schools. The new law calls for reports that contain data on student outcomes (e.g., test scores) and student characteristics (e.g., poverty levels, percentage of special education and bilingual students) *"so that districts and schools can learn from the improvement efforts of other schools and districts with similar characteristics."*[82]

To facilitate comparisons of districts and schools with similar characteristics and to evaluate the operations of districts and schools, various types of data are needed.

- *Fiscal* data are needed to determine the levels and sources of revenues and how funds are spent.

- Data on *staffing* levels are needed to analyze student-staff ratios as well as the characteristics of staff involved in the educational process (e.g., teacher education and experience).

- Data on total *student enrollment* are needed to make expenditure comparisons on a per student basis and to determine the efficiency of expenditures.

- Data on *student characteristics* (e.g., the number of students receiving bilingual or special education) and *demographics* are needed to understand the differences that exist among districts and schools that are outside the control of the education system and to make comparisons between similar districts and schools.

- Data on *student outcomes* (e.g., test scores) are needed to understand how outcomes are linked with resources (inputs) among districts and schools.

OSPI collects and maintains most of these types of data, aggregated at both the district and school levels. Data available

[82] SSB 5418, Chapter 388, Sec. 301, Laws of 1999.

for both districts and schools include total student enrollment, student outcomes, staff information, and some student characteristics (e.g., number of vocational students, minority students, and those eligible for free or reduced-price meals). Data that are available at the district level but not the school level include expenditure data[83] and enrollment data for certain student groups (e.g., bilingual, highly capable, and special education students).[84] (OSPI has school building fiscal data for only small districts that have only one school – district data are the same as school building data.)

Districts maintain additional data on their schools. According to a JLARC survey,[85] over half the districts in Washington said they maintain school-level data in electronic form on bilingual and special education enrollment, although they are not required to report this information to OSPI. Officials we contacted from nine school districts indicated that reporting school-level enrollment data for students with special needs would be easy and not burdensome, especially if existing reports were used to collect the data. Many districts also maintain some types of school expenditure data but are not required to report this information to OSPI. Some districts maintain their school expenditure data manually.

Exhibits 41 and 42 summarize the data maintained by districts and OSPI in electronic form. Little information is maintained at the grade level and even less at the classroom level. Coding in the exhibits is based on a survey of all districts as well as data available from OSPI that was obtained from districts.

[83] District expenditure data are available in great detail and are reported according to activities, objects, and programs. See Chapter 2 for more information on district expenditures.
[84] These data are student headcounts and not full-time equivalents (FTE).
[85] A summary of the survey results is found in Appendix 9.

Exhibit 41
Data Available from Districts

Codes for Data Availability

- ● All or nearly all data (85-100%) are available in electronic form
- ⊙ Most data (60-85%) are available in electronic form
- ○ Much data (40-60%) are available in electronic form
- ** Some data (15-40%) are available in electronic form
- – Little or no data (0-15%) are available in electronic form

TYPE OF DATA	*LEVEL OF AGGREGATED DATA*			
	District	School	Grade	Classroom
Fiscal Data				
Revenue	●	○	–	–
Expenditures	●	**	–	–
Staff Data				
Type of staff[1]	●	●	**	**
Teacher education/experience	●	●	**	**
Student Data				
Assessment	●	●	●[3]	**
Characteristic	⊙[2]	○	○[4]	**
Demographic/Other				
Economic status[5]	●	●	**	–
Parent education	–	–	–	–
Mobility	**	**	**	**

[1]Staff data are available in full-time equivalents (FTEs).
[2]Most data are available in terms of the number of students enrolled (headcount). Vocational student counts are available in full-time equivalents (FTEs).
[3]Many districts also maintain data on student grades and attendance.
[4]Some data are maintained much of the time (e.g., special education), while other data are maintained some of the time (e.g., highly capable and bilingual students).
[5]Number of students eligible for free or reduced-price meals.

Exhibit 42
Data Available from OSPI

Codes for Data Availability

● All or nearly all data (85-100%) are available in electronic form
⊙ Most data (60-85%) are available in electronic form
○ Much data (40-60%) are available in electronic form
** Some data (15-40%) are available in electronic form
– Little or no data (0-15%) are available in electronic form

TYPE OF DATA	*LEVEL OF AGGREGATED DATA*			
	District	School	Grade	Classroom
Fiscal Data				
Revenue	●	–	–	–
Expenditures	●	–	–	–
Staff Data				
Type of staff[1]	●	●	–	–
Teacher education/experience	●	●	–	–
Student Data				
Assessment	●	●	●	–
Characteristic	⊙[2]	○	○	–
Demographic/Other				
Economic status[3]	●	●	–	–
Parent education	**	**	**	–
Mobility	**	**	**	–

[1]Staff data are available in full-time equivalents (FTEs).
[2]Most data are available in terms of the number of students enrolled (headcount). Vocational student counts are available in full-time equivalents (FTEs).
[3]Number of students eligible for free or reduced-price meals.

PROS AND CONS FOR COLLECTING AND USING SCHOOL BUILDING FISCAL DATA[86]

As shown in Chapter 2, expenditure data aggregated at the district level show remarkable consistency across districts, potentially masking large differences in resource allocation and use at the school building level. School-level expenditure data are not needed for state funding purposes, so OSPI does not collect school-level expenditure data. Some experts believe fiscal

[86] See Appendix 12 for a description of a report in the Technical Appendix that contains more information on this issue.

analyses using building data will help solve controversies about the relationship between spending and student performance. Having fiscal data at the school building level has other potential uses as follows.

- Governance. Giving more authority and decision-making responsibility to school sites requires site managers to have more site specific information to make good decisions about the management and operation of their schools.

- Accountability and Comparability. With greater authority and responsibility at the school building level and education reform and a new accountability system that focus on schools, policymakers and the public need more detailed building data to monitor school and student performance. A consistent method of coding building fiscal data could facilitate accurate comparisons across schools within a district and across districts. New software programs can allocate existing school resources to certain categories and produce reports that make such comparisons possible.

- Efficiency and Effectiveness. When educators seek more funding, policymakers may demand more efficient school operations and better student performance in exchange for those funds. Having school building fiscal data allows educators and others to conduct analyses of alternative programs to seek cost-effective options for delivering services. Such data can also help determine which schools have the best student performance per dollar spent, and analyses of their programs and curriculum can yield lessons that can be implemented in similar schools.

- Equity. School building analyses can determine if revenue differences exist among schools within a district while taking into account differences in student needs.[87] Analyzing building fiscal data would also allow better measurement of revenues received from non-traditional sources (e.g., booster clubs, foundation grants, and associated student body fund

[87] California's school system has achieved substantial equity at the district level, but recent research found substantial variations in per pupil spending among schools within districts and across districts. Other research has yielded similar findings within individual districts.

fees) which can generate substantial, yet unequal, revenue for schools.

- Adequacy. In recent school finance litigation, some courts have overthrown existing state funding systems based on the issue of adequacy – the state's responsibility to provide an "adequate" level of resources to ensure each child has the opportunity to receive a satisfactory education. Defining adequacy requires accurate information on what schools spend to provide services to children and how those resources vary with differing student needs. School building data could make it easier to understand what it costs to meet state standards and provide a better basis for funding students with special needs.

Problems and Issues

Despite these potential uses, a number of problems and issues would need to be addressed to make school expenditure data available and usable.

- Cost and Administrative Burden. Implementing a school building data system can be costly. From 1995 to 1999, Ohio has spent an average of $30 million a year running its school-level data system. Oregon has just begun collecting school expenditure data for 16 districts participating in a pilot program and plans to expand the program to all schools in the state. The estimated cost for this effort is $6.2 million for the 1999-2001 Biennium. However, this amount does not include the costs incurred by the pilot districts or that will be incurred by all districts in Oregon as they modify their systems to meet the new reporting requirements. In addition to these costs, collecting more data places an additional administrative burden on staff at the district and school levels. This burden results in costs to schools through staff training, the need to hire additional staff, or through lost opportunities to do other things at schools due to the time spent meeting state requirements.

- Making the Data Useful. A building-level data system needs to allow policymakers, school officials, and researchers to aggregate fiscal, student, staff, and outcome data and

configure the data in the ways they choose. In addition, collecting data is worthwhile only if it is accompanied by a clear analysis plan for using the data. It is not certain what types of analyses would be conducted or how they would be used in Washington. Most of the Ohio reports simply publish school-level finance data without providing any additional analysis to enhance the data's usefulness.[88] Even if there were a plan to use the data, analyses may not provide answers to policy-related questions. There has been little research using building-level fiscal data, and the few states that collect school expenditure data have not yet made much use of the information. The few researchers that have examined school-level fiscal data have found little difference in school spending patterns, even between efficient and inefficient schools.

- Comparability and Complexity School building fiscal data are not consistent across districts in Washington. Currently, there is no uniform accounting code for school expenditures like there is for district expenditures, and without a common accounting system with standard definitions, fiscal comparisons of schools across districts would have limited value. In addition, as the number of data collected increases, the complexity grows. A state would need to provide accurate guidelines for classification of expenditures and staff so school and district officials have the knowledge to place items in the proper category. This would increase the complexity of the accounting system and increase the probability of mistakes in coding entries.

- Infrastructure, Technology and Training To implement a building-level data system, districts and schools must have the capacity to collect and report the data required. Requiring school fiscal information would likely require upgraded school and district hardware and software systems as well as substantial training for staff coding and entering the data. In addition, the state must have the capacity to receive, process, and store all of the data collected and make the information available to the data users. Finally, site managers (principals) would need training to know how to use the data to manage their schools and to improve student performance.

[88] Peternick, L., Sherman, J., and Guarnera, J. (1999), Ohio: A Case Study in School-Level Data Collection, *Journal of Education Finance*, 24(3), 303-338.

- Defining the School This task is more difficult than it seems because of the different types of school organizations that exist. For example, most elementary schools educate children in grades K-5, but some have different combinations (e.g., K-6 or K-8) or have different schools for elementary age children (e.g., one for K-2 and another for 3-5). High schools typically serve children in grades 9-12 or 10-12, but in smaller communities schools serve children in grades 7-12 or K-12. Middle or junior high schools usually are grades 6-8, but some serve other grade levels. In addition to these traditional schools, other institutions (e.g., vocational or special education schools that serve different schools) make defining a school a complex task. Designing a school building data system that accommodates the many types and forms of schools would be a complex task, and analysis of schools would need to account for these differences.

Obstacles to School Expenditure Analysis in Washington

We encountered related obstacles when conducting fiscal analyses in the six case study districts.

- Obtaining the data was difficult. Fiscal, student, and staff data were maintained in different computer systems, which required contacts with different district staff.

- Some districts we contacted do not code many expenditures to schools, which limited our ability to do meaningful analyses.[89]

- Districts code school expenditures in different ways, which limited our ability to analyze expenditure patterns among schools in different districts.[90]

[89] JLARC's survey found a wide variation exists in the extent to which districts track expenditures electronically by school building. Some districts indicated that all of its expenditures are available by school building, while many districts indicated that less than 10 percent of its total expenditures are tracked to the school. On average, districts reported that 57 percent of total expenditures are coded to individual school buildings.

- Some data were available but not in electronic form. Obtaining such data can require much staff time.

- Nontraditional schools and enrollment practices within a district required follow-up discussions with district officials in order to understand the unusual expenditure patterns they produced.[91]

Staffing Data Can Be Used to Estimate School-Level Expenditures

In light of the problems we encountered obtaining and analyzing school-level expenditure data, we sought to find ways to use existing data to estimate school expenditures. We found that the number of staff in a school provides a very good estimate of total expenditures in a school (see discussion and Exhibit 22 in Chapter 2) in part because 90 percent of all school expenditures are for staff salaries and benefits. These estimates can become more precise when using existing school data on teacher education and experience, which affect compensation levels.

SCHOOL BUILDING DATA IN OTHER STATES

Most states, including Washington, collect information on student outcomes, student characteristics, and staffing for individual schools within a district. However, few states currently collect school building fiscal data (see Appendix 10). Florida has more than 20 years of experience collecting expenditure and other types of data at the school level, although the fiscal data are rarely used for analysis or policy-related research. At the other extreme, the Oregon Database Initiative is just beginning to collect school expenditure data but has clear objectives for collecting and using the data, including the analysis of various school indicators that can help identify major factors influencing

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[90] Due to the difficulty of collecting all the school-level data from case study districts, time did not permit us to create a common coding system and convert all school expenditures into that system.

[91] For example, alternative schools or other locations serving special student populations or providing specialized services can have very unusual expenditure patterns.

student performance.[92] The experiences of Florida and Oregon are worth noting when considering the collection and use of additional school-level data. (More information about school-level data systems in other states is available in two studies described in Appendix 12.)

The usefulness of school-level data does not end with its collection and must consider the quality of the data as well as its accessibility. Minnesota collects fiscal and other types of data at the school level, but it lacks a single database that allows the data to be linked to each other. Oregon intends to create a centralized relational database as part of its school-level data system. In Washington, OSPI's databases with students, staff, expenditures, and student performance information are not linked to one another.

DISTRICT REPORTING OF FISCAL DATA

The mandate for this study required JLARC to identify districts that provide easily understood financial reports to the public. Districts in Washington are required to provide reports for their schools, but there are no structure or format requirements for these reports.[93] A study done for JLARC identified 35 characteristics of easily understandable school district financial reports and identified district reports that contain many of these characteristics.[94]

- The characteristics that make reports easily understood by the public fall into six general categories: language, relevance, comparability, length, graphics, and information provided. Districts can use these characteristics as a checklist to

[92] At the present time, managing and collecting comparable education data in Oregon is difficult because there is no standard chart of accounts. This means that similar expenditures are frequently reported differently in various districts. Moreover, there has been little automation of data reporting functions.

[93] Washington State law requires "Annual School Performance Reports" at the school level (see RCW 28A.320.205).

[94] The Northwest Regional Educational Laboratory conducted the study for JLARC, which is described in Appendices 11 and 12 and is available upon request.

improve or create their own reports. (Appendix 11 provides more information about these characteristics.)

- Three Washington districts were judged to have the highest number of the desirable characteristics: North Thurston, Edmonds, and Shoreline. Two districts outside of Washington had the highest number of the desirable characteristics: Philadelphia (PA) and Charlotte-Mecklenburg (NC). Oregon's Database Initiative project also provides extensive information on the Internet on both districts and individual schools.

The study also found that the public is generally more interested in school data than district data and more interested in student outcomes (e.g., test scores, drop-out and graduation rates) and teacher characteristics than in fiscal information. Research discussed in "Reporting Results: What the Public Wants to Know," a companion report to Education Week's *Quality Counts 1999*, found 21 indicators that parents say are important when holding schools accountable.[95] Parents were most interested in knowing about school safety, teacher qualifications, and class size. Per pupil spending and teacher salaries were ranked 12th and 14th in importance. According to school business officials in Washington, the public shows the most interest in district financial data when there is a controversy regarding the school district or when the public seeks information for voting purposes.

CONCLUSION

Washington currently collects large amounts of district and school data that can be used to understand the factors related to student performance. Although data on school expenditures are not maintained, these expenditures are determined mainly by the amount of staff as well as the level of teacher education and experience at each school. Since OSPI maintains this staff information at the school level, existing data can be used to approximate school expenditures. In addition, collecting consistent school-level fiscal data is difficult and could be costly, there is uncertainty regarding the data's use and usefulness, and

[95] A-Plus Communications. (1999). *Reporting Results: What the Public Wants to Know, Companion Report to Education Week's Quality Counts 1999.* Arlington, VA: A-Plus Communications, Inc. (See also the website at *www.apluscommunications.com)*

the public is relatively uninterested in such data. Moreover, as noted in Chapter 4, external factors such as those associated with differences in student and family characteristics have the strongest relationship with student performance, so collecting school fiscal data may not lead to discoveries that can help improve student performance.

The state's new accountability system will require data on the characteristics of students in individual schools,[96] although some information needed to implement the new system is not currently reported. A majority of districts currently collect and maintain school enrollment data on students with special needs and aggregate them to the district level for reporting purposes. Thus, much of the data needed for the new accountability system are available for school buildings. While these data are not reported to OSPI, district officials said the enrollment data could be provided to OSPI quite easily. Accurate comparisons among schools would be facilitated when schools are identified with similar student populations and their differences analyzed to determine what helps to improve student performance. Such comparisons would support education reform efforts.

RECOMMENDATIONS

Recommendation 1

Consistent with state laws for education reform and accountability, we recommend that the Office of Superintendent of Public Instruction collect enrollment data at the school building level for bilingual, special education, and highly capable students.

Recommendation 2

While having school-level expenditure data may serve useful purposes, the state does not need to start collecting this data or establish a statewide school expenditure accounting system. If policymakers and educators desire to understand school-level

[96] SSB 5418, Chapter 388, Laws of 1999.

expenditures, existing staffing data at the school building level, which is collected by OSPI, can be analyzed.

SCOPE AND OBJECTIVES

Appendix 1

SCOPE

Pursuant to the 1998 Supplemental Appropriations Act (Sec. 501 of ESSB 6108), the Joint Legislative Audit and Review Committee (JLARC) will study the system of finance of the Washington common schools. Portions of the study will be conducted with the assistance of the Legislative Evaluation and Accountability Program (LEAP) Committee as well as school finance experts and consulting services on contract with JLARC. The scope of the study will depend on the availability of reliable and consistent data, and some portions of the study will focus on a sample of districts. JLARC will provide a briefing on the study in December 1998 and a report by June 1999.

OBJECTIVES

- Determine the patterns of revenues and expenditures among local school districts and selected schools.
- Identify districts that have financial data available in a form that facilitates understanding by persons without specialized expertise in public finance.
- Determine the ratio of students to teachers and other personnel in districts and selected schools.
- Determine the patterns of student and staff characteristics among districts and selected schools.
- Determine the extent to which district, school, and classroom data are available that can be used for future analyses of the efficiency and effectiveness of expenditures.

AGENCY RESPONSE

Appendix 2

- **Office of the Superintendent of Public Instruction Response to Preliminary Report**
- **Office of Financial Management Response to Preliminary Report**
- **Auditor's Comments**

To link to this appendix, click here.

AUDITOR'S COMMENTS

We are pleased that both the Office of Superintendent of Public Instruction (OSPI) and Office of Financial Management concur with the two recommendations and that they found the information useful. The following comments respond to the additional comments OSPI made about the preliminary report.

- An analysis of the adequacy of funding was beyond the scope of the study mandate. Nevertheless, the need for such an analysis in the future was voiced by various stakeholders in light of the new student learning standards and accountability system. Stakeholders have expressed a desire to use results from the Washington Assessment of Student Learning (WASL) in future analyses of resources available to students performing below the new state standards.

- Staff compensation rankings that use data from the National Center for Education Statistics (NCES) and National Education Association (NEA) are not comparable because the rankings measure different costs. The rankings we presented relied on data from NCES because it provides a more complete set of staff-related costs.

  It is important to recognize that NEA's rankings typically use base salaries for teachers but exclude the additional compensation staff receive for extra work (e.g., supplemental contracts), compensation for classified staff, and the cost of staff benefits. Extra duty pay and benefits alone represent about 31 percent of total staff compensation in Washington. By leaving out these costs, it is difficult to determine the total costs of the education system. We found that the total cost can affect a state's national ranking on the student-teacher ratio measure (see Chapter 3). The NCES data we used measures the total cost by including all compensation, regardless of type, for all staff, including classified staff.

  OSPI implies that NEA data should be used to make national comparisons because NCES data contains reporting inconsistencies. We examined both NEA and NCES data and contacted officials at both agencies to investigate the possibility that states count and report various types of staff differently, which could distort the national rankings. We also contacted 10 states to better understand their reporting practices to NCES. We found that both NEA and NCES data contained some inconsistencies due to different reporting practices by a few states.[97] Based on our review of the NCES data and the types of

[97] OSPI noted that NEA data have been standardized after many years of refinement and education to states about how to report data in a consistent manner. NCES also provides detailed instructions and definitions to states about what data to provide and provides training to state officials on how to

reporting inconsistencies by states, we believe the effect of any inconsistencies would not change the overall results of our analysis or rankings.

Cross-state comparisons and national rankings will always be somewhat imprecise and outdated, and they generally do not adjust for differences in educational costs among states.[98] This makes it imperative to use the rankings as a general guide and to conduct analyses using the most complete set of standardized data. This is why we used NCES data for our comparisons.

provide the data in a consistent manner. Thus, the NCES data have also been standardized after many years of refinement. Nevertheless, some reporting inconsistencies do occur that are reflected in both NEA and NCES data because the same state education agencies are the source of both data.

[98] Washington has a higher cost of living than the national average, which affects the relative level of staff compensation costs and expenditures per pupil. When adjusting the 1995-96 NCES data for differences in education costs among the 50 states, total staff compensation costs in Washington were about 9 percent above the national average and ranked 17th, while total expenditures per pupil in Washington were about 7 percent below the national average and ranked 32nd.

STUDY MANDATE

Appendix 3

Excerpt from ESSB 6108, 1998 Supplemental Appropriations Act
Chapter 346 Laws of 1998

PART V
EDUCATION

NEW SECTION. Sec. 501. A new section is added to 1997 c 149 (uncodified) to read as follows:

FOR A STUDY OF K-12 FINANCE. A study of the system of finance of the Washington common schools shall be conducted by the joint legislative audit and review committee subject to the following conditions and limitations:

(1) The study shall address:

(a) The revenue and expenditure practices of local school districts. To the extent data is available, the study shall identify patterns of resource allocations to selected districts, buildings, and classrooms. The study shall document the extent to which meaningful analysis of resource allocations is limited by data currently available and shall identify means necessary to obtain information necessary to analyze the efficiency and effectiveness of common school expenditures. The study shall also seek to identify districts that have financial data available in a form that facilitates understanding by persons without specialized expertise in public finance.

(b) The ratio of students to teachers and other personnel in selected districts, buildings, and classrooms. To the extent data is obtainable, class-size shall include analysis of the use of certificated and noncertificated classroom instructors and assistants, the education and experience of instructional staff, the composition of students in classrooms by status including students who qualify for special education, learning assistance, bilingual education, gifted education, free and reduced-price meals and other characteristics, including educational outcomes

relevant to understanding the nature of class-size and the nature of students and teachers in those classes.

(2) The final report shall be presented no later than June 30, 1999. Before the final report is presented, an interim briefing shall be presented to the fiscal committees of the legislature for review and comment.

(3) Funds appropriated to the joint legislative audit and review committee for the study specified in this section may be used for consulting services as deemed necessary, including, but not limited to, review of studies of a similar nature and consultation with experts in the field of public school finance on the feasibility and best approaches to a state fiscal study with the objectives specified in this section.

DATA FOR K-12 REVENUES AND NATIONAL RANKINGS

Appendix 4

K-12 Revenues, 1987-1997

K-12 General Fund Revenues (unadjusted, in billion $)

Funding Source	School Year									
	1987-88	**1988-89**	**1989-90**	**1990-91**	**1991-92**	**1992-93**	**1993-94**	**1994-95**	**1995-96**	**1996-97**
State	$2.355	$2.545	$2.810	$3.205	$3.441	$3.696	$3.779	$3.944	$4.103	$4.227
Local	0.463	0.511	0.557	0.610	0.650	0.723	0.812	0.867	0.933	1.010
Federal	0.194	0.213	0.226	0.245	0.262	0.283	0.307	0.325	0.334	0.357
Other	0.015	0.018	0.022	0.023	0.032	0.033	0.035	0.034	0.045	0.043
Total	$3.028	$3.287	$3.614	$4.083	$4.385	$4.734	$4.933	$5.170	$5.416	$5.637

K-12 General Fund Revenues per FTE Student (in nominal $)

Funding Source	School Year									
	1987-88	**1988-89**	**1989-90**	**1990-91**	**1991-92**	**1992-93**	**1993-94**	**1994-95**	**1995-96**	**1996-97**
State	$3,126	$3,312	$3,561	$3,915	$4,112	$4,294	$4,291	$4,386	$4,472	$4,514
Local	615	665	706	745	777	839	922	964	1,016	1,079
Federal	258	277	286	299	313	329	349	361	364	381
Other	20	23	28	28	38	38	39	38	49	46
Total	**$4,019**	**$4,277**	**$4,581**	**$4,987**	**$5,241**	**$5,500**	**$5,601**	**$5,750**	**$5,902**	**$6,019**

K-12 General Fund Revenues per FTE Student (in constant 1996-97 $)

Funding Source	School Year									
	1987-88	**1988-89**	**1989-90**	**1990-91**	**1991-92**	**1992-93**	**1993-94**	**1994-95**	**1995-96**	**1996-97**
State	$4,202	$4,247	$4,366	$4,563	$4,632	$4,695	$4,586	$4,566	$4,564	$4,514
Local	827	853	866	868	875	918	985	1,004	1,037	1,079
Federal	346	355	351	349	353	359	373	376	372	381
Other	27	30	34	33	43	41	42	40	50	46
Total	**$5,402**	**$5,484**	**$5,616**	**$5,813**	**$5,903**	**$6,013**	**$5,985**	**$5,986**	**$6,023**	**$6,019**
Inflation Measure[1]	1.00000	1.04818	1.09636	1.15303	1.19303	1.22927	1.25761	1.29095	1.31679	1.34394

[1] Inflation is measured using the Implicit Price Deflator from the November 1998 Economic and Revenue Forecast.

State Data for School Year 1995-96

State	Total per pupil expenditures	Total compensation costs per staff	Teacher-staff ratio	Student-teacher ratio
Alabama	$4,343	$32,149	52.9%	16.9
Alaska	$8,189	$54,353	49.1%	17.3
Arizona	$4,476	$35,812	50.1%	19.6
Arkansas	$4,401	$33,796	53.8%	17.1
California	$4,937	$51,587	52.0%	24.0
Colorado	$5,121	$41,130	52.5%	18.5
Connecticut	$8,430	$53,542	54.5%	14.4
Delaware	$6,696	$49,302	54.5%	16.8
Florida	$5,275	$39,459	48.3%	18.9
Georgia	$5,056	$34,327	48.2%	16.5
Hawaii	$5,560	$51,791	62.3%	17.8
Idaho	$4,194	$39,040	58.6%	19.0
Illinois	$5,519	$41,611	54.3%	17.1
Indiana	$5,621	$40,040	48.0%	17.5
Iowa	$5,481	$36,190	52.1%	15.5
Kansas	$5,374	$35,344	53.7%	15.1
Kentucky	$4,807	$31,985	46.3%	16.9
Louisiana	$4,447	$31,706	50.5%	17.0
Maine	$6,151	$36,150	52.3%	13.9
Maryland	$6,593	$50,215	54.4%	16.8
Massachusetts	$7,033	$43,625	55.4%	14.6
Michigan	$6,785	$53,415	46.9%	19.7
Minnesota	$5,801	$52,563	62.7%	17.8
Mississippi	$3,951	$26,703	47.6%	17.5
Missouri	$5,092	$29,785	48.0%	15.4
Montana	$5,249	$37,590	54.2%	16.4
Nebraska	$5,688	$34,527	52.9%	14.5
Nevada	$4,892	$46,406	58.5%	19.1
New Hampshire	$5,740	$37,051	53.3%	15.7
New Jersey	$9,361	$55,276	53.2%	13.8
New Mexico	$4,604	$30,104	48.3%	17.0
New York	$8,361	$56,500	51.0%	15.5
North Carolina	$4,719	$33,547	52.2%	16.2
North Dakota	$4,677	$31,348	54.3%	15.9
Ohio	$5,669	$44,533	55.2%	17.1
Oklahoma	$4,549	$26,840	47.0%	15.7
Oregon	$5,790	$48,393	51.8%	19.8
Pennsylvania	$6,922	$51,341	53.0%	17.0
Rhode Island	$7,304	$55,095	63.5%	14.3
South Carolina	$4,779	$33,466	53.3%	16.2
South Dakota	$4,220	$26,459	53.2%	15.0
Tennessee	$4,172	$31,743	54.0%	16.7
Texas	$5,016	$32,362	52.0%	15.6
Utah	$3,604	$37,903	53.6%	23.8
Vermont	$6,488	$34,627	49.1%	13.8
Virginia	$5,528	$37,296	54.3%	14.4
Washington	**$5,611**	**$48,726**	**51.4%**	**20.4**
West Virginia	$5,881	$40,498	54.5%	14.6
Wisconsin	$6,517	$48,771	57.9%	15.8
Wyoming	$5,826	$36,674	51.2%	14.8
National Avg.	**$5,689**	**$42,161**	**52.0%**	**17.3**

Source: JLARC analysis of National Center for Education Statistics (NCES) data.
Note: Due to different reporting practices among states, comparing states using these data should be done with caution.

ACCOUNTING CODES AND EXPENDITURE CATEGORIES

Appendix 5

In school year 1996-97, districts coded their General Fund expenditures into three general categories–programs, activities, and objects–as shown in the following tables.

PROGRAMS

00 - Regular Instruction
01- Basic Education

20 - Special Education
21 Special Ed - Supp State
24 Special Ed - Supp Fed
26 Special Ed - Institutions - St
27 Special Ed – Deinstitutionalized - Fed
29 Special Ed - Other Fed

30 - Vocational Education
31 Vocational - Basic - State
38 Vocational - Fed
39 Vocational - Other Categorical

40 - Skills Center Instruction
41 Skills Center Projects
45 Skills Center Basic - State
46 Skills Center - Fed
49 Skills Center - Other Categorical

50 Compensatory Education
51 Remediation - Fed
53 Migrant - Fed

50 Compensatory Education (cont.)
54 Student Retention and Retrieval St
55 Learning Assistance Program St
56 State Institutions - Delinquent
57 Institutions - Neglected and Delinquent - Fed
58 Special and Pilot Programs - St

60 Compensatory Education
61 Head Start - Fed
64 Bilingual - Fed
65 Transitional Bilingual - State
67 Indian Education - Federal JOM
68 Indian Education - Federal - ED
69 Compensatory - Other

70 Other Instruction Programs
71 Traffic Safety
73 Summer School
74 Highly Capable
75 Local Educational Program Development

70 Other Instruction Programs (cont.)
76 Targeted Assistance - Federal
77 Eisenhower Professional Development
78 Youth Training Programs - Federal
79 Instructional Programs - Other

80 Community Services
81 Public Radio/Television
83 Adult Education - Basic - State
85 Adult Job Training – Federal
86 Community Schools
88 Day Care
89 Other Community Services

90 Support Services
92 Debt Service
94 Instructional Support
97 Districtwide Support
98 Food Services
99 Pupil Transportation

ACTIVITIES		OBJECTS
10 Administration	**50 Pupil Transportation (cont.)**	0 Debit Transfer
11 Board of Directors	54 Garage – Operations and Maintenance	1 Credit Transfer
12 Superintendent's Office	55 Payments In-Lieu-of Transportation	2 Salaries- Certificated
13 Business Office	56 Insurance	3 Salaries - Classified
20 Instruction	59 Transfers	4 Employee Benefits & Payroll Taxes
21 Supervision	**60 Maintenance and Operations**	5 Supplies and Materials
22 Learning Resources	61 Supervision	7 Purchased Services
23 Principals	62 Grounds Maintenance	8 Travel
24 Guidance and Counseling	63 Operation of Buildings	9 Capital Outlay
25 Pupil Management & Safety	64 Maintenance	
26 Health/Related Services	67 Building and Property Security	
27 Teaching	68 Insurance	
28 Extracurricular	**70 Other Services**	
29 Payments to School Districts	72 Information Systems	
40 Nutritional Services	73 Printing	
41 Supervision	74 Warehousing and Distribution	
42 Food	75 Motor Pool	
43 Commodities	**80 Debt Service**	
44 Operations	82 Warrant Interest	
49 Transfers	83 Interest	
50 Pupil Transportation	84 Principal	
51 Supervision	**90 Public Activities**	
52 Operations	91 Public Activities	
53 Maintenance		

To examine district and school expenditure patterns, we organized the accounting codes noted above into the following categories.

Programs

1. Regular Instruction 01
2. Special Education 21,24,26,27,29
3. Vocational/Skill Center 31,38,39,41,45,46,49
4. Compensatory Education 51,53,54,55,56,57,58,61,64,65,67,68,69
5. Other Instruction 71,73,74,75,76,77,78,79
6. Community/Support Services 81,83,85,86,88,89,92,94,97,98,99

Activities

1. Instruction 27,29
2. Instruction Support 22,24,25,26,28
3. Food and Nutrition Services 41,42,43,44,49
4. Pupil Transportation 51,52,53,54,55,56,59
5. Maintenance and Operations 61,62,63,64,65,66,67,68
6. Central Administration 11,12,13,21
7. School Administration 23
8. Other services 72,73,74,75,82,83,84,91

Objects

1.	Salaries – Certificated Employees	2
2.	Salaries – Classified Employees	3
3.	Employee Benefits & Payroll Taxes	4
4.	Supplies, Inst. Resources & Noncapitalized Items	5
5.	Purchased Services	7
6.	Other	8,9

METHODOLOGY AND RESULTS OF DISTRICT AND SCHOOL REVENUE AND EXPENDITURE ANALYSES

Appendix 6

This appendix discusses the methods used to analyze various aspects of revenues and expenditures among Washington's districts and schools described in Chapter 2. The source for exhibits contained in this appendix is JLARC's analysis of OSPI data.

EQUITY ANALYSIS AMONG DISTRICTS AND SCHOOLS

To determine the relative equity of the state's funding system, we analyzed per pupil revenues from local, state, federal, and other sources for school year 1996-97. We analyzed only revenues related to the General Fund because we wanted to focus on school operations and not capital expenses.

Districts with higher proportions of students with special needs, such as those with disabilities or limited English proficiency, generally have higher than average education costs because such students require additional services. We adjusted our analyses for these differences by increasing the student counts for four types of students, according to the weights implicit in the state formula. Bilingual students were given an extra weight of .18, LAP students an extra weight of .10, special education students an extra weight of .93, and institutionalized students an extra weight of 1.22.[99] Thus, the pupil count is increased, which results in a lower per pupil revenue amount than is normally reported.

We used assessed property value per weighted pupil as a measure of district wealth. While education costs may vary in different parts of the state, our analysis did not

[99] These weights are somewhat lower than those used in national research. When conducting equity analyses, the NCES uses .20 as an extra weight for students receiving bilingual and compensatory education and 1.3 as an extra weight for special education students.

adjust for differences in geographic costs.[100] The range of district revenues were grouped into quintiles, based on increasing levels of district wealth. Each quintile had approximately 20 percent of the state's students (not 20 percent of the districts) because students are the object of analysis. The exhibit below summarizes our findings.

Exhibit 43

Revenue Distribution According to Wealth Quintiles

Funding Source (General Fund)	Mean funding per weighted pupil						Ratio of Wealthiest to Poorest
	State	Poorest Group	Group 2	Middle Group	Group 4	Wealthiest Group	
State General Purpose	$3,267	$3,269	$3,313	$3,268	$3,256	$3,228	0.99
State Special Purpose	$703	$777	$674	$722	$648	$695	0.90
State Total	**$3,971**	**$4,046**	**$3,987**	**$3,990**	**$3,905**	**$3,924**	**0.97**
Local	$949	$600	$804	$1,012	$1,062	$1,270	2.12
Federal	$335	$502	$293	$328	$246	$305	0.61
Other	$40	$35	$29	$45	$33	$60	1.69
Total	**$5,295**	**$5,183**	**$5,114**	**$5,374**	**$5,246**	**$5,558**	**1.07**
Demographic Context	**State**	**Poorest Group**	**Group 2**	**Middle Group**	**Group 4**	**Wealthiest Group**	**Ratio of Wealthiest to Poorest**
Total number of students	936,395	183,011	192,322	188,923	184,231	187,908	
Total number of districts	296	75	53	40	51	77	
Avg. assessed property value/weighted pupil	$306,692	$156,851	$212,782	$251,702	$320,835	$594,367	3.79
Avg. revenue from local M&O levy	14.7%	8.9%	12.6%	15.8%	16.6%	19.1%	2.15
Avg. levy rate (per $1,000)	$2.90	$3.00	$3.16	$3.52	$2.91	$1.91	0.64
Staff Ratios							
Students per total FTE staff	10.5	10.1	10.9	10.4	10.6	10.4	1.03
Students per certified staff (FTE)	16.2	16.0	16.6	16.0	16.6	16.0	1.00
Students per teacher (FTE)	19.4	19.0	20.0	19.1	19.8	19.3	1.02
Students per classified staff (FTE)	29.5	27.4	31.2	30.1	29.7	29.2	1.07
Student Characteristics							
Bilingual students	4.7%	9.3%	2.2%	3.4%	3.3%	5.6%	0.60
LAP students	31.0%	42.8%	27.3%	33.6%	24.2%	27.4%	0.64
Lower income students[1]	16.1%	21.1%	15.2%	16.2%	13.7%	14.6%	0.69
Special ed. students	11.2%	11.8%	11.1%	11.6%	11.2%	10.4%	0.88

[1] Measured in terms of eligibility for free or reduced-price meals.

This analysis shows:

[100] Such adjustments can be made using a geographic cost of education index (GCEI) or other indexes, which are available for all districts in the country from the National Center of Education Statistics.

- The wealthiest quintile of districts have only 7 percent more funding per weighted pupil than the poorest quintile of districts.[101]
- The wealthiest districts raise twice the amount of revenue from local funds than the poorest districts. But because local revenue is a relatively small portion of total revenue, and because poorer districts receive more state and federal revenue, the overall revenue disparity between wealthy and poor districts is small.
- Student-staff ratios are somewhat smaller in the poorest districts than in wealthier districts. The poorest districts also have the highest proportions of bilingual, LAP, and special education students.

Equity Among Schools

Revenue data aggregated at the district level show remarkable consistency across districts, potentially masking large differences in resources available at the school building level. A previous study of the Los Angeles Unified School District (using school-level financial data) found that teachers with more education and experience within the district were found in schools in wealthier areas of the district. Because teachers with more education and experience are paid more, that study found substantial inequities in funding within the school district.

Using available data for Washington schools, we attempted to determine whether districts allocate their revenues among individual schools in an equitable manner. We assessed the equity of funding among schools within districts in two ways:

1. We used school-level financial and student characteristics data to review the equity of funding within the 114 schools that were part of our case study (i.e., we looked at the relationship between per pupil spending and the percentage of students eligible for free and reduced-price meals).

2. We used student-teacher ratios and staff mix information from all schools in Washington as a proxy for funding equity within all schools in the state.

We did not weight the student count in the school-level analysis because enrollment data on special education, bilingual, or special education students are not available at the school level. (Only the percentage of students eligible for free or reduced-

[101] If the revenues were adjusted for differences in geographic costs, the difference would be even smaller because the wealthier districts tend to be in areas with higher costs. GAO's 1997 study of all states adjusted for differences in student need and geographic costs and found that wealthy districts nationwide had about 24 percent more state and local funding per pupil than poor districts.

price meals is available at the school level.) Without adjusting the pupil counts for differences in student need, we expected that schools with higher percentages of students with special needs would have more revenue per pupil. As expected, we found that spending among the 114 case study schools increased as the percentage of students applying for free and reduced-price meals increased (see Exhibit 14 in Chapter 2).

Because information on spending at the school-level was not available for all schools, we also looked at the relationship between the percentage of students eligible for free and reduced-price meals and student-teacher ratios and the staff mix for all Washington schools. Since high schools have been shown to have higher costs, we looked at revenues for different types of schools.

We found that while the staff mix is slightly lower in schools with higher proportions of students eligible for free and reduced-price meals, the student-teacher ratio in such schools tends to be lower. Therefore, while schools with a higher proportion of lower-income pupils tend to have teachers with less education and experience, they also tend to have smaller student-teacher ratios. We also found that high schools have higher levels of teacher experience and education, but also higher student-teacher ratios. These relationships are illustrated by Exhibits 29, 30, and 34 in Chapter 3.

EXPENDITURE PATTERNS AMONG DISTRICT AND SCHOOLS

The patterns of expenditures at the district level discussed in Chapter 2 were based on an analyses of OSPI data that were provided to JLARC by LEAP. District expenditures were analyzed according to expenditure level and district size (number of FTE students) in the three ways the data are maintained: by program, object, and activity. The student count was weighted in the same way as in the revenue analysis. Spending quintile had approximately 20 percent of the state's students (not 20 percent of the districts). The following exhibits provide the results of these analyses.

Exhibit 44
District Program Expenditures According to Spending Level

Program Expenditures (General Fund)	Mean expenditure per weighted FTE pupil by Spending Level						Difference Highest - Lowest	Ratio of Highest to Lowest
	State Average	Lowest Spending	Group 2	Group 3	Group 4	Highest Spending		
Regular Instruction	$2,401	$2,243	$2,384	$2,405	$2,461	$2,514	$271	1.12
Special Education	$437	$392	$414	$433	$455	$491	$98	1.25
Compensatory Education	$260	$229	$201	$226	$251	$394	$164	1.72
Vocational Education	$204	$210	$213	$199	$217	$179	-$31	0.85
Other Instruction	$141	$113	$115	$136	$144	$196	$83	1.74
Support Services	$1,793	$1,578	$1,691	$1,746	$1,772	$2,176	$598	1.38
Total Expenditures	**$5,237**	**$4,766**	**$5,019**	**$5,143**	**$5,301**	**$5,950**	**$1,184**	**1.25**

Program Expenditures (General Fund)	Percentage of expenditures					
	State Average	Lowest Spending	Group 2	Group 3	Group 4	Highest Spending
Regular Instruction	45.9%	47.1%	47.5%	46.8%	46.4%	42.3%
Special Education	8.4%	8.2%	8.3%	8.4%	8.6%	8.2%
Compensatory Education	5.0%	4.8%	4.0%	4.4%	4.7%	6.6%
Vocational Education	3.9%	4.4%	4.3%	3.9%	4.1%	3.0%
Other Instruction	2.7%	2.4%	2.3%	2.6%	2.7%	3.3%
Support Services	34.2%	33.1%	33.7%	33.9%	33.4%	36.6%

Demographic Context	State Average	Lowest Spending	Group 2	Group 3	Group 4	Highest Spending
FTE Students	936,395	186,202	183,980	193,022	186,347	186,844
Total number of Districts	296	62	37	35	40	122
Average District Size	3,163	3,003	4,972	5,515	4,659	1,532

Exhibit 45
District Program Expenditures According to District Size

Program Expenditures (General Fund)	Mean expenditure per weighted FTE pupil by district size					
	State	Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
Regular Instruction	$2,401	$2,722	$2,320	$2,399	$2,378	$2,448
Special Education	$437	$415	$416	$420	$450	$464
Compensatory Education	$260	$335	$284	$208	$202	$340
Vocational Education	$204	$208	$194	$206	$233	$168
Other Instruction	$141	$130	$125	$127	$139	$178
Support Services	$1,793	$2,065	$1,693	$1,691	$1,760	$1,971
Total Expenditures	**$5,237**	**$5,874**	**$5,032**	**$5,051**	**$5,163**	**$5,570**

Program Expenditures (General Fund)	Percentage of expenditures					
	State	Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
Regular Instruction	45.9%	46.3%	46.1%	47.5%	46.1%	44.0%
Special Education	8.4%	7.1%	8.3%	8.3%	8.7%	8.3%
Compensatory Education	5.0%	5.7%	5.6%	4.1%	3.9%	6.1%
Vocational Education	3.9%	3.5%	3.8%	4.1%	4.5%	3.0%
Other Instruction	2.7%	2.2%	2.5%	2.5%	2.7%	3.2%
Support Services	34.2%	35.1%	33.6%	33.5%	34.1%	35.4%

Demographic Context	State	Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
Total Number of Students	936,395	53,760	239,791	155,196	293,374	194,274
Total number of Districts	296	147	99	22	21	7
Average District Size	3,163	366	2,422	7,054	13,970	27,753

Exhibit 46
District Object Expenditures According to Spending Level

Object Expenditures (General Fund)	Mean expenditure per weighted FTE pupil by spending level						Difference Highest - Lowest	Ratio of Highest to Lowest
	State Average	Lowest Spending	Group 2	Group 3	Group 4	Highest Spending		
Salaries - Certified	$2,455	$2,252	$2,392	$2,442	$2,503	$2,686	$434	1.19
Salaries - Classified	$868	$759	$818	$880	$841	$1,038	$279	1.37
Staff Benefits/Taxes	$989	$904	$953	$983	$1,004	$1,101	$197	1.22
Supplies, Materials	$323	$301	$312	$311	$330	$361	$60	1.20
Purchased Services	$480	$441	$434	$411	$495	$620	$178	1.40
Capital Outlay	$102	$92	$95	$97	$104	$124	$32	1.35
Travel	$19	$16	$16	$19	$23	$19	$3	1.17
Total Expenditures	**$5,237**	**$4,766**	**$5,019**	**$5,143**	**$5,301**	**$5,950**	**$1,184**	**1.25**

Object Expenditures (General Fund)	Percentage of expenditures					
	State Average	Lowest Spending	Group 2	Group 3	Group 4	Highest Spending
Salaries - Certified	46.9%	47.3%	47.6%	47.5%	47.2%	45.2%
Salaries - Classified	16.6%	15.9%	16.3%	17.1%	15.9%	17.5%
Staff Benefits/Taxes	18.9%	19.0%	19.0%	19.1%	18.9%	18.5%
Supplies, Materials	6.2%	6.3%	6.2%	6.1%	6.2%	6.1%
Purchased Services	9.2%	9.3%	8.6%	8.0%	9.3%	10.4%
Capital Outlay	2.0%	1.9%	1.9%	1.9%	2.0%	2.1%
Travel	0.4%	0.3%	0.3%	0.4%	0.4%	0.3%

Demographic Context	State Average	Lowest Spending	Group 2	Group 3	Group 4	Highest Spending
FTE Students	936,395	186,202	183,980	193,022	186,347	186,844
Total number of Districts	296	62	37	35	40	122
Average District Size	3,163	3,003	4,972	5,515	4,659	1,532

Exhibit 47
District Object Expenditures According to District Size

Object Expenditures (General Fund)	Mean expenditure per weighted FTE pupil					
	State	Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
Salaries - Certified	$2,455	$2,598	$2,321	$2,394	$2,489	$2,581
Salaries - Classified	$868	$946	$814	$826	$852	$969
Staff Benefits/Taxes	$989	$1,079	$946	$960	$986	$1,047
Supplies, Materials	$323	$421	$333	$312	$302	$324
Purchased Services	$480	$657	$480	$431	$434	$538
Capital Outlay	$102	$141	$116	$108	$84	$98
Travel	$19	$32	$22	$21	$16	$13
Total Expenditures	**$5,237**	**$5,874**	**$5,032**	**$5,051**	**$5,163**	**$5,570**

Object Expenditures (General Fund)	Percentage of expenditures					
	State	Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
Salaries – Certified	46.9%	44.2%	46.1%	47.4%	48.2%	46.3%
Salaries – Classified	16.6%	16.1%	16.2%	16.4%	16.5%	17.4%
Staff Benefits/Taxes	18.9%	18.4%	18.8%	19.0%	19.1%	18.8%
Supplies, Materials	6.2%	7.2%	6.6%	6.2%	5.8%	5.8%
Purchased Services	9.2%	11.2%	9.5%	8.5%	8.4%	9.7%
Capital Outlay	2.0%	2.4%	2.3%	2.1%	1.6%	1.8%
Travel	0.4%	0.5%	0.4%	0.4%	0.3%	0.2%

Demographic Context	State	Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
FTE Students	936,395	53,760	239,791	155,196	293,374	194,274
Total number of Districts	296	147	99	22	21	7
Average District Size	3,163	366	2,422	7,054	13,970	27,753

Exhibit 48

District Activity Expenditures According to Spending Level

Activity Expenditures (General Fund)	Mean expenditure per weighted FTE pupil by spending level						Difference Highest - Lowest	Ratio of Highest to Lowest
	State Average	Lowest Spending	Group 2	Group 3	Group 4	Highest Spending		
Instruction	$3,116	$2,893	$3,027	$3,090	$3,166	$3,403	$511	1.18
Instruction Support	$495	$430	$473	$492	$515	$564	$133	1.31
Food & Nutrition Serv.	$172	$159	$168	$172	$168	$192	$33	1.21
Pupil Transportation	$208	$202	$192	$194	$189	$262	$60	1.30
Maintenance & Oper.	$513	$449	$478	$496	$502	$638	$189	1.42
Central Administration	$324	$279	$289	$317	$347	$388	$109	1.39
School Administration	$334	$303	$326	$322	$338	$382	$80	1.26
Other Services	$75	$51	$67	$61	$77	$120	$69	2.34
Total Expenditures	**$5,237**	**$4,766**	**$5,019**	**$5,143**	**$5,301**	**$5,950**	**$1,184**	**1.25**

Activity Expenditures (General Fund)	Percentage of expenditures					
	State Average	Lowest Spending	Group 2	Group 3	Group 4	Highest Spending
Instruction	59.5%	60.7%	60.3%	60.1%	59.7%	57.2%
Instruction Support	9.5%	9.0%	9.4%	9.6%	9.7%	9.5%
Food & Nutrition Serv.	3.3%	3.3%	3.3%	3.3%	3.2%	3.2%
Pupil Transportation	4.0%	4.2%	3.8%	3.8%	3.6%	4.4%
Maintenance & Oper.	9.8%	9.4%	9.5%	9.6%	9.5%	10.7%
Central Administration	6.2%	5.9%	5.8%	6.2%	6.5%	6.5%
School Administration	6.4%	6.3%	6.5%	6.3%	6.4%	6.4%
Other Services	1.4%	1.1%	1.3%	1.2%	1.4%	2.0%

Demographic Context	State Average	Lowest Spending	Group 2	Group 3	Group 4	Highest Spending
FTE Students	936,395	186,202	183,980	193,022	186,347	186,844
Total number of Districts	296	62	37	35	40	122
Average District Size	3,163	3,003	4,972	5,515	4,659	1,532

Exhibit 49

District Activity Expenditures According to District Size

Activity Expenditures (General Fund)	Mean expenditure per weighted FTE pupil					
	State	Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
Instruction	$3,116	$3,487	$3,008	$3,039	$3,089	$3,249
Instruction Support	$495	$452	$472	$497	$496	$532
Food & Nutrition Services	$172	$231	$182	$164	$158	$170
Pupil Transportation	$208	$299	$212	$188	$192	$216
Maintenance & Operations	$513	$599	$487	$497	$496	$559
Central Administration	$324	$440	$309	$303	$309	$349
School Administration	$334	$322	$318	$311	$331	$380
Other Services	$75	$44	$45	$54	$90	$114
Total Expenditures	$5,237	$5,874	$5,032	$5,051	$5,163	$5,570

Activity Expenditures (General Fund)	Percentage of expenditures					
	State	Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
Instruction	59.5%	59.4%	59.8%	60.2%	59.8%	58.3%
Instruction Support	9.5%	7.7%	9.4%	9.8%	9.6%	9.6%
Food & Nutrition Services	3.3%	3.9%	3.6%	3.2%	3.1%	3.1%
Pupil Transportation	4.0%	5.1%	4.2%	3.7%	3.7%	3.9%
Maintenance & Operations	9.8%	10.2%	9.7%	9.8%	9.6%	10.0%
Central Administration	6.2%	7.5%	6.1%	6.0%	6.0%	6.3%
School Administration	6.4%	5.5%	6.3%	6.1%	6.4%	6.8%
Other Services	1.4%	0.8%	0.9%	1.1%	1.8%	2.1%

Demographic Context	State	Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
Total Number of Students	936,395	53,760	239,791	155,196	293,374	194,274
Total number of Districts	296	147	99	22	21	7
Average District Size	3,163	366	2,422	7,054	13,970	27,753

Expenditure Patterns Among Schools

Our analysis of school expenditure patterns was based on our case study of 114 schools in 6 districts. We originally selected 32 districts as case studies for school expenditures analyses. These districts were selected in order to provide a broad representation of district sizes and locations. Because of delays and difficulties in securing the needed data, the number of case study districts was only 8 of the 32 districts. Of the 8 districts who provided data, 2 of the districts only coded a small proportion of total expenditures to individual schools. These districts were excluded from the study, resulting in 6 case study districts. These districts had nearly 74,000 FTE students, which is about 8 percent of the state's student population.

These 6 districts sent data to OSPI, which transmitted the data to LEAP to check the data's accuracy. LEAP worked with the 6 districts to obtain missing data and resolve questions regarding the data. LEAP then provided the data to JLARC.

The 6 districts all coded approximately 70 percent of total district expenditures to individual schools. We eliminated certain outlier schools from the analysis. The schools eliminated from the analysis included:

- Schools that could not be categorized as an elementary, middle, or high school (e.g., a school providing instruction in grades K-8).
- Schools primarily serving special populations.

The following exhibits provide selected information on the districts and schools that were included in the analysis.

Exhibit 50

Profile of Six Case Study Districts

District Characteristic	District					
	1	2	3	4	5	6
District Size Category(Student FTEs)	1000-4,999	>10,000	1000-4,999	>10,000	1000-4,999	>10,000
District Expenditures per Student	$6,335	$5,838	$5,863	$5,524	$5,402	$6,343
% of Total Expenditures Coded to Schools	70%	69%	72%	78%	69%	73%
Expenditures per Student Coded to Schools	$4,410	$4,017	$4,250	$4,288	$3,723	$4,633
Highest Spending Elementary School	5,023	5,524	4,957	4,674	3,441	5,688
Lowest Spending Elementary School	3,978	2,955	3,891	3,182	3,441	3,527
Average Spending - Elementary Schools	4,449	4,097	4,458	4,021	3,441	4,350
Highest Spending Middle School	4,272	4,246	4,613	5,208	4,029	5,083
Lowest Spending Middle School	4,272	3,593	4,613	4,207	4,029	4,649
Average Spending - Middle Schools	4,272	3,954	4,613	4,477	4,029	4,784
Highest Spending High School	4,554	4,755	3,736	7,871	3,872	4,997
Lowest Spending High School	3,486	3,914	3,736	4,137	3,872	4,166
Average Spending - High Schools	4,020	4,335	3,736	5,394	3,872	4,562

Exhibit 51

Characteristics of 114 Schools in Case Study Districts

Elementary Schools												
School	Student FTEs	% Students, Free/Red. Price Meals	Total Staff FTEs	Student-Staff Ratio	Teacher FTEs	Student-Teacher Ratio	Teachers as a % of Total Staff	Staff Mix	Total Expenditures	Expenditures per Student	Total Staff Salaries and Benefits	Salaries and Benefits per Staff
1	453	40%	25.86	17.5	19.5	23.2	75%	1.72	1,619,374	3,578	1,480,783	57,262
2	454	65%	33.05	13.7	22.0	20.6	67%	1.90	2,027,604	4,467	1,863,896	56,396
3	577	74%	44.75	12.9	29.0	19.9	65%	1.76	2,713,624	4,707	2,475,887	55,327
4	368	18%	25.36	14.5	17.8	20.7	70%	1.82	1,527,669	4,147	1,433,154	56,512
5	522	88%	48.08	10.9	32.0	16.3	67%	1.78	2,971,749	5,688	2,654,638	55,213
6	429	44%	24.80	17.3	18.5	23.2	75%	1.78	1,552,785	3,618	1,450,180	58,475
7	556	59%	41.96	13.3	27.5	20.2	66%	1.80	2,550,856	4,587	2,312,605	55,115
8	585	39%	36.82	15.9	27.0	21.7	73%	1.69	2,167,062	3,705	1,968,614	53,466
9	312	43%	21.42	14.6	15.5	20.1	72%	1.69	1,302,898	4,178	1,178,597	55,023
10	473	67%	38.74	12.2	24.8	19.1	64%	1.65	2,413,159	5,105	2,169,599	56,004
11	510	87%	42.28	12.1	28.5	17.9	67%	1.76	2,618,323	5,132	2,370,773	56,073
12	474	13%	29.57	16.0	22.5	21.1	76%	1.76	1,790,987	3,779	1,663,656	56,262
13	589	96%	48.40	12.2	29.5	20.0	61%	1.71	2,899,531	4,925	2,637,767	54,499
14	486	17%	28.10	17.3	21.0	23.1	75%	1.84	1,764,620	3,633	1,621,918	57,720
15	355	20%	23.44	15.1	17.0	20.9	73%	1.93	1,529,282	4,312	1,429,035	60,966
16	514	22%	32.28	15.9	23.4	22.0	72%	1.75	1,961,173	3,815	1,803,716	55,877
17	302	65%	20.89	14.4	13.7	22.0	66%	1.92	1,383,176	4,587	1,275,892	61,077
18	372	34%	20.01	18.6	16.0	23.2	80%	1.75	1,310,371	3,527	1,201,271	60,034
19	438	45%	35.63	12.3	22.6	19.4	63%	1.83	2,069,309	4,721	1,943,378	54,543
20	435	77%	39.12	11.1	25.0	17.4	64%	1.68	2,180,897	5,016	2,027,087	51,817
21	512	78%	39.95	12.8	26.3	19.5	66%	1.70	2,456,621	4,802	2,214,439	55,430
22	405	66%	33.83	12.0	20.7	19.6	61%	1.69	1,938,369	4,791	1,794,385	53,041
23	528	5%	30.68	17.2	25.0	21.1	82%	1.75	2,024,363	3,833	1,793,047	58,443
24	382	7%	25.71	14.9	19.0	20.1	74%	1.92	1,822,688	4,769	1,631,836	63,471
25	320	46%	17.83	17.9	14.0	22.8	79%	1.93	1,268,535	3,968	1,154,000	64,722
26	483	86%	40.48	11.9	26.0	18.6	64%	1.76	2,556,999	5,294	2,309,781	57,060
27	402	42%	25.38	15.8	18.0	22.3	71%	1.68	1,474,525	3,670	1,376,305	54,228
28	594	48%	39.90	14.9	27.5	21.6	69%	1.87	2,559,610	4,309	2,307,307	57,827
29	465	74%	36.23	12.8	23.5	19.8	65%	1.65	2,236,235	4,810	1,992,165	54,987
30	588	83%	46.49	12.6	30.0	19.6	64%	1.66	2,676,751	4,556	2,422,736	52,113
31	395	41%	23.84	16.6	17.5	22.6	73%	1.78	1,525,563	3,861	1,362,552	57,154
32	568	82%	40.61	14.0	28.3	20.1	70%	1.76	2,567,261	4,522	2,320,666	57,145
33	626	57%	39.44	15.9	28.5	22.0	72%	1.77	2,490,185	3,980	2,273,980	57,657
34	512	5%	29.42	17.4	22.5	22.7	76%	1.78	1,981,197	3,872	1,778,921	60,466
35	290	20%	17.74	16.3	14.0	20.7	79%	1.88	1,152,249	3,976	1,085,079	61,166
36	580	26%	39.94	14.5	25.5	22.7	64%	1.66	2,193,717	3,786	2,043,896	51,174
37	408	33%	30.85	13.2	20.0	20.4	65%	1.81	1,750,926	4,297	1,630,653	52,857
38	431	23%	35.63	12.1	23.9	18.0	67%	1.89	2,103,158	4,880	1,981,285	55,607
39	422	45%	36.61	11.5	22.0	19.2	60%	1.79	1,982,830	4,699	1,874,403	51,199
40	557	31%	37.55	14.8	25.3	22.0	67%	1.54	1,979,301	3,554	1,804,178	48,047

Elementary Schools (cont.)												
School	Student FTEs	% Students, Free/Red. Price Meals	Total Staff FTEs	Student-Staff Ratio	Teacher FTEs	Student-Teacher Ratio	Teachers as a % of Total Staff	Staff Mix	Total Expenditures	Expenditures per Student	Total Staff Salaries and Benefits	Salaries and Benefits per Staff
41	501	33%	40.25	12.4	26.7	18.8	66%	1.63	2,211,309	4,418	2,065,134	51,308
42	478	39%	38.51	12.4	24.8	19.3	64%	1.66	2,025,902	4,238	1,895,028	49,209
43	487	17%	32.61	14.9	22.2	21.9	68%	1.71	1,827,120	3,752	1,752,776	53,750
44	323	29%	33.29	9.7	19.1	16.9	57%	1.49	1,658,680	5,143	1,549,579	46,548
45	511	39%	40.68	12.6	24.6	20.8	60%	1.70	2,213,620	4,332	2,077,081	51,059
46	448	28%	35.16	12.7	22.1	20.3	63%	1.72	1,913,403	4,271	1,794,090	51,026
47	417	50%	37.32	11.2	23.2	18.0	62%	1.70	1,998,082	4,792	1,890,432	50,655
48	461	11%	36.12	12.8	24.1	19.1	67%	1.62	1,891,088	4,098	1,755,075	48,590
49	424	18%	36.52	11.6	22.7	18.7	62%	1.57	1,887,177	4,451	1,737,493	47,576
50	418	16%	31.27	13.4	19.5	21.4	62%	1.50	1,644,800	3,940	1,525,260	48,777
51	528	27%	43.37	12.2	28.5	18.5	66%	1.74	2,373,537	4,500	2,233,014	51,488
52	547	25%	37.21	14.7	24.8	22.0	67%	1.67	2,126,134	3,890	1,882,959	50,604
53	547	24%	37.52	14.6	24.9	22.0	66%	1.77	2,182,021	3,993	2,050,255	54,644
54	361	32%	28.98	12.4	18.4	19.6	63%	1.67	1,658,431	4,600	1,524,016	52,589
55	518	71%	51.61	10.0	27.9	18.5	54%	1.44	2,496,994	4,825	2,283,989	44,255
56	351	55%	35.17	10.0	19.1	18.3	54%	1.71	1,862,322	5,311	1,596,867	45,404
57	384	46%	31.82	12.1	18.9	20.3	59%	1.78	1,619,860	4,216	1,494,374	46,963
58	323	41%	32.11	10.1	20.0	16.1	62%	1.66	1,784,291	5,524	1,576,666	49,102
59	361	39%	30.99	11.6	18.4	19.7	59%	1.71	1,620,112	4,490	1,414,728	45,651
60	377	35%	36.07	10.4	20.8	18.1	58%	1.46	1,493,561	3,965	1,373,027	38,066
61	442	42%	37.06	11.9	21.6	20.5	58%	1.63	1,845,658	4,178	1,642,023	44,307
62	379	61%	34.48	11.0	19.1	19.8	55%	1.45	1,657,905	4,373	1,389,801	40,307
63	661	24%	47.79	13.8	33.4	19.8	70%	1.75	2,351,741	3,555	2,220,684	46,468
64	646	43%	49.23	13.1	29.8	21.7	61%	1.72	2,630,895	4,073	2,459,690	49,963
65	613	29%	41.09	14.9	28.4	21.6	69%	1.80	2,255,069	3,676	1,986,365	48,342
66	642	52%	49.13	13.1	30.0	21.4	61%	1.55	2,392,150	3,726	2,197,403	44,726
67	822	27%	50.53	16.3	37.6	21.9	74%	1.48	2,430,027	2,955	2,268,000	44,884
68	717	42%	56.95	12.6	34.6	20.7	61%	1.64	2,756,339	3,843	2,575,233	45,219
69	736	36%	54.56	13.5	33.7	21.8	62%	1.60	2,551,840	3,467	2,357,881	43,216
70	379	59%	29.96	12.7	18.8	20.2	63%	1.58	1,508,864	3,978	1,394,594	46,549
71	289	73%	30.30	9.5	17.9	16.1	59%	1.65	1,359,546	4,703	1,266,331	41,793
72	390	73%	34.53	11.3	22.0	17.7	64%	1.55	1,581,990	4,056	1,457,618	42,213
73	434	99%	39.42	11.0	25.8	16.9	65%	1.75	1,986,584	4,574	1,839,503	46,664
74	222	75%	20.17	11.0	11.0	20.2	55%	1.82	1,113,778	5,023	1,026,724	50,904
75	220	29%	18.54	11.9	11.0	20.0	59%	1.70	960,551	4,362	870,381	46,946
76	250	51%	21.66	11.5	12.5	20.0	58%	1.85	1,079,719	4,319	1,012,226	46,732
77	360	45%	31.38	11.5	19.8	18.2	63%	1.80	1,581,714	4,392	1,494,533	47,627
78	327	94%	34.83	9.4	21.1	15.5	61%	1.71	1,622,160	4,957	1,524,702	43,776
79	406	43%	30.47	13.3	20.2	20.1	66%	1.87	1,580,914	3,891	1,484,781	48,729
80	331	72%	29.97	11.1	18.3	18.1	61%	1.76	1,567,502	4,729	1,458,804	48,675
81	712	40%	49.89	14.3	36.2	19.7	72%	1.61	2,448,496	3,441	2,322,654	46,556

Middle Schools

School	Student FTEs	% Students, Free/Red. Price Meals	Total Staff FTEs	Student -Staff Ratio	Teacher FTEs	Student-Teacher Ratio	Teachers as a % of Total Staff	Staff Mix	Total Expenditures	Expenditures per Student	Total Staff Salaries and Benefits	Salaries and Benefits per Staff
1	880	26%	58.9	14.9	45.3	19.4	77%	1.71	4,112,254	4,676	3,343,490	56,727
2	663	64%	50.8	13.0	35.6	18.6	70%	1.66	3,370,343	5,083	3,139,482	61,777
3	873	57%	61.6	14.2	44.0	19.8	71%	1.70	4,057,057	4,649	3,493,931	56,766
4	852	28%	55.5	15.4	42.8	19.9	77%	1.87	4,050,984	4,757	3,667,012	66,132
5	839	25%	57.1	14.7	42.4	19.8	74%	1.76	3,916,549	4,668	3,530,722	61,834
6	776	74%	61.7	12.6	42.0	18.5	68%	1.61	3,779,327	4,871	3,418,662	55,417
7	712	20%	55.3	12.9	35.3	20.2	64%	1.63	3,102,637	4,356	2,954,878	53,414
8	699	32%	56.6	12.3	35.6	19.6	63%	1.70	3,313,102	4,738	2,948,503	52,075
9	642	25%	48.1	13.4	31.4	20.4	65%	1.67	2,701,209	4,207	2,595,659	54,009
10	580	26%	56.2	10.3	32.6	17.8	58%	1.68	3,104,100	5,354	2,757,449	49,074
11	1,126	30%	72.0	15.6	48.5	23.2	67%	1.63	4,224,899	3,753	3,371,190	46,796
12	715	36%	51.8	13.8	33.5	21.4	65%	1.67	3,023,462	4,226	2,697,284	52,061
13	865	31%	62.3	13.9	36.7	23.6	59%	1.65	3,673,036	4,246	2,862,208	45,964
14	859	26%	60.7	14.1	40.6	21.2	67%	1.57	3,087,071	3,593	2,795,200	46,019
15	630	50%	49.8	12.6	30.6	20.6	61%	1.57	2,690,197	4,272	2,412,795	48,459
16	557	46%	45.4	12.3	28.5	19.5	63%	1.73	2,570,545	4,613	2,386,286	52,550
17	461	23%	30.8	14.9	23.6	19.6	76%	1.62	1,855,737	4,029	1,867,538	60,595

High Schools

School	Student FTEs	% Students, Free/Red. Price Meals	Total Staff FTEs	Student-Staff Ratio	Teacher FTEs	Student-Teacher Ratio	Teachers as a % of Total Staff	Staff Mix	Total Expenditures	Expenditures per Student	Total Staff Salaries and Benefits	Salaries and Benefits per Staff
1	1,761	18%	109.1	16.1	82.4	21.4	76%	1.76	7,334,821	4,166	6,663,110	61,068
2	1,442	16%	94.9	15.2	70.7	20.4	75%	1.76	6,424,708	4,455	5,990,352	63,156
3	1,388	35%	92.7	15.0	71.2	19.5	77%	1.76	6,934,849	4,997	6,106,971	65,850
4	1,610	53%	106.3	15.1	77.7	20.7	73%	1.78	7,383,639	4,585	6,633,897	62,401
5	1,674	19%	112.4	14.9	82.9	20.2	74%	1.78	7,710,779	4,606	6,902,344	61,398
6	1,653	17%	129.0	12.8	84.7	19.5	66%	1.71	7,665,443	4,637	6,827,314	52,937
7	1,165	11%	83.5	14.0	50.7	23.0	61%	1.70	5,108,770	4,384	4,570,176	54,739
8	1,392	14%	117.3	11.9	76.1	18.3	65%	1.67	6,897,609	4,957	6,228,414	53,107
9	1,278	24%	104.1	12.3	63.1	20.3	61%	1.83	6,663,358	5,214	5,842,603	56,109
10	312	46%	58.8	5.3	26.3	11.9	45%	1.71	2,471,515	7,913	2,211,612	37,638
11	1,452	19%	98.7	14.7	64.5	22.5	65%	1.77	5,682,864	3,914	4,809,760	48,736
12	1,068	24%	82.9	12.9	48.9	21.8	59%	1.73	5,080,334	4,755	4,034,092	48,662
13	1,024	21%	79.9	12.8	52.6	19.5	66%	1.69	4,665,355	4,554	3,977,194	49,771
14	182	68%	8.9	20.4	8.9	20.4	100%	1.46	634,077	3,486	536,392	60,269
15	1,021	30%	80.2	12.7	46.5	22.0	58%	1.75	3,813,426	3,736	3,418,764	42,639
16	396	37%	29.0	13.7	20.8	19.0	72%	1.61	1,532,334	3,872	1,444,097	49,814

In addition to the information shown in the preceding exhibits, the school-level expenditure data included expenditures by activity, program, and object. This information was used to identify the expenditure patterns noted in Chapter 2. The following exhibit includes the data for school-level expenditures by program, activity, and object.

Exhibit 52

Case Study Schools Average Expenditures by Program, Activity & Object

Program	**Type of School**		
	Elementary	Middle	High
Regular Instruction	$2,586	$2,581	$2,395
Special Education	330	376	312
Compensatory Education	301	108	77
Vocational Education	0	33	544
Other Instruction	69	65	134
Community/Support Services	1,015	1,304	1,236
Total	$4,302	$4,467	$4,699
Activity			
Instruction	$3,225	$3,008	$3,250
Instruction Support	265	437	521
Food	92	236	117
Transportation	0	1	6
Maintenance and Operations	317	347	316
Central Administration	10	16	29
School Administration	387	421	423
Other Support Services	5	1	36
Total	$4,302	$4,467	$4,699
Object			
Certificated Salaries	$2,478	$2,530	$2,643
Classified Salaries	570	525	566
Benefits	922	915	944
Supplies	168	269	230
Purchased Services	143	170	182
Other*	23	59	133
Total	$4,302	$4,467	$4,699
*Other includes travel, capital outlay, debits, and credits.			

The analysis of the patterns of expenditures at the school level (as described in Chapter 2) showed that the regardless of the *level* of expenditures at a school, the *proportion* of expenditures spent on the various activities, programs, and objects was similar. This finding was similar to our analysis of expenditures at the district level. However, there is more variation in spending patterns at the school level,

particularly among program expenditures. It is not surprising that there is a greater variation in program expenditures at the school level since some schools might serve a higher proportion of special education students, for example, and therefore have higher special education costs.

DIFFERENCES BETWEEN HIGH & LOW SPENDING DISTRICTS AND SCHOOLS

To determine the differences between high and low spending schools and districts, we conducted a series of multiple linear regressions in order to develop a model that explains these differences. Not surprisingly, at the district level, we found almost a perfect correlation between revenue per student and expenditures per student. Spending per student by school districts is explained by the amount of revenue per student. At the school level, the amount of expenditures per student is determined by the budget for each school, which is set by the district.

Our analysis was intended to identify what higher spending schools and districts are buying with the additional money they spend. We found that three staff-related variables explained the majority of the variations in spending per student at the district and school levels. These variable are:

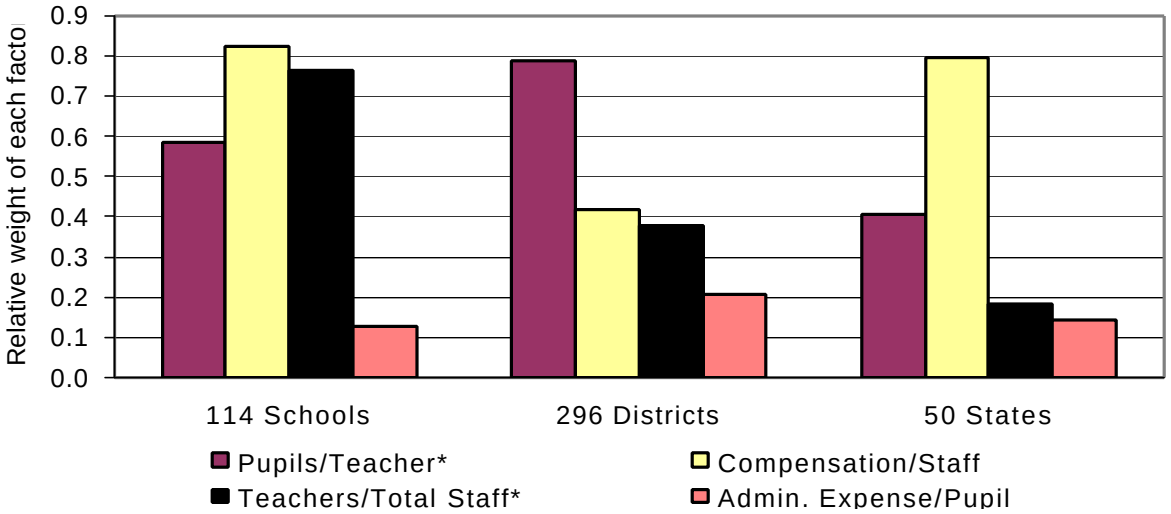
- Student-teacher ratio
- Compensation per staff
- Teachers as a percent of total staff

These variables explain 88 percent of the variation in per student spending among the 114 case study schools and 81 percent of the variation in per student spending among the 296 school districts in Washington. Since staffing comprises 82 percent of school district expenditures, it is not surprising that staffing-related variables would explain most of the differences in expenditures per student among schools and districts.

Exhibit 53 illustrates the relative importance of each factor in explaining variations in expenditures per student among schools, districts, or states. Using data from NCES, we also found these three variables explain 96 percent of the variation in expenditures per student among states. The exhibit also illustrates that administrative expenditures per student is relatively unimportant in explaining differences in total expenditures per student.

Exhibit 53

Relative Weight of Factors Explaining Variations in Expenditures Among Schools, Districts, and States



*Factor is inversely related to expenditures per student (i.e., more pupils per teacher and a higher proportion of teachers to total staff is associated with lower expenditures per student.

Source: JLARC analysis of financial information from six districts in Washington (school level), OSPI data (district level) and NCES data (state level). Administrative costs at the school level include only school-level administration.

The student-teacher ratio is negatively correlated with expenditures per student. Therefore, as student-teacher ratios decrease, spending per student increases. Teachers as a percent of total staff is also negatively correlated with expenditures per student (i.e., as the percentage of teachers decreases, spending per student increases). Compensation per staff is positively correlated. Therefore, as compensation per staff increases, expenditures per student increases.

DATA RELATED TO STUDENT AND STAFF CHARACTERISTICS

Appendix 7

The following exhibits provide the results of various analyses of student and staff characteristics. Some of these data are used for exhibits in Chapter 3. All data are for school year 1996-97. District-level averages are based on analyses of all 296 districts. School-level averages are based on analyses of the 1,617 schools that administered state standardized tests.[102] Lower income students are defined as those who are eligible for free or reduced-price meals.

Exhibit 54
District Data, by District Spending Level

	State total or average	District Spending Level (expenditure per pupil)				
		Lowest Spending	Low to Middle Spending	Middle Spending	Middle to High Spending	Highest Spending
Total FTE students	936,395	186,202	183,980	193,022	186,347	186,844
Total districts	296	62	37	35	40	122
Percent bilingual students	4.7%	4.5%	3.9%	4.1%	5.1%	6.0%
Percent lower-income students	31.0%	27.5%	26.9%	28.9%	30.6%	41.1%
Percent LAP students	16.1%	16.2%	14.4%	15.2%	16.3%	18.5%
Percent special education students	11.2%	11.6%	11.2%	11.2%	11.1%	11.0%
Percent vocational & skill center students	5.8%	6.2%	6.1%	5.7%	6.1%	5.0%
Students/staff (any type)	10.5	11.2	10.8	10.5	10.4	9.6
Students/certificated staff (any type)	16.2	17.1	16.6	16.5	16.2	14.9
Students/teacher (any type)	19.4	20.3	19.9	19.7	19.6	18.0
Students/regular education staff	21.7	22.6	21.8	21.8	21.7	20.6
Students/cert. staff for regular education	23.0	23.8	23.3	23.2	23.2	21.6
Students/classified staff	29.5	32.7	30.7	28.7	29.4	26.7

Note: District spending levels are based on increasing amounts of district spending per pupil and divided into five groups (quintiles), with each group having about 20 percent of the state's students (not 20 percent of the districts).

[102] These schools enrolled about 92 percent of the state's student population. Schools were excluded from the analysis if they did not administer a state standardized test or were administrative centers or buildings that do not provide instruction.

Exhibit 55
District Data, by District Size

	State Total	District Enrollment (FTE) Under 1,000	1,000-4,999	5,000-9,999	10,000-19,999	20,000 & over
Total FTE students	936,395	53,760	239,791	155,196	293,374	194,274
Total districts	296	147	99	22	21	7
Percent bilingual students	4.7%	4.8%	5.2%	3.7%	3.9%	6.1%
Percent lower-income students	31.0%	41.4%	34.1%	27.5%	26.4%	34.2%
Percent LAP students	16.1%	21.1%	17.3%	14.9%	14.5%	16.8%
Percent special education students	11.2%	12.2%	11.5%	11.5%	11.0%	10.7%
Percent vocational & skill center students	5.8%	5.8%	5.9%	5.8%	6.4%	4.9%
Students/staff (any type)	10.5	9.0	10.6	10.8	10.6	10.3
Students/certificated staff (any type)	16.2	14.2	16.6	16.7	16.4	15.8
Students/teacher (any type)	19.4	16.5	19.8	20.0	19.8	19.1
Students/regular education staff	21.7	18.6	22.2	21.9	22.1	21.4
Students/cert. staff for regular education	23.0	19.8	23.5	23.4	23.4	22.5
Students/classified staff	29.5	24.4	29.5	30.2	30.4	29.3
Average teacher experience (years)	13.5	13.2	13.0	13.5	13.5	14.0
Percent teachers w/ Master's or greater	49.7%	45.4%	50.4%	52.3%	50.8%	46.9%
Percent certificated staff of all district staff	64.5%	63.7%	64.2%	64.5%	65.0%	65.0%
Percent teachers of all district staff	53.8%	55.0%	53.7%	53.9%	53.8%	53.7%

Exhibit 56
District Data, by District Socioeconomic Level

	Socioeconomic Level of District (percentage of students eligible for free or reduced-price meals) Less than 10%	10% to 19.9%	20% to 29.9%	30% to 39.9%	40% to 49.9%	50% or more
Percent certificated staff of all district staff	65.7%	66.1%	64.9%	63.0%	64.7%	65.7%
Percent teachers of all district staff	54.9%	54.2%	54.3%	52.3%	53.1%	54.3%
Percent teachers with Master's or greater	47.5%	52.8%	50.8%	50.0%	50.5%	44.1%
Average teacher experience (years)	13.5	13.5	13.4	13.3	13.9	13.4

Exhibit 57
School Data, by School Socioeconomic Level

	Socioeconomic Level of School (percentage of students eligible for free or reduced-price meals) Less than 10%	10% to 19.9%	20% to 29.9%	30% to 39.9%	40% to 49.9%	50% or more	State
Percent teachers with Master's or greater	50.2%	52.0%	50.4%	48.5%	49.4%	46.5%	49.6%
Average teacher experience (years)	13.9	13.9	13.7	13.4	13.7	12.8	13.5
Students (headcount) / teacher (any type)	22.2	21.4	21.1	20.6	20.3	19.7	20.9
Total student enrollment (headcount)	107,447	203,650	179,064	148,823	93,826	161,898	894,708
Total schools	151	287	301	289	200	389	1,617
Average student enrollment (headcount)	712	710	595	515	469	416	553

Exhibit 58
School Data, by School Type

	State Averages for Schools		
	Elem.	Middle/ Junior	High
Student-teacher ratio (all teachers)	20.5	20.5	21.6
Student-other staff (non-teachers) ratio	39.9	39.5	41.7
Average teacher experience (in years)	13.3	12.8	14.5
Percent teachers with advanced degrees	47.7%	49.4%	52.5%
Average teacher mix factor	1.69	1.65	1.70
Percent minorities	23.3%	21.8%	20.8%
Percent enrolled in district less than 2 years	19.2%	17.2%	12.1%

One way to study patterns of staff and students among schools of different sizes is to divide each of the school types (i.e., elementary, middle, high schools) into groups of different sizes. We categorized each school type into five groups as shown in Exhibit 59. Our analysis of these groupings is found in Exhibit 60. We found that the level of low-income students is greatest in the smallest schools and gradually decreases as the size of a school increases (see Exhibit 26 in Chapter 3).

Exhibit 59
Categories for School Size

	School Size, by Enrollment				
Type of school	Smallest	Small/Medium	Mid-size	Medium/Large	Largest
Elementary	0-150	151-300	301-450	451-600	601 or more
Middle/Jr. High	0-200	201-400	401-600	601-800	801 or more
High School	0-400	401-800	800-1200	1201-1600	1601 or more

Exhibit 60
School Data, by School Size

Staff Variable	School Enrollment				
	Smallest schools	Small-medium	Mid-sized schools	Medium-large	Largest schools
Percent certificated staff of all school staff	71.3%	72.2%	71.7%	74.1%	75.3%
Percent teachers of all school staff	61.7%	62.0%	62.3%	65.1%	65.9%
Average teacher experience (years)	13.2	13.2	13.9	13.6	13.3
Percent teachers with Master's or greater	45.6%	47.9%	49.8%	49.5%	50.7%
Percent low-income students	38.5%	37.9%	34.8%	30.8%	27.3%
Total student enrollment (headcount)	32,855	70,067	194,977	361,682	235,127
Total schools	204	199	402	558	254
Average student enrollment (headcount)	161	352	485	648	926

FACTORS AFFECTING STUDENT PERFORMANCE IN WASHINGTON

Appendix 8

The 1998 Legislature mandated the Joint Legislative Audit and Review Committee (JLARC) to use available data to study the factors that influence educational outcomes in Washington state. This appendix describes the data and methods used in our analyses of existing data from all districts and schools in the state and the results of the analyses.

METHODOLOGY AND RESULTS – DISTRICT ANALYSES

We used data available from the Office of Superintendent of Public Instruction (OPSI) to determine the factors affecting student performance in Washington State. The analyses used data on student assessments, revenues and expenditures, staff levels and characteristics, student characteristics, and demographics from all 296 districts for school year 1996-97.

Assessment Data OSPI maintains the results from the standardized tests required by the state. These include math, reading, language, and battery tests from the Comprehensive Test of Basic Skills (CTBS) for 4th and 8th grades, and the math, language, science, and social studies tests from the Curriculum Frameworks Assessment System (CFAS) for 11th grade. Four separate analyses were conducted using the following four test results as independent variables: 4th grade battery, 8th grade battery, 11th grade math, and 11th grade language. Battery test results were used because they provide an overall (composite) indication of student performance in a district. Separate analyses were conducted for 11th grade subjects because no composite is available for this grade. The Washington Assessment of Student Learning (WASL), the new criteria-referenced test, was not used because only 4th graders had been tested.

Fiscal Data Two revenue categories were used as independent variables: local revenue per pupil and total revenue per pupil. These per pupil revenue amounts were adjusted for differences in the cost of educating students with special needs.[103] In addition, two "activity" expenditure categories were used as independent variables: the percentage of expenditures spent on regular instruction and the percentage spent on instruction support.

Staff and Student Data Districts report staff in various categories in terms of their full-time equivalents (FTE), while reporting the number of students in terms of FTEs and headcount. Our analyses used FTEs for both staff and students to compute student-staff ratios, with the student counts adjusted for differences in the cost of educating students with special needs. Two independent variables were used in the model: the ratio of student to teachers, and the ratio of students to all staff. In addition, the average level of teacher experience (measured in years) and the percentage of teachers who have at least a Masters' degree were included in the model. Finally, the percentage of students receiving bilingual education and the special education were included as independent variables.

Demographic Data Two independent variables were included in the model to control for a district's relative wealth and socioeconomic status – the district's assessed property value per weighted pupil and poverty level (measured by the percentage of students eligible for free or reduced-price meals).

Analysis Method

We conducted linear regression analyses using the four dependent variables. The regression model weighted each of the 296 observations for enrollment to prevent one or a few small districts from unduly influencing the estimated coefficients. Thus, school districts with larger enrollments had a greater effect in determining the coefficients of the model and the results are representative of the effect of the factors on students rather than districts. All independent variables were entered into each model at the same time.

Results

The coefficients and significance of the variables in the four models are shown in Exhibit 61 below. These show the direction and strength of the relationship between the dependent and independent variables. A positive coefficient implies

[103] The weights were derived from the level of extra funding provided in the state funding formula. Special education students were given a weight of .93, which corresponds to the weight in the formula. Bilingual, LAP, and institutionalized students were given weights of .18, .10, and 1.22, respectively, which correspond to the implicit weights in the formula.

that as the independent variable increases, student performance increases. Conversely, negative coefficients mean that as that variable increases, performance decreases. The larger the coefficient, the greater the effect of the variable on student performance. Variables with coefficients and significance levels in **bold** have a statistically significant effect on student performance, while those that are not in bold can be said to have little or no effect on student performance.

Exhibit 61

Results of District Analyses

Independent Variable	4th grade battery		8th grade battery		11th grade language		11th grade math	
	Adj. R-square = .640		Adj. R-square = .693		Adj. R-square = .553		Adj. R-square = .483	
	Standardized coefficient	Signif. level	Standardized coefficient	Signif. level	Standardized coefficient	Signif. level	Standardized coefficient	Signif. level
External Factors								
Assessed property value per pupil	0.066	.195	**0.103**	**.032**	-0.060	.316	-0.116	.070
Percent low-income students	**-0.392**	**.000**	**-0.437**	**.000**	**-0.391**	**.000**	**-0.261**	**.000**
Percent bilingual students	**-0.197**	**.000**	**-0.175**	**.000**	-0.037	.501	-0.015	.795
Percent special education students	-0.063	.144	**-0.081**	**.043**	0.029	.541	-0.080	.119
Fiscal Factors								
Local revenue per pupil	**0.304**	**.000**	**0.251**	**.000**	**0.341**	**.000**	**0.455**	**.000**
Total General Fund revenue per pupi1	0.045	.499	-0.117	.055	-0.094	.210	-0.147	.070
Percent spent on regular instruction	0.091	.082	**0.173**	**.000**	**0.209**	**.000**	**0.283**	**.000**
Percent spent on instruction support	0.070	.074	0.011	.761	**0.101**	**.018**	0.057	.219
Staffing Factors								
Student/teacher ratio	0.008	.896	-0.057	.292	-0.015	.820	-0.093	.181
Student/total staff ratio	0.056	.436	-0.044	.513	-0.004	.956	-0.040	.640
Percent teachers with MA or PhD	**0.142**	**.000**	**0.121**	**.001**	**0.134**	**.002**	0.057	.221
Average teacher experience (yrs)	-0.053	.186	**0.101**	**.008**	**0.120**	**.008**	**0.114**	**.020**

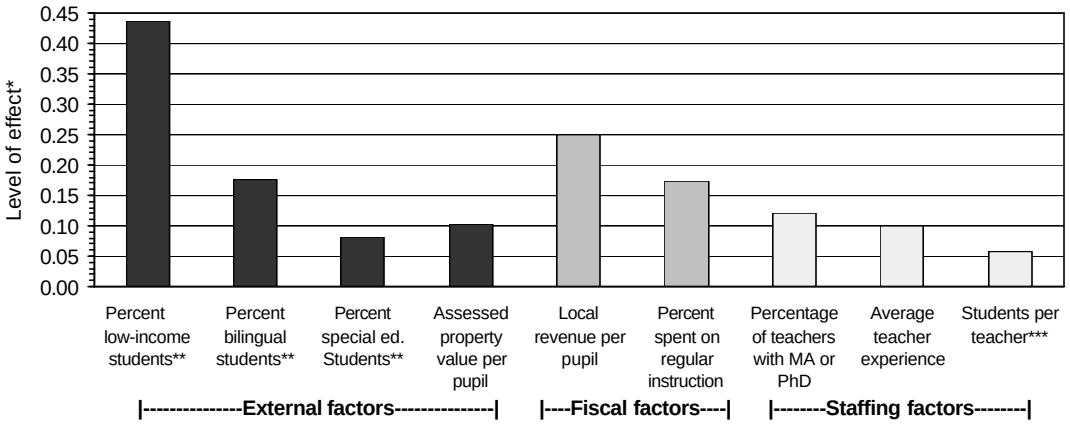
N = 296

The separate analyses yield similar results, with a few variations. Two factors had strong and consistent effects on student performance across all grade levels: the percentage of low-income students (negative coefficient) and the level of local revenue (positive coefficient). Thus, higher student performance was associated with higher socioeconomic status and higher local revenue levels. In addition, higher percentages of spending on regular education were associated with higher test scores in three of the four models. Higher levels of bilingual students were associated with lower test scores in 4th and 8th grades, but not 11th grade. Higher levels of teacher education were associated with higher test scores in all but 11th grade math. Greater levels of teacher experience were associated with higher test scores in 8th and 11th grades. The explanatory power of the model was greatest for 8th grade and lowest for 11th grades. Thus, other factors than those in the model explain more of the variation at the high school level.

The exhibit below shows the relative strength of the effects of variables on 8th grade battery test results. All variables except the students-teacher ratio were statistically significant.

Exhibit 62

Factors Affecting 8th Grade Test Results



*Absolute value of standardized coefficient
**Factor has negative influence
***Statistically had no effect

METHODOLOGY AND RESULTS – SCHOOL-LEVEL ANALYSES

We used data aggregated at the school level that are available from the Office of Superintendent of Public Instruction (OSPI) to determine the factors affecting student performance in grades 4, 8, and 11 in Washington State. The analysis used data on student assessments, staff levels and characteristics, student characteristics, and demographics from 1,603 public school buildings with 893,699 students from school year 1996-97. This represents 92 percent of the state's public school student population. The analysis included 95 percent or more of the students who took standardized tests during that school year. Exhibit 63 shows the number of schools and students included in the analysis and how they compare with state totals. Some schools gave more than one test (e.g., a K-8 school would give tests for both 4th and 8th grades).

Exhibit 63

Profile of Data Used

	State total*	Included in JLARC analysis	Percent of total included in JLARC analysis
Schools giving 4th grade test	1,087	1,023	94.1
Schools giving 8th grade test	473	396	83.7
Schools giving 11th grade test	387	317	81.9
Students taking 4th grade battery test	66,919	64,706	96.7
Students taking 8th grade battery test	68,119	64,437	94.6
Students taking 11th grade language test	53,837	52,246	97.0
Students taking 11th grade math test	53,056	51,499	97.1
Student enrollment (headcount)	975,646	893,699	91.6

* Totals for data available from OSPI.

Some schools were excluded from the analysis because (1) they did not administer a test,[104] (2) they did not have students or teachers,[105] (3) they were missing critical data, such as student assessment scores or the number of students eligible for free or reduced-price meals, or (4) their data had a disproportionate influence on the results (i.e., outlier). In some cases, schools with missing or questionable data were included in the analysis because accurate data were available from other sources or could be inferred from other schools in the district.[106]

Results from the same state standardized tests as in the district analyses were used as dependent variables. For independent variables, we used FTE staff and student enrollment (headcount) data to compute the student-teacher ratio (student FTE data are not available at the school level). The percentage of staff who are teachers was calculated using FTE staff data. In addition, the average level of teacher experience (measured in years) and the percentage of teachers who had a Masters' degree or above were included in the model. Finally, the number of students enrolled in the school was included to determine if the school size affected student

[104] Some schools did not administer certain tests because they do not serve these grades. For example, a school with only elementary grades K-3 would not administer a 4th grade test, and very small schools serving all grades may not have had any students in the grades tested.

[105] Some buildings listed by OPSI as schools are administrative centers or buildings that do not provide instruction.

[106] For example, some small districts that were missing school data have only one school but had data available at the district level, which would be the same for the school. In other cases, a school showing no students eligible for free or reduced-price meals was given the average rate of the other schools in the district that had data.

performance. School-level data were not available from OSPI on the number of students receiving bilingual education and special education, so variables related to these student characteristics were not included in the analysis and student counts and ratios were not adjusted for differences in student need. However, we used district-level data for these student groups in conjunction with a hierarchical analysis.[107]

Several types of demographic data were also included in the models as independent variables, depending on their availability. In all models, student socioeconomic status and mobility were included using (1) the percentage of students eligible for free or reduced-price meals and (2) the percentage of students enrolled in the district less than two years. Parent education variables were included in the 8th and 11th grade models but were not used in the 4th grade model.[108] In the 8th grade model, we included the percentage of mothers who (1) had not completed high school and (2) had at least a 4-year college education. In the 11th grade model, we included the percentage of fathers who (1) had not completed high school and (2) had at least a 4-year college education. We used education data on only one parent/guardian in the models due to problems with colinearity. The variable used in each model was based on which parent education variable had more effect when education data for both parents were included in the preliminary analysis.

Unlike data at the district level, expenditure data for school buildings are not collected by OSPI and were not included in the analysis. However, most school expenditures are for teachers and other staff, with compensation based mainly on education and experience.[109] Thus, the variables in the model related to teacher education and experience and the student-staff ratios could be considered a relatively accurate proxy for school expenditures. However, we used district-level expenditure data in conjunction with school-level data in a hierarchical analysis.

Analysis Method

We conducted four separate linear regression analyses using the test results as the four dependent variables. The regression model weighted each observation by the number of students taking the test to prevent smaller schools from unduly influencing the estimated coefficients. Thus, schools with larger enrollments had a greater effect in determining the coefficients of the model, and the results are

[107] For more information on the results of the hierarchical model, contact JLARC.
[108] The mobility and parent education variables were based on data collected from a survey that students complete as part of their assessment. The student survey for 4th grade does not include questions about parent education level.
[109] In an analysis of school expenditures, we found that salaries and benefits account for an average of 90 percent of total expenditures.

representative of the effect of the factors on students rather than schools. All independent variables were entered into each model at the same time.

Results

The coefficients and significance of the variables in the four models are shown in Exhibit 64. These show the direction and relative strength of the relationship between the dependent and independent variables. A positive coefficient implies that as the independent variable increases, student performance increases. Conversely, negative coefficients mean that as that variable increases, performance decreases. The larger the standardized coefficient, the greater the effect of the variable on student performance compared to the other factors in the model.

Exhibit 64

Factors Affecting Student Performance-School Year 1996-97

INDEPENDENT VARIABLE	4th grade battery		8th grade battery		11th grade language		11th grade math	
	Adj. R-square = .526 N = 1023		Adj. R-square = .750 N = 396		Adj. R-square = .703 N = 317		Adj. R-square = .587 N = 317	
	Standardized Coefficient	Signif. Level	Standardized coefficient	Signif. Level	Standardized coefficient	Signif. level	Standardized coefficient	Signif. level
External Factors								
Percent eligible for free/reduced-price meals	-.703	.000	-..328	.000	-.283	.000	-.137	.000
Percent enrolled in district less than 2 years	-.054	.000	-.057	.000	-.162	.000	-.147	.000
Percent mothers not high school graduate	—	—	-.316	.000	—	—	—	—
Percent mothers graduate of 4-yr college	—	—	.355	.000	—	—	—	—
Percent fathers not high school graduate	—	—	—	—	-.243	.000	-.242	.000
Percent fathers graduate of 4-yr college	—	—	—	—	.438	.000	.464	.000
School-Related Factors								
Student/teacher ratio	-.018	.000	-.025	.000	-.013	.000	-.007	.022
Percent teachers of total staff	.051	.000	.069	.000	-.032	.000	* -.004 .	.140
Percent teachers with MA or Ph.D.	.026	.000	.034	.000	.029	.000	-.024	.000
Average teacher experience (years)	.050	.000	.062	.000	-.008	.002	.045	.000
School size	-.074	.000	-.014	.000	.024	.000	.084	.000

— Variable not included in model.
* Not statistically significant at $p < .05$ level.

The separate analyses yield similar results, with a few variations. In every case, the external factors had a stronger effect on student performance than the school-related factors and the type of effect was the same (either positive or negative). Schools with lower student performance had students from families with low economic status, low parent education, and higher mobility rates; schools with

higher student performance had students with families who had higher economic status, higher parent education levels, and less mobility.

Among the school-related factors, the size of a school and the percentage of staff who are teachers generally had the strongest relationship with student performance.

- Smaller elementary schools had better student performance, but larger high schools had better math performance. This may be due to the ability of a larger high school to offer more levels of mathematics, including advanced courses. School size seems to make little difference for 8th graders and had little affect on 11th grade language scores.

- Schools with higher percentages of staff who are teachers had higher test scores, except for 11th grade math.

When looking at the three other school-related factors, schools with higher levels of teacher experience generally had a stronger relationship with better student performance than did teacher education. Compared to all other factors, the student-teacher ratio had relatively little effect.

The models had a strong ability to account for differences in test scores, ranging from a high of 75 percent in 8th grade to a low of 53 percent in 4th grade. These predictive values are high compared to other similar research. The 4th grade model probably had less explanatory power (i.e., a lower adj. R^2) than the other models because it did not include parent education data.[110] Data on other external factors (e.g., level of bilingual students) that were shown to affect student characteristics in our district-level analysis were not available from OSPI at the school level. If such data were available and included in all the models, their explanatory power would be expected to increase.

Additional results from our analyses are available from JLARC upon request.

RELATIONSHIP OF SCHOOL SOCIOECONOMIC STATUS WITH OTHER FACTORS AFFECTING STUDENT PERFORMANCE

Given the strong relationship between test scores and various external factors, we conducted additional analyses to show the relationship between a school's

[110] The CTBS student survey for 4th grade does not include questions about parent education level.

percentage of lower-income students,[111] test scores, and other external factors affecting student performance. These relationships are summarized below and detailed in Exhibit 65.

- Test scores decline as a school's proportion of lower-income students increases, regardless of grade level. The scores tend to decline more rapidly in the early and middle grades when the level of lower-income students in a school exceeds 50 percent.

- A distinct relationship exists between the socioeconomic status of a school and the education level of students' parents/guardians. Schools with high levels of lower-income students are more likely to have students whose parents did not complete high school. Conversely, schools with low levels of lower-income students are more likely to have students whose parents have graduated from a 4-year college.

- Mobility increases as the socioeconomic status of a school increases, up to a point. Mobility begins to decline in schools with the heaviest concentrations of lower-income students, and mobility among high schools is the lowest in the schools with the highest levels of lower-income students. This may reflect the inability of lower-income families to move to other locations. Mobility also decreases at higher grades – mobility is highest among elementary schools and lowest among high schools.

- Teacher education and experience both decline slightly as the socioeconomic status of a school declines. However, the average student-staff ratios also decline slightly (i.e., classes get smaller and support increases) as socioeconomic status declines.[112] Thus, schools with higher proportions of low-income students have smaller classes and more support but less experienced/educated teachers.

- High schools have more experienced and educated teachers, but they also have higher student-staff ratios.

- As the socioeconomic status of a school declines, the percentage of minority students increases and the size of the school decreases.

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[111] We define lower-income students as those who are eligible for free or reduced-price meals. The income of a 4-person family in school year 1996-97 could be no more than $20,280 to qualify for free meals and no more than 28,860 to qualify for reduced-price meals. The median income of a 4-person family in Washington in 1996 was $50,557.

[112] This reflects the fact that (1) many rural schools have smaller classes and are also relatively poor, and (2) additional teachers are often provided to give low-income students extra help in a "pull-out" environment.

Exhibit 65

Washington School Data by Socioeconomic Level

(All schools in school analysis, school year 1996-97)

	Socioeconomic Level of Schools (percentage of students eligible for free or reduced-price meals)						State
	Less than 10%	10% - 19.9%	20% - 29.9%	30% - 39.9%	40% - 49.9%	50% or more	
Average test scores							
4th grade battery	70.5	62.8	57.9	53.4	49.2	39.1	52.6
8th grade battery	67.0	60.6	56.9	53.6	49.0	40.7	54.7
11th grade language	59.9	53.7	48.3	40.9	36.7	33.2	50.1
11th grade math	61.6	55.4	49.8	44.8	40.9	34.7	52.2
Percent with parents without HS degree							
Mothers of 8th graders	3.6%	5.6%	7.6%	9.1%	11.0%	15.7%	8.7%
Fathers of 8th graders	3.2%	5.6%	6.6%	8.2%	10.5%	14.1%	7.9%
Mothers of 11th graders	4.7%	7.0%	10.0%	14.5%	17.8%	22.0%	9.5%
Fathers of 11th graders	4.1%	6.6%	9.8%	13.9%	16.3%	20.5%	8.9%
Percent with parents with 4-yr degree							
Mothers of 8th graders	31.7%	20.5%	20.2%	16.0%	15.4%	10.3%	18.7%
Fathers of 8th graders	45.5%	41.4%	42.6%	39.8%	40.2%	42.7%	41.9%
Mothers of 11th graders	31.2%	22.7%	20.1%	17.5%	13.8%	10.0%	21.9%
Fathers of 11th graders	39.8%	27.2%	23.9%	20.3%	14.6%	11.8%	26.4%
Enrolled in district less than 2 years							
4th graders	15.4%	17.5%	19.2%	19.4%	21.4%	20.1%	19.2%
8th graders	14.9%	17.6%	18.3%	17.0%	18.4%	16.6%	17.2%
11th graders	11.0%	12.0%	11.9%	14.5%	13.4%	10.0%	12.1%
Staffing Patterns							
Average teacher experience (in years)	13.9	13.9	13.7	13.4	13.7	12.8	13.5
Percent teachers with advanced degrees	50.2%	52.0%	50.4%	48.5%	49.4%	46.5%	49.6%
Average teacher mix factor	1.70	1.70	1.69	1.67	1.69	1.65	1.68
Student-teacher (all) ratio	22.2	21.4	21.1	20.6	20.3	19.7	20.9
Student-other staff (non-teachers) ratio	45.9	43.5	40.7	41.7	37.0	34.4	40.6
Demographic Profile							
Number of school buildings	149	286	299	285	199	385	1,603
Percent of total	9.3%	17.8%	18.7%	17.8%	12.4%	24.0%	100.0%
Number of students enrolled	107,315	203,604	178,994	148,368	93,737	161,681	893,699
Percent of total	12.0%	22.8%	20.0%	16.6%	10.5%	18.1%	100.0%
Average school size	720	712	599	521	471	420	558
Percent minorities	13.1%	13.5%	17.2%	22.1%	26.5%	42.9%	22.3%

Exhibit 66 provides various state averages for different types of schools. Exhibit 67 provides results of the statewide norm-referenced tests in 1997 and 1999 discussed in Chapter 4. A score of 50 is the national average. For more complete information on these results, see OSPI's website at http://assessment.ospi.wednet.edu/.

Exhibit 66
Washington State Data by School Level

	State Average for Schools		
	Elem.	Middle/ Junior	High
Student-teacher ratio (all teachers)	20.5	20.5	21.6
Student-other staff (non-teachers) ratio	39.9	39.5	41.7
Average teacher experience (in years)	13.3	12.8	14.5
Percent teachers with advanced degrees	47.7%	49.4%	52.5%
Average teacher mix factor	1.69	1.65	1.70
Average school size	445	550	819
Percent minorities	23.3%	21.8%	20.8%
Percent enrolled in district less than 2 years	19.2%	17.2%	12.1%
Number of buildings	1,023	396	317
Student enrollment	455,620	217,889	259,531

Exhibit 67
Washington State Results of Norm-Referenced Tests

Fall 1997 Results	Mean National Percentile		Spring 1999 Results	Mean National Percentile
4th Grade CTBS			**3rd Grade ITBS**	
Battery	53		R/M Composite	58
Reading	52		Reading	55
Math	54		Math	60
Language	53			
Spelling	41			
Study Skills	56			
Science	56			
Social Studies	55			
8th Grade CTBS			**8th Grade ITBS**	
Reading	54		Reading	52
Math	54		Math	52
Language	53		Language	56
Battery	54		Core	54
Spelling	45			
Study Skills	50			
Science	56			
Social Studies	56			
11th Grade CFAS			**11th Grade ITED**	
English/Lang. Arts	50		Reading	57
Math	53		Quantitative Thinking	60
History/Soc. St.	49			
Science	53			

Source: OSPI.

SUMMARY OF RESULTS OF DATA AVAILABILITY SURVEY

Appendix 9

JLARC's study of various K-12 education issues called for a determination of the extent to which data are available that can be used to analyze resource allocations as well as the efficiency and effectiveness of school expenditures. Each of the 296 school districts in Washington maintain various types of information about the district and its schools, some of which is provided to the Office of the State Superintendent of Public Instruction (OSPI) in order to meet various reporting requirements. A district maintains this information, either in hard copy or in electronic form, in order to carry out its educational duties.

To determine the extent to which districts maintain certain types of data in electronic form,[113] JLARC conducted a survey of all 296 districts in the state. The survey asked about the availability of data in school year 1996-97, which was the most recent year with complete data when the survey was administered. The survey asked about data availability at four levels:

(1) district
(2) school
(3) grade
(4) classroom.

At each level, the district was asked to indicate the extent to which it had certain kinds of information available on a 5-point scale.[114] This information related to

[113] We did not ask about data maintained in hard-copy form because we were interested in knowing about data that could be easily transmitted to OSPI if the district was asked to do so. Putting hard-copy data into electronic form is a labor-intensive process that can be very costly, especially in larger districts that have many schools.
[114] Districts were not asked about the availability of data that they already provided to OSPI.

- student indicators (other than assessment data)
- student enrollment
- revenues and expenditures
- number and characteristics of staff
- general information and demographic data.

The survey was returned by 260 districts (88 percent of the total number of districts).[115]

This appendix provides a summary of the survey results.[116] The appendix is organized into sections according to the four levels of data – district, school, grade, and classroom – for each item in a section for which districts were asked to respond. The last part of this appendix provides a summary of the comments made by district staff.

AVAILABILITY OF DISTRICT DATA

1. Student Indicators

- Most districts either had no data or data for all students.
- The most frequently maintained data were for attendance and grades/GPA.
- The larger the district, the more likely they are to keep this type of data.

2. General Information/Demographics

- Other than data related to eligibility for free/reduced-price meals and student transportation, which districts already provide to OSPI, little demographic data are maintained.
- About 31 percent maintain at least some data on student mobility. The larger the district, the more likely such data are maintained – large districts (over 10,000) tend to maintain such data, while relatively few districts with less than 10,000 students maintain such data.

[115] The 260 districts educate 88 percent of the state's public school student population. Three other districts responded but did not give their name, so their survey results were not included in the analysis.
[116] For a copy of the survey and complete results, contact JLARC.

AVAILABILITY OF SCHOOL DATA

1. Student Indicators

- Most indicated that they had no data or data for all students.
- The most frequently maintained data were for attendance (55 percent of the districts maintain this data for all or nearly all students) and grades/GPA (44 percent maintain this data for all or nearly all students).
- Larger districts are more likely to maintain student indicator data.

2. Student Enrollment[117]

- Most indicated that they had either no data or data for all students.
- Data on special education students is kept most often (57 percent maintain data on all such students), followed by bilingual students (52 percent maintain data on most or all bilingual students).
- Over one-quarter (27 percent) do not maintain any data on special education students, 36 percent do not maintain any data on bilingual students, and 41 percent do not maintain any data on LAP students.
- The larger the district, the more likely they are to keep school-level data.

3. Revenues

- Roughly two-thirds of the districts maintain no such data at the school level.
- Districts with enrollment under 1,000 are more likely to maintain such data – many of the 71 districts that maintain all such data have only one school and report it at the district level. The median enrollment of the 71 districts that maintained all such data was 276 students.

4. Expenditures

- Less than half the districts maintain total expenditures for all schools.
- On average, 57 percent of all district expenditures are coded to individual schools.
- Large districts code a higher percentage of total expenditures at the building level – those with over 20,000 students averaged about 73 percent, and those

[117] School-level data on students eligible for free or reduced-price meals is already maintained and available from OSPI. OSPI officials said they maintain data on highly capable students at the school level, so we did not ask this question in the survey. However, we later learned that OSPI does not collect school-level data on highly capable students from districts.

with 10,000 to 20,000 students averaged about 64 percent. Mid-sized districts coded the least to schools (less than 50 percent).

- Object expenditures
  - The least variation of data maintained among districts is for object expenditures – about 65 percent the districts maintain most or all such expenditures at the school level, while about 25 percent of the districts do not maintain any such data at the school level.
  - In general, the larger the district, the more likely it will maintain school object expenditure data.
- Activity expenditures
  - Slightly over half the districts maintain all data for the largest categories – instruction, instruction support, extracurricular activities, and school administration. However, at least one-quarter of the districts do not maintain any such data at the school level.
  - About 53 percent of the districts maintain at least some data on nutrition expenditures, while 42 percent maintain at least some data on transportation expenditures.
  - In general, the larger the district, the more likely it will maintain school activity expenditure data.
- Program expenditures
  - Districts most often kept data for regular instruction and vocational instruction (over 50 percent of the districts maintain all such data), and nearly half the districts maintain expenditure data at the school level for LAP, special education, and compensatory education.
  - Many districts (26-39 percent) do not maintain any program expenditures at the school level. (An even higher percentage of districts do not maintain any program expenditures for community and support services.)
  - In general, the larger the district, the more likely it will maintain school program expenditure data.

5. General Information/Demographics

- About 40 percent or less of the districts collect some information on pupils transported, miles transported, computers used for instruction, student mobility, or advanced courses taught. Less than 25 percent of the districts maintain such data all of the time, usually among the larger districts. Data on eligibility for free/reduced-price meals are available from OSPI.
- Little other demographic data are kept at the school level. Larger districts are more likely to maintain demographic data than smaller districts.

AVAILABILITY OF GRADE-LEVEL DATA

1. Student Indicators

- Roughly two-thirds of the districts maintain data on attendance rates and grades, with about 40 percent maintaining data for all or nearly all students. However, more than 30 percent of the districts maintain no such data.

2. Student Enrollment

- Districts tend to maintain more data on some students and less on others. If data are maintained, it tends to be for all students. For example:
  - Nearly 50 percent of the districts maintain data on all special education students in a grade, while 35 percent maintain no such data.
  - Forty percent maintain data on all bilingual students, but 43 percent maintain no such data.
  - Twenty-three percent of the districts maintain data on all highly capable students, while 56 percent maintain no such data.
- The larger the district, the more likely they are to keep these type of data at the grade level.

3. Revenues

- Less than 10 percent of the districts maintain any revenue data at the grade level. The smaller the district, the more likely it will maintain at least some of this type of data.

4. Expenditures

- Generally, less than 15 percent of the districts maintain any type of data at the grade level. Data on expenditures for supplies and materials are maintained the most often at this level (20 percent of the districts maintain at least some data).

5. Staff Information

- Less than 40 percent of the districts maintain any type of staff data at the grade level. Data on the total number of staff and certificated staff are maintained most frequently (about 37 percent of the districts maintain at least some such data). At least some data on teacher education and experience are maintained (24 percent of the districts maintain at least some such data).

- There is little variation in the size of school reporting such data.

6. General Information/Demographics

- Less than 25 percent of the districts maintain any data on computers used for instruction, student mobility, courses taught, or poverty rates at the grade level. Those that maintain such data tend to be larger districts and those that maintain the data all the time. Only about 15 percent collect any information by grade on the number of students transported or miles students are transported.
- Larger districts are more likely to maintain demographic data than smaller districts.

AVAILABILITY OF CLASSROOM DATA

1. Student Assessment/Other Student Indicators

- Only 35 percent of the districts maintain student assessment data by classroom. If data are maintained, it tends to be for all students.
- Just over half the districts maintain data on attendance rates and grades. If data are maintained, it tends to be for all students.

2. Student Enrollment

- Less than 50 percent the districts maintain student enrollment data at the classroom level, with a few exceptions. At least some data on the total number of students and the number of special education students in a classroom are maintained by more than half the districts. At least some data on the number of LAP and bilingual students in a classroom are maintained by 47 percent of the districts.
- If data are maintained, it tends to be for all students.

3. Revenues

- Less than 10 percent of the districts maintain any revenue data at the classroom level. The smaller the district, the more likely it will maintain some classroom revenue data.

4. Expenditures

- Less than 15 percent of the districts maintain any type of data at the classroom level. Data on expenditures for supplies and materials are maintained the most often at this level (17 percent of the districts maintain at least some data).
- The smaller the district, the more likely it will maintain at least some classroom-level data. Only three districts with 5,000 students or more maintained any classroom data, while 33 districts with less than 1,000 students maintained some type of classroom data.

5. Staff Information

- Less than 25 percent of the districts maintain any type of staff data at the classroom level. Data on teacher education and experience are maintained the most often at this level (24 percent of the districts maintain at least some data).
- As districts become smaller, they are more likely to maintain staff data at this level.

6. General Information/Demographics

- Less than 40 percent of the districts maintain data on the grades served by a classroom.
- Less than 25 percent of the districts maintain data on computers in the classroom or student mobility.
- Less than 15 percent of the districts maintain data on class poverty rate, and less than 10 percent maintain data on parent income level.
- Less than 10 percent of the districts maintain data related to pupil transportation or parent education level.
- Larger districts are more likely to maintain data on student mobility and poverty rates, while smaller districts are more likely to maintain data on computers in the classroom and pupil transportation.

COMMENTS

Several themes emerged among the comments districts made after completing the survey. These themes are listed below, along with example comments made by district staff.

1. Many small districts commented that they collected much data manually but did not maintain the information in electronic form.

   - "Much of the data is easily available, but not in electronic form at this time."
   - "Much of the data in the survey is manually calculated and tracked. Very little is available electronically above and beyond the (data) reported to OSPI."
   - "Most of the information is available in some form or another."
   - "Our district is small enough that information could be easily gathered."

2. Technological shortcomings were noted as limitations to collecting and maintaining any more data than was already transmitted to OSPI. In some cases, small districts relied on others to maintain the data for them.

   - "We are a small (district). Our technology has not kept pace with the expectations and demands of the state. Our financial resources are limited."
   - "Most of our computers do not have storage capacity or RAM to download (data), otherwise, more of this material would be available electronically."
   - "We are a small district still waiting for K-20 hookups, so we are somewhat behind in electronic data collection. We want to cooperate with data gathering, but please do not make it a reporting burden for small, understaffed districts."
   - "Small districts such as ours need assistance with technology."

3. Some districts expressed concern about their lack of staff and the difficulty they would have collecting grade and classroom data. Such an effort was seen to be very time-consuming, burdensome, and not useful for their own purposes.

   - "Tracking to the grade level and especially the classroom level is not possible with current software or personnel."
   - "We have concerns about the time and expense that would be necessary to accumulate this type of data."
   - "Making all of this information available would be very labor intensive. Thank you for any consideration you can give to sparing us additional burdensome reporting requirements."
   - "We have the capability of doing nearly everything . . . However, we choose not to, mostly because there is no need."
   - "We do not have the need, nor the staff, to electronically record this type of data."

4. Some districts commented that current data were available but not from previous years.

   - "Data is available on a current basis only. No history of this data is available."

5. Many small districts have only one school, so district data is the same as school data.

   - "We have only one building, so much of the information for the district is the same for the school level."

SCHOOL BUILDING DATA COLLECTED BY OTHER STATES

Appendix 10

The National Conference of State Legislatures, under a contract with JLARC, conducted a national survey to determine what types of school-level data states collect and the uses of the data. Information was obtained on 43 of the 50 states.[118] Exhibit 68 summarizes the extent to which states collect four types of school-level data: pupil, spending, personnel, and performance data. Of the 43 states,

- All 43 collected school-level data to report pupil counts. This figure differs slightly from a report prepared by the Council of Chief State School Officers in 1998.[119]
- Thirty-eight collect personnel data at the school building level.
- Thirty-eight collect school performance data. This information is typically presented as school report card data. According to the 1999 Quality Counts publication, 36 states publish annual report cards as an accountability mechanism to communicate individual school performance to the public.[120]
- Only 9 collect school expenditure data.

The table also indicates how states use the data. States indicated that they use school-level data mainly to (1) report accountability and accreditation information, (2) provide policy analysis, (3) report information on state specific programs to the

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[118] Eight states did not return surveys: Arizona, California, Florida, Hawaii, Indiana, Maine, Massachusetts, and Michigan. However, information was obtained from Florida through other means.

[119] Council of Chief State School Officers (1998). State Education Accountability Reports and Indicator Reports: Status of Reports across the states. Washington, DC. This report identified 36 states that reported school-level pupil counts. The discrepancy may be due to the difference in time when the surveys were completed.

[120] "Quality Counts 99," *Education Week* January 11, 1999.

federal government, (4) provide information to the public, and (5) monitor grant funds.

The usefulness of school-level data does not end with its mere collection, however. Its utility can only be assessed by the quality, type, and function of the data. For example, Minnesota is one of nine states that collects pupil, spending, personnel and performance data at the school level. However, the state lacks a single database that allows the data to be cross-walked. Thus, its utility is limited because school-level data must be further disaggregated by program for meaningful data analysis.

More detailed information about the school-level data systems is available in the paper described in Appendix 12.

Exhibit 68
State Collection and Use of School-Level Data

State	Pupils	Expenditures	Personnel	Performance	Reasons
Alabama	X	X	X	X	Policy and reporting
Alaska	X		X	X	Federal and state programs
Arkansas	X	In the future	X	X	Report cards and program evaluation
Colorado	X		X	X	Policy and reporting
Connecticut	X		X	X	School profiles and policy
Delaware	X	In FY 2000	X	X	Accountability reporting
Florida	X	X	X	X	
Georgia	X		X	X	Policy and reporting
Idaho	X				Reporting
Illinois	X		X	X	Reporting
Iowa	X		X		Accountability
Kansas	X		X	X	
Kentucky	X		X		Policy and accountability
Louisiana	X		X	X	Accountability and policy analysis
Maryland	X		X	X	Accountability and reporting
Minnesota	X	X	X	X	Accountability and reporting
Mississippi	X	Some	X	X	Reporting
Missouri	X		X	X	Reporting
Montana	X		X	X	Reporting
Nebraska	X		X	X	Policy analysis
Nevada	X	X	X	X	Accountability
New Jersey	X		X	X	School comparisons and aid calculations
New Hampshire	X		X		Policy and reporting
New Mexico	X		X	X	Research and reporting
New York	X		X	X	Policy analysis, accountability
North Carolina	X	In July 1999	X	X	
North Dakota	X		X		Reporting and accreditation
Ohio	X	X	X	X	
Oklahoma	X			X	Reporting
Oregon	X	**	X	X	Reporting
Pennsylvania	X		X	X	Policy analysis and school profiles
Rhode Island	X		X	X	Policy Analysis
South Carolina	X	X	X	X	Functional analysis and reporting
South Dakota	X		X	X	Reporting
Tennessee	X			X	Reporting
Texas	X	X	X	X	Research and accountability
Utah	X		X	X	Reporting
Vermont	X		X	X	Reporting
Virginia	X			X	Reporting and accreditation
Washington	X		X	X	
West Virginia	X	X	X	X	Reporting and policy analysis
Wisconsin	X		X	X	Programs
Wyoming	X			X	Funding purposes
Total	**43**	**9**	**38**	**38**	

** Has collected school expenditure data for a limited number of districts and plans to expand collection to all districts.

Source: National Conference of State Legislatures.

EXEMPLARY DISTRICT REPORTS

Appendix 11

The legislature mandated JLARC to "identify districts that have financial data available in a form that facilitates understanding by persons without specialized expertise in public finance." Districts in Washington are required to provide reports for their schools, and the law suggests information to be included in these reports. However, there are no structure or format requirements for these reports.[121] JLARC contracted with the Northwest Regional Educational Laboratory (NWREL) to conduct a study that would identify the characteristics of easily understandable school district financial reports and selected districts that make such information available to the public. This appendix summarizes this work done by NWREL.[122]

CHARACTERISTICS OF EXEMPLARY REPORTS

After consulting with over 50 education experts in the Northwest and evaluating district reports obtained from 32 districts from various parts of the country, NWREL identified 35 characteristics that make reports easily understood by the public. The characteristics fall into six general categories: language, relevance, comparability, length, graphics, and information provided.

1. Language Reports that are most easily understood avoid using financial jargon, abbreviations, or acronyms as much as possible.

2. Relevance Reports presented within a larger framework, such as in a general school district profile, provide more meaning than a budget document on its own. These profiles often include student achievement data, classroom sizes, and levy information. For those in the community that do not have school-age children, a report can describe information on community services provided by the schools.

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[121] Washington State law requires "Annual School Performance Reports" at the school level (see RCW 28A.320.205).

[122] The full study is available upon request.

3. **Comparability** Information showing changes over a several-year period helps the public understand trends. Comparisons with other school districts or national data are also helpful.

4. **Length** The best length depends on the needs of the audience. Readable reports are often short summaries that do not take a long time to read. However, some want more detailed information. Some districts combine these approaches into one report by having a summary and as well as more detailed information.

5. **Graphics** Spreadsheets and tables full of numbers for the reader to interpret and analyze are often difficult to understand. Graphs that summarize this information are easier to read and understand. Adding narrative to graphs and charts in order to describe what the graphs mean also promotes understanding.

6. **Information Provided** The type of data included in a report is important. Too much or too little data makes the report difficult to understand. Fiscal information that promotes understanding includes:

- Revenue – distribution of local school revenues by source
- Expenditures – percentages and amounts of expenditures by category (object, program, function), per pupil expenditures
- Average teacher and administrative salaries
- Explanation of budget and levy processes

While few districts combine financial reports with non-budget information, the inclusion of non-budget information helps the public understand numerous issues, such as:

- School mission and vision
- Enrollment rates and changes over time
- Average student-teacher ratios and class size for different types of schools
- Levels of teacher education and experience
- Average test scores
- Percent students attending college after graduation

Exhibit 69 summarizes the characteristics in the six categories that can either promote or hinder the understanding of school reports. Districts can use the characteristics as a checklist to evaluate or create their own reports.

Some districts provide information in a form that is relatively easy to understand. Of the 32 reports that NWREL evaluated, the two with the highest number of the desirable characteristics were from Philadelphia (PA) and Charlotte-Mecklenburg

(NC).[123] Of the reports evaluated from Washington, those having the highest number of desired characteristics were from the North Thurston, Edmonds, and Shoreline districts.[124] Oregon's pilot Database Initiative Project provides extensive information on the Internet on both districts and individual schools.[125]

RELATIVE INTEREST IN DISTRICT FINANCIAL INFORMATION

NWREL's study found that the public is generally more interested in school data than district data and more interested in student outcomes (e.g., test scores, drop-out and graduation rates) and teacher characteristics than in fiscal information. Research discussed in "Reporting Results: What the Public Wants to Know," a companion report to Education Week's *Quality Counts 1999*, found 21 indicators that parents say are important when holding schools accountable.[126] Parents were most interested in knowing about school safety, teacher qualifications, and class size. Per pupil spending and teacher salaries were ranked 12th and 14th in importance. According to school business officials in Washington, the public shows the most interest in district financial data when there is a controversy regarding the school district or when the public seeks information for voting purposes.

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[123] *Charlotte-Mecklenburg Education Foundation's Community Guide to the School Budget*, (704) 335-0100; *A Citizen's Guide to the Philadelphia School Budget*, (215) 575-2200 ext. 269.

[124] *General Fund Budget Fiscal Year 1998-99*, North Thurston School District, (360) 412-4400; *1998-1999 Citizens' Summary Guide of the General Fund Budget*, Edmonds School District, (425) 670-7000; *Shoreline Public School Budget Overview 1998-99* (WA), (206) 361-4208.

[125] Chapter 5 and the Technical Appendix discusses Oregon's Database Initiative in more detail. Reports for pilot district and schools are available on the Initiative's website (http://dbi.ode.state.or.us/).

[126] A-Plus Communications. (1999). *Reporting Results: What the Public Wants to Know, Companion Report to Education Week's Quality Counts 1999*. Arlington, VA: A-Plus Communications, Inc. (See also the website at *www.apluscommunications.com.)*

Exhibit 69
Summary of Reporting Criteria to Promote Public Understanding

	Characteristics Promoting Understanding	Barriers to Understanding
Language	• Avoids using jargon (e.g., expenditures, revenues, FTE, and capital outlay) • Use common terms (expenses, income) • Integrate definitions of financial terms in text or graphics	• Use of jargon, abbreviations, acronyms or activity codes that are unknown to the general public • Present no definitions or definitions of financial terms found in a separate section or page of a report
Relevance	• Relate the school budget to household budgets and bankbooks • Relate million dollar amounts to percent of a dollar or single dollar amounts • Address specific issues of concern to community members • Present information in larger framework such as a District Profile or School Performance Report • Furnish clarification during election periods such as levy history and property tax information • Include a "Question and Answer" section that addresses specific issues of importance in that school district and community	• Information in monetary terms the general public finds unfamiliar • Provide only general budget information without addressing specific issues of concern • Present budget information without the framework of other school district information when appropriate • Include no past levy or tax information • Question and Answer section consists of unrelated or generic information

	Characteristics Promoting Understanding	Barriers to Understanding
Comparability	• Provide data over time (at least two years) • Supply data for the last five years for ease in observing trends • Compare results to national or state levels, compare to like school districts • Use consistent reporting practices (type of data collected, form in which data is reported) in successive years and/or between entities when comparing data	• Supply current year's data only • Provide data for only one to two years makes it difficult to observe trends • Provide no data comparisons • Inconsistent reporting practices
Length	• Short summaries (under 10 pages) of the budget in booklet form, brochures, or Web sited on the Internet with links to more information • One-page balance sheet of general information (expenditures, revenue) with directions on how to obtain more information.	• Entire budget in a massive document • One-page spreadsheet or table with large amounts of computerized data or too little information for adequate application

	Characteristics Promoting Understanding	Barriers to Understanding
Graphics	• Graph titles and labels are jargon-free • Include narrative within or following graphics • Simple pie or bar charts • Color graphs if funding allows, otherwise use black and white with unambiguous headings and white space • Bar and line graphs are easier to use when looking at trends • Analysis of what data means-provide a framework for understanding graphs • Consistency with graphics used across time and entities • Non-traditional graphics capture attention and facilitate interest • Use of pictures of students are helpful in emphasizing what schools are all about	• Use of abbreviations, activity codes, and terms without explanation • Large undefined slices on a pie chart like "general fund" or "instruction" • Complex charts or tables, use of spreadsheets or other computerized information • Colored graphs that lose meaning when photocopied to black and white • Present data in tables or spreadsheet form • Provide no interpretation of data • Display of information in different graphic forms for each year or between entities • Graphics that overshadow information provided

	Characteristics Promoting Understanding	Barriers to Understanding
Information Provided	• Fiscal information (from multiple years) that promotes understanding includes: ➢ Revenue – distribution of local school revenues by source ➢ Expenditures – percentages and amounts of expenditures by category (object, program, function), per pupil expenditures ➢ Average teacher and administrative salaries ➢ Explanation of budget and levy processes • Non-fiscal information promoting public understanding includes: ➢ School mission and vision ➢ Enrollment rates and changes over time ➢ Average student-teacher ratios and class size for different types of schools ➢ Levels of teacher education and experience ➢ Average test scores ➢ Percent students attending college after graduation	• Massive amounts of information that is cumbersome to read and difficult to comprehend • No description of revenue sources • No specific explanation of what or how money is spent • Teacher salaries presented alone or as percentage of total expenditures only • No distinction between "Instructional" and "Non-instructional" expenditures • No explanation of the budget process or how to become involved • No clarification of how expenditures relate to school vision or mission • No information about teachers or class size • Test scores for one year only • Report test scores without other indicators of achievement

BIBLIOGRAPHY OF PAPERS IN TECHNICAL APPENDIX

Appendix 12

JLARC contracted with various individuals and agencies to supplement its work on this study. The Technical Appendix includes a collection of papers that resulted from some of this work. Papers in the Technical Appendix can be obtained by clicking below on the individual titles.

PAPERS ON SCHOOL-LEVEL DATA COLLECTION AND USE

The Collection and Use of School-Level Data**.** Lawrence Picus, Director, Center for Research in Education Finance, Univ. of Southern California.

This paper describes the rationale for collecting school-level data and the obstacles and issues that need to be addressed in order to collect and use such data. It also presents some results of school-level fiscal analyses.

Study of Three States That Utilize School-Level Finance Data**.** National Conference of State Legislatures.

This paper summarizes the experiences of Florida, Ohio, and Texas in collecting and using school-level fiscal data. These three states have the most experience with school-expenditure data.

Collection of School-Level Data in Oregon: An Analysis of the Database Initiative Project**.** Lawrence Picus, Director, Center for Research in Education Finance, Univ. of Southern California.

This paper provides an overview of Oregon's Database Initiative Project, including its costs and intended uses. It also discusses Oregon's Quality Education Model.

PAPERS ON OTHER ISSUES

Class Size Reduction: Effects and Relative Costs. Lawrence Picus, Director, Center for Research in Education Finance, Univ. of Southern California.

This paper summarizes historical trends in reducing the student-teacher ratio, the efforts of other states to reduce the ratio, and the research on the effects of reducing class sizes on student performance. It also discusses the cost effectiveness of reducing class sizes.

School District Financial Reporting Study. Carla Culley, Northwest Regional Educational Laboratory.

This paper identifies the characteristics that make district reports easily understood by the public, identifies districts providing reports with the highest number of these characteristics, and evaluates these districts against the desired characteristics.

GLOSSARY

Appendix 13

STAFF TERMS

Certificated staff Staff who have an education certificate, including all teachers, various instruction support staff (e.g., librarians, counselors, curriculum specialists), and administrators who have certificates.

Classified staff Staff who do not have a certificate. Classified staff include instructional aides, food service and clerical staff, bus drivers, and some professional staff.

Instructional staff Any staff (certificated or classified) who provide instruction. This includes instructional aides as well as teachers, but does not include certificated staff who are not providing instruction, such as counselors and administrators.

Regular education instructional staff Any staff providing instruction in basic education program 01, a fiscal category for state funding purposes. This excludes teachers for special and vocational education, other specialized instructional programs, and excludes support programs.

Regular education certificated staff Any certificated staff providing instruction in basic education program 01. This excludes teachers for special and vocational education, other specialized instructional programs, and classified staff providing regular education instruction, and excludes support programs.

Teacher A certificated teacher for elementary and secondary education, regardless of the type of school where instruction occurs or the subject matter taught. This category includes teachers for special education students and other students who receive specialized instruction.

FISCAL TERMS

Compensation costs All costs for staff compensation, regardless of compensation or staff type. This includes base salaries, extra duty contracts, and various benefits for both certificated and classified staff.

Expenditures Money spent on K-12 operations. All expenditures are coded in three ways: *activities, objects,* and *programs*. Each has its own categories (see below and Appendix 5).

- ***Activities*** Expenditures for different functions. These include instruction, pupil transportation, maintenance and operations, administration, and other support services.
- ***Objects*** Expenditures for salaries, benefits, supplies and materials, etc.
- ***Programs*** Expenditures for different programs. These include regular instruction, special education, vocational and compensatory education, other programs, and various support services.

General Fund Revenues and expenditures for school operations. Excludes funds related to capital projects, debt service, associated student body special revenues, and fiduciary fund. In this study, we examined only funds related to the General Fund.

Revenues Funds received by districts from various sources, including state and federal government, local levies, and private sources.

OTHER TERMS

Class size The number of students in a classroom. Can vary by the type of student and subject being taught.

Student-teacher ratio Number of students divided by number of teachers. Not the same as class size because the ratio includes teachers who may provide instruction for special student populations outside the regular classroom or who do not teach full-time.

Low-income student Defined in this study as any student eligible for a free or reduced-price meal (eligibility is determined by a student's family income level).

Levy equalization State program that provides additional funds to districts that have smaller tax bases and thus less ability to raise local funds.

LAP Learning Assistance Program
State program that provides additional funding for students scoring in the bottom 25th percentile on standardized tests.

FTE Full-time equivalent

ORGANIZATIONS

JLARC Joint Legislative Audit and Review Committee

LEAP Legislative Evaluation and Accountability Program Committee

NCES National Center for Education Statistics (U.S. Dept. of Education)

NEA National Education Association

NWREL Northwest Regional Educational Laboratory

OSPI Office of Superintendent of Public Instruction

TESTS

CTBS Comprehensive Test of Basic Skills
Norm-referenced test for 4th and 8th grade in school year 1996-97. Replaced by ITBS in school year 1998-99.

CFAS Curriculum Frameworks Assessment System
Norm-referenced test for 11th grade in school year 1996-97. Replaced by ITED in school year 1998-99.

ITBS Iowa Tests of Basic Skills
Norm-referenced test for 3rd and 8th grade in school year 1998-99. Replaced CTBS.

ITED Iowa Tests of Educational Development
Norm-referenced test for 11th grade in school year 1998-99. Replaced CFAS.

NAEP National Assessment of Educational Progress
Criteria-referenced test for a range of subjects. Given periodically to a random set of students in various grades in most states.

WASL Washington Assessment of Student Learning
New state criteria-referenced test for 4th, 7th, and 10th grades.