

ALASKA LEGISLATURE COMMITTEE FILES 1997-1998 8672

9111 HOUSE HEALTH EDUCATION & SOCIAL SERVICES

Clearly, the current formula compensates for diseconomies of scale – that is, higher per-student costs due to small size – in small schools by providing additional funding for small schools.

Current law contains a single number for each district to compensate for costs associated with location (AS 14.17.051). This number is often referred to as the area cost differential, or ACD. The ACD ranges from 1.00 to 1.46. An ACD of 1.00 means that no additional aid is granted because of location. An ACD of 1.46 means the amount of aid a district receives (after adjusting for school size) is increased by 46 percent. The ACD multiplier applies to all operating costs, including instructional costs as well as administrative costs and utilities, travel and other nonpersonal services costs.

In this study, we take a slightly different perspective on adjustment factors for location. We believe the analysis is simplified by applying ACDs to the student count rather than to the amount of aid received. That is, an ACD of 1.46 would increase a district's student count by 46 percent. Aid is then allocated based on the adjusted student count, with each "adjusted student" generating an identical amount of aid. Mathematically, both methods produce identical results.

#### *Instructional Allocation*

As defined in this study, the instructional component of the funding formula includes all teachers, specialists, building administrators, aids, and other district staff except those whose function is district administration. The statistical approach treats the instructional component of the formula in the same way current law treats overall allocation. There is a size adjustment that compensates small schools for their relatively high operating costs and an ACD that may compensate districts for salary differentials due to location.<sup>13</sup> There are, however, two noteworthy differences in the statistical approach:

- Funding is based directly on student counts rather than on conversions of students to "instructional units" and
- The basis for student counts is the school rather than the funding community.<sup>14</sup>

The latter change has a significant impact on the allocation of aid.

#### *Nonpersonal Services Allocation*

Utilities, travel and most other nonpersonal services expenses are typically paid at the district level rather than the school level. In addition, relative instructional costs between districts (primarily salaries) may differ from relative costs of purchasing nonpersonal services. For these reasons, the multipliers that may adjust instructional costs do not apply to nonpersonal services costs.

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<sup>13</sup> No ACD is applied to instructional costs under the statistical approach because there was no clear statistical basis for adjustment. Chapter V discusses the impact of applying various ACDs to instructional costs.

<sup>14</sup> Both "instructional unit" and "funding community" are discussed in Chapter II.

Under the statistical approach, adjustment factors consider the combined impacts of size and location on nonpersonal services costs. The blended multipliers are substantially higher than under current law, but they apply only to the nonpersonal services portion of expenditures. Under the statistical approach, nonpersonal services allocations are limited in districts with extraordinarily high or low per-student expenditures. The study team concluded that some limitation was necessary to prevent the multipliers from being a pure reflection of "what is" rather than "what should be."

#### *District Administration Allocation*

Similar to nonpersonal services costs, the statistical approach develops multipliers that apply specifically to district administrative personnel costs. The allocations apply only to district office administration; school administrative costs are included in the instructional allocation. Similarly, the nonpersonal services portion of district administration is part of the nonpersonal services analysis and has been excluded from the district administration component.

Some administrative multipliers are even higher than for nonpersonal services costs, indicating high disparity in administrative costs (per student) between districts. Under the statistical approach, allocations for administration are limited in districts with extraordinarily high or low per-student expenditures. The study team concluded that some limitation was necessary to prevent the multipliers from being a pure reflection of "what is" rather than "what should be."

#### *Applying Results*

Chapters 2, 3 and 4 provide detailed discussion of the methodology used to develop the size and location adjustment factors under the statistical approach. Allocations of educational aid are based on the adjusted student counts for each district and the amount the legislature appropriates to each component.

Table 1.1 shows the formula for adjusting for school size; it converts actual student counts in each school to adjusted student counts, which are then summed within each district.<sup>11</sup> This count may be further adjusted by an instructional ACD. Under the statistical approach, the instructional ACD is 1.000 for all districts, which means there is no further adjustment. Dividing the amount of money available for instructional purposes by the statewide adjusted student count gives the average allocation per "adjusted" student. This amount times the adjusted student count in each district gives the district allocation.

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<sup>11</sup> An explanation of the table is in Chapter II.

The process is similar for the noninstructional components. Student counts are adjusted by applying multipliers for the nonpersonal services and administrative components of the formula. The amounts available in each component divided by the statewide adjusted student count for each component gives an average per-adjusted-student allocation for each component. Multiplying the statewide average per-student allocation by the adjusted student count in a district gives the amount of aid allocated to the district.

Columns 1 and 2 of Table 1.2 show the effect of size and location multipliers for the instructional component of the funding formula. The factors shown are ratios of adjusted students to actual students, they are not the multipliers computed under the statistical approach. The ratios simply show the impact of the multipliers in 1996. The numbers would change annually as student counts change in each district.

Multipliers for nonpersonal services and administrative components are shown in columns 3 and 4, respectively. Multipliers for the combined noninstructional components are shown in column 5. No consolidated multiplier for all components is displayed; the school size multiplier cannot be combined with other multipliers because they are determined at the school level rather than the district level.

Under the statistical approach adopted by the study team, the legislature must determine the amount of aid to be allocated by each of the three components of the formula. For each component of the funding formula, separate funding mechanisms are for allocation purposes only and do not limit district expenditures by category of aid.

Because the multipliers differ for each component of the education formula, the money appropriated to each component will be allocated in different ways. A relatively narrow range of multipliers, such as for the instructional component, means that funds will be distributed more evenly than would occur when the range of multipliers is wide.

**Table 1.1**  
**Conversion of Actual Student Count to Adjusted Student Count**

A		B		C		D		E	
If the Student Count in a School is:		The Adjusted Student Count is:						The number of Students in Excess of:	
at least:	but less than:	Base	plus	Multiplier	times				
-	20	39.6	plus	0	x	0			
20	30	39.6	plus	1.62	x	20			
30	75	55.8	plus	1.49	x	30			
75	150	122.85	plus	1.27	x	75			
150	250	218.1	plus	1.08	x	150			
250	400	326.1	plus	0.97	x	250			
400	750	471.6	plus	0.92	x	400			
750	5,000	793.6	plus	0.84	x	750			

**Table 1.2  
Size and Location Multipliers**

School District	District Level Multipliers				
	School Size Multiplier	Instructional Area Cost Differential	Nonpersonal Services Multiplier	Administration Multiplier	Non-Instructional Multiplier
	1	2	3	4	5
Alaska Gateway	1.513	1.000	4.397	3.301	4.122
Aleutian Region	1.963	1.000	11.610	14.027	12.217
Aleutians East	1.617	1.000	4.910	3.166	4.472
Anchorage	1.069	1.000	1.000	1.000	1.000
Annette Island	1.333	1.000	1.417	1.162	1.353
Bering Strait	1.490	1.000	6.924	3.437	6.049
Bristol Bay	1.495	1.000	4.228	3.455	4.034
Chatham	1.724	1.000	2.939	2.470	2.821
Chugach	1.956	1.000	4.751	4.914	4.792
Copper River	1.559	1.000	3.483	2.347	3.198
Cordova	1.285	1.000	1.889	2.489	2.040
Craig City	1.345	1.000	1.589	1.000	1.441
Delta/Greely	1.393	1.000	2.444	2.400	2.433
Denali	1.414	1.000	4.329	3.376	4.090
Dillingham	1.284	1.000	4.019	1.614	3.415
Fairbanks	1.094	1.000	1.432	1.000	1.324
Galena	1.560	1.000	3.674	2.066	3.270
Haines	1.509	1.000	1.796	1.052	1.609
Hoonah	1.472	1.000	2.239	1.278	1.998
Hydaburg	1.685	1.000	2.709	1.428	2.387
Iditarod	1.861	1.000	7.750	5.032	7.068
Juneau	1.058	1.000	1.000	1.062	1.016
Kake	1.555	1.000	1.659	1.811	1.697
Kashunamiut	1.310	1.000	4.488	4.555	4.505
Kenai	1.209	1.000	1.332	1.000	1.249
Ketchikan	1.178	1.000	1.064	1.000	1.048
Klawock	1.521	1.000	1.676	1.415	1.610
Kodiak	1.244	1.000	2.141	1.318	1.934
Kuspuk	1.724	1.000	6.027	7.450	6.384
Lake & Peninsula	1.664	1.000	6.978	4.152	6.269
Lower Kuskokwim	1.414	1.000	6.707	3.147	5.813
Lower Yukon	1.389	1.000	6.023	2.747	5.201
Matanuska	1.122	1.000	1.068	1.166	1.093
Nenana	1.428	1.000	3.466	4.690	3.773
Nome	1.235	1.000	4.273	2.513	3.831
North Slope	1.315	1.000	4.447	5.385	4.682
Northwest Arctic	1.351	1.000	5.234	6.732	5.610
Pelican	1.782	1.000	4.921	4.355	4.779
Petersburg	1.285	1.000	1.157	1.000	1.118
Pribilof	1.503	1.000	4.682	5.722	5.093
Sitka	1.255	1.000	1.108	1.000	1.081
Skagway	1.481	1.000	1.807	3.181	2.152
Southeast Island	2.038	1.000	3.364	3.394	3.372
Southwest	1.566	1.000	5.600	3.085	5.118
St. Mary's	1.637	1.000	6.174	1.500	5.001
Tanana	1.564	1.000	4.676	2.449	4.267
Unalaska	1.384	1.000	4.020	2.407	3.615
Valdez	1.225	1.000	2.023	1.911	1.995
Wrangell	1.376	1.000	1.163	1.000	1.122
Yakutat	1.676	1.000	2.165	1.961	2.129
Yukon Flats	1.612	1.000	8.930	3.613	7.595
Yukon Koyukuk	1.654	1.000	7.147	4.097	6.381
Yupik	1.632	1.000	6.779	5.652	6.496

## Chapter II. Instructional Allocations

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The instructional allocation is the largest of the three components of the formula for funding basic aid for education. Instructional costs include the cost of all teachers, specialists, building administrators, aides, and other district staff except those whose function is district administration.

Instructional costs account for nearly 80 percent of total school district expenditures, but districts vary widely in how they spend money in each of the three components. Expenditures on instruction range from 86 percent of total expenditures to less than half of total expenditures, with most districts spending between 65 percent and 75 percent of their total expenditures on instruction.

This chapter, as well as Chapters 3 and 4, discusses development of multipliers. There is no discussion of implementation scenarios in these chapters because multiplier development requires that numbers interrelate in an unrestricted way. Implementation scenarios are alternate ways in which to apply multipliers *after* they are developed.

The following major topics are addressed in this chapter:

- Adjusting instructional costs to compensate for the influence of school size and
- Adjusting instructional costs to compensate for the influence of location.

Under the heading of "Adjustments for School Size," we discuss:

- Funding communities versus schools as the units for school funding. Current law counts students in "funding communities" while the statistical approach counts students in each school. The discussion focuses on the study team's reasons for adopting schools as the units for funding and on the impact of that decision.
- The process of converting actual student counts to "adjusted student counts." Adjusted student counts are the basis for allocating aid under existing law and the statistical approach. Adjusted student counts are determined by multiplying actual student counts by adjustment factors (for size or location). Both current law and the statistical approach provide more funding per student to small schools than to larger schools in order to compensate for the higher per-student cost of operating small schools.

Under the heading of "Adjustments for School Location," we examine

- Issues related to compensation for instructional salary differences among districts. The statistical analysis found no clear basis for instructional salary differentials based upon location.

## Adjustments for School Size

The study team took a "model school" approach to determining adjustments for school size. The premise of the approach is that instructional staffing requirements are affected primarily by the number of students in individual schools, not by the location of the schools or by the number of students in the district.<sup>18</sup> That is, schools with any given number students should have similar instructional staffing requirements for regular K-12 education regardless of the districts in which the schools are located. If justified, location adjustments can be applied to compensate for differences in salaries. These adjustments are separate from the size adjustment process and are discussed later in this chapter.

### *"Funding Community" versus "School" as the Basis for Funding*

The concept that instructional size factors apply to individual schools is fundamental to the statistical approach and produces allocation results that differ substantially from allocations under current law. Foundation aid is generated at the "funding community" level under current law. Each funding community generates an independent count of students, and these counts are summed to produce a district count. However, because each student in small funding communities generates more education aid than does a student in larger funding communities, the concept of a "funding community" is critical to a discussion of education aid.

The term "funding community" is intended to describe a school system that serves students within a unique geographic location. Under the current formula, students in small schools typically generate more aid than do students in large schools. "Extra funding" for small schools may encourage districts to build and operate schools that are smaller than considerations of efficiency would dictate. The "funding community" approach attempts to eliminate this incentive by applying size adjustment factors to an entire community rather than to each school within the community.

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<sup>18</sup> "Instructional staffing" refers all staff at the school level, including teachers, specialists, administrators and classified staff. Teachers include classroom teachers as well as music, physical education and other teachers that do not typically have a single class. Specialists include psychologists, counselors and others who are not typically assigned to classrooms. Administrators include principals and others whose jobs focus on school operations and whose jobs require a teaching or administrative certificate. "Classified staff" refers to instructional aides, special education or other aides, administrative and maintenance staff and others who hold jobs for which a teaching certificate is not required. Classified staff are typically from the local labor market while the labor market for certificated staff is statewide or even national.

In addition to its potential effect on school size, the funding community concept offers a measure of dispersion of schools within a school district. To the extent that schools spread over a large area are more expensive to operate than schools in proximity, the concept adds an important element to the current allocation system. The study team considers dispersion of schools to be an important determinant of administrative and nonpersonal services costs, but concluded that dispersion has a negligible effect on *instructional* costs. The statistical approach adjusts for dispersion of schools in the nonpersonal services and administrative components of the formula.

The funding community concept clearly has merit. However, the advantages of the concept may be more theoretical than real. The study team concluded that differences in instructional requirements due to the number of students served are best measured at the school level. Analysis based on existing funding communities would not be appropriate because the mixture of single- and multi-school funding communities would mask "staff requirements at size" trends. That is, a funding community containing three schools of 200 students each would receive staffing allocations appropriate to a school of 600 students. A funding community containing a single school of 200 students would have a higher size adjustment factor and would receive more money per student than would the multi-site community. The study team concluded that such funding differentials were inappropriate and that adopting schools as the units of funding would greatly reduce such funding inequities.

Further, funding communities are not the only safeguard against inefficiently sized schools. The Department of Education exercises some control over school construction, and some level of local fiscal responsibility should be assumed. Also, if adjustment factors are accurate reflections of the increased costs of operating small schools, there is little incentive to operate smaller-than-necessary schools because additional aid allocations would merely offset increased costs.

Lack of a consistent definition of "funding community" was also a factor in the decision to adopt schools as revenue-generating units. Some districts contain funding communities that do not meet the principles of the concept.<sup>17</sup> The study team concluded that revenue generation units must be defined consistently if the formula is to address issues of simplicity and equity.<sup>18</sup> Although there are some inconsistencies in the school database, definitional problems are far less severe than with funding communities.

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<sup>17</sup> The Mat-Su district is perhaps best known for having "extra" funding communities, but is not alone in this regard.

<sup>18</sup> Adopting schools as revenue-generating units would not necessarily resolve issues of consistency. Just as with funding communities, there would be incentive for districts to establish artificial distinctions in order to restart the student count and increase State aid allocations. School-based counting offers improvements over funding community counts only if the Department of Education establishes and enforces consistent and equitable rules for defining schools as revenue-generating units.

### *Impact of Using Schools as the Basis for Funding*

To illustrate the importance of the "funding community versus school" debate, consider that nearly half of some districts' formula aid is the result of starting a new count for each funding community instead of having a single count for the district. In rural districts, schools and funding communities tend to be synonymous; urban districts typically have more schools in each funding community.

The implication of adopting schools as the basis for student counts is that districts with multiple schools in funding communities will have higher adjusted student counts than they do now, while the count in districts with single-school funding communities will be unchanged. Given a fixed amount of aid to allocate, districts with multiple schools in few funding communities will tend to gain at the expense of districts in which every school is a funding community.

Table 2.1 demonstrates the impact of adopting a school-based student count. Column 4 shows the proportion of students in each district after applying current size adjustment factors at the *funding community* level. Column 6 shows the proportion of students in each district after applying current size adjustment factors at the *school* level. Column 7 is derived by dividing column 6 by column 4, and indicates the impact of adopting a school-based count. A number less than one indicates a relative loss of student count, which translates directly to a reduction of State aid (given a fixed amount of aid to allocate).

Note that rural districts tend to have ratios less than one, and that many - those in which every school is a funding community - have ratios of .89 despite having the same adjusted count under both approaches (columns 3 and 5). This means that adoption of school-based student counts could reduce aid to some districts by up to 11 percent (given a fixed amount of aid to allocate). Districts that gain most under the school-based approach are concentrated in Southeast Alaska. Southeast communities tend to have multiple schools in a single funding community.

### *Adjustments for Primary versus Secondary Schools*

The study team's decision to abandon differential funding for primary and secondary students is a minor departure from current practice. There is no reason to believe the mix of students varies greatly from district to district. Since districts don't have to spend money in the school in which it is earned, accounting for higher costs in upper grades is not a significant issue.

For example, if high school students are funded at a student/staff ratio of 13 while primary schools are funded at a ratio of 17 and there are equal numbers in each type of school, a formula that funds all schools at a student/staff ratio of 15 would generate an identical amount of aid. A district can allocate more money per student to the high schools if it wishes to do so. Addressing the issue would add needless complications to the formula.

Table 2.1  
Impact of School-Based Student Counts

	Type	Student Count	Current Law Size Factors Applied to Funding Communities	Portion of Students	Current Law Size Factors Applied to Schools	Portion of Students	Impact of Implementing a School-Based Count	Statistical Approach Size Factors Applied to Schools	Portion of Students	Isolated Impact of Implementing Revised Size Factors	Combined Impact of Count and Size Revisions
		122,857	122,928	100.00%	137,818	100.00%	1.00	144,819	100.00%	1.00	1.00
School District											
Alaska Gateway	REAA	552	841	0.68%	841	0.61%	0.89	835	0.58%	0.94	0.84
Aleutian Region	REAA	21	54	0.04%	54	0.04%	0.89	41	0.03%	0.73	0.65
Aleutians East		353	598	0.49%	598	0.43%	0.89	574	0.40%	0.91	0.81
Anchorage		46,175	40,447	32.90%	46,236	33.60%	1.02	49,382	34.10%	1.01	1.04
Annette Island	REAA	444	485	0.38%	543	0.39%	1.04	592	0.41%	1.03	1.08
Bering Strait	REAA	1,679	2,539	2.07%	2,539	1.84%	0.89	2,502	1.75%	0.94	0.84
Bristol Bay		301	368	0.30%	442	0.32%	1.07	450	0.31%	0.97	1.04
Chatham	REAA	337	600	0.49%	600	0.44%	0.89	582	0.40%	0.92	0.82
Chugach	REAA	131	271	0.22%	271	0.20%	0.89	256	0.18%	0.90	0.80
Cooper River	REAA	839	898	0.73%	1,012	0.74%	1.01	996	0.69%	0.94	0.94
Cordova		519	530	0.43%	609	0.44%	1.03	667	0.46%	1.04	1.07
Craig City		424	448	0.36%	526	0.38%	1.08	570	0.39%	1.03	1.08
Delta/Greely	REAA	910	895	0.73%	1,199	0.87%	1.20	1,267	0.87%	1.00	1.20
Denali		378	524	0.43%	524	0.38%	0.89	535	0.37%	0.97	0.87
Dillingham		524	535	0.43%	613	0.45%	1.02	673	0.46%	1.04	1.07
Fairbanks		15,816	14,167	11.53%	16,088	11.89%	1.01	17,297	11.94%	1.02	1.04
Galena		150	209	0.17%	248	0.18%	1.06	234	0.16%	0.90	0.95
Haines		430	472	0.38%	619	0.45%	1.17	649	0.45%	1.00	1.17
Hoonah		273	316	0.26%	394	0.29%	1.11	402	0.28%	0.97	1.08
Hydaburg		114	176	0.14%	220	0.16%	1.12	192	0.13%	0.83	0.92
Iditarod	REAA	422	808	0.66%	808	0.59%	0.89	765	0.54%	0.92	0.82
Juneau		5,525	4,893	3.96%	5,463	3.97%	1.00	5,844	4.04%	1.03	1.01
Kake		190	244	0.20%	311	0.23%	1.14	295	0.20%	0.90	1.03
Kashunamiut	REAA	244	291	0.24%	291	0.21%	0.89	320	0.22%	1.04	0.93
Kenai		10,282	10,398	8.46%	11,561	8.40%	0.99	12,431	8.58%	1.02	1.01
Ketchikan		2,650	2,584	2.09%	3,104	2.28%	1.08	3,358	2.32%	1.03	1.11
Klawock		220	270	0.22%	344	0.25%	1.14	335	0.23%	0.92	1.03
Kodiak		2,872	2,984	2.43%	3,451	2.51%	1.03	3,571	2.47%	0.98	1.02
Kuspuuk	REAA	468	615	0.68%	918	0.67%	1.01	806	0.56%	0.83	0.84
Lake & Peninsula		458	1,071	0.87%	1,071	0.78%	0.89	929	0.64%	0.82	0.74
Lower Kuskokwim	REAA	3,275	4,349	3.54%	4,807	3.35%	0.88	4,831	3.20%	0.89	0.90
Lower Yukon	REAA	1,695	2,275	1.85%	2,275	1.65%	0.89	2,355	1.63%	0.98	0.89
Matanuska		12,024	11,530	9.38%	12,570	9.13%	0.97	13,493	9.32%	1.02	0.99
Nenana		181	219	0.18%	219	0.16%	0.89	230	0.16%	1.00	0.89
Nome		733	721	0.58%	839	0.61%	1.04	905	0.62%	1.03	1.07
North Slope		1,808	2,143	1.74%	2,301	1.67%	0.96	2,376	1.64%	0.94	0.94
Northwest Arctic		1,892	2,429	1.98%	2,507	1.82%	0.92	2,556	1.78%	0.97	0.89
Pease		38	82	0.07%	82	0.06%	0.89	89	0.05%	0.78	0.70
Peterson		754	739	0.60%	862	0.63%	1.08	989	0.67%	1.03	1.11
Petersburg		328	328	0.27%	328	0.24%	0.89	320	0.22%	0.93	0.83
Predeal	REAA	212	328	0.27%	328	0.24%	0.89	320	0.22%	0.93	0.83
Sitka		1,802	1,678	1.38%	2,118	1.54%	1.13	2,284	1.59%	1.02	1.15
Skagway		131	192	0.16%	192	0.14%	0.89	194	0.13%	0.86	0.86
Southeast Island	REAA	350	717	0.58%	717	0.52%	0.89	713	0.49%	0.89	0.84
Southwest	REAA	618	967	0.79%	967	0.70%	0.89	964	0.67%	0.96	0.89
St. Mary's		129	181	0.18%	233	0.17%	1.00	211	0.15%	0.86	0.94
Tanana		84	155	0.13%	155	0.11%	0.89	147	0.10%	0.90	0.81
Unalaska		353	386	0.31%	464	0.34%	1.07	489	0.34%	1.00	1.07
Valdez		896	863	0.70%	1,013	0.74%	1.03	1,088	0.78%	1.03	1.08
Wrangell		550	582	0.46%	714	0.52%	1.14	757	0.52%	1.01	1.14
Yakutat		187	241	0.20%	329	0.24%	1.22	313	0.22%	0.90	1.10
Yukon Flats	REAA	410	817	0.64%	817	0.59%	0.89	742	0.51%	0.86	0.77
Yukon-Koyukuk	REAA	625	1,083	0.89%	1,083	0.79%	0.89	1,034	0.71%	0.90	0.86
Yupik	REAA	281	564	0.46%	887	0.50%	1.09	821	0.43%	0.86	0.94

### *Developing Multipliers for School Size*

After determining that school-based counts offer greater consistency and equity than a funding community approach, the study team turned to the development of adjustment factors to compensate for school size. The approach focused on "class size" and produced a series of points at which the study team determined additional staff would be required. In this analysis, "class size" is not the number of students in a classroom, but rather a measure of all staff required to serve the needs of students in a school. Because staff includes specialists, administrators and others who are not assigned to individual classes, "class size" measures school staff per student rather than *teachers* per student.

The proposed formula for allocating the instructional portion of school foundation aid is based on the "adjusted student count" of each school rather than actual student counts. The proposed formula contains adjustment factors – referred to as "multipliers" – that compensate small schools and/or schools in high-cost areas for high operating costs relative to other schools.

For each school, the amount of instructional aid is determined by the following formula:

$$\text{Instructional Aid} = \text{\$/Student} \times (\text{Students} \times \text{Size Factor} \times \text{Area Cost Differential})$$

The amount of instructional funding the legislature makes available can be divided by the statewide total of adjusted student counts to produce the "S/student" figure used in the formula above. The "student" element in the formula refers to actual student counts. These counts are adjusted by the size and location multipliers to determine adjusted student counts.

In this portion of the analysis, the focus is on the "size multiplier" in the formula. The objective of the analysis was to generate a table that can be used to produce adjusted student counts that compensate for higher staffing requirements in small schools. Discussion of the fourth element in the formula – multipliers for location, or ACDs, for instructional costs—appears later in this chapter.

#### *A Formula for Size Multipliers*

Table 2.2 shows the results of the analysis. Figure 2.1 and Table 2.3 translate (the beginning portion of) the formula into concrete examples of how the formula works. Under the formula, every school begins with a base adjusted student count of 39.6 (line 1, column C of Table 2.2).<sup>19</sup> This constant value for adjusted student count corresponds to the horizontal portion of the line in Figure 2.1. Column 3 of Table 2.3 also shows the adjusted student count is 39.6 for schools with 20 or fewer students.

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<sup>19</sup> The student-staff database includes several schools with fewer than ten students and many with fewer than 20. Minimum enrollment requirements (to qualify for funding) have been proposed, but we did not address the issue in our research. Savings attributable to closing very small schools would be an insignificant portion of total funding.

Line 2 of Table 2.2 indicates that each student from 20 to 30 is counted as 1.62 students. The 1.62 contribution to the adjusted student count is shown in column 2 of Table 2.3, with the adjusted student count (column 3) increasing by 1.62 students for each student enrolled (up to 30 students). Each successive line in Table 2.2 can be translated in similar fashion. Each change in the adjustment factor is marked by a kink in the line shown in Figure 2.1.

The remainder of this section provides a step-by-step description of the process used to produce Table 2.2.

### ***Steps to Developing Size Multipliers***

The statistical approach to calculating size multipliers included the following steps:

1. Determining student-staff ratios by graphing students per staff at each school,
2. Identifying ranges of school size that are staffed at similar levels, then
3. Determining adjustment factors for each size category (identified in step 2) that, when multiplied by actual student counts, would compensate small schools for higher per-student operating costs due to higher staffing requirements.
4. Smoothing the transition from one school size category to the next so that additional students always generate additional aid.

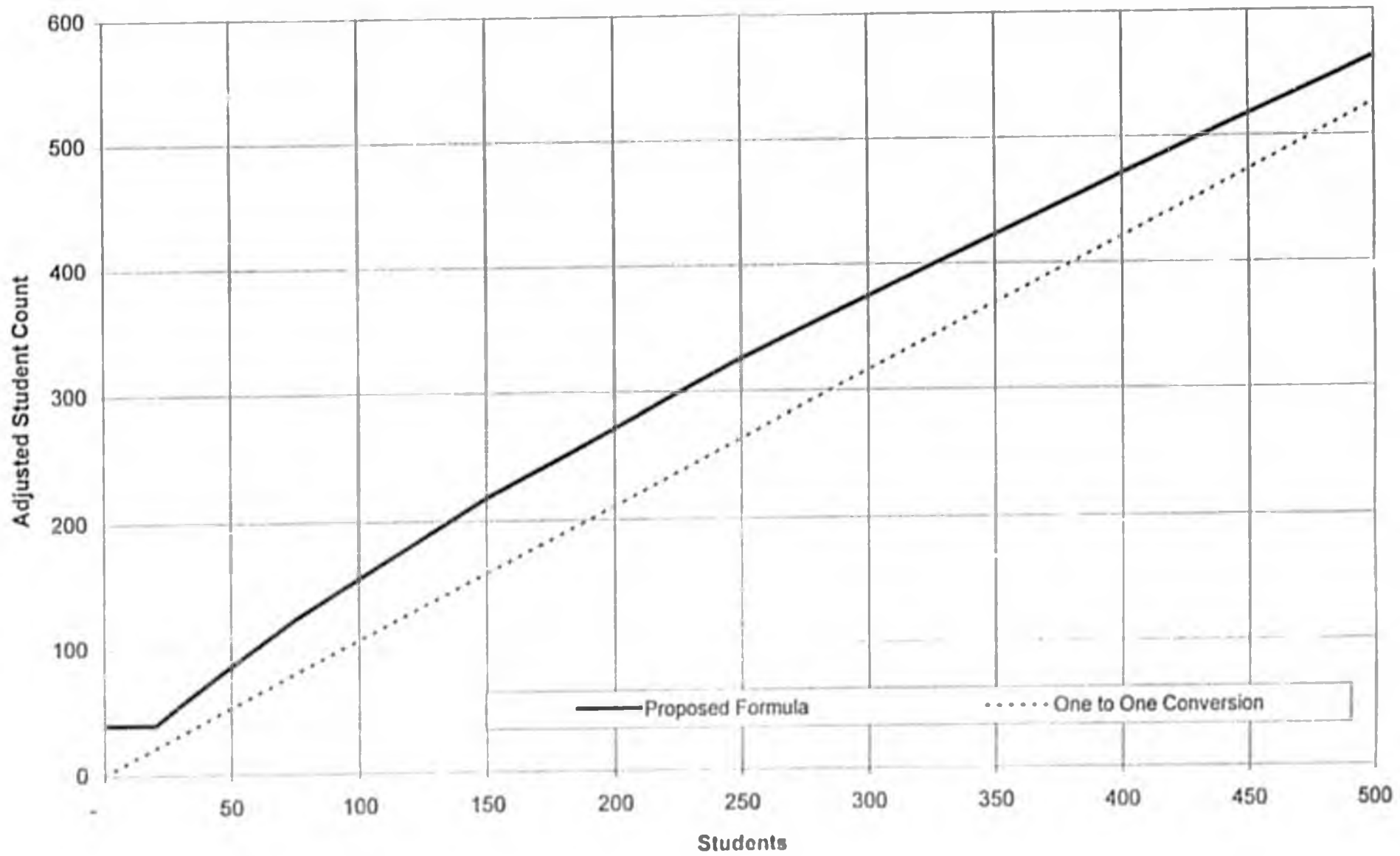
### **Step 1 - Determine Student-Staff Ratios**

The Department of Education provided electronic files on staffing within each school district. We used data for school year 95-96 because it is the most recent data available. Both our panel of advisors and Department staff noted that school staffing patterns change slowly and in small increments, so the age of the data—and the use of data for only a single year—is not expected to bias the results.

**Table 2.2**  
**Conversion of Actual Student Count to Adjusted Student Count**

A		B	C		D		E
If the Student Count in a School is:			The Adjusted Student Count is:				
at least:	but less than:	Base	plus	Multiplier	times	The number of Students in Excess of:	
	20	39.6	plus	0	x	0	
20	30	39.6	plus	1.62	x	20	
30	75	55.8	plus	1.49	x	30	
75	150	122.85	plus	1.27	x	75	
150	250	218.1	plus	1.08	x	150	
250	400	326.1	plus	0.97	x	250	
400	750	471.6	plus	0.92	x	400	
750	5,000	793.6	plus	0.84	x	750	

Figure 2.1--Student Count Adjustment under the Statistical Approach



**Table 2.3**  
**Conversion of Actual Student Count to**  
**Adjusted Student Count**

Actual Student Count	Contribution		Actual Student Count	Contribution	
	to Adjusted Student Count	Adjusted Student Count		to Adjusted Student Count	Adjusted Student Count
1		39.6	28	1.62	52.6
2		39.6	29	1.62	54.2
3		39.6	30	1.62	55.8
4		39.6	31	1.49	57.3
5		39.6	32	1.49	58.8
6		39.6	33	1.49	60.3
7		39.6	34	1.49	61.8
8		39.6	35	1.49	63.3
9		39.6	36	1.49	64.7
10		39.6	37	1.49	66.2
11		39.6	38	1.49	67.7
12		39.6	39	1.49	69.2
13		39.6	40	1.49	70.7
14		39.6	41	1.49	72.2
15		39.6	42	1.49	73.7
16		39.6	43	1.49	75.2
17		39.6	44	1.49	76.7
18		39.6	45	1.49	78.1
19		39.6	46	1.49	79.6
20		39.6	47	1.49	81.1
21	1.62	41.2	48	1.49	82.6
22	1.62	42.8	49	1.49	84.1
23	1.62	44.5	50	1.49	85.6
24	1.62	46.1	51	1.49	87.1
25	1.62	47.7	52	1.49	88.6
26	1.62	49.3	53	1.49	90.1
27	1.62	50.9	54	1.49	91.6

### Counting Students

The study team used a direct student count rather than the "instructional unit" concept included in current law. The concept of "instructional unit" is similar to "class size" in that an instructional unit is (roughly defined as) the number of students assigned to a single teacher. The implication of a "unit" designation is that there are discrete steps between units and that a teacher is added for each full unit of students.

Current law uses fractional instructional units. That is, the units are not treated as increments equivalent to a classroom. Using fractional instructional units is the mathematical equivalent of using student counts, so that a switch to student counts does not affect funding allocations, and certainly does not affect the cost of delivering education services.

Although converting from instructional units to direct student counts may affect the State's ability to meet federal standards of equity and may affect the treatment of federal impact aid, these are not issues directly related to the cost of delivering education service in various communities. From the study team's perspective, the lack of impact on cost of school operations makes the issue of instructional units outside the scope of this study. We use a direct student count because the concept is perceived by many as less complicated than the conversion to instructional units.<sup>70</sup>

### Counting Staff

The file provided by DOE lists 9,000+ classified employees by job category, and gives district and school codes, education, experience and salary for each individual. Staff were sorted and subtotaled by school code. District office administrative staff were removed from the file.

Some building administrators, teachers and specialists were identified as central office employees. These staff were generally allocated to each school in the district in proportion to the number of students in the schools. This is not a significant issue - there are few central office staff relative to school staff - but the allocation was necessary because some districts appear to assign all staff to schools while other districts show some teachers, counselors and other specialists as central office staff. Allocating these central office staff to schools allows more meaningful comparisons of district staffing data.

Classified staff posed a dilemma. Classified staffing level is a local option that depends less upon school size than upon available funding. The study team was concerned that including classified staff in the analysis would simply reflect "what is" rather than "what should be." The study team's concentration on "what should be" was disturbed by concern that excluding classified staff might leave the analysis open to criticism on the grounds that an important part of school operations had been ignored.

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<sup>70</sup> Once adjusted student counts are determined (by multiplying size factors by actual student counts), they can be converted to instructional units simply by dividing by an appropriate constant. Because funding is allocated according to fractional instructional units, the choice of a unit size is irrelevant. That is, any unit size would produce allocations identical to any other unit size, assuming that funding per unit is determined by dividing the total amount available for allocation by the number of instructional units.

The study team concluded that focusing on certificated staff provides a better measure of *required* staffing in schools, while including classified staff provides a better measure of existing staffing levels. The former approach was judged more appropriate, based on the specifications of the Legislative Budget and Audit Committee.

It is important to understand that excluding classified staff from the analysis does not ignore their importance or leave them unfunded. Exclusion implies that classified staff for regular instruction should follow approximately the same pattern as certificated staff.<sup>21</sup>

Table 2.4 shows the number of students per classified staff (in several categories) for each school district. It also shows the ratio of classified staff to certificated staff (column 5). In general, districts with relatively high levels of classified staff (indicated by relatively low student-to-staff ratios in column 5) are districts that are identified by the statistical approach as being relatively overcompensated under current law.

Table 2.4 is not essential to the analysis; it is included only because it may be of interest to readers. The table provides a partial answer to the question "If districts with high ACDs do not have significantly more teachers per student (at any given school size) and do not pay teachers significantly higher salaries, how do they spend the money that they receive due to a high ACD?" The answer appears to be that many districts with high ACDs have relatively high levels of classified staff.

Data on certificated staffing levels was merged with data on the number of students in each school. This process required some manipulation of data to ensure consistent treatment of correspondence studies and other irregularities. For example, the career centers in Anchorage and Fairbanks have staff, but no students were shown in the files (because students are counted in their "home" schools and cannot be double counted). Staff in the career centers were allocated to high schools in proportion to the number of students in each high school.

The merged files that became the foundation for statistical analysis are nearly, but not absolutely, accurate. There are some small errors in district subtotals, and the total student count differs from the Department of Education's figure by about 40 students. These differences have no significant impact on the analysis. Although every practical effort was made to make the data as reliable as possible it is important to understand that small data errors have a negligible impact on the analysis because allocation of aid under current law and the statistical approach are based on applying formulas to the same database. This is one reason comparisons of various alternatives can be made with the data presented in this report, but comparisons between the allocations under the statistical approach and actual aid received by districts are invalid.

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<sup>21</sup> Vocational, bilingual and other special programs are not addressed in this analysis. Classified staff for special programs should not be expected to follow the pattern for regular education.

Table 2.4  
Student-Staff Ratio and Classified to Certificated Staff Ratios

School District	Students	Student-Staff Ratio		Classified to Certificated Staff Ratios		Administrative Support	All Other Support	Instructional Aides	Library Aides	Officials & Administrators	School Support	
		max	min	avg	std dev							Classified Staff per Certificated Staff
Total	78,333	31.3	4.7	18.9	8.4	8,729	0.88	110.4	82.0	80.7	652.1	100.4
Alaska Gateway	352	31.3	4.7	18.9	8.4	48.9	0.88	110.4	82.0	80.7	652.1	100.4
Alutian Region	21	4.5	4.7	18.9	8.4	3.0	1.50	21.0	21.0	8.0	104.9	38.3
Alutians East	355	25.8	13.9	40.4	0.63	177.5	34.8	42.4	182.1	355.0	177.5	46.3
Anchorage	444	22.5	19.7	41.1	0.85	148.0	68.3	81.2	592.0	444.0	111.0	71.3
Annette Island	644	22.5	19.7	41.1	0.85	148.0	68.3	81.2	592.0	444.0	111.0	71.3
Bering Strait	1,679	227.5	7.4	159.2	1.43	639.6	20.2	17.2	104.9	419.8	67.2	48.3
Bristol Bay	301	17.0	17.7	27.0	0.63	190.9	43.8	51.0	301.0	240.8	240.8	96.4
Chatham	337	32.1	10.5	35.4	0.91	71.0	33.8	26.4	337.3	90.0	90.0	60.0
Chugach	131	13.1	11.0	13.0	1.01	72.0	40.8	48.8	180.0	72.0	80.0	175.6
Copper River	639	29.7	22.2	47.9	0.62	219.6	87.8	85.9	1,197.5	658.7	175.6	175.6
Cordova	519	21.0	24.7	36.0	0.58	259.6	64.9	74.2	519.2	141.3	141.3	141.3
Craig City	424	21.4	19.8	29.0	0.74	282.7	86.4	52.2	424.0	141.3	141.3	141.3
Delta/Greely	910	40.0	22.1	67.2	0.60	178.9	60.0	64.3	910.0	151.8	151.8	151.8
Denali	378	18.3	21.0	33.8	0.55	185.5	46.4	130.8	174.5	524.0	174.7	174.7
Dillingham	524	24.0	21.8	45.8	0.52	524.0	174.7	37.4	252.0	524.0	174.7	174.7
Fairbanks	15,816	584.8	27.0	1,018.5	0.57	251.9	68.0	99.9	483.9	1,216.6	183.9	183.9
Galena	150	12.1	12.4	19.3	0.83	75.0	34.1	37.5	223.9	150.0	150.0	150.0
Gaika	430	17.9	24.4	32.2	0.55	434.9	55.0	101.8	434.9	434.9	182.9	182.9
Haines	273	24.5	11.3	23.0	1.07	139.0	19.9	48.3	185.3	273.0	273.0	273.0
Hoonah	273	24.5	11.3	23.0	1.07	139.0	19.9	48.3	185.3	273.0	273.0	273.0
Hoodlum	114	9.0	12.6	13.1	0.69	113.6	25.2	45.4	344.2	169.6	169.6	169.6
Hydaburg	422	37.4	11.3	41.8	0.90	76.8	32.6	34.3	422.0	211.3	91.3	91.3
Iditarod	422	37.4	11.3	41.8	0.90	76.8	32.6	34.3	422.0	211.3	91.3	91.3
Juneau	5,525	225.8	24.4	332.5	0.68	230.2	68.2	66.2	2,129.5	919.2	184.3	184.3
Kake	190	14.0	13.6	19.9	0.83	63.3	38.0	38.0	190.0	190.0	190.0	190.0
Kake	244	17.3	14.1	23.1	0.75	30.8	30.8	35.0	498.0	244.0	262.4	262.4
Kashunamiut	244	17.3	14.1	23.1	0.75	30.8	30.8	35.0	498.0	244.0	262.4	262.4
Kanaa	10,282	375.6	27.4	740.7	0.51	236.3	62.6	100.5	11,662.6	1,713.5	175.3	175.3
Katikuk	2,850	95.3	29.9	177.6	0.54	407.2	71.7	111.8	475.1	370.1	237.9	237.9
Katukuk	2,850	95.3	29.9	177.6	0.54	407.2	71.7	111.8	475.1	370.1	237.9	237.9
Klawock	220	14.0	15.7	19.3	0.73	73.4	44.0	44.0	220.2	1,435.9	194.0	194.0
Kodiak	2,872	130.4	22.0	191.9	0.68	234.2	54.6	64.2	717.9	1,435.9	194.0	194.0
Kotukuk	468	43.5	10.8	49.4	0.88	82.3	43.4	26.1	468.4	156.1	143.2	143.2
Kotukuk	468	43.5	10.8	49.4	0.88	82.3	43.4	26.1	468.4	156.1	143.2	143.2
Lake & Peninsula	498	54.0	9.2	65.4	0.63	82.9	18.8	35.0	152.7	1,554.1	186.2	186.2
Lower Kuskowim	3,275	238.8	13.8	300.9	0.79	88.8	38.3	38.5	368.3	1,554.1	186.2	186.2
Lower Yukon	1,835	177.0	9.6	152.5	1.16	121.1	27.3	20.2	1,835.2	339.0	154.1	154.1
Mataluska	12,024	375.9	32.0	843.3	0.45	304.8	45.6	304.3	1,024.4	437.7	322.0	322.0
Nanana	161	11.4	14.1	17.3	0.66	64.4	30.6	50.9	161.0	181.8	104.7	104.7
Nana	733	41.4	17.7	58.0	0.71	244.3	91.6	43.5	366.5	181.8	104.7	104.7
North Slope	1,805	315.0	5.7	193.0	1.63	75.7	13.1	19.0	903.0	106.2	46.3	46.3
Northwest Arctic	1,802	196.0	9.7	155.0	1.26	77.1	27.8	21.5	948.0	630.7	172.0	172.0
Penain	39	4.5	8.5	5.3	0.65	19.1	19.1	25.5	39.0	38.3	38.3	38.3
Petersburg	754	27.6	27.3	52.2	0.53	502.4	81.2	85.2	668.9	753.6	243.1	243.1
Prudof	213	25.0	9.7	19.0	1.16	71.1	35.5	23.7	106.6	213.2	213.2	213.2
Prudof	213	25.0	9.7	19.0	1.16	71.1	35.5	23.7	106.6	213.2	213.2	213.2
Sika	1,802	38.0	51.6	123.3	0.28	300.8	601.6	80.2	3,609.7	601.6	601.6	601.6
Slapway	131	8.3	20.8	13.0	0.49	45.9	45.9	110.3	525.2	131.3	131.3	131.3
Southeast Island	618	62.5	10.1	73.0	0.66	63.0	28.1	28.7	618.0	209.9	124.2	124.2
Southwest	129	10.0	12.9	9.5	1.05	28.8	28.8	32.3	129.1	129.1	129.1	129.1
St. Mary's	94	7.3	13.0	10.5	0.69	37.6	29.9	188.0	47.0	352.8	176.4	176.4
Tanana	353	26.3	13.4	30.5	0.86	82.0	30.7	47.0	352.8	112.0	112.0	112.0
Unalaska	899	57.5	15.8	67.5	0.85	223.9	33.2	61.8	298.6	899.6	112.0	112.0
Valdez	590	29.8	18.7	39.3	0.76	277.5	49.3	50.5	595.0	123.3	123.3	123.3
Village	590	29.8	18.7	39.3	0.76	277.5	49.3	50.5	595.0	123.3	123.3	123.3
Village	590	29.8	18.7	39.3	0.76	277.5	49.3	50.5	595.0	123.3	123.3	123.3
Yakutat	187	16.5	10.6	17.4	0.95	130.6	35.0	23.3	175.0	105.4	105.4	105.4
Yukon Flats	410	74.0	5.7	49.5	1.45	84.5	14.6	12.4	422.6	211.3	140.9	140.9
Yukon Koyukuk	625	68.0	9.5	68.2	1.00	125.0	25.0	28.4	156.3	625.1	65.5	65.5
Yukon	381	58.0	6.9	61.0	1.40	77.4	21.2	18.0	110.6	381.0	96.3	96.3

## Graphing Results

Figure 2.2 shows students per staff for all schools in the student-staff database. The "trumpet" shape of the plot in Figure 2.2 is normal; we expect greater variation in student/staff ratios in small schools because the addition of one teacher produces a large change in the student/staff ratio. An additional teacher in a large school has a much smaller effect on the ratio of students to staff.

Two trendlines are shown in Figure 2.2. These are simply computer-generated, "best-fit" lines through the data points. Trendline A is the "best-fit" straight line through the points while the logarithmic method (Trendline B) allows the line to bend in order to fit the data better. The upward slope of the trendlines indicates that larger schools have larger class sizes (more students per staff). This may indicate economies of scale, but it may also indicate that the funding community approach in the current formula is biased toward smaller communities and districts with multiple funding communities, and thereby "forced" larger class sizes in large schools by restricting funding.

## Step 2 - Determine School Size Categories

Identifying ranges of school size over which per-student staffing levels are reasonably constant is a somewhat arbitrary exercise. Smaller groupings of schools (by number of students) will show less variation in staffing levels from school to school than will groupings of schools that encompass a greater range of students. Thus, smaller groups make the adjustment for size more precise. However, the desire for precision conflicts with the desire for simplicity.<sup>21</sup> The size categories we selected are the result of several rounds of graphing rather than sophisticated statistical analysis. In order to keep the formula as simple as possible, we wanted round numbers at the break points and no more than ten school size categories.

Figure 2.3 is a sample of the size category analysis. It shows schools with between 10 and 50 students and indicates that class size in those schools varies from four students to 20 students. Similar figures for other school sizes appear in the technical appendix.

The tests used to determine a "good" grouping of schools were:

- the trendlines through the points should be horizontal (indicating a constant average class size throughout the range), and
- The logarithmic trendline should coincide closely with the linear trendline (indicating that the group is small enough to "take the curve out" of the curved trendline in Figure 2.2).<sup>22</sup>

<sup>21</sup> Although a logarithmic function would adjust more smoothly than can be done by grouping data points, the study team decided that logarithms fail the simplicity test. Even for those who grasp the concept of logarithms, we believe the conversion of ADM to adjusted ADM should be possible without using a calculator or table of logarithms. The degree of accuracy gained by using logarithms is not significant.

<sup>22</sup> The purpose of the analysis is to find linear relationships between students and staff. The curved (logarithmic) trendline in Figure 2.2 clearly fits the data points better than the straight trendline. A curve can be broken into a number of small pieces that are nearly straight lines—as the pieces of the curve get smaller, the segments become more linear. Little difference between the linear trendline and the logarithmic trendline indicates the group is small enough to demonstrate a fairly constant relationship throughout the size category.

Figure 2.2--Students per Staff

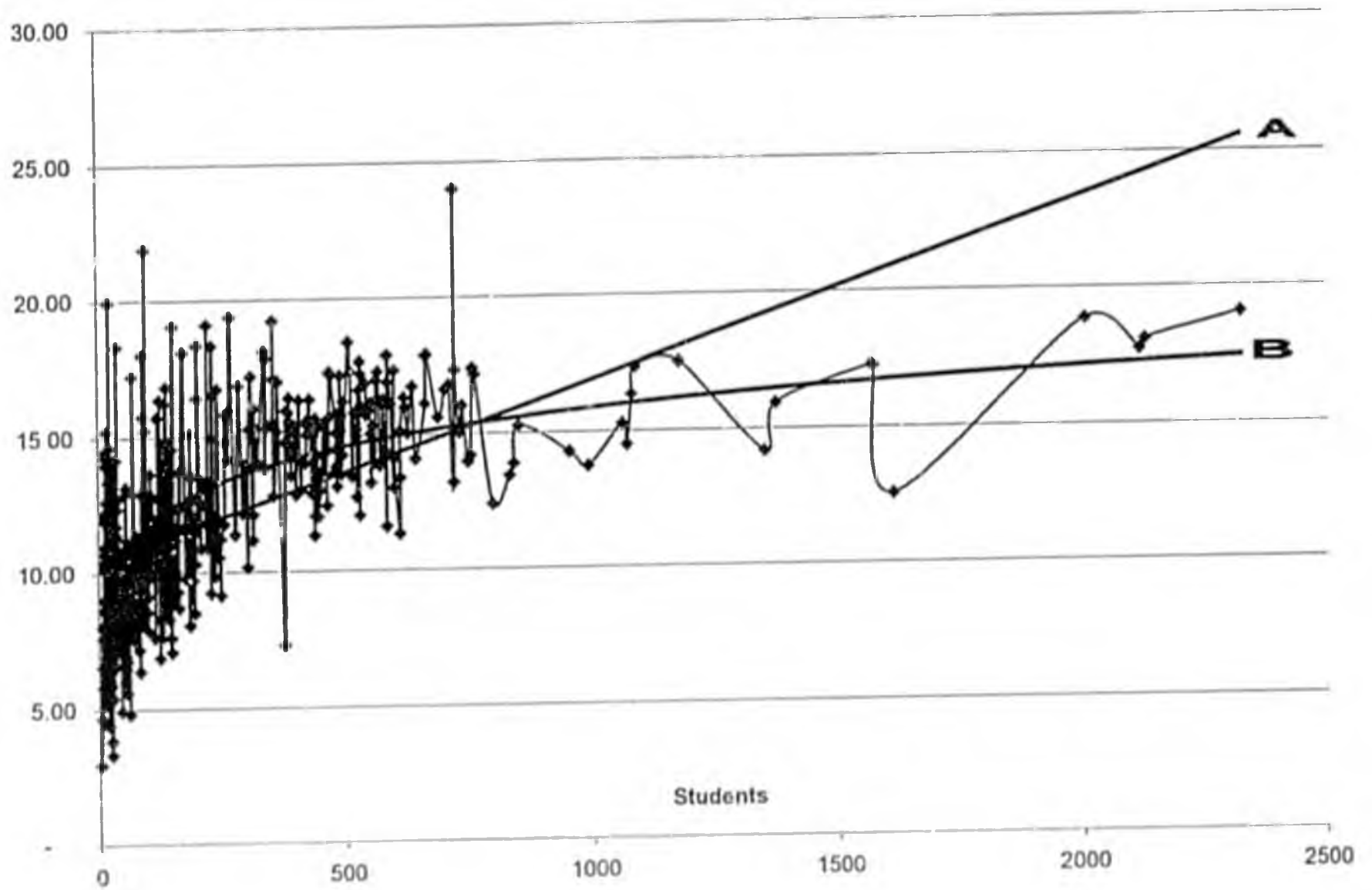
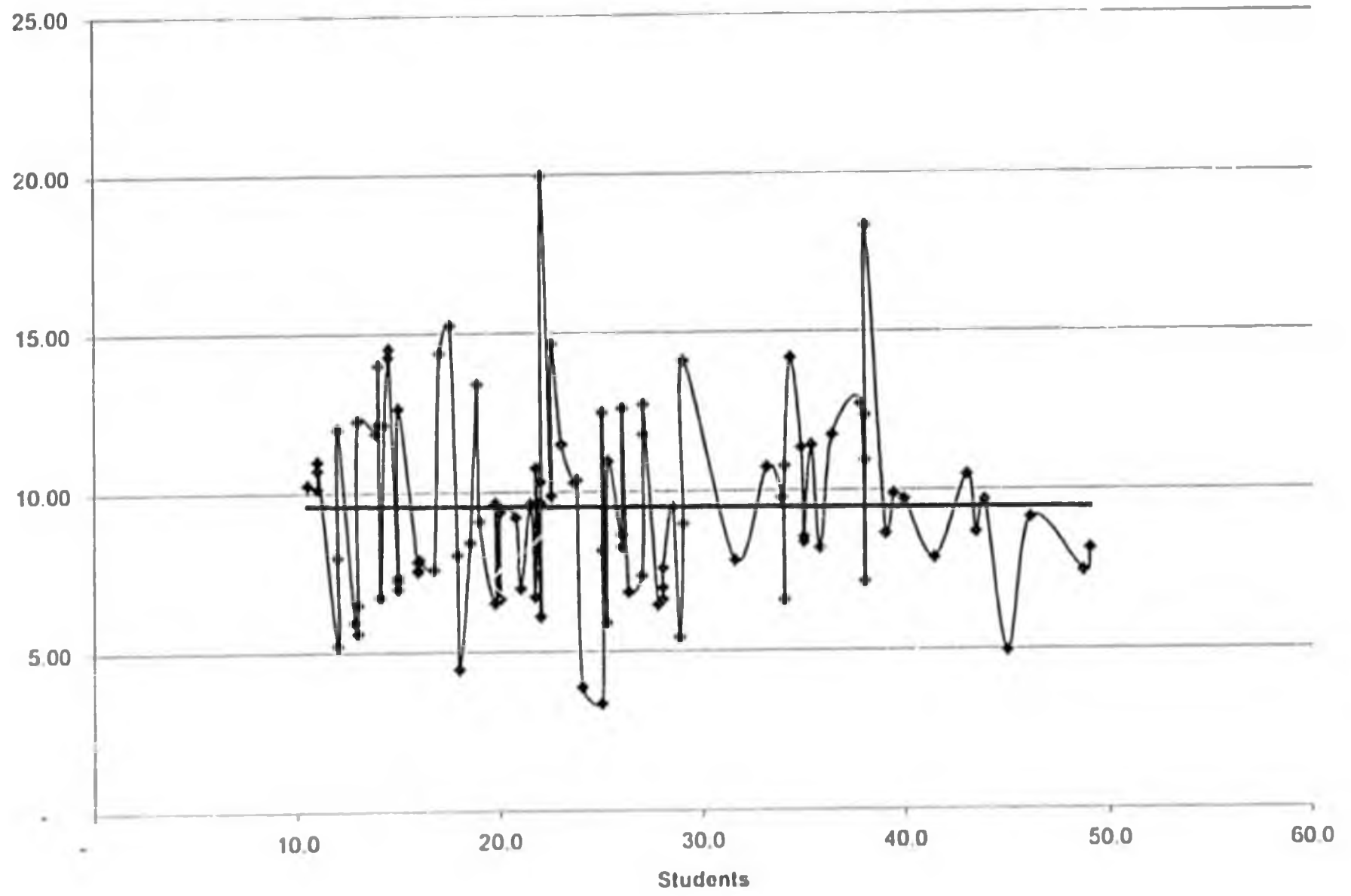


Figure 2.3--Students per Staff



While the technique may appear unsophisticated, a more statistical approach would lend an appearance of precision that simply does not exist. In addition, the importance of category breakpoints diminishes if the adjustment formula is designed so that it produces a kinked line rather than a series of steps (See Step 4, "Smooth the Curve," below).

### Step 3 - Determine Adjustment Factors

Subtotals of staff and students in each school size category are used to determine student to staff ratios (i.e. average "class sizes") as shown in Figure 2.4. The adjustment factors are multipliers required to make the "adjusted student to staff ratio" identical for each school-size category. (In picture terms, the multipliers, when applied to the steps in Figure 2.4, move each step up or down until, together, they form a straight line at the statewide average class size). Multipliers are computed by dividing the student-staff ratio for each size category by the statewide average student-staff ratio.

For example, the statewide average "class size" is 14. The smallest school-size category (fewer than 50 students) has a class size of seven. This size category requires a multiplier of 2.0 ( $14/7$ ) to produce an "adjusted" class size equal to the statewide average of 14. The multiplier means that each student in a school of fewer than 50 students is counted as two students. Similarly, the student count in a large school (with an average class size of 16) would be multiplied by .88 ( $14/16$ ) to produce an adjusted student count that also produces an adjusted class size of 14.

### Step 4 - Smooth the Curve

The "step function" shown in Figure 2.4 can be used to produce a formula similar to that contained in SSHB148 and a number of other bills before the legislature. The formula would be easy to understand but has an inherent weakness the study team finds unacceptable. As shown in Figure 2.5, the size factors in SSHB148 produce a series of discontinuities. That is, moving from one school-size category to a higher category causes a decline in the adjusted student count (and in aid received). For example, a school of 400 students has a multiplier of 1.40 and an adjusted student count of 560. The addition of one student would put the school in a size category with a multiplier of 1.10. This multiplier produces an adjusted student count of 441.

The solution to this problem is to define a conversion formula that connects the midpoints of the treads of the steps, as shown in Figure 2.6. Such a formula produces a line with a kink at each change in school size category rather than the discontinuities produced by a formula of the type in SSHB148. Both current law and the size formula in Table 2.2 smooth out the changes between categories by producing a kinked line.

Figures 2.7 and 2.8 show the formulas for converting actual student counts to adjusted student counts under current law, SSHB148, and our statistical approach. Figure 2.8 shows only schools of 500 students in order to show detail.

Figure 2.4--"Class Size" under Proposed Formula

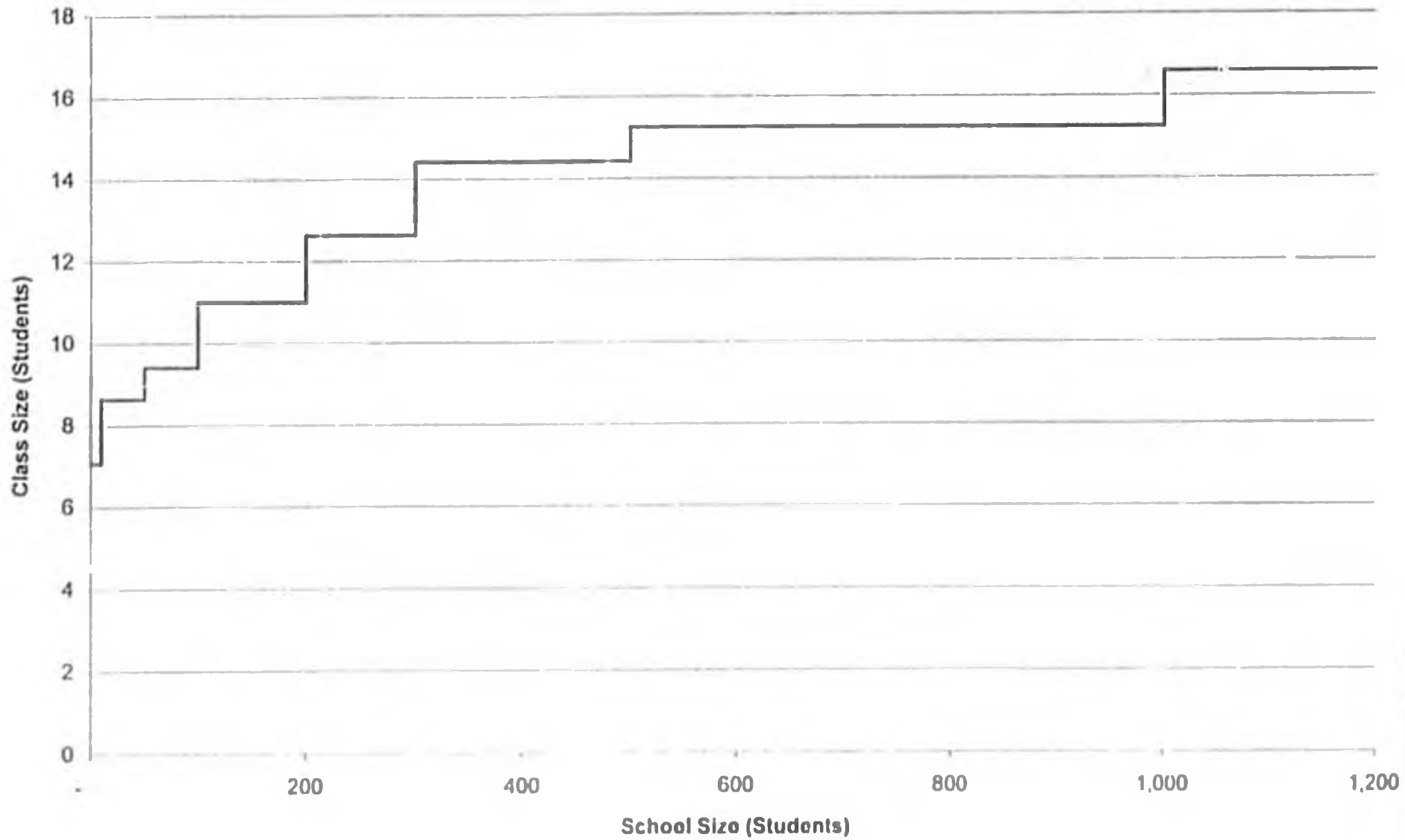


Figure 2.5--Student Count Adjustment under SSHB148

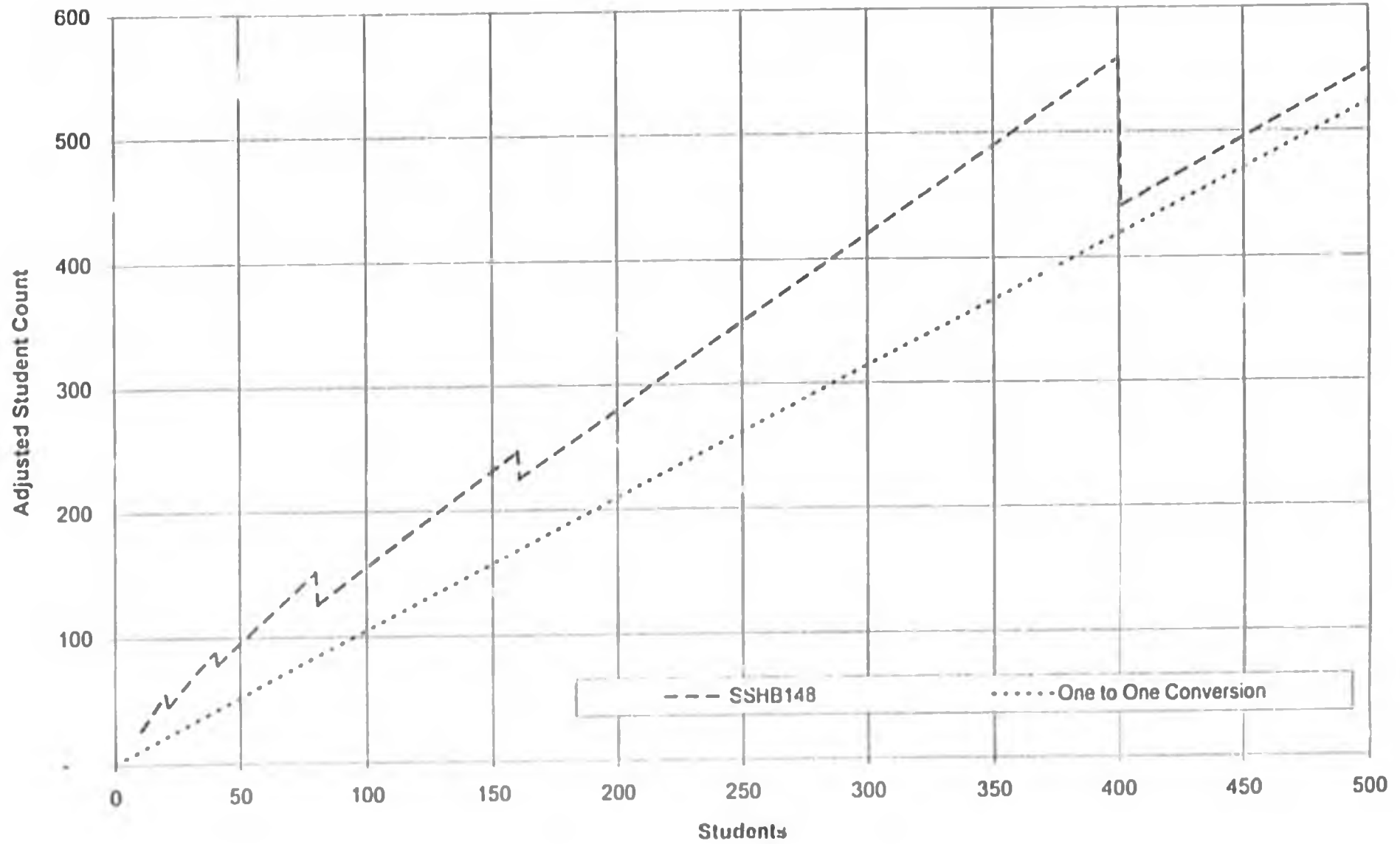


Figure 2.6--Class Size under Proposed Formula

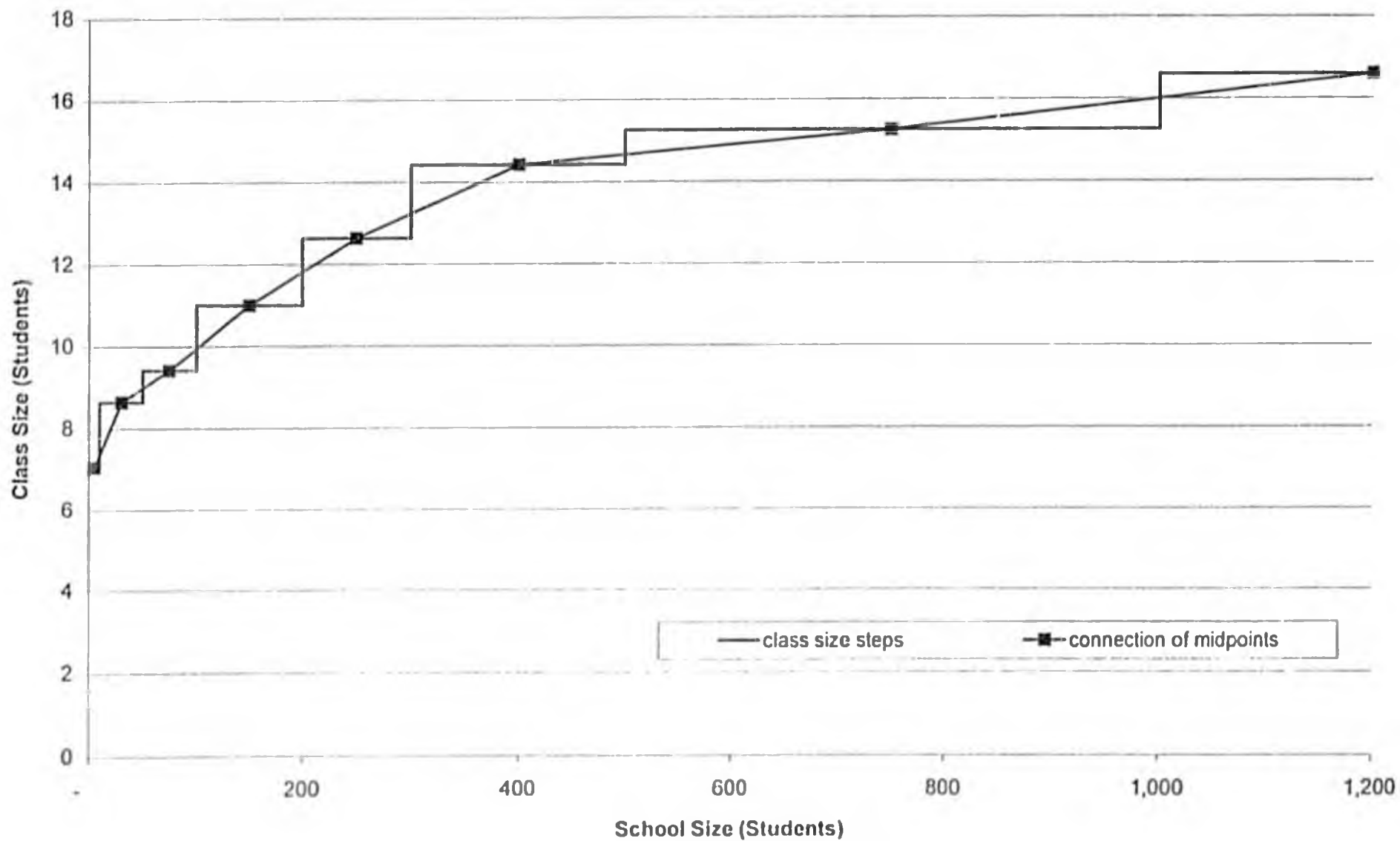


Figure 2.7--Student Count Adjustment under Various Formulas

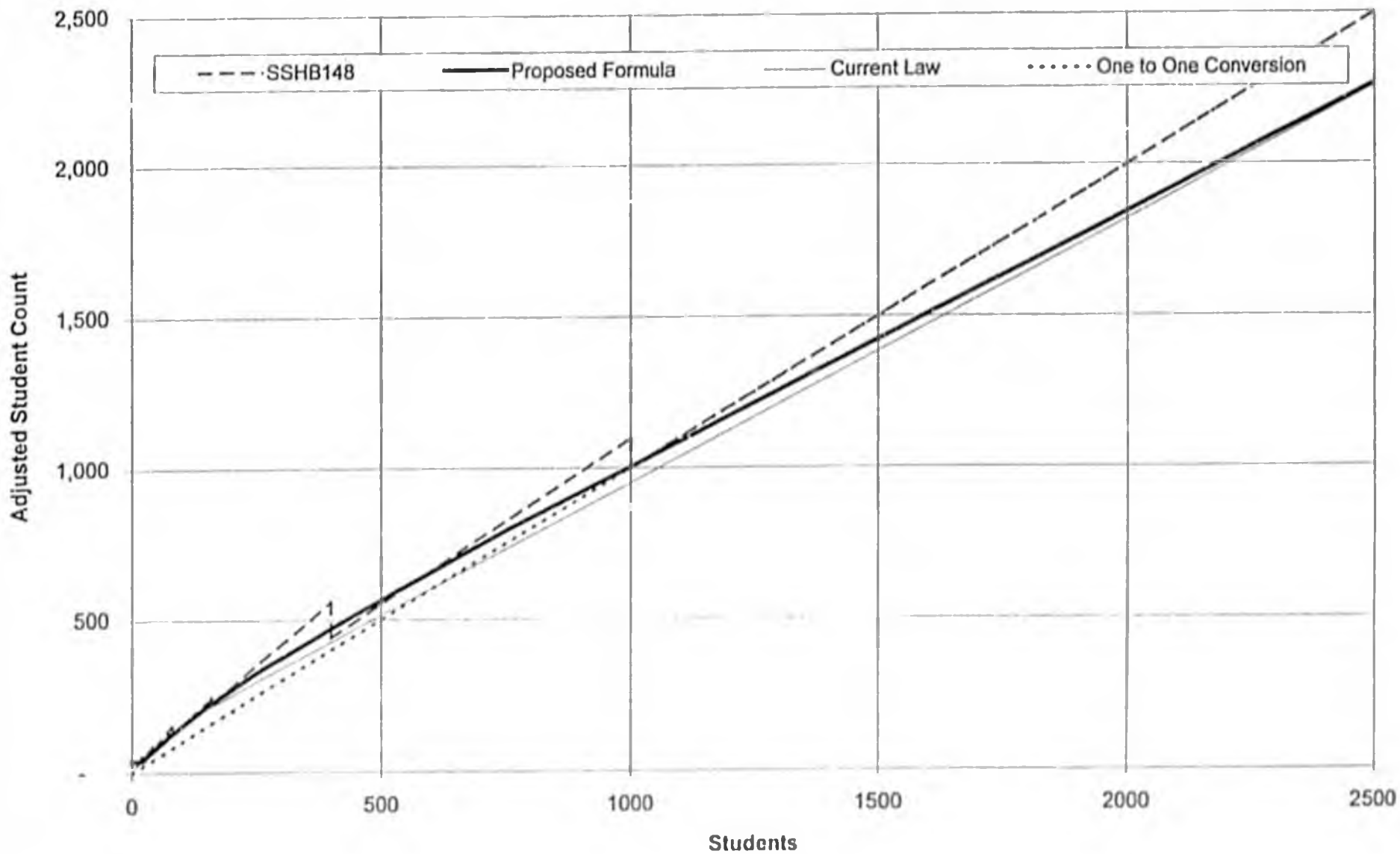
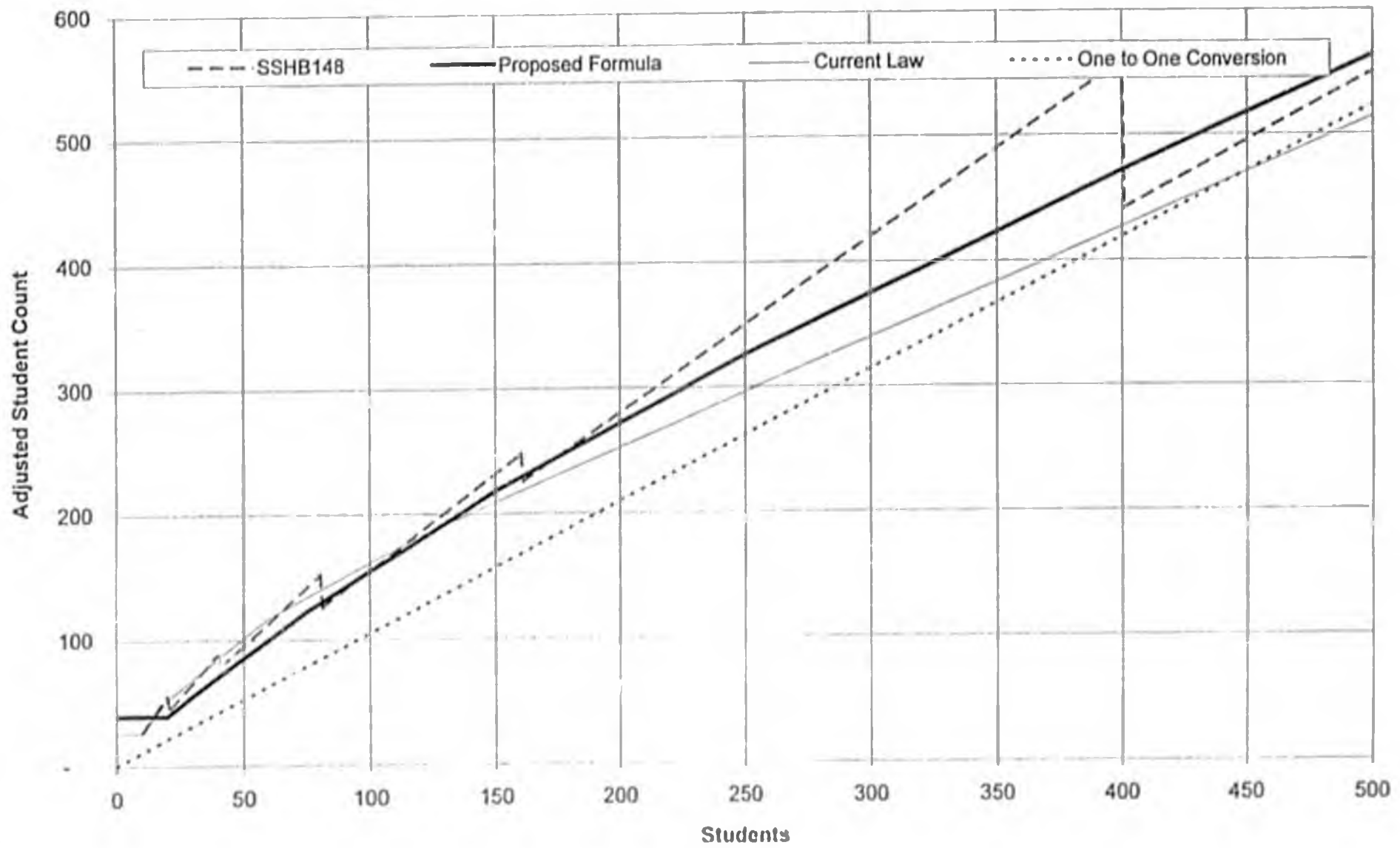


Figure 2.8--Student Count Adjustment under Various Formulas



Interpreting the meaning of the relative positions of the plots can be tricky. For example, the plot of the formula in SSHB148 is above both the statistical approach formula and the current formula for most of its length. This does not imply higher funding levels for schools of any particular size or for all schools; it simply means that the formula under SSHB148 produces higher adjusted student counts than the other formulas do. Given a fixed amount of funds to allocate, higher student counts translate to lower per-student allocations. How schools of a particular size are affected by the conversion formula depends not only upon the relative position of the curves, but also upon the number of schools at each point along the curve. The only accurate method to compare formulas is to apply them to a common set of school enrollment. This is the method used by the statistical approach.

### *Summary of Size Adjustments*

The statistical approach formula shown in Table 2.2 and in Figures 2.7 and 2.8 adjusts the number of students in each school in a way that

- reflects existing staffing patterns, yet
- equalizes staffing in all schools regardless of location.

The adjusted student counts for each school can be summed within each district to produce a district-wide adjusted student count that compensates for higher operating costs (due to lower student-to-staff ratios) in small schools. When each district's adjusted student count is multiplied by the statewide average per-student allocation for instruction and by the district's area cost differential, the result is the instructional allocation for each district. Determination of appropriate area cost differentials for the instructional component is the topic of the following section.

## Adjustments for School Location

The purpose of area cost differentials (ACDs) is to equalize the real value of education aid in order to remove inequities caused by regional differences in the cost of school operations. The study team performed a statistical audit of expenditures for both administration and nonpersonal services (NPS). The audit produced adjustments that are discussed in Chapters 3 and 4 of this study. The discussion in this chapter applies only to the adjustment of instructional allocations. As defined in this study, an ACD for the instructional component of the funding formula is roughly equivalent to a teacher salary differential.

For noninstructional costs, the measurement and adjustment processes are fairly straightforward because costs are assumed to be market driven. That is, unit costs (for a gallon of oil or kwh of electricity, for example) are not directly controllable by the school districts. In addition, one can assume that districts do not purchase more fuel, electricity and other goods and services than they need. Under these assumptions, noninstructional expenditures by districts (on a per student basis) reflect cost differences attributable to size and geographic location of schools. This means we should find little difference between noninstructional expenditures on a "what is" basis and a "what should be" basis.

### *Determining What to Measure and How to Measure It*

Determination of appropriate salary differentials is much more complicated. One major issue is whether area cost differentials (ACDs) should account for differences in the *cost of living* or in the *cost of delivering education services*. As noted by Chambers, "Accurately measuring geographic cost differences has been one of the preeminent challenges in education."<sup>11</sup> Alaska's current adjustment factors are based on (10-year-old) costs of purchasing comparable household goods and services.

The study team did not attempt to establish and compare living costs via the "market basket" approach. As noted by McMahon, "Measures of unit-cost differences covering all small local areas within states do not exist because of the enormous cost associated with collecting price data in each locality and repeating the correlation process periodically to keep this data updated."<sup>12</sup> Moreover, the cost-of-living approach does not reflect factors that may be important to area cost differentials. These factors include:

- supply and demand for various types of staff;
- the value of nonmonetary factors (literature on the subject mentions adjustments for climate, crime, proximity to amenities and several other nonmonetary factors); and
- differences in levels of training, experience or education of staff.

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<sup>11</sup> Chambers, Jay G., *Public School Teacher Cost Differences Across the United States: Introduction to a Teacher Cost Index*, Developments in School Finance, 1995, National Center for Educational Statistics, July 1996.

<sup>12</sup> McMahon, Walter M., *Intrastate Cost Adjustments*, Developments in School Finance, 1994, National Center for Educational Statistics, July 1996.

In short, the cost-of-living approach has been criticized as insufficient and impractical. However, attempting to measure differences in quality of life is more complicated and more subjective than attempting to measure cost-of-living differences.

### Salary Comparisons

The study team concluded that neither teachers' cost of living nor quality of life was the central issue in developing salary differentials. If we consider education a business in which employees are one of many elements required by the production process, we can apply broadly accepted economic theory to the issue. According to theory, staff are "inputs" in the business of producing education and prevailing wages are the best measure of the appropriate cost of these inputs. Prevailing wages reflect many factors - including cost of living - that can be described as "market conditions." At least one state (Ohio) uses general wage differentials as the basis for area cost differentials for education funding.

While the study team analyzed existing teacher salary schedules and average salaries, we determined that this information alone was insufficient for making allocation decisions. Some consider salaries of school employees to be determined more by past allocations of aid than by current market forces. To the extent this statement is accurate, we must go outside the education system to determine appropriate area cost differentials for education.

### Salaries Outside the Education System

The Alaska Department of Labor provided data on wage levels in general (in local government and the trade, service and finance industries) and for specific occupations throughout Alaska. The general wage data indicated a pattern of higher wages in urban areas, but the information was insufficiently specific for this analysis.

Wage and salary information from the Occupational Data Base was far more specific and more conclusive.<sup>24</sup> The conclusion of our salary analysis is that there is no statistical basis for a salary differential favoring rural areas. To the contrary, the results indicate that average salaries for most jobs tend to be higher in Anchorage than in other districts.

The analysis of occupational records included information on about 230,000 workers who had earnings during the second quarters of 1995 and 1996. The second quarter was chosen as the period of analysis because it has the lowest proportion of part-time workers, making it best for comparative purposes. Twenty-five occupations were selected as representative of salary differentials throughout the economy. The occupations were selected because they exist in most districts, thereby allowing statewide comparison of salaries.

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<sup>24</sup> Alaska is unique in that it collects occupational information through its unemployment insurance reporting system. The Department of Labor's Occupational Data Base contains information on individuals, including earnings, place of work, occupation and industry. Information on specific individuals is confidential, but aggregated data can be released. We received much-appreciated cooperation from the staff of the Research & Analysis section of the Department of Labor in compiling data for this analysis. In addition, Caldwell Economic Information Services performed the statistical testing described in the text. A more complete reporting of the statistical analysis is included in the technical appendix.

After identifying comparable occupations in each census area, the top and bottom 20 percent of earners were removed from the database. The purpose of this action was to remove extremely low and high wage earners, thus eliminating the effect of part-time workers and compensating for differences in business size and level of responsibility. Focusing on the middle 60 percent of the database produces "typical salaries" rather than strict averages.

Average salaries – after removing records as described above – were computed for each occupation in each area. Each average was then compared with the corresponding average salary in Anchorage. Anchorage was chosen as the base for comparison because it is the largest school district and is a logical candidate for an ACD of 1.00.

Complete results of statistical tests are included in the technical appendix to this study. In summary, average salaries in Anchorage were higher than in other districts in 73 percent of all cases. At the 95 percent confidence level, 55 percent of all cases showed higher salaries in Anchorage while 16 percent were lower and 29 percent showed no statistically significant difference.<sup>27</sup> At the 99 percent confidence level, 49 percent of all cases showed higher salaries in Anchorage while 13 percent were lower and 37 percent showed no statistically significant difference. These findings could be used to justify a set of area cost differentials that favor Anchorage.<sup>28</sup>

The data indicate that only the Aleutians West Census Area (Aleutian School District) and the North Slope Borough typically have average salaries that are (statistically significantly) above those in Anchorage.

### Teacher Salaries

The study team also examined salaries within the educational system. We applied regression analysis to data supplied by the Department of Education with the following results.<sup>29</sup> The average salary of full-time teachers was \$49,121 in 1996, and the standard error of the estimate increased by roughly \$175 (\$4,911 to \$5,086) when ACD was deleted from a stepwise regression. In English, the conclusions were that salaries are generally related to the ACD of districts, but experience and educational attainment have far more power to explain variations in teacher salaries than do existing ACDs.

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<sup>27</sup> A confidence level is a measure of the statistical validity of comparisons. It tests to ensure that differences are large enough to indicate reliable conclusions. The test results indicate a clear, statistically significant trend of higher salaries in Anchorage.

<sup>28</sup> Computing a set of differentials from the occupational data would be difficult. Confidentiality restrictions on the data preclude computation of weighted averages, which would be necessary to adjust for differences in the number of people in each occupation.

<sup>29</sup> Regression analysis is a common statistical technique to determine the influence of one variable on another. Full regression results are included in the technical appendix to this study. The technical appendix also describes identification and treatment of selected records.

ACDs have a variable impact up to \$4,300, or less than 10 percent of the average salary (five percent in each direction). There is no clear pattern in the results; many districts with high ACDs have lower average pay than districts with ACDs of 1.00. Readers unfamiliar with regression analysis need to understand that, while it is a powerful tool, it is purely a "what is" analysis; there is no way to determine whether higher salaries are paid because they are necessary to attract teachers to high-cost communities or because a high ACD makes more money available for teachers' pay.

Because it is average pay – not the salary schedule itself – that determines each district's instructional costs, the analysis of teacher pay indicates that some salary differentials may be justified. The basis for this conclusion is that the purpose of the formula is to pay school operating costs and that the existing salary is a part of that cost.

The study team gave serious consideration to this "what is" argument, however, the Legislative Budget & Audit Committee's guidelines for this study included clear direction to consider "what should be." The study team was concerned that average teacher salaries reflect differences in collective bargaining power, district choices regarding pay level, and past allocations of aid more than they reflect "what should be."

The study team determined that salary research on non-educational jobs is a better indicator of "what should be" than is the teacher salary comparison and concluded that the statistical approach should not contain an area cost differential for instructional costs. Alternate adjustment factors – and the strengths and weaknesses of the factors – are discussed in Chapter V of this study.

#### Implications of Omitting ACDs for Instructional Costs

The study team's decision to exclude area cost differentials from the instructional component of the statistical approach does not imply that salary schedules are expected to be identical in all districts. The following discussion demonstrates this point.

An ACD of 1.00 for every district – which means there is no adjustment for location – can be interpreted as allocating the statewide average pay to meet staffing requirements as determined by adjusted student counts. Even with no salary adjustment, districts can offer higher starting salaries than Anchorage. For example, Table 2.5 shows that the starting salary in the Yupiit district is 15 percent above the starting salary in Anchorage (column 2), but the average salaries in both districts are nearly identical (column 7).

Table 2.5  
A Comparison of Teacher Salaries in Alaska, School Year 1986-87

School District	Base Salary	Count of Districts that		Master's Level Salary	Count of Districts that		Average Salary (including Housing Allowance)	Count of Districts that
		Base Pay Relative to Anchorage	Pay at least 5 percent above Anchorage		Base Pay Relative to Anchorage	Pay at least 3 percent above Anchorage		
max	39,472	1.31	1	42,841	1.30	1	56,123	1.35
min	20,000	0.93	1	31,398	0.95	1	41,813	0.88
std. dev.	2,270	0.08	1	2,330	0.07	1	4,220	0.08
spread	1,41	1.41	1	1.38	1.38	1	1.58	1.58
			32			40		11
Alaska Gateway	34,329	1.14	1	37,286	1.13	1	50,328	1.03
Aleutian Region	32,060	1.09	1	37,364	1.13	1	51,048	1.04
Aleutians East	36,100	1.20	1	37,666	1.14	1	49,795	1.02
Anchorage	30,078	1.08	1	32,871	1.00	1	48,912	1.00
Annette Island	32,073	1.07	1	35,038	1.08	1	47,908	0.98
Bering Strait	31,039	1.06	1	34,280	1.04	1	45,407	0.93
Bradford Bay	33,687	1.12	1	36,830	1.16	1	48,043	1.00
Chatham	32,284	1.07	1	34,837	1.06	1	48,148	0.96
Chugiach	29,283	0.98	1	36,283	1.16	1	43,282	0.88
Copper River	31,995	1.08	1	35,453	1.08	1	47,949	0.98
Corcora	30,414	1.01	1	35,889	1.09	1	54,865	1.12
Craig City	30,208	1.06	1	35,720	1.02	1	47,111	0.98
Delta-Grady	31,400	1.04	1	34,817	1.05	1	47,667	0.97
Denali	30,036	1.03	1	35,000	1.06	1	47,478	0.97
Dillingham	34,244	1.14	1	36,037	1.08	1	48,303	1.01
Farbanks	31,931	1.00	1	34,845	1.08	1	49,737	1.02
Galena	34,600	1.19	1	37,822	1.18	1	43,620	0.89
Haines	28,209	0.94	1	31,398	0.95	1	45,740	0.94
Noonah	31,908	1.03	1	34,804	1.06	1	51,045	1.04
Hydaburg	29,593	0.98	1	32,140	0.97	1	42,437	0.87
Iktadod	33,128	1.10	1	37,898	1.15	1	49,300	1.01
Juneau	31,242	1.04	1	37,820	1.18	1	57,386	1.17
Kala	32,183	1.07	1	35,864	1.09	1	45,378	0.93
Kashunamiut	35,500	1.18	1	37,500	1.14	1	46,940	0.96
Kani	30,500	0.94	1	32,861	1.00	1	46,968	0.96
Ketchikan	30,354	1.02	1	35,125	1.07	1	50,362	1.03
Klawock	29,621	0.96	1	33,960	1.02	1	50,868	1.04
Kodiak	32,482	1.06	1	36,003	1.09	1	50,915	1.04
Kuspuk	34,070	1.13	1	37,347	1.12	1	51,833	1.06
Lake & Peninsula	31,500	1.05	1	36,048	1.09	1	46,602	0.95
Lower Kuskokwim	33,947	1.13	1	36,874	1.12	1	54,297	1.11
Lower Yukon	34,039	1.15	1	38,707	1.17	1	58,285	1.18
Martinaukia	31,037	1.03	1	34,844	1.05	1	48,021	1.00
Nenana	32,321	1.07	1	34,935	1.06	1	48,716	1.00
Nome	31,830	1.06	1	35,838	1.08	1	47,643	0.97
North Slope	39,472	1.31	1	42,841	1.30	1	66,123	1.35
Northwest Arctic	33,441	1.11	1	37,858	1.19	1	54,838	1.18
Pelican	32,718	1.06	1	35,720	1.08	1	46,926	0.96
Penninsula	30,712	1.02	1	34,175	1.04	1	47,854	0.94
Preobrazhenskiy	34,810	1.16	1	38,338	1.19	1	50,861	1.04
Sitka	30,508	1.01	1	34,868	1.08	1	50,298	1.03
Skagway	29,185	0.97	1	32,181	0.94	1	49,818	1.01
Southwest Island	29,344	0.94	1	33,947	1.03	1	41,813	0.85
Southwest	35,960	1.16	1	38,345	1.16	1	47,139	0.96
St. Mary's	32,588	1.08	1	36,503	1.11	1	43,913	1.10
Tanana	33,718	1.12	1	38,521	1.09	1	49,999	1.02
Unalaska	38,700	1.19	1	39,903	1.18	1	54,843	1.12
Valdez	34,831	1.15	1	40,458	1.23	1	57,964	1.19
Whitgel	38,000	0.93	1	31,943	0.96	1	47,345	0.87
Yakutat	29,887	0.96	1	33,188	1.01	1	47,180	0.96
Yukon Flats	31,320	1.05	1	37,381	1.12	1	48,818	0.96
Yukon-Koyukuk	34,172	1.14	1	38,198	1.16	1	51,706	1.08
Yupik	34,800	1.15	1	37,307	1.13	1	48,882	1.00

The conclusion is that higher salary schedules in districts outside Anchorage are partially offset by greater longevity and/or higher teacher qualifications in Anchorage, so that average teacher salaries statewide are much closer than is indicated by simple comparison of schedules. As shown in Table 2.5, this example is not unusual; 32 districts offer starting pay at least five percent higher than Anchorage (column 3) and 40 offer at least five percent more pay to teachers holding a Masters degree (column 6). However, column 9 shows that average pay in only 11 districts is at least five percent higher than in Anchorage.

In summary, analysis of salaries outside the education system provides no statistical support for existing salary differentials. Analysis of teacher salaries indicates no clear relationship between salary levels and existing ACDs, but shows that some districts do have average costs significantly higher than average. Salary differentials based on average salaries would tend to favor City and Borough districts rather than Regional Education Attendance Areas.

## Chapter III.

### Nonpersonal Services (NPS) Allocations

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A statistical analysis of audited expenditure reports from all 53 school districts produced the NPS multipliers shown in Table 3.1. The multipliers apply only to nonpersonal services expenditures by districts, which are approximately 16.5 percent of the total amount of education aid allocated to school districts. The multipliers are intended to be applied as follows:

1. Multiply the actual student count in each district by the district's NPS multiplier (as shown in Table 3.1) to obtain an adjusted student count.
2. Add the adjusted student counts for each district to obtain a statewide total.
3. Divide the (legislatively determined) available amount of NPS aid by the statewide adjusted student count to obtain the statewide NPS allocation for each student.
4. Multiply each district's adjusted student count by the statewide per-student allocation to obtain the amount of NPS aid allocated to each district.

**Table 3.1**  
**Multipliers for the Nonpersonal**  
**Services Component of Education Aid**

School District	Multiplier	School District	Multiplier
Alaska Gateway	4.397	Kodiak	2.141
Aleutian Region	11.610	Kuspuk	6.027
Aleutians East	4.910	Lake & Peninsula	6.978
Anchorage	1.000	Lower Kuskokwim	6.707
Annette Island	1.417	Lower Yukon	6.023
Bering Strait	6.924	Malanuska	1.068
Bristol Bay	4.228	Nenana	3.466
Chatham	2.939	Nome	4.273
Chugach	4.751	North Slope	4.447
Copper River	3.483	Northwest Arctic	5.234
Cordova	1.889	Pelican	4.921
Craig City	1.589	Petersburg	1.157
Delta/Greely	2.444	Pribilof	4.882
Denali	4.329	Sitka	1.108
Dillingham	4.019	Skagway	1.807
Fairbanks	1.432	Southeast Island	3.364
Galena	3.674	Southwest	5.800
Haines	1.796	St. Mary's	6.174
Hoonah	2.239	Tanana	4.876
Hydaburg	2.709	Unalaska	4.020
Iditarod	7.750	Valdez	2.023
Juneau	1.000	Wrangell	1.163
Kake	1.659	Yakutat	2.185
Kushunamit	4.488	Yukon Flats	8.930
Kenai	1.332	Yukon Koyukuk	7.147
Ketchikan	1.064	Yupit	6.779

## Method of Analysis

The study team obtained audited financial reports for all 53 school districts from the Alaska Department of Education. Expenditures from each district's 1996 operating fund were entered into a database, then several categories of NPS expenditures were chosen for analysis.<sup>30</sup> As with the instructional component of the formula, we used 1996 data because 1996 is the most recent year for which we were able to obtain data required for all areas of analysis.

The statistical approach differs from the method used to compute NPS differentials in the 1988 McDowell Group report, *Alaska School District Profiles and Differential Study*. In that study, the McDowell Group used a statewide survey to obtain detailed price information about items normally purchased by school districts.

While the 1988 study provided more reliable data than the household-cost-of-living information that was used in earlier NPS differential computations, the price survey was not duplicated in this study for two reasons:

- From a practical standpoint, there was not enough time during the study period to allow for a broad price survey, so that a survey was not included in the study proposal.
- More importantly, another approach was called for on the grounds that unit cost alone is not an appropriate way to measure cost differentials.

Because the funding formula allocates aid based on the number of students, area cost differentials must be measured in terms of cost per student rather than cost per gallon, cost per kwh, or other unit common to market prices. An example regarding heating oil will demonstrate the importance of this point.

If heating oil costs \$1/gallon in District A and \$1.50/gallon in District B, the price differential analysis would conclude that District B deserves 1.5 times as much funding for fuel as does District A ( $\$1.50/\$1 = 1.5$ ). If District A uses 500 gallons of fuel per month to heat a building housing 100 students, the cost of fuel per student for District A is  $(\$1/\text{gallon} \times 500 \text{ gallons})/100 \text{ students}$ , or \$5 per student. If District B uses 300 gallons of fuel per month to heat a building housing 50 students, the cost of fuel per student for District B is  $(\$1.50/\text{gallon} \times 300 \text{ gallons})/50 \text{ students}$  or \$15 per student. District B needs 3.00 ( $\$15/\$5$ ) times as much funding per student for fuel as District A in order to compensate for true differences in fuel cost per student.

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<sup>30</sup> Major operating accounts in the financial statements are, for the most part, identical. They consist of instruction accounts (regular instruction, vocational education, correspondence, special education, gifted and talented, and bilingual/bicultural), other student-oriented accounts (pupil support (including library and guidance)), school administration, pupil activities and district administration (including school board) accounts, and the operations & maintenance account. Some districts presented slightly more or less aggregated accounts than others. During the data entry process, we occasionally combined categories to make them as parallel as possible. Except for the operations & maintenance account, which we entered in somewhat more detail than others, we placed all expenditures for each of the major accounts under one of the following headings: salaries, benefits, professional services, communications, travel, other purchased services, supplies, equipment, and other.

The point of the example is to demonstrate that price differences do not tell the full story of NPS expenditure differentials; size, price and other location factors combine to amplify differences in school district operating costs. A price survey may have allowed us to separate the effects of size and location from price effects, but there is no practical reason to do so. The study team computed ACDs that incorporate size, price and other effects of location.

### *Assumptions*

The multipliers shown in Table 3.1 are based on the following assumptions:

- Accounting practices are at least moderately consistent from district to district. This seems reasonable because the figures we used were taken from independently audited financial statements and because the Department of Education has a policy of standardized financial reporting in all school districts.
- NPS expenditures are typical for each district. We departed from this assumption when we looked at Operations and Maintenance, since utility and repair costs may not be evenly distributed from year to year. In the case of Operations and Maintenance we used an average of 1996 and 1997 figures.

### *Key Issues*

The analysis is district-based rather than school- or funding community-based. Analysis was performed at the district level because that is the level at which expenditure decisions are made and tracked. While expenditures by individual schools would likely provide interesting data for a management audit, they are neither available in comparable form nor necessary for the type of analysis we performed.

The analysis is expenditure-based rather than price-based and incorporates size differences as well as price differences. The fundamental advantage of using statistical analysis based on actual expenditures is that actual expenditures, by definition, capture or represent all the factors and considerations influencing those expenditures, as illustrated by the heating oil example.

The analysis inarguably reflects "what is" rather than "what should be." An obvious limitation of the statistical method is that current expenditure levels reflect current funding levels rather than "theoretically optimal" expenditure levels. Funding levels are inescapably one of the factors that determine expenditures. We have attempted to minimize the impact of funding levels on our analysis by limiting per-student expenditures for those districts with extraordinarily high or low per-student expenditures.

A statistical approach can point out anomalies, but it cannot fully explain them. In the absence of detailed management audits of school districts, we simply do not have enough information about how districts function to explain large parts of the variation in NPS expenditure levels.

It is possible that the data we analyzed is not entirely representative of "typical" expenditure levels for every district. In addition, accounting methods and classifications, while governed by law and district policies, are not totally consistent from district to district. Moreover, there are countless local considerations underlying expenditure decisions that may result in very different spending rationales from one district to another.

### ***The Statistical Approach***

Our initial hypothesis regarding nonpersonal services expenditures was that no school district could either afford to overspend significantly on NPS or would have incentive to do so. Therefore, existing expenditure levels should reflect actual need for most districts.

We began our analysis of NPS costs by measuring each district's NPS costs per-student. We found an extremely broad range of values, from \$599 per student in Anchorage to over \$14,000 per student in the Aleutians Region.<sup>11</sup>

In order to eliminate any unknown or unrecognized factors that might be contributing to the broadness of this range of values, we repeated our analysis using a "market basket" of expenditure accounts that we believed were most likely to be comparable across districts in terms of how they were treated for accounting purposes. We eliminated from our analysis those elements of NPS that are mainly surrogate salary items—"professional services" and "purchased services" (primarily repairs).<sup>12</sup> Finally, we did not look at NPS categories where expenditures seemed likely to vary widely from year to year and where expenditures per district were mostly small - including equipment and oil and gas for vehicles. The "market basket" of 1996 NPS audited expenditure categories for chosen for this second level of analysis was:

1. Travel (all travel)
2. Supplies (teaching supplies and maintenance supplies)
3. Utilities (electricity, fuel, water/sewer, garbage, "other.")
4. Insurance (liability and property)
5. Communication (phone and postage)

### ***Initial Results of the Market Basket Analysis***

Although focusing on a market basket of NPS expenditures reduced the variability in our sample, we again found a broader range than seemed explainable by differences in size, location and physical composition of school districts. Column 7 of Table 3.2 shows per-student expenditures on our NPS market basket, with individual categories shown in columns 2 through 6.

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<sup>11</sup> The Aleutian Region contracts for administrative services. This contract adds over \$6,000 per student to NPS costs. We transferred the contract to the administrative component during further analysis, and omitted all data for the district in developing multipliers, so that the high per-student cost in this small district did not influence the calculation of multipliers for other districts.

<sup>12</sup> Some inconsistency was unavoidable. For example, it seems likely that garbage collection was recorded as a "purchased service" in some districts and a "utility" in others.

**Table 3.2**  
**Nonpersonal Services Expenditures per Student by Alaska School Districts, 1996**

	Max	1,278	1,320	2,118	1,861	522	6,578
	Min	12	165	144	20	18	406
	Avg.	105	302	327	79	44	857
	Std. Dev.	301	320	433	274	88	1,192
	Spread	108.17	8.02	14.74	91.68	29.41	13.75
1996 Audited Expenditures per Student (avg. 96-97 for utilities)							
School District	DOE Count of Students	Travel	Supplies	Utilities	Insurance	Communi-cations	Market Basket
<b>Total</b>	<b>122,897</b>	<b>105</b>	<b>302</b>	<b>327</b>	<b>79</b>	<b>44</b>	<b>857</b>
Alaska Gateway	552	138	559	888	325	110	2,016
Aleutian Region	21	1,027	1,212	954	1,861	522	5,576
Aleutians East	355	1,153	1,311	981	319	289	4,053
Anchorage	46,159	12	190	185	21	18	406
Annette Island	444	331	558	280	303	88	1,560
Bering Strait	1,679	709	893	1,351	323	110	3,187
Bristol Bay	301	519	377	771	92	59	1,819
Chatham	337	498	414	608	168	119	1,806
Chugach	144	493	652	659	426	197	2,426
Copper River	659	128	483	450	258	57	1,374
Cordova	519	37	205	468	59	35	803
Craig City	424	245	609	262	20	43	1,179
Delta/Greely	885	56	278	311	187	63	895
Denali	384	195	525	428	307	100	1,555
Dillingham	524	248	313	241	31	49	882
Fairbanks	15,818	17	275	212	38	37	579
Gaiens	150	643	1,052	2,118	542	116	4,471
Haines	435	90	317	451	43	35	935
Hoonah	278	321	342	925	83	63	1,733
Hydaburg	114	660	864	735	405	51	2,715
Iditarod	423	665	717	1,112	353	242	3,088
Juneau	5,515	12	165	144	94	22	436
Kake	190	296	388	755	152	76	1,666
Kashunamiut	244	375	751	636	215	71	2,048
Kenai	10,281	59	183	302	100	41	685
Ketchikan	2,850	57	218	286	74	23	657
Klawock	220	444	588	474	103	124	1,734
Kodiak	2,872	150	329	391	41	41	952
Kuspuk	468	392	553	860	257	146	2,207
Lake & Peninsula	498	1,278	602	1,452	483	170	3,985
Lower Kuskokwim	3,275	509	817	615	289	105	2,335
Lower Yukon	1,695	245	627	1,070	288	86	2,316
Matanuska	12,037	12	201	61	32	26	432
Nenana	161	194	402	352	250	71	1,469
Nome	733	129	362	712	235	62	1,501
North Slope	1,808	784	1,258	1,209	113	305	3,669
Northwest Arctic	1,892	290	518	1,265	193	86	2,353
Pelican	38	680	894	1,024	392	137	2,926
Petersburg	754	101	369	522	99	33	1,124
Pribilof	213	440	579	643	460	186	2,309
Sitka	1,805	20	216	230	31	27	525
Skagway	131	392	460	615	146	71	1,683
Southeast Island	350	327	544	569	233	165	1,838
Southwest	630	435	1,320	1,105	383	113	3,357
St. Mary's	129	217	678	759	509	63	2,226
Tanana	94	770	1,238	1,787	671	141	4,607
Unalaska	353	682	490	615	183	68	2,038
Valdez	896	69	372	335	26	38	640
Wrangell	555	151	309	235	62	46	602
Yakutat	175	380	609	727	92	133	1,941
Yukon Flats	423	543	1,269	1,723	31	210	3,776
Yukon Koyukuk	625	763	1,079	855	361	175	3,233
Yupik	387	668	688	705	228	120	2,405

While large, urban districts spent between \$400 and \$600 (total) per student in the five expenditure categories, several rural districts spent more than \$4,000 per student on the same items. The Aleutian Region spent the most per student, nearly 14 times more than Anchorage.

While these results support the supposition that it is more expensive to operate small remote districts than large urban ones, the broad range of expenditures in districts of similar size caused us to question the hypothesis that districts spend no more than is necessary on nonpersonal services. The panel of superintendent-advisors pointed out that variations in accounting practices and methods of operation could affect results. For example, some districts own and operate their own airplanes or have other unusual expenditures. Management audits are the only way to gain full explanation of cost differentials.

### *Secondary Analysis - Operations and Maintenance*

As a result of concern about the high variability of NPS costs per student, we repeated our analysis using a more restrictive proxy for NPS expenditures. Operations and Maintenance (O&M) expenditures were chosen because these expenditures are essentially non-discretionary and treated similarly for accounting purposes.

In using O&M expenditures as a proxy for NPS, we included all O&M, not simply the NPS portion. We did this because we felt there is no clear line between Personnel, Professional Services and Other Purchased Services in the O&M category. Districts may hire staff or contract for various O&M needs depending upon local considerations, with the result that similar needs may be met by expenditures in each of the three "quasi-personnel" categories. To be consistent, we included all three accounts.

Finally, although our analysis of the Occupational Data Base indicates that there is no meaningful geographic differential for salaries, it is nevertheless true that O&M staffing will reflect the physical composition of the district and its structures. We believe this influence over-rides neutral geographic salary differentials and calls for inclusion of O&M personnel expenditures in our NPS proxy analysis.

### **Results of the O&M/NPS Analysis**

Using O&M expenditures as a proxy for NPS yields a narrower range of expenditures per student. Table 3.3 shows a range from \$616 per student in Sitka to \$5,411 in the North Slope (column 3). Table 3.3 shows that nonpersonal services costs in the North Slope district are about nine times higher than in Sitka, which is a district of similar size. No data on comparative costs (from region to region of Alaska) support differentials this large. Even consideration of the lesson demonstrated in the "heating oil" example seemed unable to account for differentials of this magnitude. This puzzling result is cause for a brief discussion of the limits of statistical analysis.

**Table 3.3**  
**Operations and Maintenance Expenditures by School Districts**

		Max	5,411
		Min	616
		Avg.	1,226
		Std. Dev.	1,192
		Spread	8.78
School District	DOE Count of Students	Average 1996 & 97 O&M Expenditures	Average O & M per Student
<b>Total</b>	<b>122,897</b>	<b>150,874,956</b>	
Alaska Gateway	552	1,330,346	2,410
Aleutian Region	21	94,536	4,502
Aleutians East	355	1,044,972	2,944
Anchorage	46,159	38,976,472	801
Annette Island	444	581,049	1,309
Bering Strait	1,679	6,004,444	3,576
Bristol Bay	301	554,597	1,843
Chatham	337	523,802	1,553
Chugach	144	334,437	2,322
Copper River	659	1,137,192	1,727
Cordova	519	554,797	1,069
Craig City	424	364,392	659
Delta/Greely	885	1,005,466	1,137
Denali	384	728,899	1,898
Dillingham	524	635,933	1,214
Fairbanks	15,816	14,115,424	892
Galena	150	623,131	4,154
Haines	435	542,039	1,246
Hoonah	278	628,917	2,262
Hydaburg	114	313,476	2,759
Iditarod	423	1,353,102	3,202
Juneau	5,515	4,278,051	776
Kake	190	443,508	2,334
Kashunamiut	244	543,650	2,228
Kenai	10,281	13,125,825	1,277
Ketchikan	2,850	2,798,832	932
Klawock	220	348,989	1,585
Kodiak	2,872	3,117,721	1,086
Kuspuk	468	1,148,363	2,452
Lake & Peninsula	498	2,382,923	4,788
Lower Kuskokwim	3,275	8,032,101	2,452
Lower Yukon	1,695	4,505,706	2,658
Matanuska	12,037	9,399,692	781
Nenana	161	317,388	1,971
Nome	733	1,449,134	1,977
North Slope	1,806	9,772,145	5,411
Northwest Arctic	1,892	5,808,701	3,070
Pelican	38	147,813	3,864
Petersburg	754	881,308	1,170
Pribilof	213	414,998	1,947
Sitka	1,805	1,112,213	616
Skagway	131	226,327	1,724
Southeast Island	350	793,111	2,287
Southwest	630	2,207,151	3,505
St. Mary's	129	292,051	2,262
Tanana	94	459,101	4,884
Unalaska	353	604,690	1,714
Valdez	896	1,213,670	1,355
Wrangell	555	445,256	802
Yakutat	175	308,806	1,765
Yukon Flats	423	1,907,699	4,514
Yukon Koyukuk	625	1,578,891	2,526
Yukon-Charley	387	1,161,671	3,002

### *Limitations of Statistical Analysis*

Statistical analysis can identify anomalies but does not provide explanations for real-world events. Unfortunately, based on the data available to us, we are unable to offer a complete explanation of the broad range of differences in observed NPS expenditures. Raw NPS expenditures per student vary from school district to school district by a factor of nearly 25. Limiting the analysis to expenditures that are more consistent between districts reduces the range of variation, as expected, but the range remains very broad.

The study team again examined the hypothesis that districts spend no more than is necessary on nonpersonal services. Does the broad range of expenditures indicate that some districts spend too much on NPS? Does the broad range reflect differences in local priorities, cultural needs, design and condition of buildings and equipment, use of different kinds of fuels in different areas, climate, geography, and other important influences on expenditure decisions? Without detailed information about how individual districts are structured, staffed and managed, we can offer only a statistical answer.

The essence of that answer is that in any distribution of observed values—such as per-student NPS expenditures—some variation in values is expected. Applying regression analysis to NPS expenditures per student would provide a formula describing what expenditure levels “should be” and identifying variations from the formula.<sup>11</sup> Unfortunately, there is no way to determine whether these variations are due to unnecessary expenditures or to the effects of location and other valid reasons for the variation. That is, it would be impossible to determine “errors” from what we are trying to measure.

### *Summary and Conclusions*

The study team concluded that the most reasonable approach to determining NPS multipliers was to use the subset of expenditures identified above, but to impose limits on per-student expenditures. The conclusion was based on the following considerations:

1. Although there are strong theoretical arguments for using O&M costs to determine the allocation of NPS aid, multipliers based on O&M expenditures would result in significant reallocation of funds from small districts to large districts. The study team could not support this reallocation without access to more detailed information about district operations that would be available only from management audits.

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<sup>11</sup> Regression analysis is a statistical tool for determining the relationship of one variable with other variables.

2. There are also strong arguments for using a broader measure of expenditures than those included in the O&M accounts. District size and location, while important, cannot fully explain the range of per-student NPS expenditures. The study team found the arguments for a broad measure more compelling than those for using only O&M expenditures. The broader measure reflects differences in local priorities, cultural needs, climate, geography, travel costs and other important influences on expenditures. Other factors that influence NPS expenditure levels include
  - the number of schools in a district, how far they are from each other and from the district office, and whether there are roads connecting them,
  - the type and condition of buildings and large equipment,
  - the management methods of individual administrators,
  - the educational expectations of local parents and other citizens and the degree to which those constituencies have direct influence over school and district administrators.
3. Basing multipliers on current expenditure data would simply mirror "what is." The study team concluded that we had no basis for forcing all districts to fit a formula that placed all districts in a very narrow range, but that the broad range of current expenditures warrants some limitation of unusually high expenditures. Although any limit is arbitrary, the argument that the overwhelming majority of districts manage to operate at lower expenditure levels is compelling.
4. Districts with abnormally low per-student expenditures should receive additional aid to bring them closer to the average. This method of adjustment – cutting off the peaks while filling in a portion of the valleys – arguably overcompensates districts that have low per-student expenditures due to relatively low costs. However, failing to "fill in the valleys" would penalize districts with relatively low expenditures due to low past funding levels or to efficient operations.

The study team's solution to the question of how much to reward districts with abnormally low expenditures per student was to bring all districts up to Anchorage's per-student expenditure level. This minimum applied only to Juneau, and raised the district's NPS allocation by about \$5 dollars per student, or \$24,000 total.

Table 3.4 shows how a two-standard-deviation cap affects the NPS market basket. District expenditures affected by the cap are shown in bold type. Full spreadsheets showing the determination of multipliers are included in the technical appendix to this report. A summary of steps in the process follows:

1. Determine the average per-student expenditure in each category. (The Aleutian Region and Pelican were dropped from this computation because their small size causes them to have per-student expenditures that cannot be compared reasonably with expenditures of other districts.)<sup>31</sup>
2. maximum per-student expenditure level in each category. The limit for each category is the category average plus two standard deviations.<sup>32</sup>
3. Adjust expenditures so they equal the amount of funding available. This adjustment is necessary because the expenditures we use in the analysis are a sample rather than a full representation of expenditures.
4. Apply the expenditure cap to each category of NPS expenditures.
5. Use actual expenditure data to determine instructional and noninstructional components of aid for each district.
6. Divide the adjusted allocations in each district by the number of students in respective districts to determine per-student allocations.
7. Apply a minimum per-student allocation level equal to the amount of per-student NPS aid received by Anchorage.
8. Calculate multipliers by dividing each district's per-student allocation by the statewide average per-student expenditure level.
9. Normalize the multipliers by dividing each district's multiplier by the minimum multiplier. This process ensures that no multiplier is less than 1.0.

For NPS expenditures, Anchorage and Juneau have multipliers of 1.0. The Aleutian Region has the largest multiplier (11.610) and several rural districts have multipliers larger than 5.0.

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<sup>31</sup> These small districts were brought in at the end of the analysis. Effectively, they were not subject to the expenditure limits, so that multipliers for them reflect current per-student expenditure levels.

<sup>32</sup> Standard deviation is a common statistical measure of dispersion, or variation, in a set of observations. Typically, two-thirds of all observations are within one standard deviation of the mean (average) and 95 percent of observations are within two standard deviations. This means that about 2.5 percent of observations will be less than two standard deviations from the mean and 2.5 percent will be more than two standard deviations above the average. We applied a two-standard-deviation limit because we believe it reflects the natural differences between school districts while making modest adjustments to the most abnormal expenditure levels.

**Table 3.4**  
**Effect of Limiting Nonpersonal Services Expenditures per Student to**  
**Two Standard Deviations above the Mean**  
 (for the purpose of computing a multiplier)

Max	684	928	1,202	395	178	5,576
Min	12	165	144	20	18	406
Std. Dev.	233	234	331	131	51	1,003
Spread	57.88	5.63	8.34	19.76	10.03	13.75

1998 Audited Expenditures per Student (avg. 96-97 for utilities)  
 Limited to Two Standard Deviations from the Mean

School District	Travel	Supplies	Utilities	Insurance	Communi- cations	Market Basket	Uncapped Market Basket
	Mean plus 2 Std. Deviations						
School District	684	928	1,202	395	178		
Alaska Gateway	136	559	888	325	110	2,018	2,018
Aleutian Region						5,576	5,576
Aleutians East	684	928	981	319	178	3,090	4,053
Anchorage	12	190	165	21	18	406	406
Annette Island	331	558	280	303	88	1,560	1,560
Bering Strait	684	693	1,202	323	110	3,013	3,187
Bristol Bay	519	377	771	92	59	1,819	1,819
Chatham	498	414	608	168	119	1,808	1,808
Chugach	493	652	659	395	178	2,377	2,426
Copper River	128	483	450	258	57	1,374	1,374
Cordova	37	205	468	59	35	803	803
Craig City	245	609	262	20	43	1,178	1,179
Delta/Greely	58	278	311	187	63	895	895
Denali	195	525	428	307	100	1,555	1,555
Dillingham	248	313	241	31	49	882	882
Fairbanks	17	275	212	38	37	579	579
Galena	643	928	1,202	395	116	3,285	4,471
Haines	90	317	451	43	35	935	935
Hoonah	321	342	925	83	63	1,733	1,733
Hydaburg	660	664	735	395	51	2,705	2,715
Iditarod	665	717	1,112	353	178	3,024	3,088
Juneau	12	165	144	94	22	436	436
Kake	296	388	755	152	76	1,666	1,666
Kashunamiut	375	751	636	215	71	2,048	2,048
Kenai	59	183	302	100	41	685	685
Ketchikan	57	218	288	74	23	657	657
Klawock	444	566	474	103	124	1,734	1,734
Kodiak	150	329	391	41	41	952	952
Kuspuk	392	553	860	257	148	2,207	2,207
Lake & Peninsula	684	602	1,202	395	170	3,052	3,985
Lower Kuskokwim	509	817	615	289	105	2,335	2,335
Lower Yukon	245	627	1,070	288	86	2,316	2,316
Matanuska	12	201	161	32	26	432	432
Nenana	194	402	552	250	71	1,469	1,469
Nome	129	362	712	235	62	1,501	1,501
North Slope	684	928	1,202	113	178	3,105	3,669
Northwest Arctic	290	518	1,202	193	86	2,289	2,353
Pelican						2,926	2,926
Petersburg	101	369	522	99	33	1,124	1,124
Pribilof	440	579	643	395	178	2,236	2,309
Sitka	20	216	230	31	27	525	525
Skagway	392	460	615	146	71	1,683	1,683
Southeast Island	327	544	569	233	165	1,838	1,838
Southwest	435	928	1,105	383	113	2,965	3,357
St. Mary's	217	678	759	395	63	2,111	2,226
Tanana	684	928	1,202	188	141	3,350	4,607
Unalaska	682	490	615	183	68	2,038	2,038
Valdez	69	372	335	26	38	840	840
Wrangell	151	309	235	62	46	802	802
Yakutat	380	609	727	92	133	1,941	1,941
Yukon Flats	643	928	1,202	31	178	2,682	3,776
Yukon Koyukuk	684	928	855	361	175	3,004	3,233
Yupik	666	686	705	228	120	2,405	2,405

Note: Aleutian Region and Pelican were omitted from the analysis due to small size

## Chapter IV. Administrative Allocations

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Administrative costs as defined in this study include only the personnel costs listed in the "District Administration" accounts of each school district. School administrative costs are included in the instructional allocations described in Chapter II and non-personnel costs are included in the NPS allocations described in Chapter III.

Steps to obtain the administrative multipliers are identical to those described for the NPS multipliers in the previous chapter. Details of the multiplier computation are in the technical appendix to this study.

A statistical analysis of audited expenditure reports from all 53 school districts produced the administrative multipliers shown in Table 4.1. Several districts have multipliers of 1.0, while several rural districts have multipliers greater than 5.0. The multipliers apply only to administrative expenditures, which are approximately 4.5 percent of the total amount of education aid allocated to school districts. The multipliers are intended to be applied as follows:

1. Multiply the student count in each district by the district's administrative multiplier (as shown in Table 4.1) to obtain an adjusted student count.
2. Add the adjusted student count for each district to obtain a statewide total.
3. Divide the (legislatively determined) available amount of administrative aid by the statewide adjusted student count to obtain the statewide per-student allocation.
4. Multiply each district's adjusted student count by the statewide per-student allocation to obtain the amount of administrative aid allocated to each district.

### Summary and Conclusions

Table 4.2 shows administrative costs (personnel costs only) for each district. Column 2 shows actual administrative expenditures for 1996, column 3 shows administrative expenditures per student, and column 4 shows the impact of imposing a "two standard deviation cap" on per-student administrative expenditures. (Districts affected by the cap have bold type in column 4.)

**Table 4.1**  
**Multipliers for the Administrative Component of Education Aid**

School District	Multiplier	School District	Multiplier
Alaska Gateway	3.301	Klawock	1.415
Aleutian Region	14.027	Kodiak	1.318
Aleutians East	3.166	Kuspuk	7.450
Anchorage	1.000	Lake & Peninsula	4.152
Annette Island	1.162	Lower Kuskokwim	3.147
Bering Strait	3.437	Lower Yukon	2.747
Bristol Bay	3.455	Matanuska	1.166
Chatham	2.470	Nenana	4.690
Chugach	4.914	Nome	2.513
Copper River	2.347	North Slope	5.385
Cordova	2.489	Northwest Arctic	6.732
Craig City	1.000	Pelican	4.355
Delta/Greely	2.400	Petersburg	1.000
Denali	3.376	Pribilof	5.722
Dillingham	1.614	Sitka	1.000
Fairbanks	1.000	Skagway	3.181
Galena	2.066	Southeast Island	3.394
Haines	1.052	Southwest	3.085
Hoonah	1.278	St. Mary's	1.500
Hydaburg	1.428	Tanana	2.449
Iditarod	5.032	Unalaska	2.407
Juneau	1.062	Valdez	1.911
Kake	1.811	Wrangell	1.000
Kashunamiut	4.555	Yakutat	1.961
Kenai	1.000	Yukon Flats	3.613
Ketchikan	1.000	Yukon Koyukuk	4.097
		Yupit	5.652

**Table 4.2**  
**Administrative Expenditures**  
 (personnel costs only) by School Districts in Alaska, 1996

School District	DOE Count of Students	1996		Linen 1996 Administrative Expenditures per Student
		Administrative Expenditures (Personnel Costs Only)	Administrative Expenditures per Student	
<b>Total</b>	<b>122,897</b>	<b>41,448,879</b>	<b>338</b>	
Alaska Gateway	552	373,856	677	677
Aleutian Region	21	130,173	6,199	6,199
Aleutians East	355	405,814	1,143	1,143
Anchorage	48,159	9,594,921	208	208
Annette Island	444	262,051	590	590
Bering Strait	1,679	1,108,514	660	660
Bristol Bay	301	238,101	791	791
Chatham	337	268,993	797	797
Chugach	144	205,895	1,428	1,188
Copper River	659	305,061	463	463
Cordova	519	314,128	605	605
Craig City	424	139,933	330	330
Delta/Greely	885	405,413	458	458
Denali	384	220,534	574	574
Dillingham	524	160,340	308	308
Fairbanks	15,816	3,159,017	200	200
Galena	150	213,494	1,423	1,188
Haines	435	131,985	303	303
Hoonah	278	168,160	605	605
Hydaburg	114	97,750	858	858
Iktarod	423	388,867	915	915
Juneau	5,515	1,364,462	247	247
Kake	190	228,907	1,194	1,188
Kashunamiut	244	262,108	1,074	1,074
Kenai	10,281	2,256,185	219	219
Ketchikan	2,850	624,542	219	219
Klawock	220	182,529	829	829
Kodiak	2,672	780,905	272	272
Kuspuk	468	545,464	1,165	1,165
Lake & Peninsula	498	556,519	1,118	1,118
Lower Kuskokwim	3,275	1,697,818	518	518
Lower Yukon	1,695	837,983	494	494
Maternuska	12,037	2,942,263	244	244
Nenana	161	180,655	1,122	1,122
Nome	733	343,630	469	469
North Slope	1,808	3,364,347	1,863	1,188
Northwest Arctic	1,892	2,717,839	1,436	1,188
Pelican	38	61,090	1,597	1,597
Petersburg	754	208,220	274	274
Prudhoe	213	287,000	1,346	1,188
Sitka	1,605	393,981	218	218
Skagway	131	208,123	1,583	1,188
Southeast Island	350	352,039	1,006	1,006
Southwest	830	468,404	744	744
St. Mary's	129	42,084	328	328
Tanana	84	120,081	1,277	1,188
Unalaska	353	183,548	520	520
Valdez	896	312,623	349	349
Wrangell	555	170,985	308	308
Yakutat	175	184,144	938	938
Yukon Flats	423	298,424	701	701
Yukon Koyukuk	625	580,972	897	897
Yukon-Charley	387	443,596	1,146	1,146

Note: Aleutian Region and Pelican were omitted from the analysis due to small size.  
 Note: An expenditure rate of two standard deviations above the mean is reported only for the purpose of identifying outliers.

Variation in administrative expenditures among districts is larger than for NPS expenditures, particularly for small districts. This result was unexpected; the study team anticipated that administrative costs would depend primarily on district size while NPS costs would be affected by location as well as size, and therefore have a wider range.

It is possible that administrative staffing levels are less dependent on the number of students served than we anticipated, but it appears that the impact of small size simply overwhelms all other impacts, causing per-student administrative costs to be much higher in small districts than in larger districts. For example, a \$50,000 administrative salary spread among Anchorage's nearly 50,000 students costs \$1 per student while a \$50,000 administrative salary spread among a district with 200 students costs \$250 per student. This aspect of administrative cost variation makes a strong case for consolidated or centralized administrative services.

Figure 4.1 shows administrative costs per student (with large districts and the Aleutian Region omitted for scaling reasons) for each district. The figure shows that several small districts are able to operate with per-student administrative costs of less than \$400, while other districts of similar size spend twice that amount. This conflicts with the notion that districts of small size *must* have relatively high per-student administrative costs because the costs are spread over few students.

Figure 4.2 explores administrative costs further. The figure shows the (1996) administration share of total expenditures for each district. After adjusting administrative multipliers by the proportion of administrative spending in each district, Kenai, Fairbanks and the Southeast communities of Ketchikan, Petersburg, Wrangell, Craig and Sitka have an administrative multiplier of 1.0. This prevents districts that have low costs due to exceptionally efficient management and/or relatively low current formula allocations) from being penalized for current efficient practices.

### **Key Issues**

The study team is concerned that administrative multipliers reflect "what should be" to a lesser degree than we were striving for. However, none of the panel members was confident that reasons for variation in per-student administrative costs could be identified without thorough reviews on a district-by-district basis.

For example, Sitka and the North Slope are districts of similar size (1,800 students). Sitka spends \$400,000 (\$220 per student) on administrative salaries while the North Slope spends \$3.4 million (\$1,860 per student). Only thorough investigation of district administrative practices could determine whether Sitka has discovered a magic formula for administration, has chosen to spend less on curriculum development or other areas that will eventually be reflected in the relative quality of education delivered, is located in an area in which costs are substantially lower, or spends less on administration because there is relatively less money available to spend.

Figure 4.1--Administrative Expenditures per Student

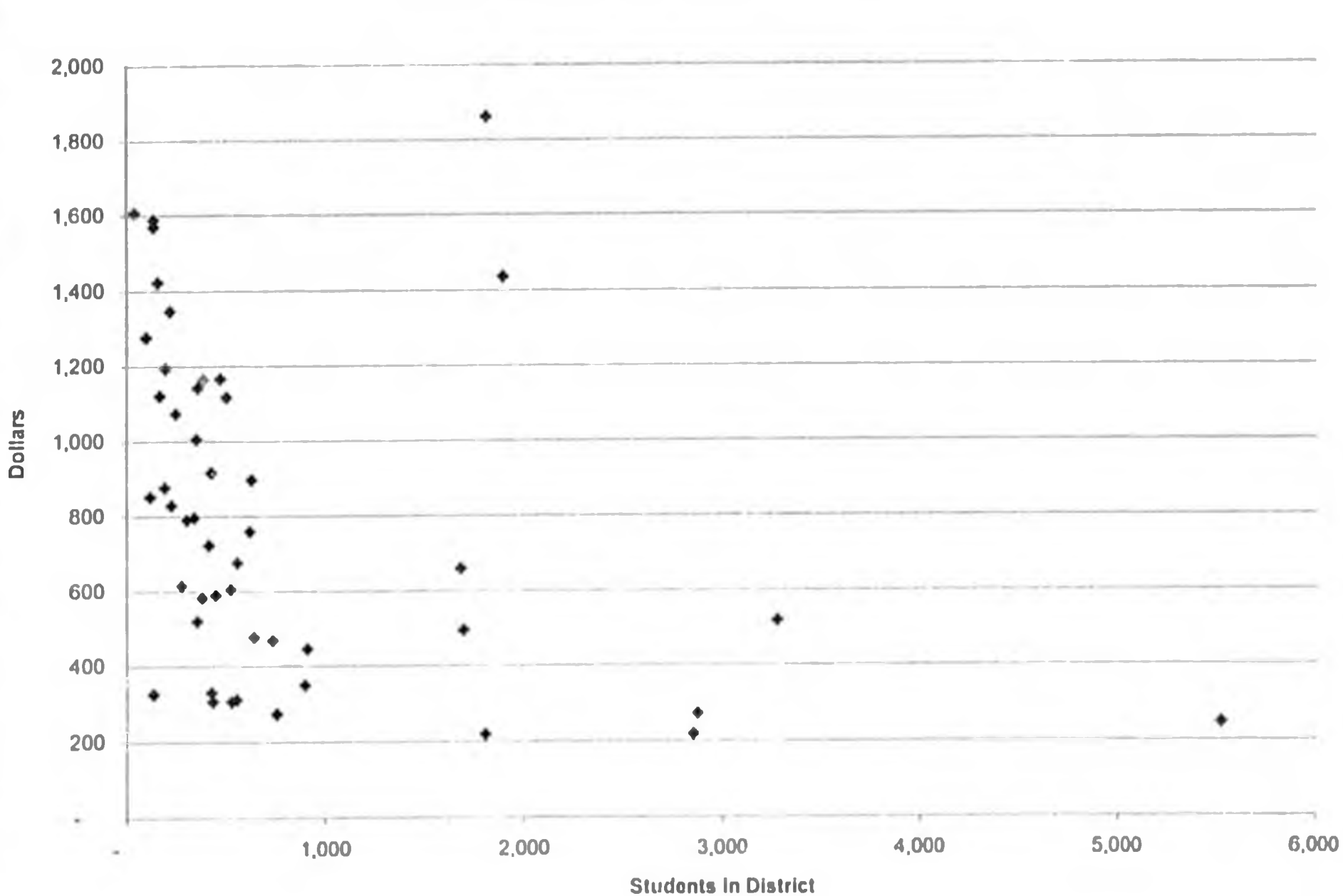
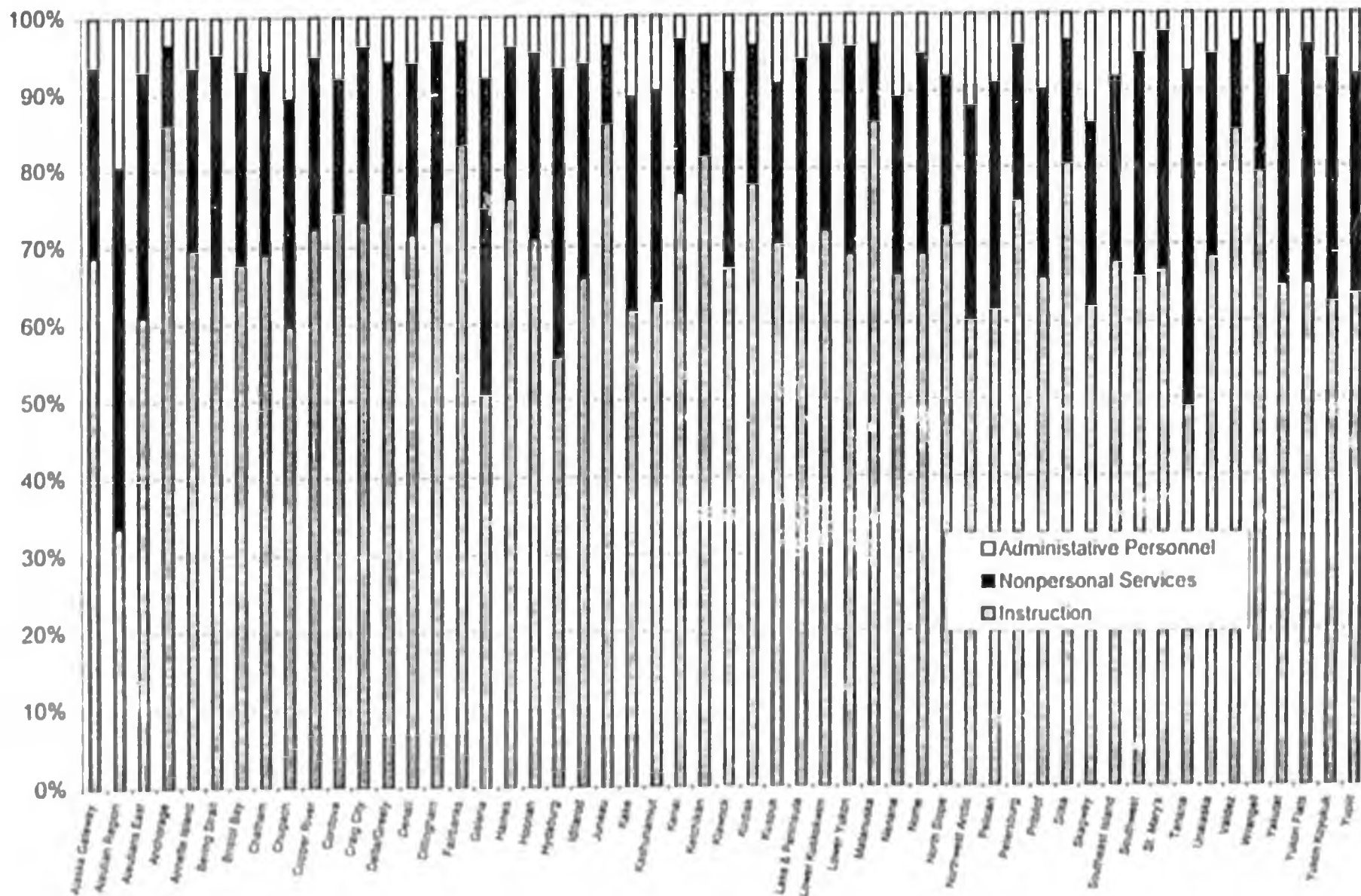


Figure 4.2--Expenditures by Alaska School Districts, 1996



While it is possible to manipulate existing data in more and more extensive ways in order to find "explanations" for expenditure variations, this is neither an efficient nor reliable method. The shortcomings of this study with respect to administrative differentials could be addressed by a series of management audits to ascertain the following:

- The effects of any differences in accounting practices on the current results.
- Other unidentified sources of inaccuracy in the existing data or analysis.
- Patterns of management practice, school or district structure and/or local factors and influences that may contribute to the large current differences from one district to another in expenditures per student.
- The potential for cost savings as a result of consolidation of districts, cooperative or centralized administrative structures or other system efficiencies. For example, audits might consider:
  - How insurance levels and carriers are determined.
  - Whether plant and equipment investments could reduce overall costs.
  - Whether use of technology could alter spending patterns, particularly for travel and communications.

Insights from these investigations would add significantly to the interpretation of the statistical analysis. Additional insight into expenditure patterns might be gained by tracking historical data over time to try to better quantify effects of year-to-year funding levels on expenditures. It may be worthwhile to repeat the analysis periodically using a rolling average of three or more years' financial reports.

In conclusion, the study team is comfortable with the statistical approach for allocation of funding for district administration, but with certain limits.

- First, the revised multipliers may force some districts to operate more cost-efficiently, but the real issue appears to be inefficiently sized districts rather than inefficient administrators. Limits imposed on per-student administrative expenditures for purposes of developing multipliers were not stringent. The limits - a two-standard-deviation cap for districts with exceptionally high administrative expenditures and a floor equal to per-student administrative expenditures in Anchorage - narrows the range of multipliers, but the range remains broad. Perhaps the best way to reduce administrative costs is to explore cooperation among districts and centralization and consolidation of administrative functions.
- Second, we recommend management audits to further learn the causes of exceptionally high and low administrative expenditures. Decision-making can be improved once this knowledge is gained.
- Third, until further research is done and better quality databases are available to decision makers, the study team recommends all districts be protected from losses by means of transitional implementation of the adjustment factors so that no district loses aid without sufficient time to plan.

## Chapter V. Additional Considerations

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This chapter provides additional discussion of relevant issues that were not treated as fully as desired in other sections of the report. While the topics vary, the purpose of Chapter V is to amplify discussion of key issues in school cost research.

A brief discussion of the "size of the pie" makes the point that the statistical approach offers an improved, but more complex, education funding formula. Shifts in legislative allocation among the three components of the formula can change allocations to districts.

The second section of Chapter V deals with methods for altering the implementation of the statistical approach. There are innumerable options possible; we discuss only two. Although this chapter presents little quantitative analysis, it does indicate the probable effect of applying the alternatives.

Third, we present background discussion relevant to the recommendation to eliminate the area cost differential (ACD) for the instructional component. While some of the ACD discussion duplicates points made earlier in the study, it is presented in more detail here.

### The Size of the Pie(s)

The statistical approach does not establish any fixed level of school expenditures. It is a vehicle for equitable distribution of the "educational funding pie" on the basis of student enrollment adjusted for school size and location - regardless of the size of the pie. The size of the pie is determined by the combination of available State revenue and the political process. Each district, under the statistical method, is allocated a proportion of the pie, not a specific level of funding.

Perhaps the most important point in this discussion is that there are three pies - instruction, nonpersonal services and administration - and that each pie is divided differently. The instructional pie is divided most evenly among districts because the instructional component has the lowest multipliers. Both noninstructional components have higher multipliers than does the instructional component. High multipliers in a district mean that adjusted student counts - and so allocations of aid - are disproportionately high. The implication of the higher range of multipliers in the noninstructional components is that shifting money from the instructional pie to the noninstructional pies will shift the distribution of aid to districts with high noninstructional multipliers.

The funding level in each component does not affect the calculation of multipliers, but it does affect the aid allocated as a result of those multipliers. We did not test the sensitivity of allocations to the size of the pies.

If allocations to the three components of the funding formula were to reflect the current division of expenditures by districts, 79 percent of total

aid would go to the instructional component, 16.5 percent to the nonpersonal services component and 4.5 percent to the administrative component. We recommend that allocations be specified in law rather than becoming a point of controversy in each budget cycle.

## Additional Allocation Considerations

The statistical approach that is the basis for this study would make public school funding more equitable. The study team found that funding for special programs is complicated and, according to school administrators, is subject to abuse. The multipliers developed in this study reflect the certificated staff associated with special programs, but we were unable to perform a comprehensive study of classified staff due to lack of data. We recommend that the legislature consider abandoning separate funding for special programs, allowing a single allocation to each district to be spent as the district believes is appropriate. A supplemental pot of money could be used to fund those districts with documented extraordinary needs.

Essentially, the statistical method found that the current funding formula undercompensates some districts – generally those with high area cost differentials (ACDs) – for nonpersonal services costs and at the same time overcompensates many of these same districts, and some others as well, for personnel costs. The approach makes no judgments about proper or improper expenditures in any district. It simply identifies and quantifies the extent of differences in nonpersonal services and administrative expenditures. The reasons for those differences and any decisions about their propriety are beyond the scope of this study effort.

The major areas in which alternate scenarios might be considered are

- area cost differentials for the instructional component;
- schools instead of funding communities as the basic units for funding (which is addressed adequately in Chapter II and is not discussed in this chapter), and
- other limits on nonpersonal services and administrative costs.

## Equity in Instructional Allocation

Research of instructional salaries and pay scales, and of private sector compensation practices in Alaska indicate that area cost differentials for personnel based on the household cost of living are rarely paid and that districts do not have to pay high geographic differentials to attract personnel. In fact, average salaries in major urban school districts and smaller remote districts are often about the same because higher starting salaries in rural areas are offset by greater longevity in urban districts.

The study team's recommendation to provide no ACD for the instructional component would provide the same level of funding support

per teacher for all districts. Any alternative to this recommendation is fraught with potential for aggravating inequities among districts.

#### **ACDs Based on Differences in Average Salaries**

ACDs based on average instructional salaries are by far the most supportable, because average salaries are an accurate measure of costs incurred by school districts. However, this alternative would reward districts that have chosen to pay more than average for instructional personnel and penalize districts that historically have chosen to pay less than the state average. Districts have chosen to compensate instructional personnel at different levels for many reasons. These may include attracting superior personnel, lack (or surplus) of funds under current law, poor or excellent collective bargaining skills and high non-personnel costs, for example.

In addition, average salaries are highly dependent upon average teacher experience, which can change from year to year. Multipliers are expected to reflect less variable factors and would not respond to changes in average salaries once the multipliers are implemented. One solution to this problem is to add a "longevity factor" to the adjustment process. Several states provide additional funding to districts with average longevity greater than the statewide average.

The impact of an ACD based on average instructional salaries would be mixed. Anchorage's average is very close to the statewide average salary, so that nearly half of all districts - including several with high current ACDs - would receive relatively less aid if ACDs were based on average salaries. A longevity adjustment would tend to shift aid from rural districts to urban districts.

#### **Allocation Based on Cost-of-Living Differentials**

Another alternative could be to continue the current (and - in light of the study findings - irrelevant) practice of allocating funds to districts based on household cost-of-living differentials. Disadvantages of this alternative are:

- High pay differentials are not necessary to attract personnel, judging from the actual practices of districts with both high and low current ACDs.
- Cost-of-living differentials do not compensate for costs associated with greater job longevity in urban areas with low ACDs.
- The household cost of living is not directly related to the actual cost of staffing a school.

ACDs based on prices of household goods would favor rural districts.

## Equity in Nonpersonal Services and Administration Allocations

Due to data limitations and the exceptionally wide variations in actual district expenditures, approaching equity in these allocation categories is more difficult. The statistical method limits (for purposes of developing multipliers) only extreme per-student expenditures. A cap of two standard deviations above the mean and a floor equal to Anchorage's per-student expenditures cut off the most extreme peaks and fill in the lowest valleys in per-student spending. The method has the advantages of not penalizing the lowest spending districts nor rewarding the highest spending ones by continuing past funding practices.

However, until data become available to understand the reasons for these variations, the study team is reluctant to recommend more than modest adjustments. As a result, sound alternatives for further adjusting the nonpersonal services and administration allocations appear very limited at this point.

One might consider a more rigid dollars-per-student allocation based on the size factor derived from the instructional size analysis. However, this eliminates consideration of the many factors affecting cost that are not related to size alone and would result in significant undercompensation for districts in high cost areas. The research, even with its limitations, is conclusive in that each of the three cost categories responds to very different factors and should have unique area cost adjustment factors.

## Discussion of The Personnel Area Cost Differential Issue

The personnel cost component (which constitutes from 60 percent to 90 percent of a district's total costs, depending on the district) has been based on the household cost of living in each of the 53 districts.

The underlying principle has been salary equity for school district personnel, which may or may not mean equity for students. The thinking goes, "If it costs 30 percent more than in Anchorage to operate a household in a particular district, that district needs 30 percent more personnel funding (for classified as well as certified personnel) as equity compensation."

The obvious weakness in this argument is that the cost of operating a household is not the cost of operating and staffing a school. Further, compensation for household cost of living assumes that school district employees need significant differential incentives to take local school jobs. Analysis of both instructional salaries and other occupational data concludes this is not the case.

Still, most of the current ACD granted for location equity is based on the cost of operating a household, not staffing a school. While household cost of living is the single most important factor in the ACD, it fails to address the most important issue of school funding. That issue is "What does it cost to staff a school so it can deliver an appropriate level of education to Alaska children, regardless of geographic location?" That issue cannot be addressed by determining the price of bread in local grocery stores.

There are two apparent historical reasons for using household costs instead of school costs. The first reason has been lack of school cost data. Household cost-of living-data has existed in some form ever since statehood, while little data has been developed on the differences in operating and staffing schools. The McDowell Group's *Alaska Geographic Differential Study of 1985* is the single study since statehood that measured geographic differences in the complete range of household expenditures. With some adjustments for political considerations, this study is the basis for the personnel side of the current ACDs paid to school districts. Other studies have been largely confined to either food or housing and did not address transportation, medical, recreation and other significant household costs.

The second reason for using household cost of living as a measure of most of the cost of operating a school was the thinking by some that salary equity – regardless of other factors such as market demand and supply, lifestyle preference, local economic conditions, presence or absence of amenities, and cultural consideration – was a bottom line for school district personnel. Under the terms of the RFP, this study is required to address and offer alternatives to “existing practices.”

### Study Results of Salary Differential Research

In an effort to identify actual school costs, several research tasks were undertaken by the McDowell Group. These included an analysis of actual instructional salaries paid by districts and schools of all sizes, an analysis of district pay scales at all levels of experience and education, an Occupational Data Base research effort comparing salaries of 25 different occupations in all areas of Alaska, research on pay practices by private sector firms with multiple locations, and review of recent cost-of-living research in Alaska.

Two conclusions were obvious. First, the research found that school districts do not typically pay salary differentials as high as the district Area Cost Differentials, and some districts with high differentials pay less than the statewide average. Some districts do have higher starting salaries, but their scales and actual pay practices do not generally reflect the personnel differential incorporated into the district ACD.

Further, most other entities – both private sector and government – do not provide a differential. Only the State of Alaska has a formal pay differential based on the estimated household cost of living. The federal government pays no differential within Alaska (though it pays 25 percent more than in the “Lower 48”). More conclusive are private sector practices. If anything, the private sector pays a reverse differential with wages lower in rural areas than in Anchorage for a wide range of 25 occupations ranging from bartender to engineer. The exception was one statewide company that paid differentials in two remote locations (out of over 100) for housing. The amount of the differential was about half that of the State of Alaska differential in these two locations.

## Household Cost of Living Research

The second conclusion of this study's personnel cost research was that true differences in cost of living still exist and have probably not declined since the 1985 McDowell Group study, the *Alaska Geographic Differential Study*. The most reliable indicator since statehood has been the University of Alaska Cooperative Extension Service's Cost of Food at Home Index, which shows little change over the past twelve years.

Alaska's economic maturity following the trans-Alaska pipeline construction brought modern merchandising to urban Alaska and actually accentuated the price differences between urban and remote Alaska when compared to pre-pipeline days. A review of sound cost-of-living research shows little change in these price differences from the early 1980's to the present day.

We are left with the paradox that groceries and many other household items continue to cost more in outlying (no road access) areas but – apart from state government – little differential compensation is paid in Alaska, including in school districts. Clearly, the predominant private and public policy is to pay what is necessary to attract and retain employees but not to compensate specifically for household cost of living differences.

In other states, living costs are generally lower in rural areas and cost differential policies in most states compensate urban personnel for higher living costs. In Alaska, some costs in road-accessible rural areas are lower. Historically, housing in many districts (even in a number of remote districts) has been less expensive than in Anchorage. However, retail prices are obviously lower in Anchorage than in rural areas of the state.

Generally, urban costs throughout Alaska are similar to those in Anchorage. In smaller urban communities that benefit from road, air and rail access to urban centers, costs appear to be the same or a bit higher than Anchorage. In the truly remote areas of Alaska, virtually all costs are higher, except housing in some cases.

## Compensation Choices Made by School Districts

The salary levels of instructional personnel are a far more complex issue than simply stating that most districts that receive additional aid due to an ACD do not typically pass the money on to instructional personnel. One reason for urban districts paying as much or more than districts with higher ACDs may be a desire to recruit and retain superior instructional personnel. Districts are clearly free to make these choices. A district can choose either a generous or budget-minded negotiating policy. Districts can also offer higher pay scales under the assumption that higher pay would help attract high quality personnel.

Thus, the issue is not that smaller districts are paying too little or urban districts paying too much. Neither is the case. Instead they simply are paying what they have chosen to pay.

In summary, it is clear that market forces and district policy choices, not household cost of living, already determine the cost of instructional staffing. It is also clear that this cost is only slightly related to the cost of

operating a household. Our study recommendation is to fund a *level of staffing* adjusted for school size as calculated in the body of this report. Granting similar dollar allocations for similar staffing levels appears to be a step toward equity.

# *Alaska School Operating Cost Study*

## *Supplemental Summary*

*Prepared for:*

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*February 12, 1998*

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# Alaska School Operating Cost Study Supplemental Summary

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## Purpose

The purpose of this *Supplemental Summary* is to explain, briefly and clearly, how to apply the methods and results of the *Alaska School Operating Cost Study*. The study was prepared by the McDowell Group under contract to the Legislative Budget and Audit Committee and was completed on January 31, 1998.

Readers of the study may have some difficulty in pulling together pieces from the separate chapters addressing the complex school cost issues. This supplement is intended as a user-friendly guide to seeing "the big picture" that may be hidden in the technical detail in the study.

The purpose of the full *Alaska School Operating Cost Study* is to determine adjustment factors that compensate for the impact of *school size* and *geographic location* on school operating costs.

The study was confined to determining the cost of basic educational need – known officially as Basic Need – and did not address or include local contributions, federal impact aid, categorical aid, or other factors that affect the amount of state aid allocated to each school district. Basic Need is simply the amount of money needed to provide basic education to students.

## The Current Situation

Incredibly, this *Alaska School Operating Cost Study* is the first study of real school costs in the thirty-nine years of Alaska statehood. School operating cost allocations are not currently based on actual school costs. Instead, the distribution of billions of dollars in state aid to public education has been based on three unsatisfactory and outdated proxies in lieu of real school cost data.

Current Area Cost Differentials (ACDs) are based on two proxies. Most funding (about 80%) is based on the 1985 cost of operating a personal household (not a school) in various locations in Alaska, and the remaining 20% is based on the 1988 shelf prices of 34 items commonly purchased by schools. However, shelf price is just one factor that affects the per student cost of operating a school in different locations. Without a method that considers such geographic location factors as climate, building quality, the quantity of each item purchased and local district policies – just to name a few – simply comparing shelf prices is meaningless.

The third proxy in the formula is for school size. Current school size factors are based on past educators' best subjective opinions on the inefficiency of small schools compared to larger schools, with no supporting factual data.

## The Communications Problem

Any new method of allocation for school operating costs will certainly result in changes in allocation among districts. Further, a new method based on actual school costs is certain to improve accuracy and equity compared to a method not based on school costs. Yet, for those familiar with the workings of the current method, changing to another method can be confusing. This Supplemental Summary intends to bridge the communications gap between our recommended statistical method and the current method of allocation.

## The "Statistical Method"

Under the legislative directive to develop a new basis for determining Basic Need, the McDowell Group designed a "statistical method" that made three major advances.

- The "size formula" applies at the school level rather than to groups of schools known in the current method as "funding communities." This assures that each school is treated equitably regardless of its location or past levels of funding.
- Size adjustments are based on actual staffing levels in schools rather than on subjective factors.
- ACDs are based on actual expenditures rather than on a combination of outdated household cost-of-living data and subjective adjustment.

In addition, the statistical approach bases computation of Basic Need on student counts rather than converting to instructional units. This is mathematically identical to the current formula (and it would be easy to convert to "units" if desired).

The study identifies three categories of school costs - instruction, non-personal services and administration - and analyzes them separately because their responses to size and geographic location vary. Later in the study process, these costs were placed into two groups - *school level costs* (instruction) and *district level costs* (non-personal services and administration combined) to simplify the analysis. In this summary, we discuss the simplified, two-category approach.

The study relied on FY 1996 data as that was the last year of complete data available for all districts and for school-specific staffing. The statistical method is designed so that existing data bases - provided their quality is improved - will supply increasingly accurate adjustments for school size and geographic location. In other words, the state of Alaska will no longer have to go thirteen years and to considerable expense before updating and improving the system for allocation of aid for education.

Our proposal has its faults, primarily due to the obvious limitations of existing school cost data for administration and non-personal services. However, in our opinion, the advantages of basing school cost allocations on real school costs, and of having an unquestionably sound basis for the dominant cost of instruction, vastly outweigh the temporary deficiencies of the statistical method.

## Two Steps to the Bottom Line

Using the statistical method, Basic Need is simply the sum of each district's allocations for the two categories of school costs – school level (instructional) needs and district level (non-personal services and administration) needs. School level costs are adjusted for school size and district level costs are adjusted by each district's Area Cost Differential (ACD). The following two steps explain the procedures and provide the allocation results by district.

### Step 1: School Level (Instructional) Costs and the Impact of School Size

First, the school size factor was determined. In this study, the dominant school operating cost – instructional staffing – is treated on a school by school basis, depending on school size. *School level* staffing costs account for 70% to 80% of total Alaska school operating costs, depending on how administration costs are defined. The remaining 20% or 30% of operating costs are *district level* costs (non-personal services and administration) costs. In the example used in this Supplemental Summary, a broad definition of administration is used resulting in an allocation split of 70% school level costs and 30% district level costs. The priority of the study team was to develop appropriate school level staffing requirements for schools of all sizes.

#### School Size Distribution

Table I shows the distribution of Alaska's schools by size of school.

Table I.  
Alaska School Size Distribution

Number of Students		Number of Schools
From	To	
-	20	49
20	30	35
30	75	69
75	150	83
150	250	53
250	400	47
400	750	102
750	2,500	22

## Developing a School Size Formula

The statistical method grouped schools throughout the state into similar size categories, studied their staffing patterns (regardless of the funding level of the districts) and developed a staffing model for every size school in Alaska. This process was complemented by a team of school experts with decades of experience in both rural and urban areas of the state. They developed a professionally-determined model for school staffing for all sizes of Alaska schools. The statistical and professional models were strikingly similar, lending support to the overall study method.

The result of the school-staff model is a formula that compensates for small school size by adjusting the student count upward in small schools so that each student generates more revenue than students in larger schools do. This is identical (in concept) to the current formula for determining the number of "instructional units" which define Basic Need.

Study results show that school size factors vary from 1.98 for the smallest schools to 0.84 for the largest schools. The base 1.00 is simply the statewide average school size factor.

These school size factors are exhibited Table II, which reads like an income tax table. The formula in Table II could replace the "instructional unit computation" in AS 14.17.041. This table insures that a district is compensated for every student in every school.

For example, a small school of 80 students receives an adjusted student count of the base of 122.85 (for schools in the 75 to 150 size category), plus 1.49 for each student over 75, or 7.45. The total adjusted student count for this small school of 80 students is then 130. The size factor for that school is then 1.63 (the ratio of 80 actual students to 130.30 adjusted students).

Table II  
**School Size Adjustment Formula**  
 (for the Conversion of Actual to Adjusted Student Count)

If The Student Count is		The Adjusted Student Count is				
At Least:	But Less Than	Base	plus	Multiplier	Times	The Number of Students in Excess of
-	20	39.6	•	0	X	0
20	30	39.6	•	1.62	X	20
30	75	55.8	•	1.49	X	30
75	150	122.85	•	1.27	X	75
150	250	215.1	•	1.08	X	150
250	400	326.1	•	0.97	X	250
400	750	471.6	•	0.92	X	400
750	5 000	793.5	•	0.84	X	750

### Computing District School Size Factors

Once each school is assigned its size factor in the formula in Table II, the school factors result in a district size factor. In the case of the following example in Table III - Kenai School District - each of 36 schools gets credit for every student with size factors ranging just 1.09 for the 594-student Soldotna Middle School to 1.81 for the 35-student Port Graham School. In total, the Kenai School District has a resulting district size factor of 1.21, meaning that 10,282 actual students become 12,431 adjusted students. When the legislature determines a basic need amount for school level (instructional) the Kenai School District receives school level funding for 12,431 adjusted students as compensation for school size throughout the district.

Table III demonstrates that the dominant school operating cost - instructional staffing - is addressed on a school-by-school basis. The "boost" in adjusted student counts decreases as school size (and therefore, efficiency) increases.

Composite district size factors (the result of applying the school size formula to all schools in a district) range from 1.07 in Anchorage to 2.04 for the Southeast Island district and are shown in Table IV.

Readers should recognize that the school - and therefore, the district - size factor changes when the number of students changes. In most cases the size factor changes will be slight, but each district will have a different size factor each year unless enrollment remains exactly the same. The formula adjusts for year-to-year variation in school enrollment and the most recent enrollment will be used to determine actual funding each year.

Table III  
 Sample District School Size Factor Computation  
 Kenai School District

School	Students	Grades	School Size Factor	Adjusted Student Count
Chapman Elementary School	262	k 8	1.29	338
Cooper Landing School	40	k 8	1.77	70
Homer Middle School	253	7 8	1.30	329
Homer Intermediate School	259	4 6	1.29	335
Paul Banks Elementary School	310	p 3	1.24	384
Homer High School	518	9 12	1.12	580
Hope Elementary School	33	k 10	1.83	60
Kachemak Selo School	54	k 8	1.70	92
Tustumena Elementary School	282	k 6	1.27	357
Mt View Elementary School	417	3 5	1.17	487
Sears Elementary School	435	p 2	1.16	504
Kenai Middle School	457	6 8	1.15	524
Kenai Central High School	458	9 12	1.15	525
McNeil Canyon Elementary School	198	k 6	1.36	270
Moose Pass School	39	k 7	1.77	69
Nanwalek School	53	k 12	1.70	90
Nikiski Elementary School	313	p 6	1.24	387
North Star Elementary School	336	k 6	1.22	410
Nikiski Middle/Senior High School	478	7 12	1.14	543
Nikolaevsk School	135	k 12	1.47	199
Ninilchik School	223	k 12	1.33	297
Port Graham School	35	k 10	1.81	63
Razdolna Elementary	36	k 8	1.80	65
Susan B English School	99	k 12	1.55	152
Seward High School	441	7 12	1.15	509
Seward Elementary School	459	p 6	1.15	526
Alternative School/Bilingual	104	k 12	1.54	160
Soldotna Elementary School	413	k 5	1.17	488
Redoubt Elementary School	424	p 6	1.16	503
Kalifornsky Beach Elementary	436	k 6	1.16	505
Soldotna High School	547	9 12	1.11	607
Skyview High School	568	9 12	1.10	626
Soldotna Middle School	594	7 8	1.09	650
Sterling Elementary School	382	k 6	1.19	454
Bartlett Elem/High School	43	k 12	1.75	75
Voznesenka Elementary School	134	k 10	1.48	186
<b>Kenai Total</b>	<b>10,262</b>		<b>1.21</b>	<b>12,431</b>

### Computing School Level (Instructional) Basic Need

Table IV shows the bottom-line impacts of school size on district allocations for school level (instructional) Basic Need. Following the columns from left to right for the Alaska Gateway School District we see that a student count of 552 becomes an adjusted student count of 835 when the district school size factor of 1.51 is applied.

School level Basic Need is proportional to adjusted student counts. In the Alaska Gateway example, the district has 0.58% of the statewide adjusted student count (835 out of 144,819), so has 0.58% of total school level Basic Need. In the example used for Table IV, the basic need for school level (instructional) costs is assumed to be \$560 million. Alaska Gateway gets 0.58% of that amount, or \$3.2 million.

### School Level (Instructional) ACD

The dominant cost of basic education – school level instructional costs – is dealt with through the preceding size formula. The question then is “Shouldn’t there also be an ACD for instructional personnel?” The study does not recommend an ACD for instructional staffing.

A surprising finding of this study is that most districts pay instructional personnel approximately the same (within 5%) as Anchorage pays. Therefore, the actual per teacher instructional costs of most districts are remarkably similar, regardless of geographic location. All other 52 districts combined pay an average salary less than 1% above Anchorage. Further, the districts that do pay significantly higher or lower appear to be doing so out of local choice (i.e., district policy) rather than in direct response to higher or lower household costs of living.

The analysis leads to the conclusion that typical instructional costs are not the result primarily of geographic location but are more strongly determined by market forces including district choice. At the same time, household cost of living clearly is higher in some areas than in others. Just as clearly, districts appear able to staff their schools with little variation in average cost. Thus, the cost of staffing a school in Alaska is not the cost of operating a household – a proxy upon which most of the current ACD is based.

Because the cost of staffing a school does not vary with the cost of operating a household, the study team recommends compensating districts for instructional costs only through the school size factor (which can be substantial) but not with a personnel ACD. By recommending no ACD for instructional staffing, districts that have been frugal are not penalized and districts that have chosen to pay more are not rewarded at the expense of others.

**Table IV  
District Allocations of School Level (Instructional) Need**

School District	District		Adjusted Student Count	Proportion of Adjusted State Total	School Level (Instruction) Need
	Student Count	School Size Factor (See Table III)			
<b>Total</b>	<b>122,887</b>		<b>144,819</b>	<b>100.00%</b>	<b>\$60,000,000</b>
Alaska Gateway	552	1.51	836	0.58%	\$3,229,088
Aleutian Region	21	1.98	41	0.03%	\$189,393
Aleutians East	355	1.52	574	0.40%	\$2,320,332
Anchorage	48,178	1.07	49,382	34.10%	\$190,964,969
Annette Island	444	1.33	592	0.41%	\$2,288,119
Bering Strait	1,878	1.49	2,802	1.73%	\$9,876,593
Bristol Bay	301	1.50	450	0.31%	\$1,740,489
Chatham	337	1.72	582	0.40%	\$2,248,847
Chugach	131	1.95	254	0.18%	\$990,814
Cooper River	839	1.58	1,326	0.92%	\$5,850,972
Cordova	519	1.28	667	0.46%	\$2,578,538
Craig City	424	1.34	570	0.39%	\$2,204,134
Delta Group	910	1.39	1,267	0.87%	\$4,898,387
Denali	378	1.41	535	0.37%	\$2,067,435
Dillingham	524	1.29	673	0.46%	\$2,602,227
Fairbanks	15,818	1.09	17,297	11.94%	\$66,883,858
Galena	150	1.56	234	0.16%	\$988,047
Haines	430	1.51	649	0.45%	\$2,509,816
Hoonah	273	1.47	402	0.28%	\$1,864,144
Hydaburg	114	1.88	192	0.13%	\$742,878
Iktardit	422	1.86	788	0.54%	\$3,038,276
Juneau	5,525	1.08	6,044	4.14%	\$22,599,291
Kake	180	1.55	280	0.20%	\$1,142,281
Kashunamiut	244	1.31	320	0.22%	\$1,238,937
Ketchikan	10,282	1.21	12,431	8.58%	\$48,970,684
Ketchikan	2,890	1.19	3,438	2.32%	\$12,983,838
Klawock	220	1.52	338	0.23%	\$1,293,863
Kodiak	2,972	1.24	3,671	2.47%	\$13,809,049
Kutikuk	468	1.72	806	0.56%	\$3,116,771
Lake & Peninsula	498	1.86	929	0.64%	\$3,891,328
Lower Kuskokwim	3,275	1.41	4,631	3.20%	\$17,908,893
Lower Yukon	1,885	1.38	2,588	1.83%	\$9,107,140
Matanuska	12,024	1.12	13,493	9.32%	\$52,174,841
Nenana	161	1.43	230	0.16%	\$889,308
Nome	773	1.23	951	0.62%	\$3,499,248
North Slope	1,808	1.22	2,216	1.54%	\$9,186,444
Northwest Arctic	1,952	1.33	2,596	1.79%	\$9,883,844
Peckan	58	1.78	104	0.07%	\$461,844
Penikese	754	1.29	989	0.67%	\$2,748,242
Preced	217	1.52	330	0.23%	\$1,338,180
Saga	111	1.24	138	0.09%	\$612,793
Skagway	131	1.48	194	0.13%	\$768,042
Southeast Island	350	2.04	713	0.49%	\$2,716,868
Southwest	818	1.57	1,286	0.87%	\$3,734,498
St. Marys	129	1.84	239	0.17%	\$1,116,348
Tanana	34	1.58	54	0.04%	\$248,316
Unalaska	353	1.58	559	0.39%	\$1,848,978
Vadot	898	1.22	1,096	0.76%	\$3,243,994
Wrangell	532	1.28	681	0.47%	\$2,328,892
Yakutat	187	1.48	277	0.19%	\$1,211,923
Yukon Flats	412	1.81	743	0.51%	\$2,878,488
Yukon-Koyukuk	825	1.63	1,334	0.91%	\$3,994,988
Yupik	381	1.63	622	0.43%	\$2,694,474
Basic Need			\$	800,000,000	
Factor is School Level (Instruction)				79.0%	
Amount Allocated in Instructional Component			\$	800,000,000	
Statewide Adjusted Student Count			144,819		
Allocation per Adjusted Student Count			\$	5,525	

## Step 2 District Level (Non-personal Services and Administration) Costs and the Impact of Area Cost Differentials

In contrast to instructional costs by school, district level (non-personal services costs and administration) costs vary widely depending on geographic location. However, separating the influence of location and size in the non-instructional district level cost categories is very difficult and is not attempted in this study. The ACDs for district level costs compensate for both size and location.

To illustrate, a remote district with several small schools may pay eight times as much per student for heating oil as does a large urban district, although the shelf price of oil is only twice as high in the remote district. Both school size (small schools cost more per student to heat) and geographic location (high shelf price, building quality, harsh climate, etc.) combine to increase costs.

The same blurring of the influence of location and size exists when analyzing administration costs. Every district, no matter how small, must have some administrative structure. A small district may be administered as efficiently as possible, but it will still have high per student administration costs simply because it has fewer students over which to spread costs. Consolidation of small districts and/or of administrative functions could result in significant administration cost savings.

### Study Conclusions Concerning District Level ACDs

Analysis of administrative and non-personal services costs points to the following conclusions:

- Administration staffing and cost differences were so variable, even among similar districts, that no consistent standard could be applied for computing a relationship between enrollment and administration costs. The long run solution is more accurate administration data, uniform accounting practices, a clear definition of administration and a general district staffing standard for size similar to that for school level instructional staffing. The short run solution is to compensate districts based on their actual costs.
- Non-personal services costs varied among districts, but not to the extent that administration costs varied. Many districts have been under-compensated for non-personal services costs by the current method of allocation. As in administration costs, better district non-personal services data is essential before formulating policy.
- Finally, for simplicity, the study team recommends a single blended ACD for district level costs, combining administration and non-personal services. Districts are then compensated for costs according to their financial statements. If such statements are inaccurate, then future allocation refinements should allow for improved data.

Our recommendation is to compensate districts for actual costs incurred. This is an unsatisfactory long run solution, but basing the district level ACD on actual costs is an improvement over the current method.

### Calculating District ACDs

The method for calculating the district level ACD, or multiplier, is not complex. Total actual district level costs are divided by the total number of actual students. The result is a per student district level cost. This district level cost is then compared to the statewide per student cost. This ratio becomes the district level ACD. Using Alaska Gateway as an example, the district's per-student district level (non-personal services and administration) expenditures were \$3,326 and the average for Alaska was \$1,056. The district's ACD then is 3.15 ( $3,326/1,056$ ).

Table V shows how the ACD is used. Each district's actual student count is multiplied by the ACD to produce an adjusted student count. Again using Alaska Gateway as an example, 552 actual students (times the ACD of 3.15) gives an adjusted student count of 1,739 for purposes of allocating district level costs. When all adjusted student counts are totaled, Alaska Gateway's proportion of statewide adjusted student count is 0.91%, so their slice of the district level cost allocation pie is 0.91%, significantly greater than the district's school level cost allocation pie slice of 0.58%.

The Alaska Gateway School District has significantly higher-than-average district level costs per student. As a result, the district receives 0.91% of the total district level cost allocation of \$240 million, or \$2.2 million.

Readers should remember that the district level ACDs apply only to district level (non-personal services and administration) costs.

**Table V  
District Allocations of District Level (Nonpersonal Services and  
Administrative) Need**

School District	Student Count	District Level ACD	Adjusted Student Count	Proportion of Adjusted State Total	District Level (NPS & Admin.) Need
<b>Total</b>	<b>122,857</b>		<b>190,569</b>	<b>100.00%</b>	<b>240,000,000</b>
Alaska Gateway	552	3,152	1,740	0.91%	2,191,207
Aleutian Region	21	7,532	158	0.08%	199,199
Aleutians East	355	4,209	1,494	0.78%	1,881,765
Anchorage	46,175	1,002	46,175	24.23%	58,151,802
Annette Island	444	1,307	580	0.30%	730,831
Benng Strait	1,879	4,475	7,515	3.94%	9,464,385
Bristol Bay	301	2,941	885	0.46%	1,114,858
Chatham	337	2,427	819	0.43%	1,030,968
Chugach	131	4,098	537	0.28%	678,085
Copper River	839	2,538	1,621	0.85%	2,041,647
Cordova	519	1,687	876	0.46%	1,102,657
Craig City	424	1,311	556	0.29%	700,046
Delta/Greely	910	1,384	1,714	0.90%	2,158,308
Denali	378	3,065	1,159	0.61%	1,459,084
Dillingham	524	2,488	1,304	0.68%	1,641,874
Fairbanks	15,816	1,190	18,820	9.88%	23,702,166
Galena	150	3,599	540	0.28%	679,878
Haines	430	1,457	627	0.33%	789,017
Hoonah	273	1,896	483	0.24%	583,105
Hydaburg	114	2,137	244	0.13%	306,809
Igitarod	422	5,192	2,189	1.15%	2,757,379
Juneau	5,525	1,010	5,580	2.93%	7,027,677
Kake	190	1,607	305	0.16%	384,528
Kashunamut	244	3,236	790	0.41%	994,389
Kenai	10,292	1,148	11,803	6.19%	14,065,002
Ketchikan	2,850	1,008	2,873	1.51%	3,618,466
Klawock	220	1,527	336	0.18%	423,077
Kodiak	2,872	1,521	4,655	2.44%	5,862,261
Kuspuk	468	4,557	2,131	1.12%	2,683,849
Lake & Peninsula	498	5,347	2,913	1.53%	3,668,186
Lower Kuskokwim	3,275	4,257	13,287	6.97%	16,733,281
Lower Yukon	1,595	3,695	6,264	3.25%	7,888,484
Matanuska	12,024	1,092	13,130	6.89%	16,538,317
Nenana	161	2,353	460	0.24%	579,490
Nome	733	2,706	1,983	1.04%	2,497,986
North Slope	1,805	3,446	6,944	3.64%	8,745,735
Northwest Arctic	1,892	4,133	7,924	4.16%	9,979,239
Pelican	38	3,704	141	0.07%	177,261
Petersburg	754	1,077	612	0.31%	1,022,693
Prudhoe	213	3,886	829	0.43%	1,042,419
Sitka	1,402	1,259	1,926	1.01%	2,425,999
Skagway	131	2,219	291	0.15%	366,089
Southeast Island	350	2,900	1,015	0.53%	1,277,727
Southwest	618	4,080	2,514	1.32%	3,165,698
St. Mary's	129	3,797	490	0.26%	616,863
Tanana	94	4,917	425	0.22%	534,732
Unalaska	753	2,531	929	0.49%	1,162,644
Valdez	876	1,606	1,439	0.76%	1,812,233
Wrangell	550	1,136	625	0.33%	786,863
Yakutat	187	1,871	380	0.18%	440,629
Yukon Flats	410	6,466	2,649	1.38%	3,336,259
Yukon Koyukuk	625	4,820	3,013	1.58%	3,794,501
Yupik	381	4,542	1,731	0.91%	2,179,366
Basic Needs				\$ 800,000,000	
Percent to District Level				30.0%	
Amount Allocated to District Level				\$ 240,000,000	

## Summary Computation of Total District Basic Need Allocations

Table VI identifies each district's Basic Need allocation. The statistical method for computing total Basic Need is simply addition. Table VI adds the school level cost component (from Table IV) and the district level cost component (from Table V) of Basic Need, resulting in total Basic Need allocation. In the example of the Alaska Gateway School District, the \$3.2 million in school level cost need plus the \$2.3 million in district level cost need total the district's \$5.5 million Basic Need allocation.

## Discussion of Basic Need

### Definition of Basic Need

Basic Need is simply an estimate of the amount of money required to educate students. It is currently set at \$61,000 per instructional unit. We recommend not using the term instructional unit due to common difficulty in understanding the concept. In its place we suggest the simple concept of cost per student as applied in this report. Thus, under the statistical approach developed in the study, Basic Need would be stated in terms of dollars per student. In the calculations used in this study, the actual unadjusted per-student Basic Need is about \$5,500, 70% of it for school level (instructional) costs and 30% for district level (non-personal services and administration) costs. This split reflects expenditures shown in district financial reports.

Just as under current law, the requested level of funding will be driven by Basic Need. Basic Need is set by statute in terms of dollars per (adjusted) student, so that additional students increase Basic Need. Just as under current law, state aid is equal to Basic Need less local contributions and a portion of federal impact aid. Therefore, Basic Need is only the starting point for determining state aid; it is not the final level of funding.

### Formula for Basic Need

The current formula for determining Basic Need is:

Students (adjusted by a formula that adjusts for school size and converts to "instructional units")

x ACD (which is a fixed "multiplier" that is based on differences in the cost of living and prices of certain school supplies and services)

x S/Instructional Unit (which is an amount determined by the legislature).

= Basic Need

The statistical method formula for determining Basic Need is:

Students (adjusted for School Size) x School Level - i.e., instructional - Cost Allocation per adjusted student (an amount determined by the legislature).

+

Students (adjusted for ACD) x District Level - i.e., non-personal services and administration - Cost Allocation per adjusted student (a second, separate amount determined by the legislature).

= Basic Need

**Table VI**  
**Summary Computation of Basic Educational Need**  
 Based on Total Basic Need of \$800million

School District	Actual Number of Students FY86	School Level Component of Basic Need		District Level Component of Basic Need	Total Basic Need
		70%	30%		
Source	DOE	See Table IV	See Table V	Computation	
Alaska Gateway	552 \$	3 229 089 \$	2 191 207 \$		8 420 296
Aleutian Region	21 \$	159 393 \$	199 199 \$		358 593
Aleutians East	355 \$	2 220 332 \$	1 841 765 \$		4 162 097
Anchorage	48 175 \$	190 954 989 \$	58 151 902 \$		249 106 891
Annette Island	444 \$	2 288 119 \$	730 831 \$		3 018 950
Bering Strait	1 079 \$	8 679 593 \$	9 464 365 \$		19 143 958
Bristol Bay	301 \$	1 740 489 \$	1 114 858 \$		2 855 348
Chatham	337 \$	2 248 847 \$	1 030 956 \$		3 279 803
Chugach	131 \$	990 814 \$	676 083 \$		1 666 897
Copper River	619 \$	3 850 982 \$	2 241 647 \$		6 092 629
Corдова	519 \$	2 378 368 \$	1 122 857 \$		3 501 225
Craig City	424 \$	2 204 584 \$	700 048 \$		2 904 632
Delta/Grady	910 \$	4 828 389 \$	2 158 708 \$		7 087 097
Denali	378 \$	2 087 433 \$	1 459 084 \$		3 546 517
Delvingham	524 \$	2 862 227 \$	1 641 874 \$		4 504 101
Fairbanks	18 818 \$	68 983 958 \$	23 702 186 \$		92 686 144
Galena	150 \$	303 047 \$	879 678 \$		1 182 725
Haines	450 \$	2 509 615 \$	789 017 \$		3 298 632
Healy	273 \$	1 354 144 \$	583 105 \$		1 937 249
Hydaburg	114 \$	742 978 \$	308 929 \$		1 051 907
Iditarod	422 \$	3 035 276 \$	2 757 379 \$		5 792 655
Juneau	5 325 \$	22 998 291 \$	7 027 677 \$		29 025 968
Kake	190 \$	1 142 281 \$	384 528 \$		1 526 809
Kashunami	244 \$	1 233 837 \$	984 389 \$		2 218 226
Ketchikan	10 282 \$	48 070 688 \$	14 985 002 \$		63 055 690
Ketchikan	2 950 \$	12 383 935 \$	3 818 486 \$		16 202 421
Kilbuck	220 \$	1 293 863 \$	423 077 \$		1 716 940
Kodiak	2 872 \$	13 809 048 \$	5 882 251 \$		19 691 319
Kudluk	468 \$	3 118 771 \$	2 883 849 \$		6 002 620
Lower Peninsula	498 \$	3 581 228 \$	3 068 188 \$		7 259 416
Lower Kuskokwim	3 219 \$	17 308 853 \$	19 753 281 \$		34 062 134
Lower Yukon	1 955 \$	8 107 140 \$	7 938 484 \$		16 045 624
Marathon	10 224 \$	52 174 541 \$	19 828 317 \$		72 002 858
Merida	161 \$	883 308 \$	579 430 \$		1 462 738
Nome	723 \$	3 498 346 \$	2 437 386 \$		5 935 732
North Slope	1 808 \$	8 188 444 \$	8 743 735 \$		17 932 179
Northwest Arctic	1 892 \$	6 983 846 \$	9 879 239 \$		16 863 085
Pacifi	38 \$	291 854 \$	177 251 \$		469 105
Petersburg	754 \$	3 743 242 \$	1 022 683 \$		4 765 925
Prudhoe	213 \$	1 738 180 \$	1 342 415 \$		3 080 595
Saga	1 802 \$	8 752 783 \$	2 423 899 \$		11 176 682
Skagway	131 \$	790 061 \$	386 389 \$		1 176 450
Southeast Island	352 \$	2 736 158 \$	1 277 727 \$		4 013 885
Southwest	818 \$	3 734 490 \$	3 161 198 \$		6 895 688
St. Marys	129 \$	618 340 \$	618 863 \$		1 237 203
Terrace	34 \$	148 298 \$	824 732 \$		1 073 030
Unalakleet	333 \$	1 848 878 \$	1 183 644 \$		3 032 522
Valdez	898 \$	4 243 964 \$	1 612 223 \$		5 856 217
Wrangell	830 \$	2 928 853 \$	788 863 \$		3 717 716
Yakutat	187 \$	1 211 823 \$	642 829 \$		1 854 652
Yukon Flats	415 \$	2 873 600 \$	3 328 289 \$		6 201 889
Yukon-Charley	629 \$	2 128 118 \$	1 734 521 \$		3 862 639
Yukon	381 \$	2 424 674 \$	2 173 266 \$		4 597 940
<b>TOTALS</b>	<b>122 817 \$</b>	<b>548 888 888 \$</b>	<b>348 888 888 \$</b>		<b>897 777 776</b>

## Summary

In general, the statistical method has these impacts compared to the current funding formula:

- Most of the shift in allocation dollars from the current method to the statistical method is due to the recommended change from "funding community" to "school" as the basic unit for cost, and not to the change in the method of calculating school size factors and ACDs. The loss of an ACD for school level personnel costs may be more than offset by higher ACDs for district level costs.
- Districts currently disadvantaged by having more than one school per funding community would be on an equal basis with communities with one school per funding community. School size is a significant determining factor for cost. For example, when a district with three school with 200 student each in one community receives funding for only one school of 600, the community is deprived of compensation for smaller school size. Funding on a school basis provides equity. Administrative inefficiencies created by administering a district consisting of several communities are compensated for in the statistical method by rewarding for actual cost of administration.
- The range of allocations becomes more moderate. The districts with the highest per student allocations will receive slightly to moderately less and those with the lowest per student allocations receive slightly to moderately more.
- The rank order of per-student Basic Need remains nearly the same as under the current system. In almost all cases, the highest compensated districts remain the highest and the lowest compensated remain the lowest.
- Districts are compensated for actual operating costs, not proxies. If a district has exceptionally high non-personal services costs and moderate administration costs, for example, the statistical method compensates for the reality of both costs.
- A transitional period is strongly recommended by the study team to prevent any district from receiving less than their current dollar allocation due to changing the statistical method of computing Basic Need. The amount needed in the first year would be about \$16 million to \$20 million, depending on the total Basic Need allocation determined by the legislature. As the total allocation pie increases over time, transition compensation will decrease and be eliminated.

**CS FOR SPONSOR SUBSTITUTE FOR HOUSE BILL NO. 148(HES)**

**IN THE LEGISLATURE OF THE STATE OF ALASKA**

**TWENTIETH LEGISLATURE - SECOND SESSION**

**BY THE HOUSE HEALTH, EDUCATION AND SOCIAL SERVICES COMMITTEE**

**Offered:**

**Referred:**

**Sponsor(s): HOUSE HEALTH, EDUCATION AND SOCIAL SERVICES COMMITTEE**

**A BILL**

**FOR AN ACT ENTITLED**

1 "An Act relating to the public school funding program; relating to the definition  
2 of a school district, to the transportation of students, to school district layoff  
3 plans, to the special education service agency, to the child care grant program,  
4 and to compulsory attendance in public schools; and providing for an effective  
5 date."

6 **BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:**

7 \* Section 1. PURPOSE OF SECTION 2. The purpose of sec. 2 of this Act is to provide  
8 a level of funding through the public school funding program that allows for an equitable level  
9 of educational opportunities and outcomes for those students attending the public schools of  
10 the state, to promote local decision-making, and, through increased control of funding, to  
11 provide more local responsibility and accountability for decisions affecting public schools.

12 \* Sec. 2. AS 14.17 is amended by adding new sections to read:

13 **Article 1. State Funding to Public Schools.**

1           **Sec. 14.17.300. Public school account.** (a) The public school account is  
2 established. The account consists of appropriations for distribution to school districts,  
3 state boarding schools, and for the centralized correspondence study program under  
4 this chapter.

5           (b) The money in the account may be used only in aid of public schools,  
6 including community school programs, and for centralized correspondence study  
7 programs under this chapter.

8           **Sec. 14.17.400. State funding for districts.** (a) The state funding for which  
9 a school district is eligible in a fiscal year is equal to the amount for which a district  
10 qualifies under AS 14.17.410 (equalization funding).

11           (b) If the amount in the public school account is insufficient to meet the  
12 amounts authorized under (a) of this section for a fiscal year, the department shall  
13 reduce pro rata the state share of equalization funding for which districts are eligible  
14 by the necessary percentage as determined by the department. If the state share of  
15 equalization funding is reduced under this subsection, the department shall also reduce  
16 state funding for centralized correspondence study and state boarding schools by the  
17 same percentage.

18           **Sec. 14.17.410. Equalization funding.** (a) A district is eligible for  
19 equalization funding in an amount equal to the sum calculated under this section.

20           (b) Except as provided in (d) of this section, equalization funding consists of  
21 a state share and a local contribution, determined as follows:

22           (1) the state share equals need minus local contribution; need equals  
23 the district adjusted ADM, multiplied by the base student allocation set out at  
24 AS 14.17.475, plus any intensive services funding for which the district qualifies under  
25 AS 14.17.420(a)(2); district adjusted ADM is calculated as follows:

26           (A) the ADM of a funding community is multiplied by the  
27 funding community size factor set out in AS 14.17.460;

28           (B) the product obtained under (A) of this paragraph is  
29 multiplied by the funding community area cost factor described in  
30 AS 14.17.470(a) and set out in regulations adopted by the department;

31           (C) if a funding community is the only funding community in

1 a district with an ADM of 900 or less, the product obtained under (B) of this  
2 paragraph is multiplied by the appropriate factor set out in AS 14.17.460(b);

3 (D) the ADMs of each funding community in a district, as  
4 adjusted according to (A) - (C) of this paragraph, are added; the sum is then  
5 multiplied by the special needs factor set out in AS 14.17.420(a)(1);

6 (E) the product obtained under (D) of this paragraph is  
7 multiplied by a district's student transportation factor described in  
8 AS 14.17.470(b) and set out in regulations by the department; the resulting  
9 product is the district's adjusted ADM;

10 (2) for the fiscal year beginning July 1, 1998, the local contribution is  
11 the equivalent of a three mill tax levy on the full and true value of the taxable real and  
12 personal property in the district as of January 1 of the second preceding fiscal year,  
13 as determined by the Department of Community and Regional Affairs under  
14 AS 14.17.510 and AS 29.45.110, not to exceed 35 percent of a district's need as  
15 determined under (1) of this subsection for the preceding fiscal year; for the fiscal year  
16 beginning July 1, 1999, and subsequent fiscal years, the required mill equivalent shall  
17 be increased by one-fourth of a mill each year until the local contribution is the  
18 equivalent of a four mill tax levy, but, in each year, a district's local contribution may  
19 not exceed 35 percent of the district's need for the preceding fiscal year, as determined  
20 under (1) of this subsection.

21 (c) Equalization funding may not be provided to a city or borough school  
22 district if the local contributions required under (b) of this section have not been made.

23 (d) In a regional educational attendance area, funding consists of need,  
24 calculated under (b)(1) of this section for that regional educational attendance area.

25 **Sec. 14.17.420. Special needs and intensive services funding.** (a) As a  
26 component of equalization funding, a district is eligible for special needs funding and  
27 may be eligible for intensive services funding as follows:

28 (1) special needs funding is available to a district to assist the district  
29 in providing special education, gifted and talented education, vocational education, and  
30 bilingual education to its students; a special needs funding factor of 1.20 shall be  
31 applied as set out in AS 14.17.410(b)(1);

1 (2) in addition to the special needs funding for which a district is  
2 eligible under (1) of this subsection, a district is eligible for intensive services funding  
3 for each special education student who needs and receives intensive services and is  
4 enrolled on the last day of the count period; for each such student, intensive services  
5 funding is equal to \$22,500 multiplied by the area cost factor of the funding  
6 community in which the student is enrolled.

7 (b) In this section, "intensive services" has the meaning given by the  
8 department by regulation adopted under AS 14.30.180 - 14.30.350.

9 **Sec. 14.17.430. State funding for correspondence study.** Except as provided  
10 in AS 14.17.400(b), funding for the state centralized correspondence study program or  
11 a district correspondence program includes an allocation from the public school  
12 account in an amount calculated by multiplying the ADM of the correspondence  
13 program by the base student allocation and multiplying that product by 65 percent.

14 **Sec. 14.17.435. State funding for state boarding schools.** Except as provided  
15 in AS 14.17.400(b), funding for a state boarding school established under  
16 AS 14.16.010 includes an allocation from the public school account in an amount  
17 calculated by multiplying the ADM of the state boarding school by the special needs  
18 factor in AS 14.17.420(a)(1) and multiplying that product by the base student  
19 allocation. A state boarding school is also eligible for intensive services funding under  
20 AS 14.17.420(a)(2).

21 **Sec. 14.17.440. Local contribution.** (a) The required local contribution to  
22 a city or borough school district is a district's local contribution as calculated  
23 according to AS 14.17.410(b)(2).

24 (b) Nothing in this section prohibits a city or borough from contributing to its  
25 district amounts in excess of the local contribution required under this section if the  
26 local contribution is also in compliance with federal law.

27 **Sec. 14.17.450. Funding communities.** The department shall adopt  
28 regulations defining funding communities within each district that reflect geographic  
29 and attendance area factors. The regulations may not allow for funding communities  
30 smaller than 10 ADM.

31 **Sec. 14.17.460. Funding community size factor.** (a) For purposes of