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AUTHOR Swift, Doug
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ABSTRACT

Using 1975-76 school-year data, the study describes New Mexico size adjustment factors for public school funding, compares them with the manner in which other states recognize smallness or sparsity, and delineates the impact of size adjustment factors on New Mexico school districts in terms of resources, net operational and proportionate operational expenditures, pupil-professional and pupil-adult ratios, and breadth of program. The study also investigates size adjustment factors as incentives for school reorganization and for school and district consolidation and the desirability of recognizing alternative schools within the distribution formula. Results support the concept of three-tier size-adjustment recognition (school, district, and rural/isolation) and the current recognition formulas for small elementary-junior high schools, small districts, and rural/isolation, but reveal a large disparity in the breadth of programs offered in small and large secondary schools and difficulties for very small schools to offer a breadth of program comparable to larger secondary schools, regardless of resources provided. Recommendations include: retaining without change the elementary-junior high, district, and rural/isolation factors; changing the high school adjustment factor to recognize schools with enrollments of 500 or fewer and reducing the multiplier to 1.5; and adopting incentives for small secondary school and small school district consolidation. (Author/NEC)

An Analysis of Size Adjustment Factors in the New Mexico Public School Funding Formula

Doug Swift

February 1978

The project reported herein was performed pursuant to Contract Number 65-10 with the State of New Mexico, Department of Finance and Administration, Public School Finance Division. The opinions expressed are those of the author; no official endorsement by the State of New Mexico, the Secretary of Educational Finance and Cultural Affairs, or the Public School Finance Division should be inferred.

Harry Wugalter
Secretary of Educational Finance and Cultural Affairs, and
Chief of Public School Finance

ABSTRACT

The 1974 New Mexico school finance reform was enacted to meet better the principles of fiscal neutrality and taxpayer and distributional equity. Elements of the formula are:

-pupil-weighted cost differential factors which recognize the relative costs of different programs to meet educational needs of the students;

-a Training and Experience Index which recognizes additional costs incurred by districts which retain highly trained and experienced teachers; and

-sparsity or size adjustment factors which recognize the increased costs of operating small schools and small districts.

The program cost differentials were the subject of studies undertaken following the 1974-1975 school year--the first full year under the reform.

This study investigates the size adjustment factors, using 1975-1976 school-year data. The report describes the New Mexico size adjustment factors, compares them with the manner in which other states recognize smallness or sparsity, and delineates the impact of size adjustment factors on New Mexico school districts in terms of resources, net operational and proportionate operational expenditures, pupil-professional and pupil-adult ratios, and breadth of program. The study also investigates the size adjustment factors as incentives for school reorganization and for school and district consolidation and the desirability of recognizing alternative schools within the distribution formula.

The results of the study support the concept of three-tier size adjustment recognition: school, district, and rural/isolation. Analyses of data support the current recognition formulas for small elementary-junior high schools, small districts, and rural/isolation; but considerable evidence was found to support changes in the high school size adjustment formula. Findings of the study reveal that there is a large disparity in the breadth of programs offered in small and large secondary schools and that additional resources are necessary for small secondary schools to provide a breadth of program commensurate with larger secondary schools. It is difficult for very small secondary schools to offer a breadth of program comparable to that offered by larger secondary schools regardless of the resources provided. Size adjustment recognition encourages the maintenance of small schools and small districts even when the distance between attendance centers is small.

The report recommends that the elementary-junior high school, the district, and the rural/isolation adjustment factors be retained without change; that the high school size adjustment factor be changed to recognize high

schools with enrollments of 500 ADM and fewer and that the multiplier be reduced to 1.5; that incentives be adopted for consolidation of small secondary schools and small school districts; and that at least for the present, alternative schools not be recognized for additional funding either by cost differential factor or by school size adjustment.

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CHAPTER 1

INTRODUCTION

In 1934, the State of New Mexico assumed responsibility for 75% of the costs of the public schools. Since 1935, each of the distribution plans has recognized, explicitly or implicitly, the additional needs of small schools or small districts.

The two most recent predecessors of the current distribution formula were the 1963 Greer formula and the 1969 staffing formula. The Greer formula recognized different cost levels for elementary, junior high, and high schools, and included 28 weighting intervals based on Average Daily Membership (ADM)* of schools from fewer than 20 students to more than 1500 students. Although small schools were recognized as being more costly, the formula was criticized for not recognizing the "sharply increased staffing costs necessary for very small schools, particularly high schools, to offer sound programs." (Hughes, 1967, p 44.)

The 1969 formula shifted from recognition of school size to recognition of district size. The recognition of small districts favored those districts whose geography and road structure permitted schools to be centrally located, but severely penalized districts which were forced to maintain small, isolated schools. There were a number

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*An asterisk denotes terms defined in the Glossary (Appendix A).

of problems with the staffing formula; failure to recognize small schools adequately was only one of them. (Wugalter, 1970.)

The 1974 New Mexico school finance reform included both school and district size adjustment[1] factors. The school size adjustment factor applies to schools with fewer than 200 ADM with a greater weight applied to high schools than to elementary and junior high schools. The district size adjustment factor applies to districts with fewer than 4000 ADM.

A 1976 amendment to the formula added a third adjustment, a "rural/isolation factor," which applies to districts of more than 10,000 ADM which (primarily due to geography and population distribution) must maintain a number of high schools which are not small enough to qualify for the school size adjustment factor.

Since 1974, the majority of the school districts in the state have received substantial increases in revenues. The legislature has increased the unit value* from $616.50 in 1974-1975 to $905 in 1977-1978. The state-wide total program cost* has increased from $222.2 million in 1974-1975 to an estimated $333.7 million in 1977-1978 despite declining enrollments.

It is doubtful that the annual increases realized in the past few years will continue at such a high rate, a situation which will be exacerbated by continuing decline in enrollment in many New Mexico districts, the increased competition for the public dollar, and the continuing squeeze of inflation.

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[1]The term "sparsity" was used in the 1974 law. The term was changed to "size adjustment" in the 1975 technical amendments to the school finance act.

As competition for the general-fund dollar increases, school districts may take whatever action is possible to maximize revenues regardless of programmatic impact. On the other hand, if small districts and small schools are to be maintained, it is essential that the additional funding be sufficient to provide an adequate level of educational opportunity throughout the state.

As enrollment declines in some of the very small districts, it may be impossible for the districts to offer adequate educational opportunities regardless of the level of funding. Under such conditions, alternatives, including school and district consolidation and district reorganization,[2] must be considered.

The three size adjustment factors--school, district, and rural/isolation--are the subject of this investigation. It is the purpose of this study to examine the current size adjustment policies and to provide policy recommendations regarding the size adjustment factors in the New Mexico public school funding formula.[3]

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[2]Some terminology. As used in this paper:
School consolidation: merger of two or more schools.
District consolidation: merger of two or more districts. District consolidation does not imply school consolidation.
District organization/reorganization: the grade-level structure of the school district, i.e., 6-6, 5-3-4, etc.

[3]Although the term "size adjustment" may imply schools and districts of large as well as small enrollment, this study is concerned only with smallness. Diseconomies of large scale, predictable from economic theory, are most likely caused by factors other than those which contribute to diseconomies of small scale. The diseconomies of very large scale are more appropriately the subject of a separate study.

Given the assumption that small schools and small districts cost more per pupil than large schools and districts, questions which will be addressed include:

1. What criteria can be used to determine whether adequate educational opportunities are available in small schools and in small districts?

2. Are the resources available to small districts and to districts with small schools sufficient to provide adequate educational opportunities?

3. Is enrollment (ADM) a sufficient criterion for additional funding of small schools and small districts?

4. Is the rural/isolation factor justified? Is the one school district to which the factor applies sufficiently unique to warrant unique funding recognition?

5. Are criteria for size adjustment and the formulas employed in the funding formulas of other states applicable to conditions in New Mexico?

6. Do small districts incur additional costs above and beyond the additional costs of their inherently small schools?

7. Do (and should) the size adjustment factors encourage district reorganization?

8. Do (and should) the size adjustment factors encourage school and district consolidation?

9. Should alternative schools be recognized for size adjustment?

Answers to these and related questions are important to those persons who recommend policy changes and who make decisions concerning public school finance in New Mexico. Principal among these persons are the

Secretary for Educational Finance and Cultural Affairs and the Chief of Public School Finance, the Legislative School Study Committee, the Legislative Finance Committee, and the Legislature.

Unless otherwise specified, data used in this study are from the 1975-1976 school year--the most recent year for which complete data were available at the time the analyses were performed.

CHAPTER 2

SIZE ADJUSTMENT FACTORS: NEW MEXICO

The New Mexico funding formula uses a weighted-pupil definition of need based on several program categories. As enacted in 1974, the program categories included kindergarten, grade-level groupings, special education, bilingual, and vocational[1] education. A school district's total program cost is obtained by summing the products of the number of students in each program by the program cost differential, applying a Training and Experience (T&E) Index, adding the size adjustment factors and multiplying the resulting units by the legislatively-established unit value.

The 1974 New Mexico school finance reform included school and district sparsity or size adjustment factors. A 1976 amendment added the district rural/isolation factor.

School Size Adjustment

The school size adjustment formula is:

$$\frac{200 - ADM}{200} \times M \times ADM = \text{additional school units}$$

where ADM = Average Daily Membership,

M = 1.0 for elementary and junior high schools, and

M = 2.0 for senior high schools.

The school size adjustment formula is illustrated graphically in Figure 2.1. The solid lines indicate the application to elementary and

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[1] The 1976 amendments to the Public School Finance Act removed vocational education recognition from the funding formula.

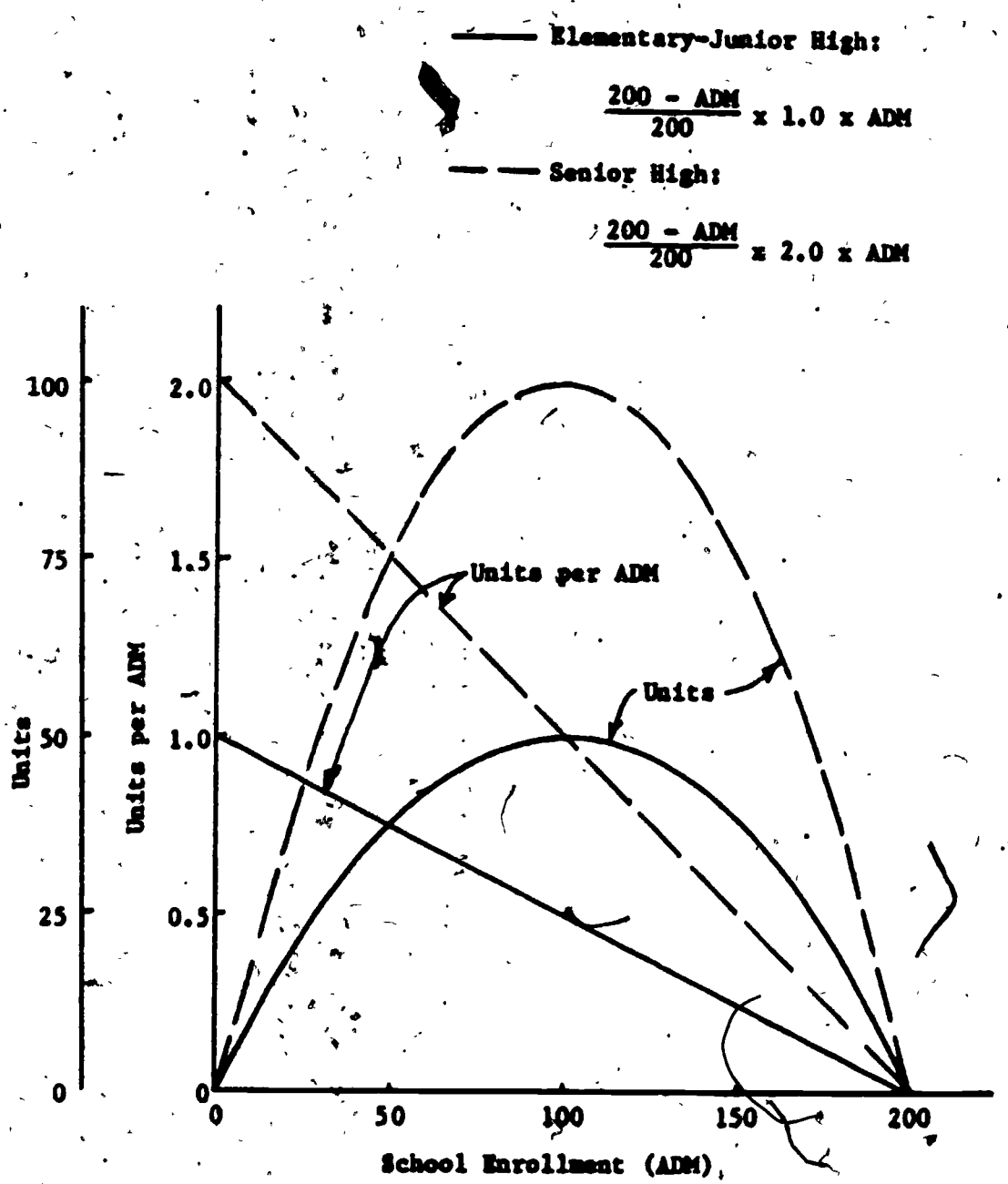

Figure 2.1. New Mexico school size adjustment formulas.

junior high schools and the dashed lines indicate the application to high schools. The straight-line relationships between ADM and units per ADM show that as a school decreases in enrollment below 200 ADM, each student is "worth" more units. The curved line indicates the relationship between ADM and the additional units which accrue to a school as the enrollment varies from 0 to 200 ADM. Although the "worth" of each student increases as the enrollment decreases, maximum benefit occurs with an ADM of 100. With 100 ADM, an elementary/junior high school generates an additional 50 units and a high school generates 100 additional units.

According to Bothwell, Johnson, and Hickrod (1976), the school size adjustment (or sparsity) factor was discussed at length by the Advisory Committee on School Financing,[2] but the discussion centered on the formula for size recognition; it always was agreed that a school size adjustment was necessary. The formula for school size adjustment changed during the discussions, but the 200 ADM "breaking point" was never in question. (P 54.)

The figure 200 has a modicum of support. Analyzing the data of the 1931-1932 National Survey of School Finances, Mort (1933) found that the breaking point (national average) for elementary schools (grades 1-8) was slightly more than 200 Average Daily Attendance (ADA);* but the breaking point for high schools (grades 9-12) was about 600 ADA. In a

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[2] A 32-member committee appointed by the Governor in 1973 and charged with studying public school finance in New Mexico and with making recommendations for an equalizing distribution plan. The recommendations of the committee became, in essence, the school finance reform legislation introduced into and enacted by the 1974 legislature.

1960 study of secondary schools in Ohio, Smith notes that "schools with an enrollment of less than 200-400 pupils are paying a premium for their educational programs." (P 144.) In addition, the figure of 200 was used by the National Educational Finance Project (NEFP)[3] as the threshold for small size recognition, and, according to Bothwell, et al., the figure is "substantiated when applied to New Mexico school districts." (P 55.)

The slopes of the straight-line relationships between ADM and units per ADM for elementary/junior high schools and for high schools (defined by the multipliers 1.0 and 2.0 in the school size adjustment formula) are explained by Bothwell, et al., as follows:

> These two numbers . . . recognize pupil-teacher ratios. Studies of New Mexico schools show that not only are pupil-teacher ratios less in normal-size high schools than in normal-size elementary schools, but when schools drop below 200 in enrollment, the difference is exaggerated. Because of the number of programs necessary to meet minimum standards, pupil-teacher ratios in small high schools are approximately half the ratio for small elementary and junior high schools. Therefore, the multiplier is twice as great. (P 55.)

Finally, a straight-line function avoids the discontinuities inherent in a step function.

District Size Adjustment

The district size adjustment formula is:

$$\frac{4000 - ADM}{4000} \times 0.15 \times ADM = \text{additional district units}$$

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[3]The Advisory Committee, early on, determined that the NEFP model was the most appropriate model for New Mexico.

The formula is of the same mathematical form as the school size adjustment formula and is graphically portrayed in Figure 2.2. As enrollment decreases from 4000 ADM, the "worth" of each student increases in a straight-line function; maximum additional units accrue to a district with 2000 ADM.

The 1963 Greer formula recognized school size but not district size and was criticized for the oversight. The 1969 staffing formula recognized district size but not school size--and was equally criticized. Yet the Governor's Advisory Committee did not recommend a district size adjustment factor--there were no substantiating data. As the bill was introduced into the legislature, only the school size adjustment factor was included. The district size adjustment factor was added by amendment in the legislature.

As explained by Bothwell, et al.,

> A study conducted during the legislative session indicated that districts with below 4000 ADM were not profiting from the new formula as much as were the larger districts. The addition of the district sparsity factor to the bill was advantageous from at least two points of view. First, it permitted a number of small districts to "gain" under the overall public schools funding formula as much as the larger districts with smaller schools thereby gathering political support (there are those who consider that most all of the opposition disappeared after the addition of the district sparsity factor). Second, the public school funding formula is now free of the criticism of prior formulas which did not recognize both school and district size factors.
>
> The 4000 district sparsity figure appears to be working well in New Mexico. Yet there are no data that support 4000 as the breaking point, or that 0.15 is the correct multiplier. (P 55.)

The district size adjustment factor gained the immediate support of the superintendents, board members, and legislators representing the 73 school districts which would benefit financially from the factor.

District:

$$\frac{4000 - ADM}{4000} \times 0.15 \times ADM$$

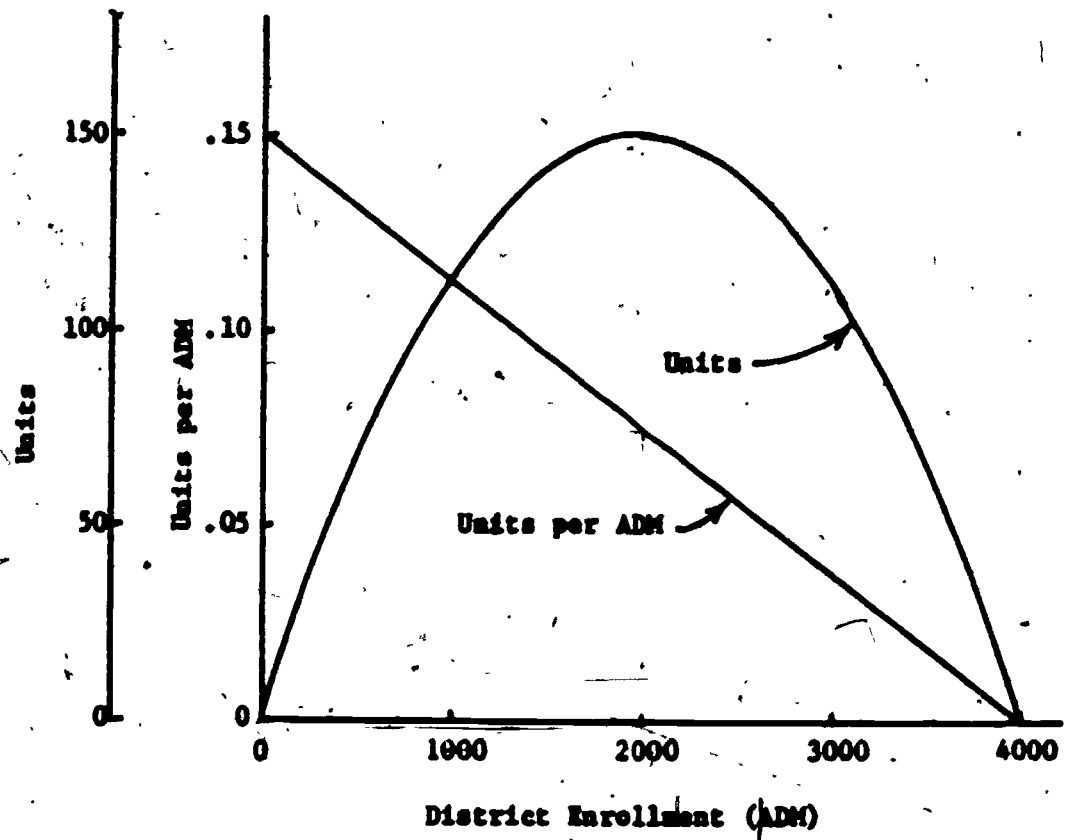

Figure 2.2. New Mexico district size adjustment formula.

A save-harmless provision in the legislation guaranteed that each district would receive as much state money per basic program ADM* as it did in the 1973-1974 school year. Under the 1969 staffing formula, the state provided 70% of the calculated "basic program cost" regardless of the ability of the local district to provide the remaining 30%. The state thus provided more money than necessary (under an equalizing plan) to districts with high property wealth per student and/or high noncategorical federal income, notably PL 81-874 (Impact Aid) funds. These districts would "lose" under the proposed equalization formula (i.e., get less state money than in the preceding year). The addition of the district size adjustment factor reduced the number of save-harmless districts from 24 to 8 under the funding level proposed by the LSSC. The 16 districts brought out of save harmless were now "gainers" under the formula. Some of these districts were represented by relatively powerful legislators. A large amount of political support indeed was gathered by the addition of the district size adjustment factor.

The district size adjustment factor itself and its characteristics appear to be political-based rather than data-based.

Rural/Isolation Size Adjustment

A 1976 amendment to the funding formula added a rural/isolation factor which applies to districts having both an enrollment of greater than 10,000 ADM and a ratio of ADM to the number of high schools of less than 4000:1.

The rural/isolation size adjustment factor is:

$$\left(4000 - \frac{\text{ADM}}{\text{No. of HSs}}\right) \times 0.2 = \text{rural/isolation units}$$

Due to the above limitations, only the Gallup-McKinley County school district currently qualifies. Because of its large geographic size and the isolation of its students, the district must maintain five high schools and their feeders, more schools than other districts of similar enrollment. Although the district has a single central office administrative staff, many of the support services must be provided as if the district consisted of five districts each consisting of a high school and its feeder schools.

As the factor was introduced into the legislature, the factor would have generated for the district slightly more units than would have been generated by the district size adjustment factor if the school district were deconsolidated into five districts around each high school. As enacted, the adjustment provides slightly more than half of the units which would be realized if the district were to deconsolidate.

In the 1975-1976 school year, 69 of the 88 New Mexico districts qualified for elementary/junior high school size adjustment units and 32 districts qualified for senior high school size adjustment units. In the same year, 73 districts enjoyed the benefits of the district size adjustment factor. Only two districts (Roswell and Farmington) did not qualify for either school or district size adjustment units. It might be said that size adjustment provides a little something for almost everyone.

Indeed, for some of the very small districts, the "little something" is substantial. Two districts (House, 92 ADM; Encino, 105 ADM) in 1975-1976 attributed more than 50% of their grand total program units* to size adjustment units, and 26 other districts attributed more than 20% of their grand total program units to size adjustment.

The effect of the size adjustment factors on the New Mexico school districts will be elaborated in Chapter 4.

CHAPTER 3

RECOGNITION OF SMALL SIZE: OTHER STATES[1]

There are 27 other states which agree with New Mexico that smallness, or sparsity which dictates smallness, merits special recognition in their public school funds distribution plans. The most popular formulas, used by 19 states, are based on the number of students, either ADA or ADM. Beyond this point, however, there is very little agreement. Cost functions and breaking points--the largest enrollment at which smallness is recognized--vary widely among the states. In this chapter, the smallness criteria and formula structures of several states are examined and compared with size recognition in New Mexico.

Statutes and Regulations

The investigator has limited his research of statutes and regulations to those states which provide additional resources to small schools and/or small districts. In the 28 states, provisions for the distribution of public school funds are contained in the statutes. With one exception (Rhode Island), all of these states recognize small size by statute, but the statutory recognitions vary considerably among the states.

The statutes in some states, such as New Mexico, are very explicit: criteria for recognition and the funding mechanics are specified. The

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[1]The information in this chapter, including the tabulated data, was compiled from Tron's Public School Finance Programs, 1975-76; the Education Commission of the States' "School Finance at a Glance"; Callahan and Wilken's School Finance Reform; the laws of the states; and from personal correspondence and conversations with state school personnel.

statutes in other states are detailed to a degree, but leave explication of some of the criteria to a regulatory agency--usually the state education agency. Utah's statutes, for example, specify the number of students necessary for a school to qualify and the manner of fund distribution, but direct the State Board of Education to establish the definftion of "necessarily existent." A few states, such as Maine, proclaim only that isolated schools will be recognized, leaving regulations for implementation and funding procedures in the hands of the State Board of Education. Rhode Island is unique: it apparently has neither laws nor regulations; the size recognition apparently predates 1961 and "the procedures are built directly into the computer program . . . and no one in the Department has really given it much thought."[2]

Rationale for the Mechanics of Small Size Recognition

Based on communications with representatives of many of the states which recognize small schools or small districts, the rationale for a particular recognition, with one notable exception, appears to be nebulous--or the rationale is lost in antiquity. The step function and refinements thereof which are used in several states are founded in the works of Mort (1924 and 1933) and McClure (1947). Representatives of some states have indicated that the recognition is based on analysis of the pupil-teacher ratio (PTR)* in various sized schools and districts, but requested details generally have not been provided. More typical, however, are responses such as:

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[2]Cynthia V. L. Ward, Coordinator of Research and Evaluation, Rhode Island State Department of Education; private communication.

It is historical. I cannot defend it.

There are no data. There is no rationale. But the figures appear reasonable.

We've always done it this way.

and even

They came from heaven. We cannot support them.

The one exception appears to be Florida, whose Sparsity Factor is based on a study by Johns (1975) of factors such as administrative costs, PTR, and breadth of programs in the high schools.

Although there is a long history of interest in the recognition of sparsity and small size, there is little current interest. Recognition of small size is sometimes a part of proposed school finance reform legislation, such as are being considered in South Dakota and Texas. There have been some minor changes (tinkering) in current formulas, such as in Utah. Even Florida, whose legislature enacted Johns' recommendation into the funding formula in 1975, shows little concern--the legislature has yet to appropriate funds for the sparsity recognition! Kern Alexander summed it well by saying, "There is not much concern for sparsity. It accounts for a very small amount of money in state aid, and it is a political requirement."[3]

Recognition of School Size

Seventeen states, including New Mexico, recognize the additional cost of supporting small schools. Of these, 13 states base the recognition

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[3]Statement made in workshop on program costs, Equalization Workshop, Denver CO, March 3-4, 1977.

on school ADA or ADM. Unlike New Mexico, most states have different breaking points for elementary and secondary schools: secondary schools generally are defined as "small" for funding purposes with a larger number of students than are elementary schools. As shown in Table 3.1, the range of the breaking points for elementary schools is 99 to 1000 students, with a median of 193 students. The breaking point range for secondary schools is 100 to 1000 students with a median of 300 students.

Of the 13 states which recognize school size on the basis of number of students, nine use a step or step-ramp function. The ramp smooths the discontinuities which occur in step functions. Some states which use step functions have provisions so that no school will receive less total benefit than if the school had the highest number of students under the preceding step--a kind of save harmless applied to school size adjustment. The remaining four states use other functions--straight line, curve, or discontinuous but connected straight-line segments.

In one way or another, 11 of the 13 states which recognize small schools give more recognition to secondary than to elementary schools. The greater recognition is in the form of higher breaking points (as can be discerned in Table 3.1), higher steps, a faster rising line or curve (as in New Mexico), or combinations thereof.

The additional unit weight per student for the 13 states with ADA/ADM-based funding recognition is presented in Table 3.2. Additional unit weights are calculated for three distinct enrollments for elementary and secondary schools. The table reveals the variation of unit weight per students with school enrollment.

Table 3.1

School size recognition in 17 states recognizing small schools for additional funding.

		Breaking Points Rank Order		
		Elementary	Secondary	
ADA/ADM-Based Recognition				
	WA	99	100	KY
	KY	100	100	OR
	OR	100	175	CO
	ND	100	200	NM
	CO	150	249	WA
	UT	165	253	NV
Med	NV	193	300	WY Med
	NM	200	375	UT
	WY	200	438	LA
	LA	203	550	ND
	MT	300	600	MT
	ID	300	750	ID
	AK	1000	1000	AK
Teacher-Based Recognition	SC	12 or fewer teachers		
Isolation-Based Recognition	GA	"State board policies"		
	ME	"State board shall determine"		
?	TN[a]	?		

[a]ECS "School Finance at a Glance" states that "small schools require fewer pupils to earn teaching position." The statement, however, is uncorroborated and the details of the recognition are unknown to the investigator.

Table 3.2

Additional unit weight per student in 13 states with ADA/ADM-based funding recognition of small schools.

Additional Unit Weight Per Student

Elementary Schools				Secondary Schools			
State*	Number of Students			State*	Number of Students		
	25	100	200		25	100	200
NM	.88	.50	-0-	*WA	2.00	1.40	.45
AK	1.10	.40	.14	NM	1.75	1.00	-0-
UT	1.12	.39	-0-	UT	1.00	.90	.60
NV	1.00	.30	-0-	WY	1.50	.67	.19
WY	1.50	.25	-0-	NV	NA	.57	.21
MT	.28	.23	.12	LA	1.00	.50	.25
ID	.25	.20	.10	ID	.70	.50	.40
LA	.08	.08	.08	MT	1.40	.40	.19
CO	.20	.05	-0-	AK	1.10	.40	.14
WA	1.95	-0-	-0-	CO	1.00	.40	-0-
OR	.19	-0-	-0-	ND	.42	.17	.10
KY	.08	-0-	-0-	OR	.74	-0-	-0-
ND	Not computable. Depends on school and classroom size			KY	.08	-0-	-0-

*Ranked by unit weight per student for schools with 100 students.

From Table 3.2 and comparing, state by state, the additional unit weight per student in secondary and elementary schools of the same sizes (25 and 100 ADM) provides the information for Table 3.3. The table further reveals the degree of greater recognition given to secondary schools than to elementary schools having each of the calculated enrollments.

The foregoing descriptions are oversimplifications of complex school size recognitions. Some states use ADA, ADM, or a combination of both, directly to determine additional units or funds for the districts in which the schools are located. A few states use an intermediate step based on instructional units or number of teachers in a school--but both are determined generally by numbers of students and PTR in some type of step function. A few states recognize district organization in greater detail than elementary and secondary. Utah, for example, has different breaking points and different straight-line segments for elementary, junior high or middle schools, high schools, and six-year (grades 7-12) high schools.

Of the 17 states which recognize small schools, eight include, in addition to small enrollment, a requirement that a school be considered necessary. In these eight states, a small school cannot receive additional assistance unless it is "necessary" as well as small. Expressions such as "isolated," "remote," "necessarily existent," and "remote and necessary" are typical statutory expressions. Distance by road or bus transit time frequently are used to define a qualifying criterion, but in at least two states the State Department of Education is to determine the degree of "isolation" based on petition of the districts.

Table 3.3

Relative additional unit weight per student in elementary and secondary schools in selected states.[a]

Relative Unit Weight[b]				
25 students		100 students		
LA	12.5			
CO	5.0	8.0	CO	
MT	5.0	6.3	LA	
OR	3.9	2.7	WY	
ID	2.8	2.5	ID	
Med NM	2.0	2.3	UT Med	
WA	1.0	2.0	NM	
WY	1.0	1.9	NV	
KY	1.0	1.7	MT	
AK	1.0	1.0	AK	
UT	0.9			

[a]Those states from Table 3.2 for which calculations are possible.

[b]Additional unit weight per student in secondary school divided by additional unit weight per student in an elementary school of the same size.

Comparing New Mexico's recognition of elementary schools with similar recognition in other states, Table 3.1 reveals that the breaking point for New Mexico (200 ADM) is close to the median (193) for the 13 states which recognize school size in terms of ADA or ADM. In terms of the additional weight per student in small elementary schools (Table 3.2), New Mexico ranks first for schools of 100 students; however, five states provide higher additional weight for schools of 25 students.

In the recognition of secondary schools, the New Mexico breaking point (Table 3.1) of 200 ADM is well below the median (300) for the 13 states which recognize school size in terms of number of students. New Mexico does not have a higher breaking point for secondary schools than for elementary schools as do nine of the 13 states. In terms of the additional weight per student in small secondary schools (Table 3.2), New Mexico ranks second for schools of 25 and 100 students.

In the relative recognition of elementary and secondary schools (Table 3.3), New Mexico ranks at or near the median for schools of both 25 and 100 students.

In terms of both elementary and secondary school size, New Mexico compares favorably with the other 12 states, with the exceptions that New Mexico tends to give more recognition to both small elementary and small secondary schools than most states and does not have a higher breaking point for secondary schools than for elementary schools. New Mexico joins with eight other states which recognize school size without an isolation or necessarily existent requirement.

Recognition of District Size

Thirteen states, including New Mexico, recognize small districts in terms of number of students (eight states), by some measure of sparsity of students or population (four states), or by the number of teachers in the district as computed from the state PTR allocation (one state), as presented in Table 3.4.

The breaking point for district size recognition ranges from 101 students to 4000 students depending on the district organization. Four states, recognizing the nonunified nature of many of the districts, have established different breaking points for elementary and secondary districts. In each of these states, the secondary districts are considered small with a larger number of students than in elementary districts. The median breaking point for elementary districts is 184 students; the median for secondary districts is 396 students; and for unified districts the median is 1000 students.

Three of the eight states which base district recognition on the number of students use step functions, one state uses a step-ramp function, and four states use straight-line functions or connected straight-line segments.

Table 3.5 shows the additional weight per student for the states which recognize district size by some enrollment count and for which the investigator has sufficient information to make calculations.

In relation to the eight other states which recognize district smallness on the basis of number of students, New Mexico has a breaking point (4000 ADM) far beyond the other states (Table 3.4), but the additional unit weight per student is small compared with the other five states for which calculations are possible (Table 3.5).

Table 3.4

District size recognition in 13 states recognizing small districts for additional funding.

	Breaking Point		
	Elementary Districts	Unified Districts	Secondary Districts
ADM/ADA-Based Recognition:	101 CA		
			140 NC
	147 NC		
	221 SD		
		252 AR	
			301 CA
	314 RI		
			491 SD
			758 RI
		1000 KS	
		1000 AK	
		4000 NM	
Median	184	1000	396
Teacher-Based Recognition:	NY Fewer than 8 teachers		
Sparsity Recognition:	FL $X \leq 7000$ where $X = \frac{\text{District FTE}}{\text{No. of HSs not in excess of three}}$		
	NB Population $\leq$ 4 persons/sq mi in county in which district is located		
	PA Population $\leq$ 50 persons/sq mi in the district.		
	TX Area of district > 300 sq mi and ADA < 1000.		

Table 3.5

Additional unit weight per student in six states with ADA/ADM-based funding recognition of small districts.

State[a]	District Enrollment			
	100	200	500	1000
RI[b]	.63	.63	.19	.06
SD[b]	.64	.34	.10	.05
KS (1973-1974 figures)	.29	.29	.16	.10
AR (assuming 12 grades)	1.52	.26	-0-	-0-
NM	.15	.14	.13	.11
FL (assuming 1 HS)	NA[c]	NA	NA	.19

[a]Ranked by additional unit weight for district enrollment of 200 students.

[b]Formula includes consideration of grade level. Calculations are based on proportional enrollment in the grade levels specified in the formulas.

[c]Not applicable.

There are only two states which recognize both school and district size: Alaska and New Mexico. Alaska's recognition of district size, however, is in the form of differentiated but similar Tables of Instructional Units for districts of fewer than 1000 ADM and for districts of 1000 and more ADM. The difference in the tables is so slight that for all practical purposes only New Mexico recognizes both school and district size.

Consolidation Incentives

A number of states have various incentives for school or district consolidation to encourage the elimination of inefficient units. Some of the incentives are outside the operational funding formula: capital outlay incentives and statutory requirements that districts operate schools or that schools be of a specified minimum enrollment are typical. Nine states include consolidation incentives within the operational funding plan itself; seven of the nine also recognize small size or sparsity.

Some of the incentives consist of rewards, such as continued funding, usually for a specified number of years, as if the schools or districts had not consolidated. On face value, it would appear that such rewards are not very productive in encouraging consolidation: there is not necessarily an increase in funds available, and eventually the funds may be less than would be received if the schools/districts had not consolidated.

Penalty clauses would appear to be more productive in encouraging consolidation. In some states, size adjustment funds flow only to those schools or districts which are determined to be isolated and/or essential. At least two states require districts which continue to operate small, nonessential schools to levy a higher local school tax than is required in districts with large schools. California provides less state aid per pupil to inefficient, nonessential school districts than to districts of more than 1000 students.

How It's Done in Florida

In his study of Florida, Johns found that as district enrollment decreases:

-administrative costs per student increase;

-the PTR decreases; and

-the breadth of program offered at the high school level decreases.

Johns' concern was to develop a formula which would provide sufficient funds to districts with a small number of students (less than 20,000) and/or sparse population to permit program offerings at the high school level equivalent to the offerings in districts of 20,000 to 60,000 students. For each district, he computed the number of additional teachers required to provide equivalent program offerings, from which he obtained the amount of additional funds needed for each of the districts.

Johns' "best fit" curve of the added cost due to sparsity from which to compute the additional funds needed for equivalent program is graphed in Figure 3.1. The equation of the curve is:

$$Y = \frac{1101.8918}{2700 + X} - .1101$$

where the "sparsity index," $X = \frac{\text{District FTE}}{\text{No. of approved high schools not in excess of 3}}$

The number of high schools was limited to three because "if more than three centers are approved in a district it is due more to density of population than to sparsity." (P 170.)

Control for quality is by the use of only "approved" schools: those which meet the state's minimum standards and are approved as permanent high school centers by the State Department of Education. Approval of a

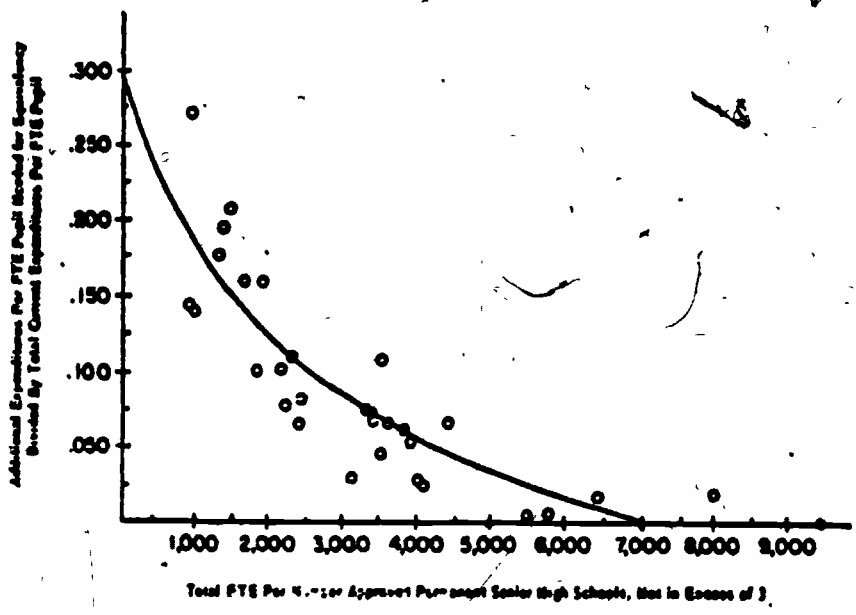

Figure 3.1. Additional need for program equivalency in sparse districts in Florida and the "best fit" curve.

Source: Johns, p 197.

school includes recognition that the school is necessary, based on a study of the "distribution of pupil population and applying appropriate criteria of necessity." (P 170.) It is interesting to note that at the time of the study (1973-1974 school year), at least 11 districts operated high schools at centers that were not approved by the State Department.

The curve of the sparsity factor, Y, and the plot of the additional expenditures per FTE pupil needed for equivalency for a sample of 35 of the 67 school districts in Florida is presented as Figure 3.1.

An analysis of the Impact of the Florida sparsity factor if applied to the New Mexico districts is discussed in Chapter 4.

CHAPTER 4

EFFECT OF SIZE ADJUSTMENT FACTORS ON NEW MEXICO SCHOOL DISTRICTS[1]

As noted earlier, the impact of size adjustment factors on small school districts in New Mexico is substantial. This is illustrated dramatically in Figure 4.1. Two districts (House, 92 ADM; Encino, 105 ADM) realize more than 50% of their grand total program units from the size adjustment units; the factors contribute 20% or more of the units in 28 districts; 10% or more in 43 districts.

The lower edge of the scattergram for districts of about 500 to 4000 ADM indicates the effect of the district size adjustment factor--as illustrated in Figure 4.2. The variations above the district size adjustment curve are due to school size adjustment units.

Although the maximum district size adjustment units are generated by districts of 2000 ADM, the maximum effect (in terms of proportion of grand total program units) occurs for districts of from 400 to 600 ADM. The Socorro district with 2000 ADM realizes the maximum 150 district size adjustment units which account for 5.6% of its grand total program units.

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[1]The information in this chapter, including (except where otherwise noted) the tabulated and plotted data, was compiled from the 1975-1976 40- and 80-Day ADM reports for each school and each district provided by the Public School Finance Division (PSFD); the 1975-1976 Revenue Worksheet I-A based on the best of the 40- or 80-Day ADM reports for each district provided by the PSFD; Statistics, 1974-1975 and 1975-1976; geographic size of districts provided by the PSFD; the 1975-1976 master file of certificated personnel in each school and school district provided by the State Department of Education (SDE); and the noncertificated school personnel forms, school year 1975-1976 (SDE form 811-75) for each school and school district provided by SDE.

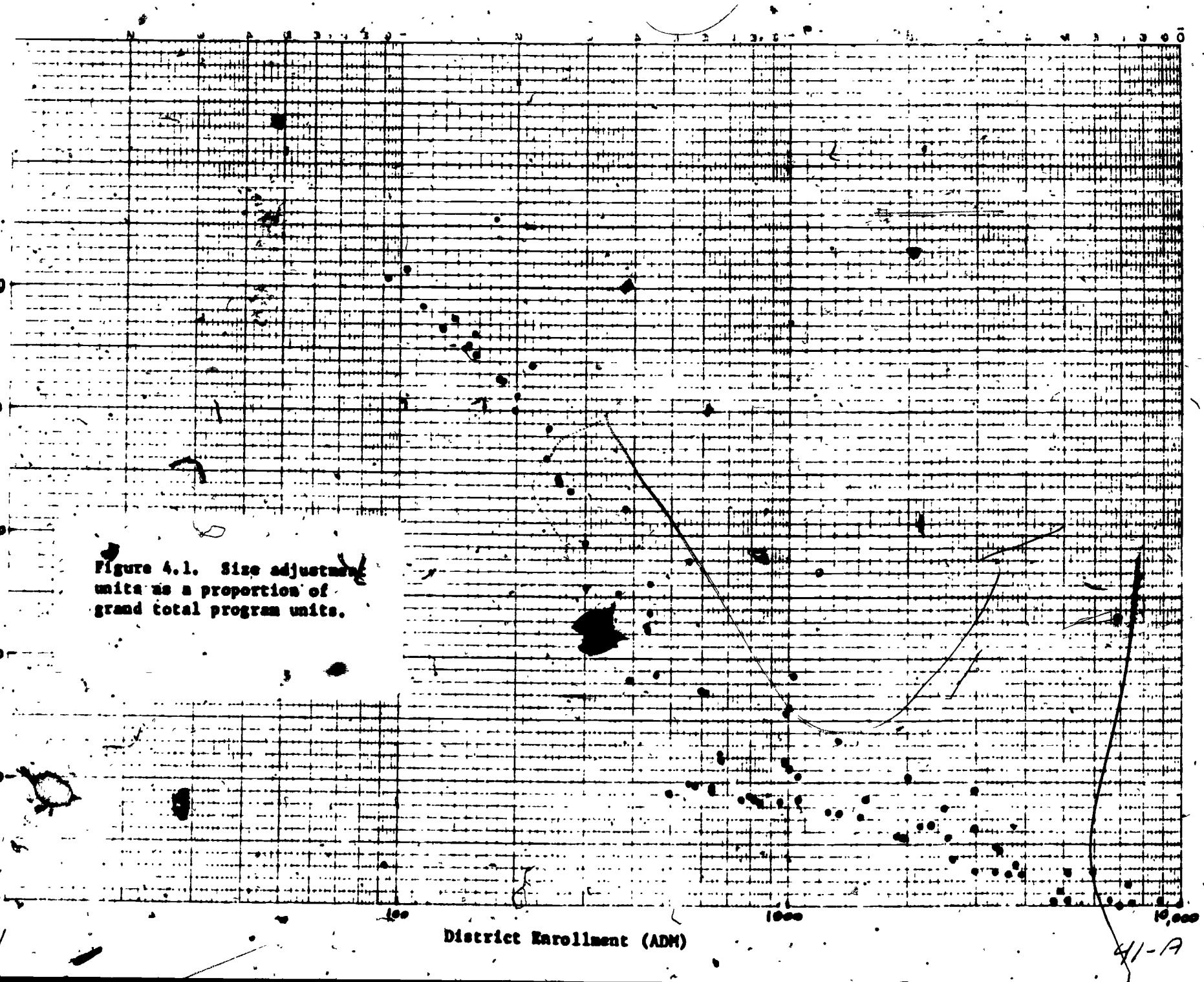

Figure 4.1. Size adjustment units as a proportion of grand total program units.

41-A

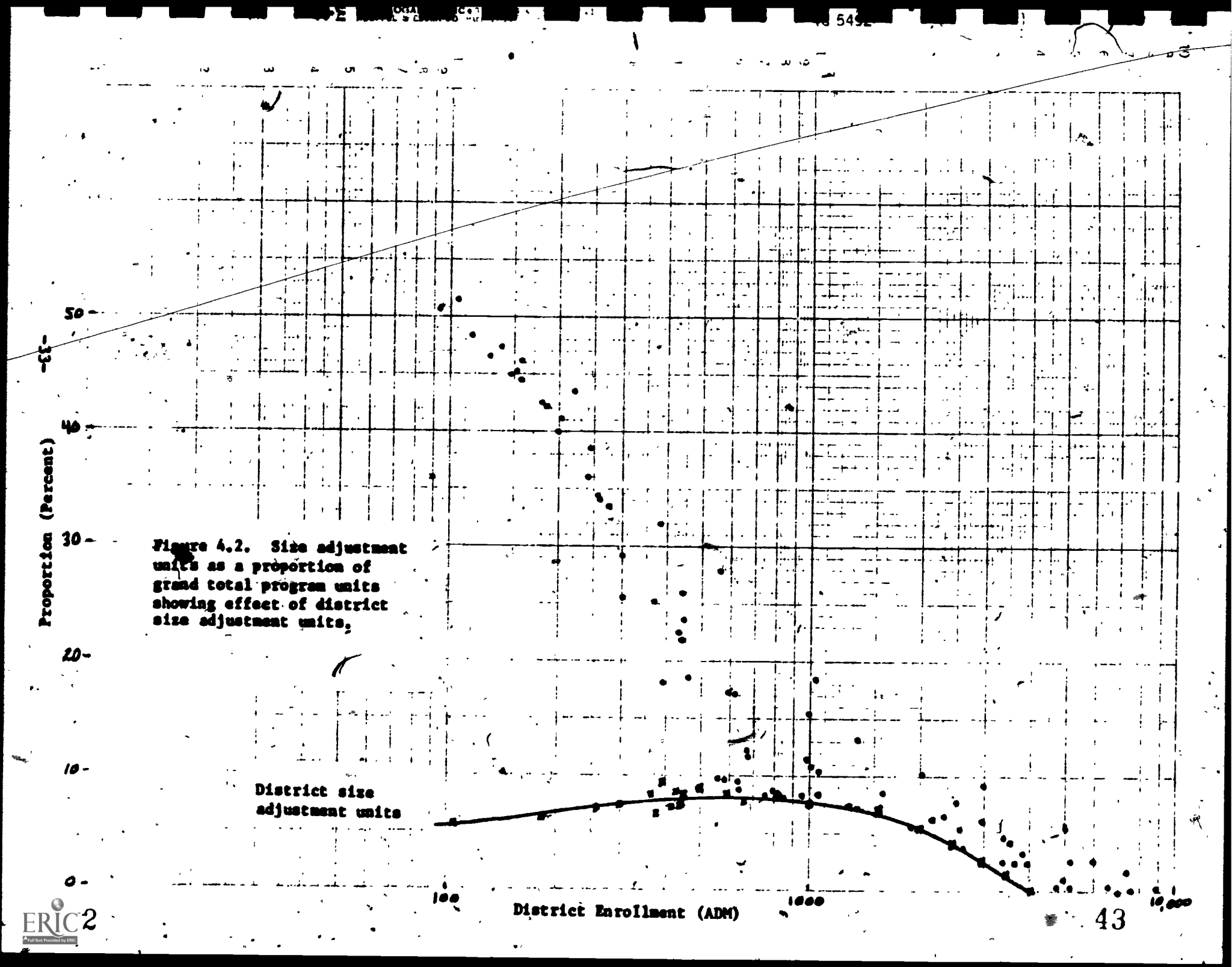

Figure 4.2. Size adjustment units as a proportion of grand total program units showing effect of district size adjustment units.

Fort Sumner, with 499 ADM, generates 65.512 district size adjustment units, but these units represent 9.2% of its grand total program units. At the low end of the scale, Encino (105 ADM) generates 15.265 district size adjustment units, or 5.9% of its grand total program units.

The effect of the school size adjustment factor for districts of 700 ADM and fewer (as well as for some of the larger districts) is readily apparent from Figure 4.2. In Encino, the school size adjustment factor, accounting for 118.829 units, represents 45.5% of the grand total program units. In Carrizozo (377 ADM), the smallest district with a three-level (4-4-4) organization, the school size adjustment factor generates 189.978 units, or 25.3% of its grand total program units. Mountainair, slightly larger than Carrizozo (433 ADM) and with an 8-4 organization, realizes 80.640 school size adjustment units, or 12.3% of its grand total program units. Socorro (2000 ADM) generates 122.949 school size adjustment units in its five elementary schools; the school size adjustment units account for 4.6% of Socorro's grand total program units.

The greater the number of units generated in a district, the higher the revenues will be to the district. Higher revenues permit higher expenditures. Due almost entirely to the size adjustment factors, more units are generated per student in the smaller districts than in the larger districts. Hence more dollars per student are available for expenditure in the smaller districts. Figure 4.3 illustrates the net operational expenditures* per pupil for the 88 New Mexico school districts. The expenditures range from $839 per pupil in Gadsden (4846 ADM) to $1775 per pupil in Grady (137 ADM). The median for the 88 districts is

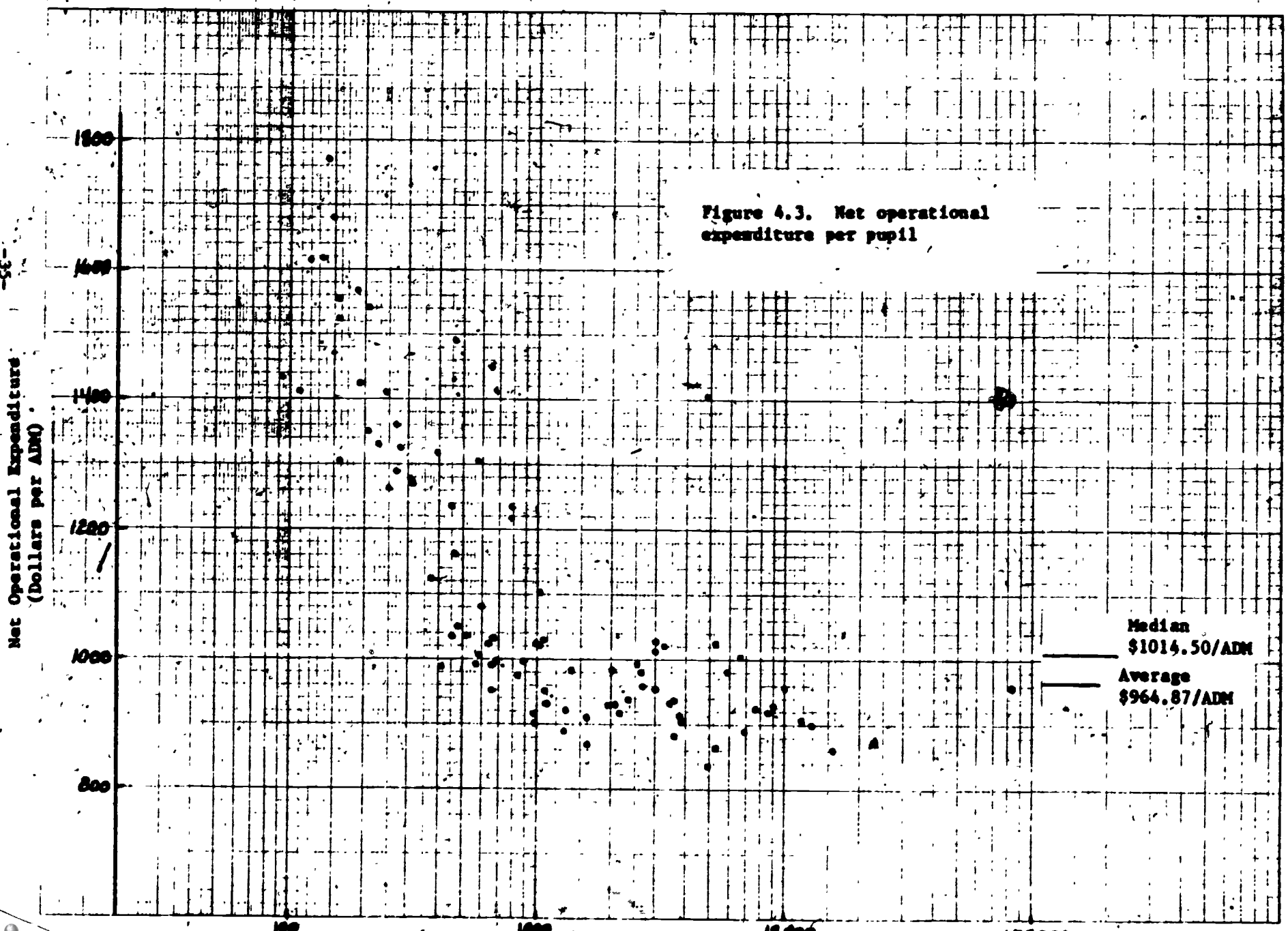

Figure 4.3. Net operational expenditure per pupil

$1014.50 per pupil. The shape of the plot in Figure 4.3 is very similar to the shape of the plot in Figure 4.1.

How is the Money Spent?

Lacking program budgeting, it is exceedingly difficult, as the Garcias (1976) found, to determine program costs. Even a program budget, however, generally does not reveal how specific revenues are expended. The Garcias were unable to validate the size adjustment factors--the revenues generated by the size adjustment units were distributed among all of the programs. The range of program costs which the Garcias found in districts of similar size indicated little consistency among the districts in the distribution of the additional size adjustment-generated revenues.

Examination of the various line-item* expenditures as a proportion of the net operational expenditures, however, is instructive.

Figure 4.4 displays the 1.xxx series (administration) expenditures as a function of district enrollment. The expenditures range from 2.2% in Albuquerque (82277 ADM) to 14.3% in Encino (105 ADM) with a statewide average of 3.6%. As Johns found in Florida, small districts in New Mexico spend a greater percentage of their operational expenditures for administration. This is not unexpected. Every district has a superintendent, and superintendents' salaries are not directly proportional to enrollment. Every superintendent needs a staff--at minimum a part-time secretary-bookkeeper. These two functions form the main expenses in the 1.xxx series in very small districts. Thus it is logical that administration

expenditures per pupil should increase (as a proportion of the net operational expenditures) as the districts decrease in size.

Figure 4.4 displays this phenomenon: An ever-increasing percentage of net operational expenditure is charged to administration as districts decrease in enrollment from the very largest. There appears to be no distinct point at which the expenditures "level off," but the increase is much more pronounced for districts with fewer than 1000 ADM than for districts with higher enrollments.

Figure 4.5 is a plot of the 2.xxx series (direct instruction) expenditures as a proportion of the net operational expenditures against district enrollment. The proportion ranges from 50.0% in Jemez Springs (576 ADM) to 64.4% in Gadsden (4846 ADM) with a statewide average of 58.0%. The plot shows little or no correlation between district enrollment and the 2.xxx expenditures. It may be concluded that direct instruction does not necessarily suffer from the increased administration expenditures in small districts.

It is, instead, the 3.xxx series (instructional support) which bears the brunt of the increased proportion of expenditures for administration as district enrollment decreases, as illustrated in Figure 4.6.

A review of expenditures within the 3.xxx series reveals that for the smallest district, the only personnel entry is for secretarial/clerical personnel. As district enrollment increases, librarians and counselors are added, but on a part-time basis in the smaller districts. One principal is named to serve both the elementary and secondary school when the district enrollment exceeds 200 ADM. Above 400 ADM, each school in the district

will have its own principal. Above 450 ADM an instructional aide is added. 600 ADM brings in a subject matter specialist. It is not until the district reaches 3500 ADM that diagnosticians, psychometrists/therapists and other support professionals are added.

Returning to Figure 4.6, the proportion of net operational expenditures for the 3.xxx series ranges from 2.6% in Elida (129 ADM) to 15.4% in West Las Vegas (2884 ADM). The statewide average is 13.1%; the proportion rises continuously from the smallest district to the largest. The effect, however, is most pronounced in districts of fewer than 1000 ADM. The plot of Figure 4.6 appears to be almost the reverse of Figure 4.4. This would suggest that combining the 1.xxx and 3.xxx series would yield a plot showing little or no correlation with the district enrollment.

Which is exactly what is shown in Figure 4.7.

There is little or no correlation between district enrollment and either the 6.xxx + 7.xxx series (operation and maintenance of the plant) or the 8.xxx series (fixed charges), as is illustrated in Figures 4.8 and 4.9, respectively.

Reviewing Figures 4.4 through 4.9 reveal that the only line-item expenditures which correlate with district enrollment are administration and instructional support:

-administration expenditures per pupil increase as district enrollment decreases, especially for districts whose enrollment is fewer than 1000 ADM; and

-instructional support expenditures decrease as district enrollment decreases; the effect is most pronounced for districts of fewer than 1000 ADM.

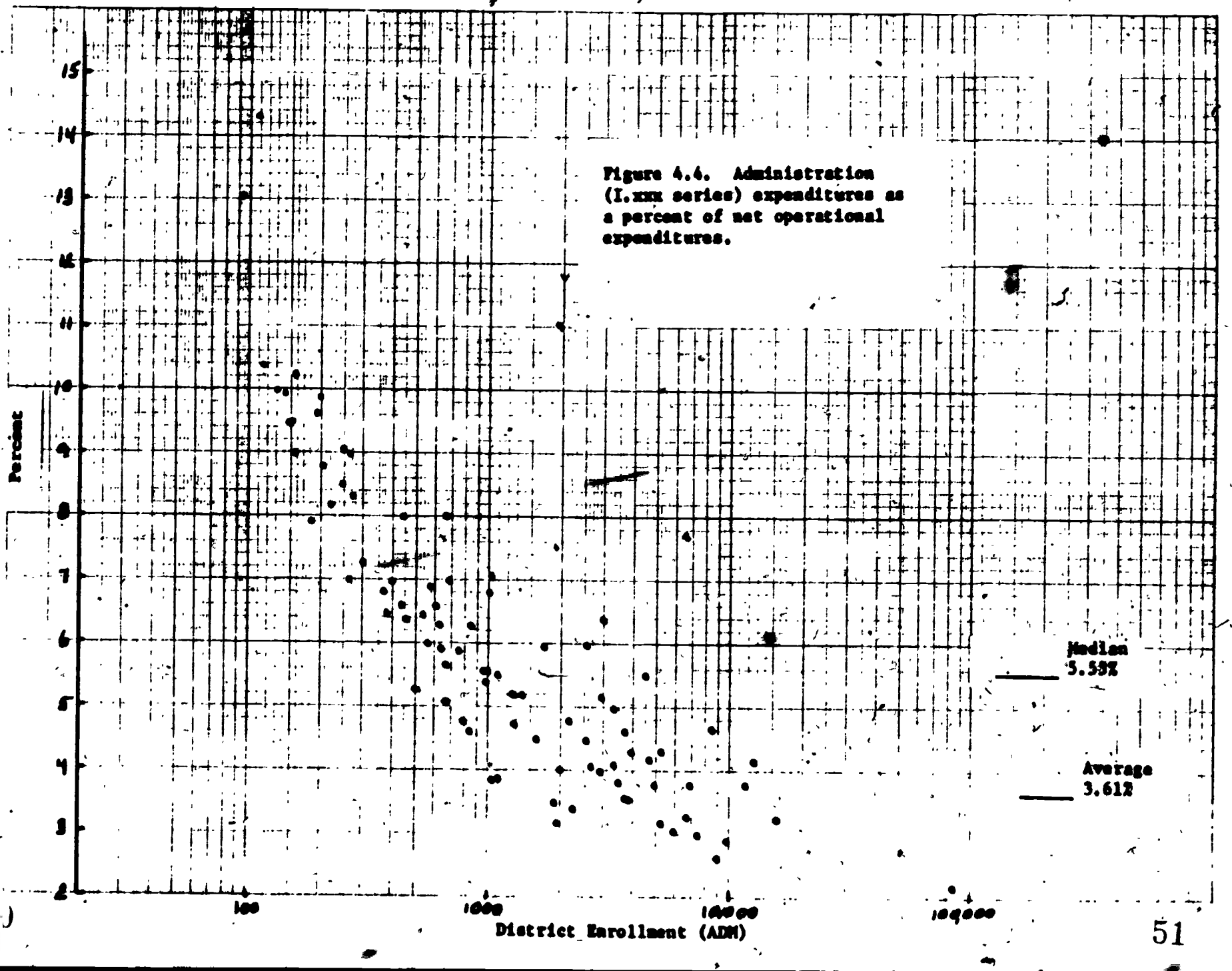

Figure 4.4. Administration (I.xxx series) expenditures as a percent of net operational expenditures.

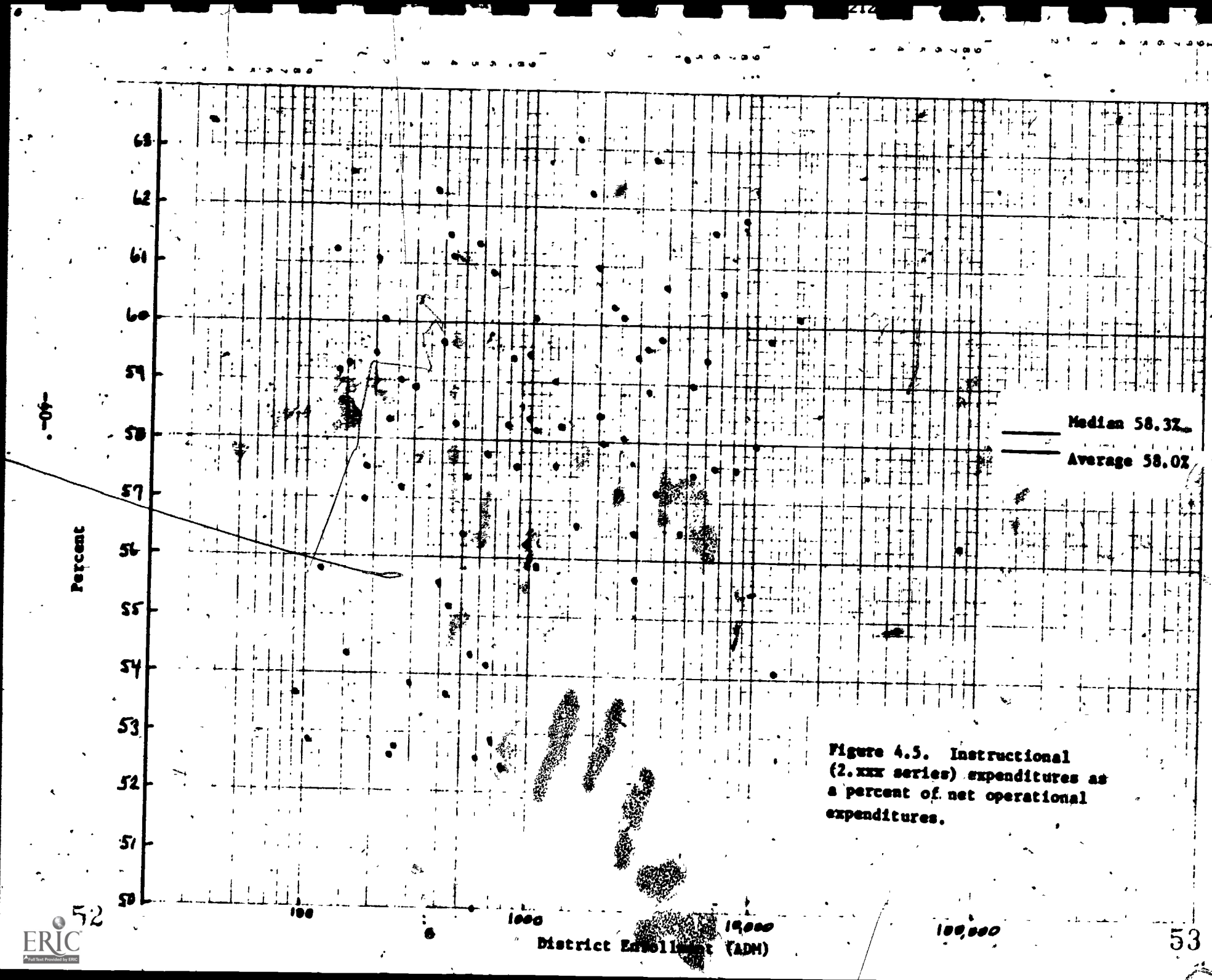

Figure 4.5. Instructional (2.xxx series) expenditures as a percent of net operational expenditures.

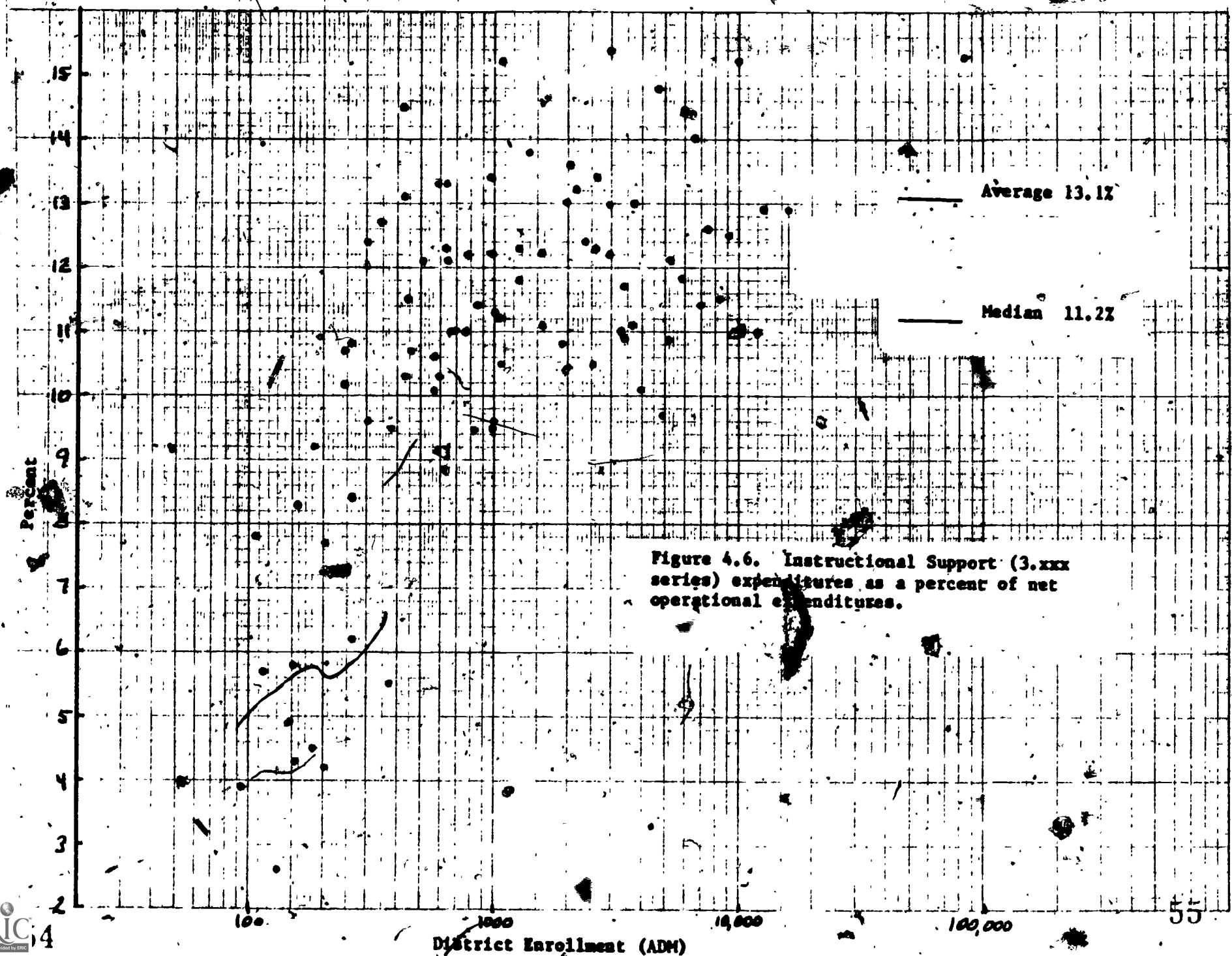

Figure 4.6. Instructional Support (3.xxx series) expenditures as a percent of net operational expenditures.

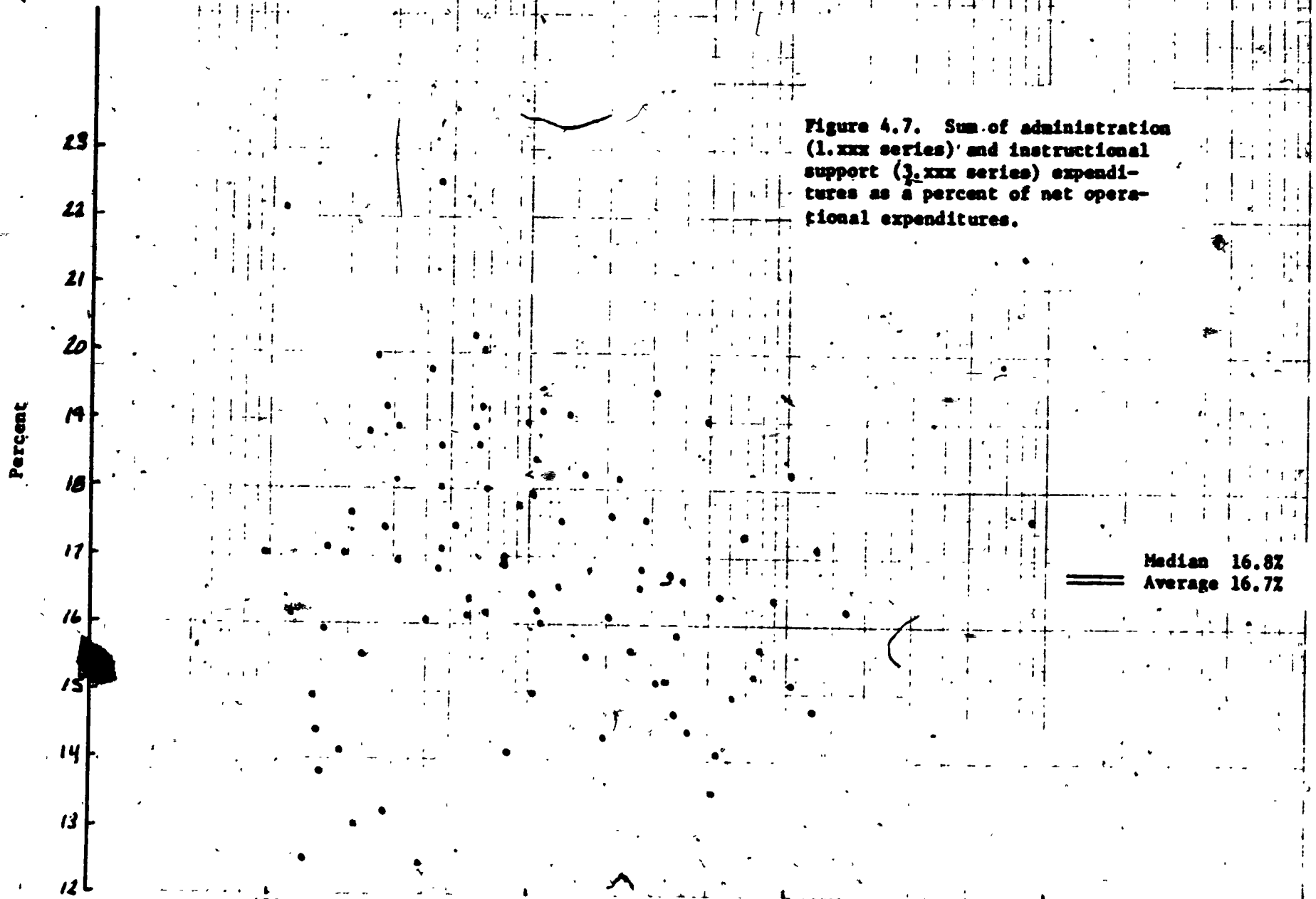

Figure 4.7. Sum of administration (1.xxx series) and instructional support (3.xxx series) expenditures as a percent of net operational expenditures.

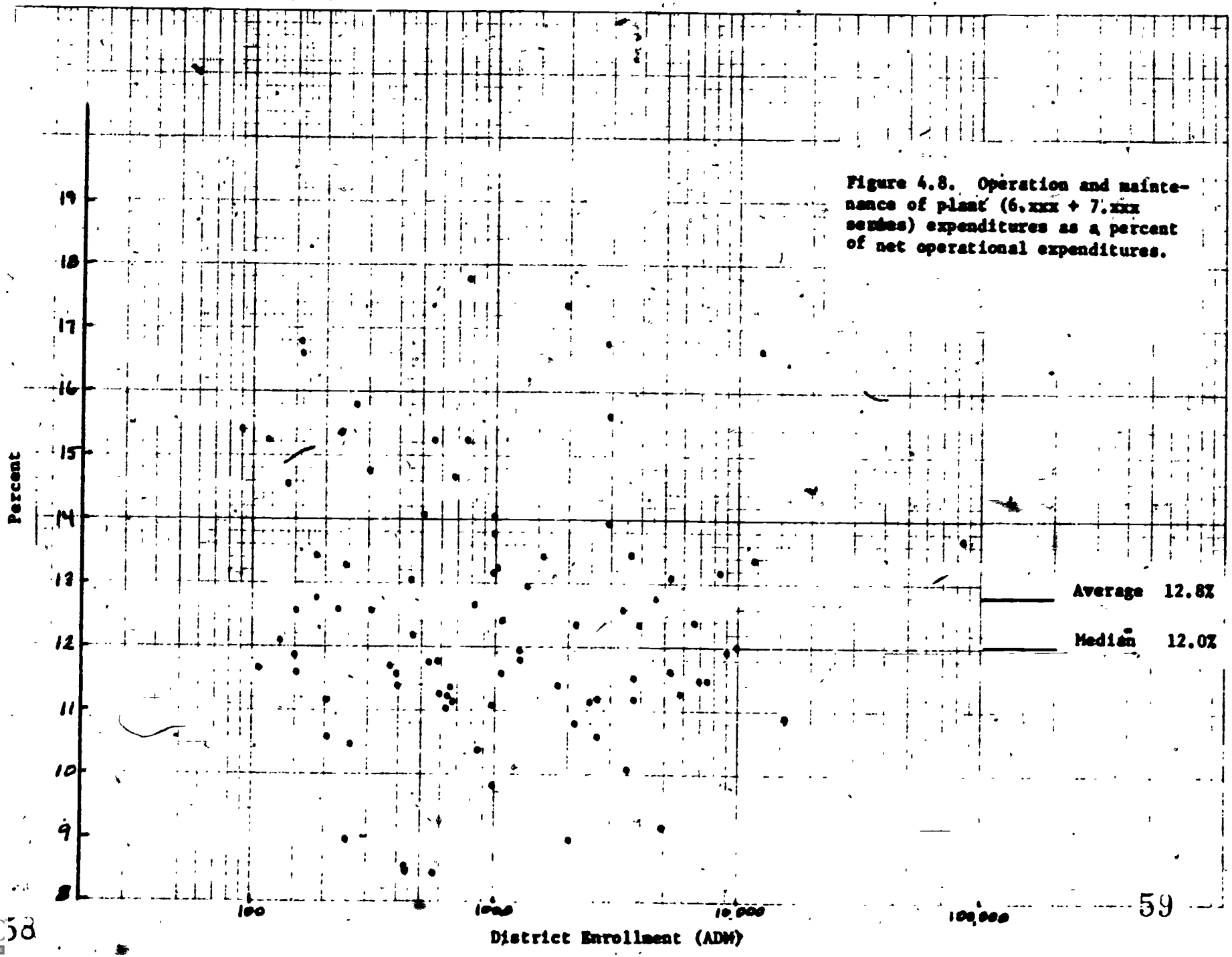

Figure 4.8. Operation and maintenance of plant (6.xxx + 7.xxx series) expenditures as a percent of net operational expenditures.

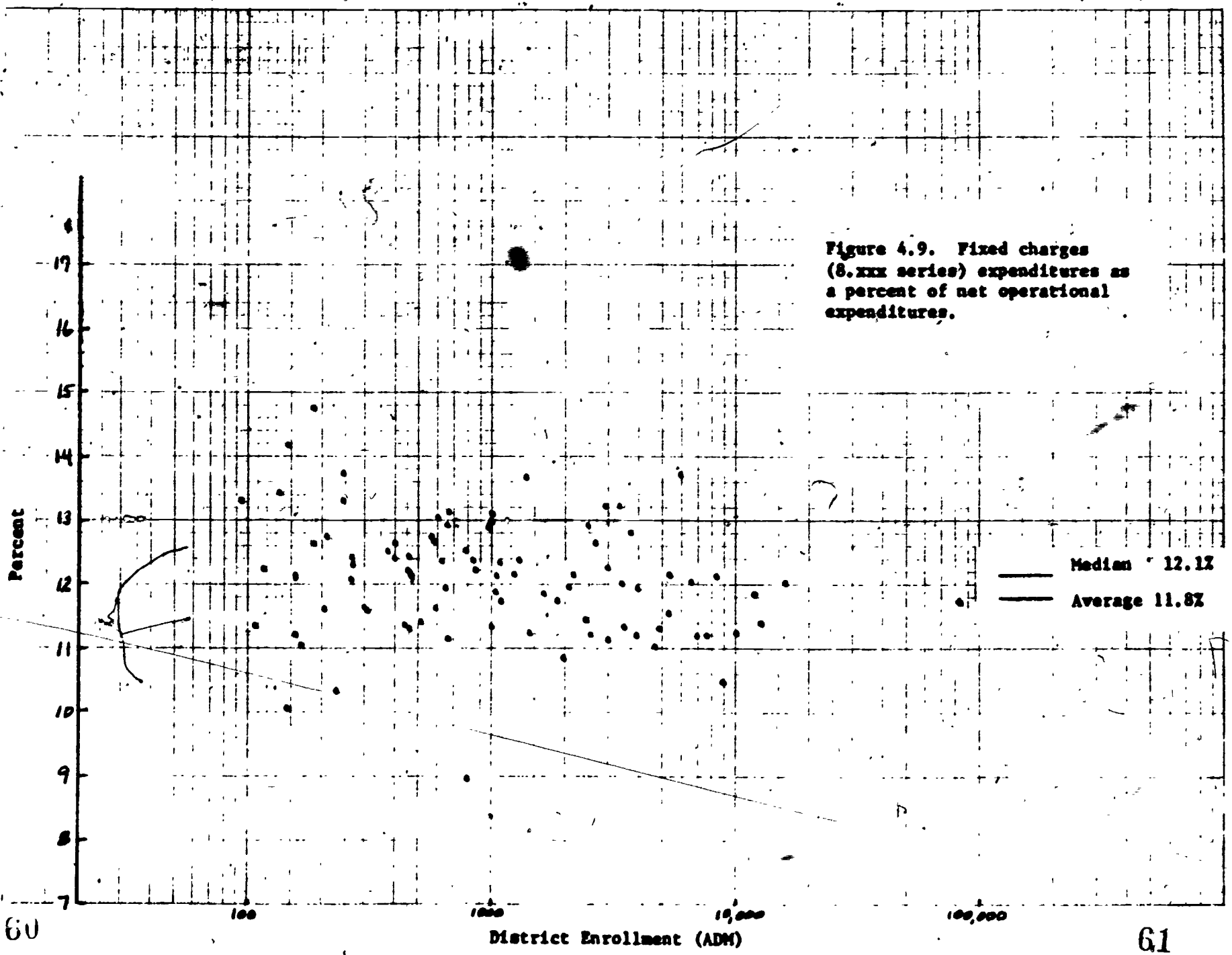

Figure 4.9. Fixed charges (8.xxx series) expenditures as a percent of net operational expenditures.

It may be concluded that in small districts the responsibility for instructional support falls on the administration (and, perhaps, others) or that several of the support roles are not provided effectively--despite the lower Pupil-Professional Ratio and lower Pupil-Adult Ratio.

Pupil-Professional Ratio and Pupil-Adult Ratio

Figure 4.10 is a plot of the Pupil-Professional Ratio (PPR)* and the Pupil-Adult Ratio (PAR)* for the districts for which the necessary data are available (84 districts for PPR, 79 for PAR). As the districts decrease in enrollment, the PPR and PAR both decrease. In districts of fewer than 1000 ADM, the PPR decrease is very pronounced; the PAR, however, does not decrease as rapidly as the PPR.

In order to maintain the breadth of program mandated by the Minimum Standards, particularly at the secondary level, it is expected that the Pupil-Teacher Ratio (PTR)* will decrease as the district enrollments decrease. The PPR, of course, reflects the PTR.

The PAR, however, does not decrease at the same rate as the PPR. As districts become smaller, the elementary and secondary schools tend to become colocated permitting some efficiencies in operation through shared personnel and facilities.

Comparing Figure 4.10 with Figure 4.3, it may be concluded that the higher net operational expenditures in the smaller districts, made possible through the size adjustment factors, are used primarily to hire additional personnel to provide the decreased PPR/PAR needed to provide as broad a program as possible.

Differences in pupil-teacher ratios were used to justify the different multipliers for elementary-junior high schools and for senior high schools

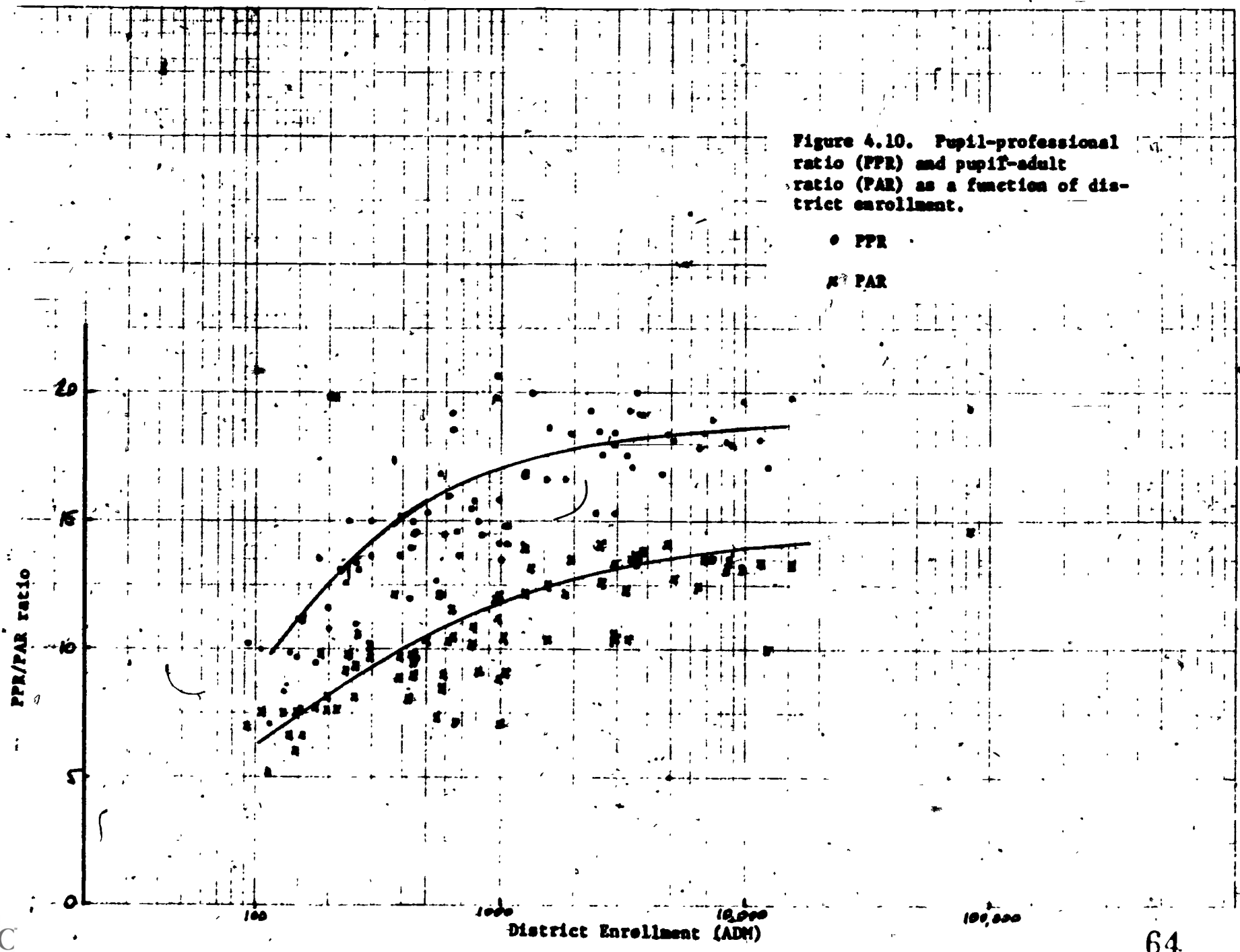

Figure 4.10. Pupil-professional ratio (PPR) and pupil-adult ratio (PAR) as a function of district enrollment.

• PPR

x PAR

in the school size adjustment formula. The rationale for the 2.0 multiplier for the high school size adjustment as compared with the 1.0 multiplier for the elementary-junior high school adjustment was explained by Bothwell, et al., as accounting for two traits. First, "Studies in the New Mexico schools show that . . . pupil teacher-ratios [are] less in normal-size high schools than in normal-size elementary schools . . . ." Second, ". . . when schools drop below 200 in enrollment the difference is exaggerated . . . pupil-teacher ratios in small high schools are approximately half the ratio for small elementary and junior high schools." (P 55.)

Analysis of Figure 4.11, however, casts both arguments into question. Figure 4.11 depicts the ratio of PPR in elementary and junior high schools to the PPR in high schools for each of the districts for which data are available. For districts which operate remote K- or 1-through-12 attendance centers (Amistad, Weed, Cliff), the ratios for the remote sites are plotted as individual points. The abscissa is high school enrollment.

First, the median for all of the districts and remote K/1-through-12 attendance sites plotted is 0.97; the PPR for high schools is higher than the PPR for elementary schools for half of the districts and remote sites! It thus is questionable if, indeed, the pupil-teacher ratios are less in normal-size high schools than in normal-size elementary schools.

There is no doubt, however, that as schools become smaller, the PPR in the high schools becomes lower than in elementary and junior high schools, as is discernable from Figure 4.11. It appears from the plot that the breaking point is at a high school enrollment of about 400 ADM.

In only three districts does the ratio of PPRs exceed 2.0, and in only 12 districts does the ratio exceed 1.5--and many of these are not

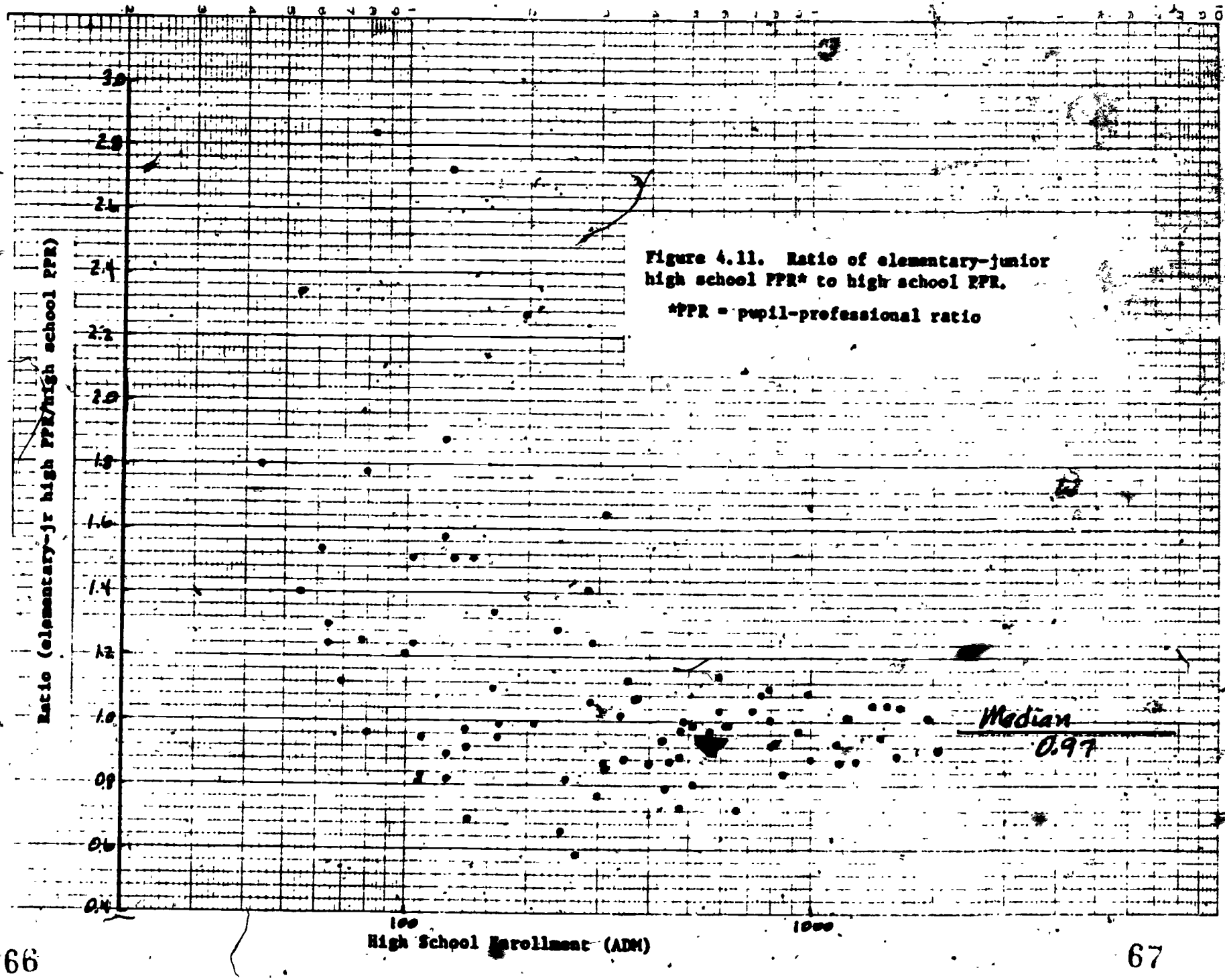

Figure 4.11. Ratio of elementary-junior high school PPR* to high school PPR.

*PPR = pupil-professional ratio

in the smallest high schools. Thus the second hypothesis on which the 2.0 multiplier is based--a PTR in small high schools which is half the PTR in small elementary and junior high schools--is also questionable.

The rationale for the 2.0 multiplier as described by Bothwell, et al., is refuted also by the cost differential validation study conducted by J. Placido Garcia, Jr. (1976). Garcia found that there was little difference in the grades 7-9 cost indices (program cost per pupil ÷ grades 4-6 cost per pupil) in small school districts and in large school districts, and the increased cost indices for grades 10-12 in small districts averaged no more than 1.4 times the average in the large districts and the statewide average, as shown in Table 4.1. The costs considered in the Garcia study included all costs attributable to a given program, including the costs of personnel, thus reflecting the costs of reduced PPR and PAR in the small districts, and the costs of instructional equipment carried in the operational budget.

The argument that the relative per-pupil costs of instructional equipment, generally agreed to be higher in secondary schools than in elementary schools, are exaggerated in small schools, is not relevant to this discussion. Most equipment is provided by capital outlay; most capital equipment expenditures are from outside the operational budget. Only the operational budget is germane to a discussion of the distribution of operational funds, including those generated by size adjustment factors.

The operational budget does include a line item for capital outlay (12.xxx series) including equipment (12.700). Almost all of the 12.xxx

expenditures are budgeted from the operational fund cash balances which generally are restricted to nonrecurring expenditures.[2] The increased cost of instructional equipment in small high schools as compared to similar costs in small elementary and junior high schools is not a relevant consideration in size adjustment factors.

Table 4.1

Average cost indices for grades 7-9 and 10-12 in various size New Mexico school districts

Enrollment Range (ADM)	Ave CI Gr 7-9	Ave CI Gr 10-12	Relative CI Gr 10-12 Compared with State Ave.
0-200	1.12	1.56	1.32
201-500	1.04	1.65	1.40
501-1000	0.96	1.39	1.18
1001-2500	1.01	1.33	1.13
2501-4000	1.05	1.17	0.99
Statewide average	1.03	1.18	1.00

Source: J. Placido Garcia, Jr., Cost Analysis of Early Childhood and Basic Elementary and Secondary Public School Programs in New Mexico.

Breadth of Program

Breadth of program offered in a school and school district can be considered as one of the measures of equal educational opportunity. The New Mexico Minimum Standards prescribe Instructional Program Planning

[2] In 1975-1976, the statewide expenditures in the 12.xxx series amounted to $11.5 million, or 3.9% of the total operational expenditures of $295.0 million. The statewide cash balances on June 30, 1975, amounted to $22.9 million.

and Implementation in both general terms and in terms specific for various grade levels from kindergarten through high school. Program requirements are more explicit for the higher grades than for the lower grades, and the high school program mandates include graduation requirements. One of the principal arguments for size adjustment factors is to ensure that small schools and small districts have the necessary resources to provide an adequate breadth of program.

For purposes of this study, program is defined in terms of the information requested on the School Personnel Form (SDE-810-75) for the 1975-1976 school year. A program was said to exist when:

a. a person was assigned to students for one or more periods each day and the assignment code was of an instructional or instructional support nature. Each different instructional or instructional support assignment was considered as a program; or

b. a person was assigned a position code of an instructional or instructional support nature and the person was not assigned to students. Each different position code was considered as a program; but

c. a program was never counted more than once in any one school.

In schools with self-contained grade-level classrooms, only programs other than the grade-level programs were tabulated.

The breadth of programs offered in elementary schools is shown in Figure 4.12. Although the range varies from no programs to 22 programs in excess of the grade-level structure, there is little correlation

between breadth of program and school size. This is not to say that a substantial breadth of program does not exist where little or no breadth is indicated, for many elementary teachers, assigned to particular grade levels, offer a range of programs within the classroom--but such information is not necessarily revealed on the reporting form.

The breadth of program--again in excess of grade-level program--for junior high schools and middle schools is depicted in Figure 4.13. The range of breadth is from a low of three in a school of less than 100 ADM to a high of 30, with some correlation between school enrollment and the breadth of program offered.

The correlation is very pronounced, however, in Figure 4.14, which depicts high school breadth of program. The range is from 11 programs to 64, with the median occurring at 35 programs. This point occurs with high school enrollments of about 500 ADM.

In terms of educational opportunity and preparation for anticipated post-high school experiences, breadth of program is of greatest concern at the secondary level. Figures 4.13 and 4.14 indicate that the breadth of program in small secondary schools is limited despite the substantially lower PPR and PAR shown in Figure 4.10.

School District Reorganization

Considering the number of size adjustment units relative to the grand total program units generated in some school districts (Figure 4.1), it is appropriate to ask if the school size adjustment factor encourages reorganization in order to realize more revenue.

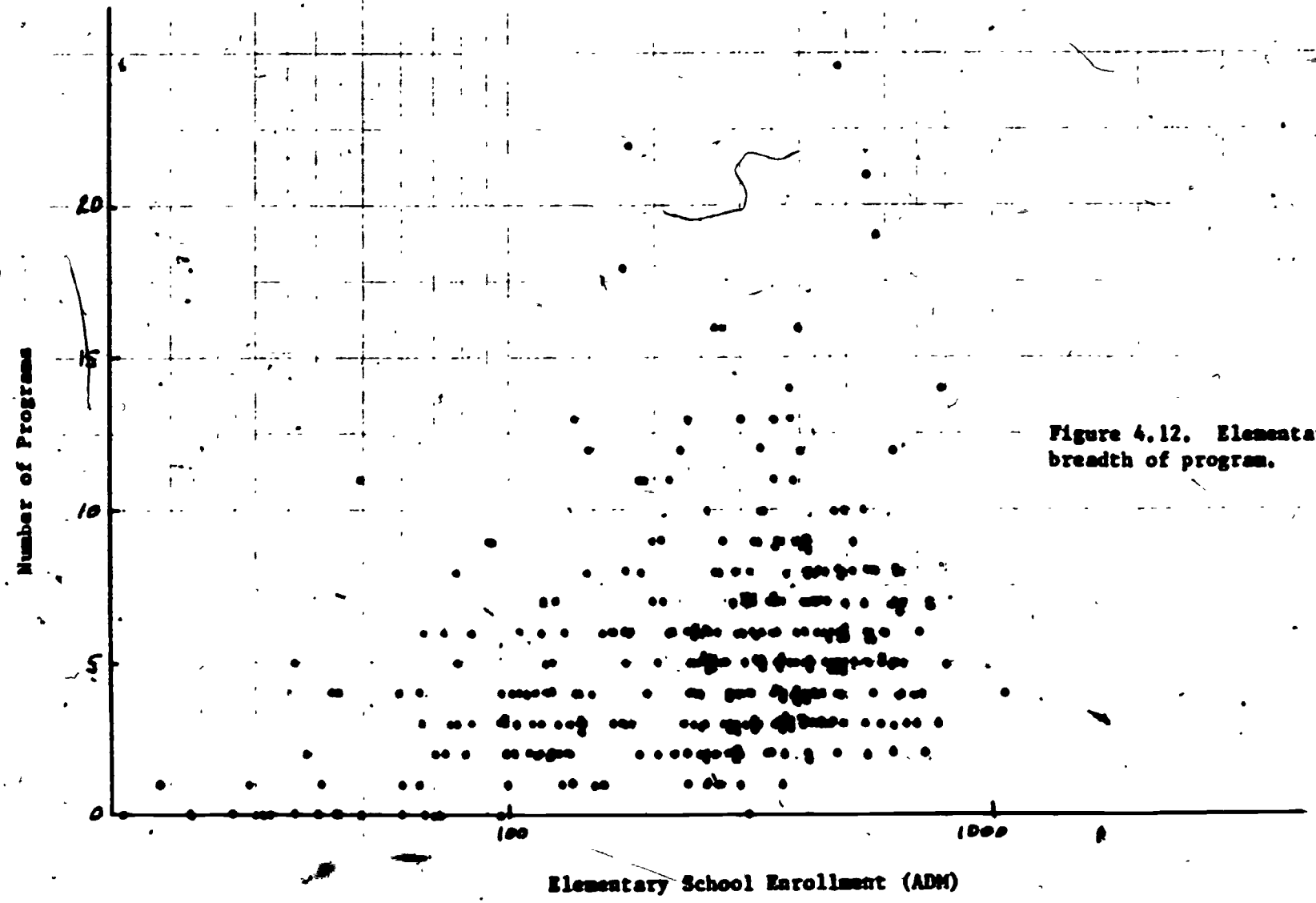

Figure 4.12. Elementary school breadth of program.

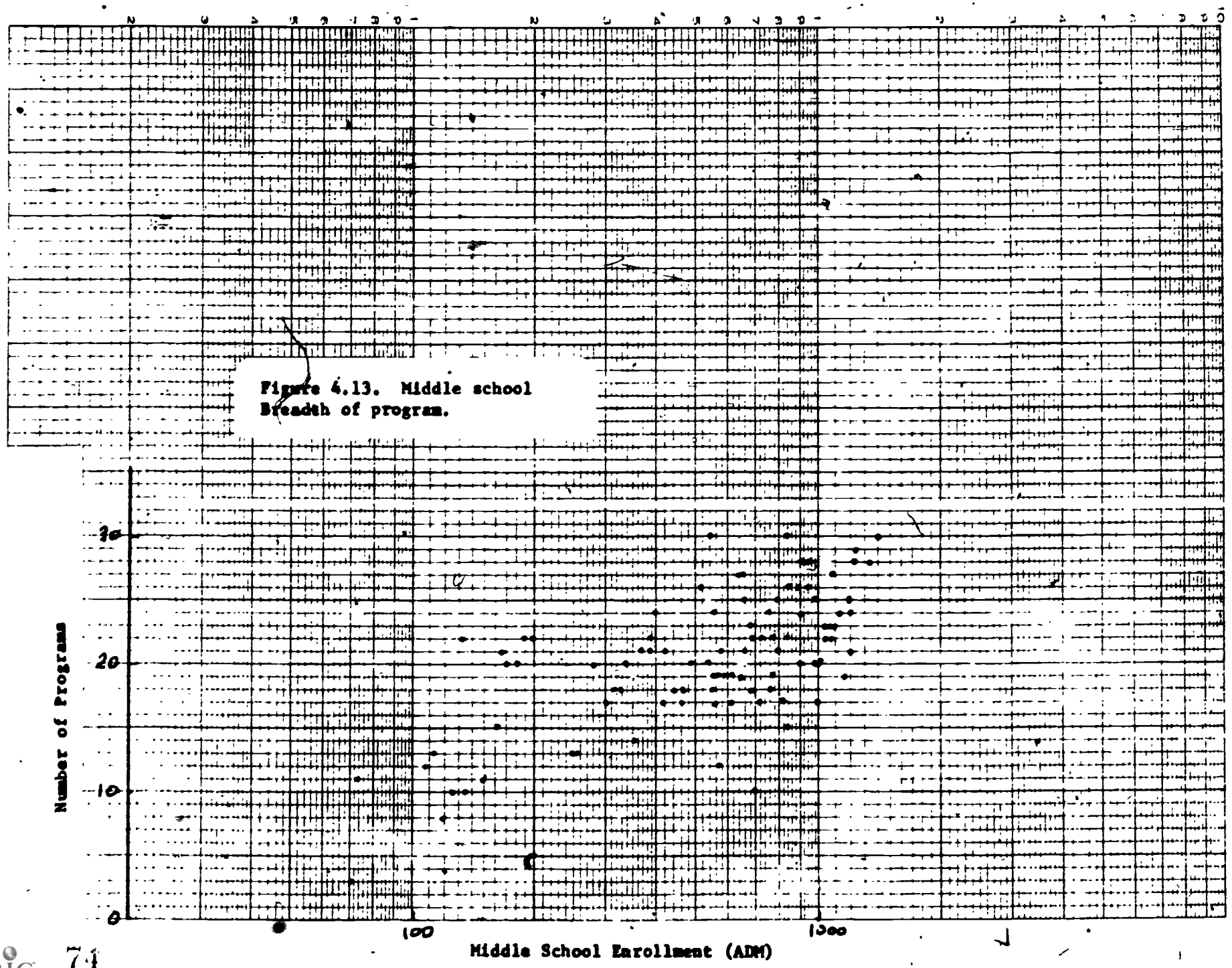

Figure 4.13. Middle school Breadth of program.

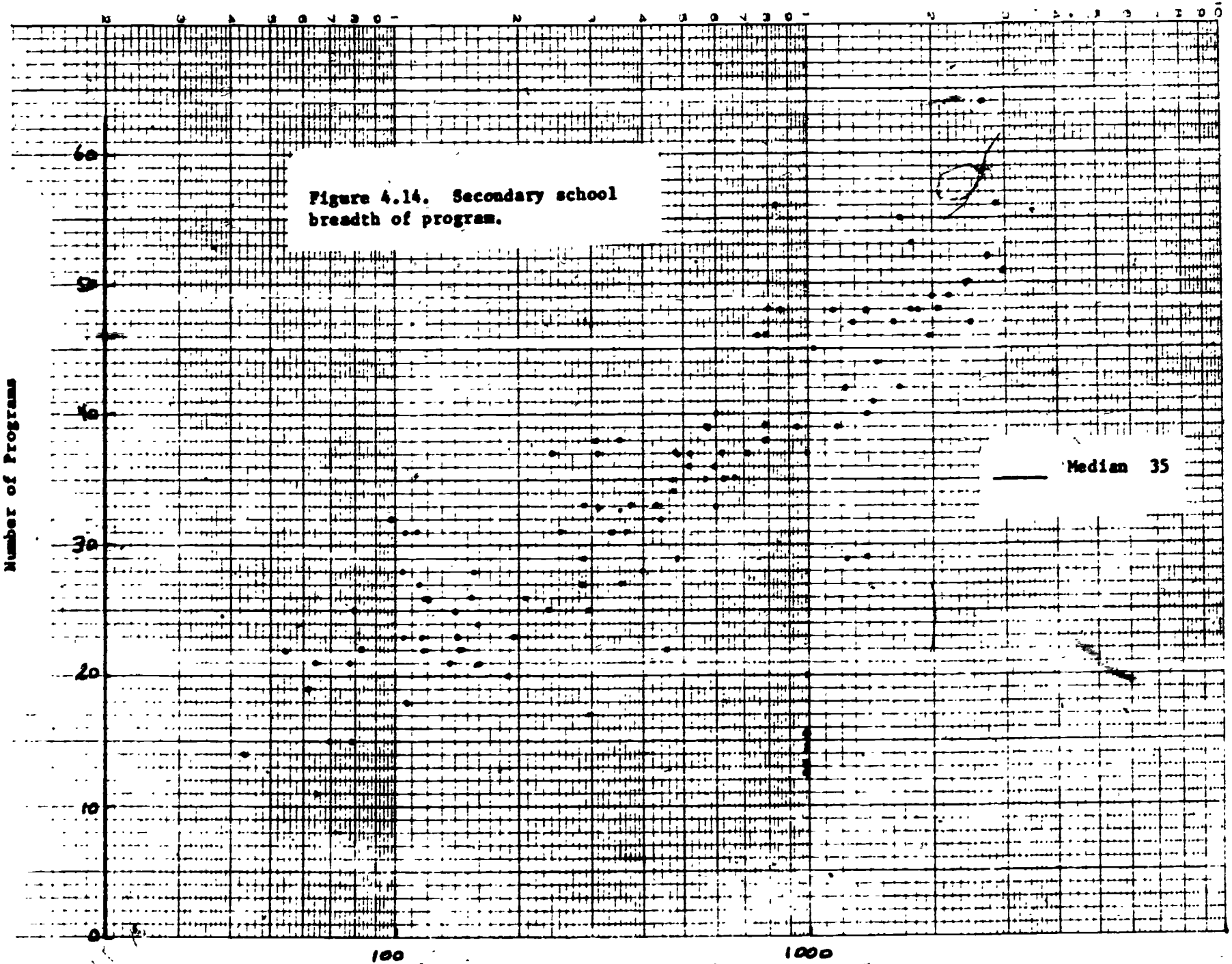

Figure 4.14. Secondary school breadth of program.

The impact can be dramatic. Consider the case of Texico. In 1973, prior to enactment of the new finance formula, Texico requested permission to reorganize its schools from a 6-6 to a 5-3-4 structure. The request was not acted upon immediately, and Texico operated for the first year under the formula as a 6-6 district. Only the elementary school, with an enrollment of 198.64 ADM, qualified for school size adjustment units. In the 1974-1975 school year, units were generated in the following manner:

	Units	Percent of total units
Adjusted program units	577.794	90.3
School size adjustment	1.351	0.2
District size adjustment	60.738	9.5
Grand Total	639.883	100.0

The 5-3-4 organization was approved, and in the 1975-1976 school year all three schools qualified for the size adjustment units. In that school year units were generated as follows:

	Units	Percent of total units
Adjusted program units	568.974	73.9
School size adjustment	142.583	18.5
District size adjustment	58.662	7.6
Grand Total	770.219	100.0

With a 1975-1976 ADM of 439.33 (slightly less than in 1974-1975), both the adjusted program units and the district size adjustment units decreased; however the grand total program units increased a remarkable

130.336 units. The reorganization increased the school size adjustment by 141.232 units. There was essentially no change in adjusted program units, a slight decrease in ADM, but, at $703 per unit, the district gained some $90,000 more than it would have received under the 6-6 organization. This is a very healthy increase (23%) in a budget where total program cost in 1974-1975 was $392,100.

Other districts, subsequent to the formula enactment, have reorganized, but none with such dramatic effect as in Texico. Some of the districts, as a result of the reorganization, have gained a little; others have lost a little. Some examples:

-Belen. Prior to the 1976-1977 school year, two of the six elementary schools qualified for size adjustment units. Those two school generated 95 school size adjustment units--worth $76,000 at the 1976-1977 funding level. In the fall of 1976, Belen opened a new elementary school, closed the two small elementary schools, rearranged the grade levels in two of the elementary schools--and lost all of the school size adjustment units.

-Jemez Mountain. At the start of the 1976-1977 school year, the district changed the high school from grades 7-12 to grades 8-12 and added the 7th grade to Gallinas Elementary School. Combined with a shift in school enrollment, the effect was almost negligible; had the enrollment remained the same as in 1975-1976, the district would have lost about 5 units.

-Los Lunas. In shifting from a 4-2-3-3 structure to a 3-2-3-4 organization at the start of 1976-1977 school year, Los Lunas suffered negligible impact in terms of grand total program units.

-Springer. At the start of the 1975-1976 school year, Springer shifted from a 6-6 structure to a 3-3-6 structure, resulting in an increase of almost 83 elementary/junior high school size adjustment units.

A review of some of the correspondence between districts and the State Department of Education reveal that all requests reviewed were

made for reasons programmatic rather than financial. Indeed, the "gain-a-few, lose-a-few" results of many of the approved reorganizations would indicate that the districts are more interested in program than in money--despite the fact that it is difficult to argue that program can be improved with a reduction in funds.

Reorganization can be inhibited or facilitated by available facilities. The reorganization in Belen, for example, was not possible until the new, larger elementary school was completed. The economies of a larger, single school, contrasted with the two smaller units, may offset partially the loss in size adjustment-generated revenue.

As enrollments decline, however, and as inflation continues to take its toll, districts may look to any available, legitimate means of increasing revenues. Reorganization to take advantage of the school size adjustment units may be one such strategy--just as some districts have adopted teacher salary schedules which coincide with the Training and Experience matrix in order to recognize maximum benefits from the T&E Index. Because reorganization may depend upon available facilities, districts may plan new facilities to permit reorganization which will provide additional school size adjustment units to accrue to the district.

Rural/Isolation Factor

The 1976 legislature added the rural/isolation factor to the public school finance formula. The factor recognizes a unique district--the Gallup-McKinley County School District. The district is unique in New Mexico by a number of measures.

The Gallup-McKinley County district is, geographically, the largest district in the country, with 5484 square miles. Much of the population is isolated, by both distance and road conditions, from the major population centers. The isolation requires that the district maintain, for its 12310 students, five high schools and their feeder schools--in contrast to other districts of similar enrollment, such as Roswell (9751 ADM), Santa Fe (11757), and Las Cruces (15434), with one or two high schools each.

The degree of uniqueness in terms of the number of high schools maintained in comparison with other New Mexico districts with enrollments greater than 10,000 ADM is illustrated in the following table developed by the Public School Finance Division and presented to the Legislative School Study Committee on December 2, 1974:

District	1974-1975 40-day ADM	No. of High Schs.	Ratio ADM/No. of Hss	Deviation fm Average
Albuquerque	81,436	10	8,144	+29%
Las Cruces	14,749	2	7,374	+17%
Gallup-McK. County	12,137	5	2,427	-62%
Santa Fe	11,631	2	5,815	- 8%
	119,953	19	6,313 ave.	

Although six elementary and junior high schools in the Gallup-McKinley County school district qualify for school size adjustment units, each of the high schools is too large to qualify. This is in contrast to the three other districts (Alamogordo, Silver City, and Clayton) which maintain isolated high schools--all of which qualify for size adjustment.

Finally, the district is unique in comparison with other districts of large geographic size and substantial enrollment. Information concerning the districts of interest follows:

District	ADM	Geog. size (sq mi.)	No. of HSs	No. of Elem/JHSs	Total No. of Schools
Gallup-McK. County	12,310	5,484	5	23	28
Alamogordo	8,344	5,040	3	13	16
Grants	5,148	4,534	2	11	13
Roswell	9,751	3,234	2	19	21

Alamogordo. The high schools in the Alamogordo district are:

Alamogordo High School, grades 11-12, 1217 ADM

Alamogordo Mid School, grades 9-10, 1475 ADM

Weed High School, grades 7-12, 69 ADM

Weed is located in the Sacramento Mountains, 44 miles from Alamogordo. Because of the district configuration, travel between Alamogordo and Weed passes through Cloudcroft. Weed is 22 or 27 miles from Cloudcroft, depending on the route used. Both the elementary and secondary schools at Weed qualify for school size adjustment units.

Grants. The two high schools in the Grants School District are:

Grants High School, grades 10-12, 1023 ADM

Laguna-Acoma High School, grades 7-12, 561 ADM

Laguna-Acoma is 31 miles east of Grants on I-40. The school cannot be considered isolated; it is well placed to serve the students from the eastern portion of the district.

Roswell. The high schools in Roswell are both located in the city of Roswell, the population center of the district.

Roswell High School, grades 9-12, 1659 ADM

Goddard High School, grades 9-12, 1376 ADM

Thus the Gallup-McKinley County district is unique in geographical size, the number of high schools and their feeder schools maintained in relation to the district's enrollment, and the number of high schools and feeder schools in relation to both geographic size and enrollment.

There are certain economies of scale in the Gallup-McKinley County district, primarily those associated with a single superintendent and a single central office staff. But there are diseconomies of isolation, particularly the need to maintain more schools than other districts of comparable enrollment and geographic size. More schools mean more principals and other instructional support staff, and the isolation makes it difficult to use itinerant support personnel. More schools mean higher expenditures for plant operation and maintenance. More schools spread over a large area mean greater travel for administration, supervision of instruction, and maintenance and operation.

It is appropriate, perhaps, to recognize some of these additional costs through the rural/isolation factor--but not necessarily all of the additional costs. The state has districts (such as Quemado and Reserve) which are as isolated as the outlying attendance areas in the Gallup-McKinley County district. Quemado and Reserve, of course, qualify for district size adjustment units, but under the same formula as applied to House and Dexter. Both House and Dexter are small in terms of enrollment, but are by no means as isolated as Reserve and Quemado.

It is not unreasonable, then, to provide to the Gallup-McKinley County district some recognition of the additional costs incurred by its unique rural/isolation characteristics. The amount of additional

recognition, however, is not well substantiated. Attempts by the district to provide appropriate data have been unsatisfactory. Data provided by then-superintendent A. C. Woodburn in December 1975 was based on Natonabah--a civil rights case--rather than on the additional costs of rural/isolation. More recent material (November 1977) prepared by the current superintendent, Jack Swicegood, purports to support a 0.9 multiplier in the rural/isolation formula rather than the current 0.2 multiplier, but suffers from gross inconsistencies in the data handling.

Lacking more definitive data, an appropriate recognition may approach the additional units which would accrue were the Gallup-McKinley County district to deconsolidate into five districts centered on the high school attendance areas. Under such a scheme, four of the "new" districts would qualify for district size adjustment units for a total of 515 units in the 1975-1976 school year.

If the rural/isolation factor had been in effect in the 1975-1976 school year, it would have generated an additional 307.600 units for the district. To generate the 515 units, the current multiplier, 0.2, in the rural/isolation formula would have to be raised to 0.33.

The current rural/isolation factor, then, recognizes some of the costs of isolation, but also recognizes some of the efficiencies of a single district administration. The factor also tends to discourage the deconsolidation of the district into smaller, perhaps less efficient, units.

Consolidation of Schools and Districts

The school and district size adjustment factors offer no monetary incentive for schools or districts to consolidate. Indeed, the factors

would tend to inhibit consolidation, for there is no way, under the current recognition, for two schools (or districts) combined to generate more school (or district) size adjustment units than the two schools (or districts) separately. It is difficult (perhaps impossible) to provide the additional funds necessary to operate and maintain small schools (and districts) and encourage consolidation in the same formula.

At least two districts have consolidated schools in the past few years: Belen, mentioned earlier [the consolidation resulted in a loss of revenue), and Albuquerque. Albuquerque has closed a number of small elementary schools, but the closings occurred before the schools' enrollment declined to less than the 200 ADM needed for size adjustment recognition. In Albuquerque, an elementary school becomes "too costly" to maintain at an enrollment well above 200 ADM--unless the school is necessary for reasons of isolation. Indeed, a study by Brown (1975) of the Albuquerque school size and pupil costs conducted for the 1974-1975 school year, indicated that the minimum elementary school enrollment should be 450 ADM, where "minimum school size . . . [is] based upon purely economic considerations." (Abstract.)

The size adjustment factors may be encouraging a movement toward deconsolidation. Deconsolidation in the Gallup-McKinley County district is more than the hypothetical question discussed earlier; official correspondence has addressed the possibility of the Zuni area establishing a separate district and deconsolidation has been discussed in the Tohatchi area. There has been talk in the Amistad area of seceding from the Clayton school district. Some residents, according to the

press, believe that only by reestablishing their own district can they guarantee the continued existence of their local K-12 school. The district would be second to House in terms of enrollment; the attitude seems to be that if House can make it financially, why not Amistad?[3]

The size adjustment factors should recognize the necessary costs of smallness, but the factors should not encourage the creation of additional schools and school districts. Like the philosophic foundation of the equalization formula itself, the size adjustment factors should be fiscally neutral.

Recognition of Alternative Schools

The school size adjustment statute has been changed twice since enactment in 1974--not the formula, but the classification of students counted in the ADM.

As enacted, ADM for school size adjustment included special education but excluded early childhood education membership. In 1975, the categories were interchanged and school size adjustment ADM included early childhood but excluded Classes C (moderate) and D (severe) special education membership.

In 1977, words were added to the law to prevent separate schools established to provide special programs such as vocational, early childhood, and alternative education from qualifying for school size adjustment units.

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[3]The statutes for consolidation and deconsolidation (Chapter 77, Article 3, NMSA 1953) permit the latter only if the created and existing districts each have an ADM of at least 500--a situation which applies to Zuni and Tohatchi but not to Amistad.

The change was designed to prevent the establishment of special schools for the additional units which might be generated; special small schools would be established only on the basis of student need.

The formula, however, is founded on costs incurred, recognizing that different programs designed to meet the individual needs of individual students incur different costs. The different costs reflect primarily different PTRs.

Vocational, early childhood, and special education programs are established frequently in existing schools or are colocated with existing schools. The additional costs incurred are thus primarily a function of PTR (or PAR where aides frequently are employed) and do not include the additional costs of separate school sites. The lower PTR in early childhood and special education programs are recognized in the cost differentials for these programs; vocational education, by the 1978 amendments to the formula, is considered part of the "regular" program.

The argument is made, however, that there are some youth in the "regular" program who are "turned off" by school or who would not attend a "regular" school. Alternative programs located away from the regular school are necessary in order to provide for the educational needs of these youth. In addition to the added costs of a separate school site, such programs or schools incur additional costs of lower PTR, increased counseling services, and sometimes specialized services such as health care and social workers.

Lacking program budgeting, however, it is difficult to determine the additional costs of alternative programs. James Miller, Superintendent

of the Santa Fe schools, estimates a needed unit value of 1.75 (compared with 1.25 for "regular" students, grades 7-12) to provide with state and local money the lower PTR and the additional services now provided to the Santa Fe Alternative School by federal funds. He suggests not recognition as a small school, but recognition of "alternative programs"--particularly those which are not located on a "regular" school site--within the program cost differential structure of the finance formula.[4]

There are two problems with such a scheme: definition of need and delineation of services to provide for the need. Early childhood and grade level needs are defined easily by age, and the services are prescribed by the Minimum Standards. Identification of students who require special education is accomplished through a detailed system of referral, diagnosis, and assessment and evaluation. Services to be provided, depending on the handicapping condition and severity, are the subject of State Board of Education Regulations. With the exception of bilingual education, which remains nebulous in both definition of need and services to be provided, all of the programs recognized by cost differentials in the formula have a structure in statute or regulation for both definition of need and services to be provided. Neither exist for alternative programs.

Application of Johns' "Added Cost Due to Sparsity" to New Mexico

It is appropriate now to return to Johns' study of Florida and determine if his formula is pertinent to New Mexico.

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[4] Memorandum to the members of the Santa Fe Board of Education and the Administrative Team, subject: Alternative School Funding, dated October 26, 1977.

Johns' "added cost due to sparsity" is a factor by which the program-generated units are multiplied to obtain additional sparsity units. An equivalent factor from the New Mexico schools finance formula is size adjustment units divided by program units which, for purposes of this discussion, is called the size adjustment index--a factor which could be multiplied by the program units to obtain the additional units for size adjustment.

The plot of the index for New Mexico districts is contained in Figure 4.15. The solid line is the Johns' curve of added costs:

$$Y = \frac{1101.8918}{2700 + X} - .1101$$

where $X = \frac{\text{District FTE}}{\text{Number of approved high schools not in excess of three}}$

The shape of the curve is different from that shown in Figure 3.1 due to different coordinate systems: Figure 3.1 is plotted on rectangular coordinates; Figure 4.15 is plotted on semilogarithmic coordinates. The latter is necessary in order to display adequately the index for the small school districts and yet show the full range of the New Mexico districts.

Each point on Figure 4.15 is the size adjustment index for one of the 88 school districts. The circled points are those districts with more than one high school and whose "measure of sparsity"--X--is less than 7308.1, the threshold for recognition under the Johns' formula.

It is instantly apparent that the Johns' added cost curve does not fit the size adjustment index for New Mexico school districts. If the Johns' formula were applied to New Mexico:

-of the 8 districts with more than one high school and with $X < 7308$, all would "gain";

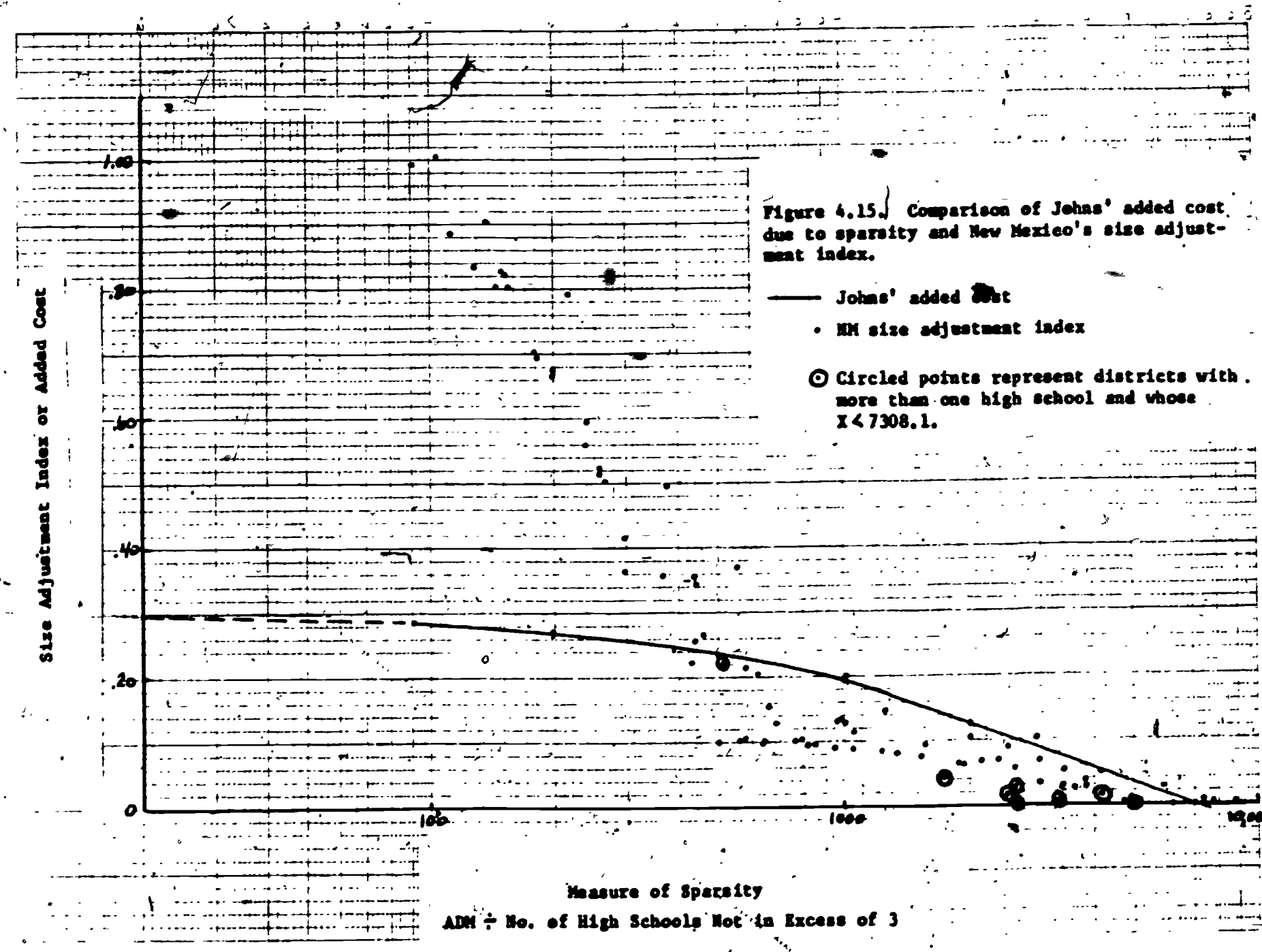


Figure 4.15. Comparison of Johns' added cost due to sparsity and New Mexico's size adjustment index.

—— Johns' added cost

• NM size adjustment index

⊙ Circled points represent districts with more than one high school and whose X < 7308.1.

-of the 59 districts with $425 \leq X < 7308$, 8 would "lose" (3 only slightly); 51 districts would "gain";

-the 23 districts with $X < 425$ would "lose"--and lose substantially; and

-one district, Loving, would not qualify for consideration as it has no high school.

If there is any validity to the current New Mexico size adjustment factors, it does not appear that the Johns' formula would be an acceptable substitute.

Johns cautions that his formula, based on and designed for county unit school districts, may not be applicable to other states:

> In a county unit state, the three variables [of school population of the district, the area in square miles of the district, and the scatter of pupil population in the district] can be condensed into one variable . . . . In small unit states it may be necessary to include these three characteristics as separate variables in the formula. (P 202.)

To determine if any possible relationships existed between these three variables in New Mexico, the variables were plotted by pairs, as shown in Figures 4.16 through 4.18. (These figures are plotted on logarithmic coordinates and Figure 4.18 has as its abscissa the district enrollment--in contrast to Figures 4.16 and 4.17--due to limitations of the construction paper.) Figures 4.16 and 4.17 show little or no correlation between geographic size of the district and either district enrollment or district density. There is, however, correlation between density and district enrollment, as shown in Figure 4.18.

Figure 4.18 suggests that of the variables of density and district enrollment, the latter is sufficient for recognition of both variables. Figures 4.16 and 4.17, however, suggest that geographic size of the

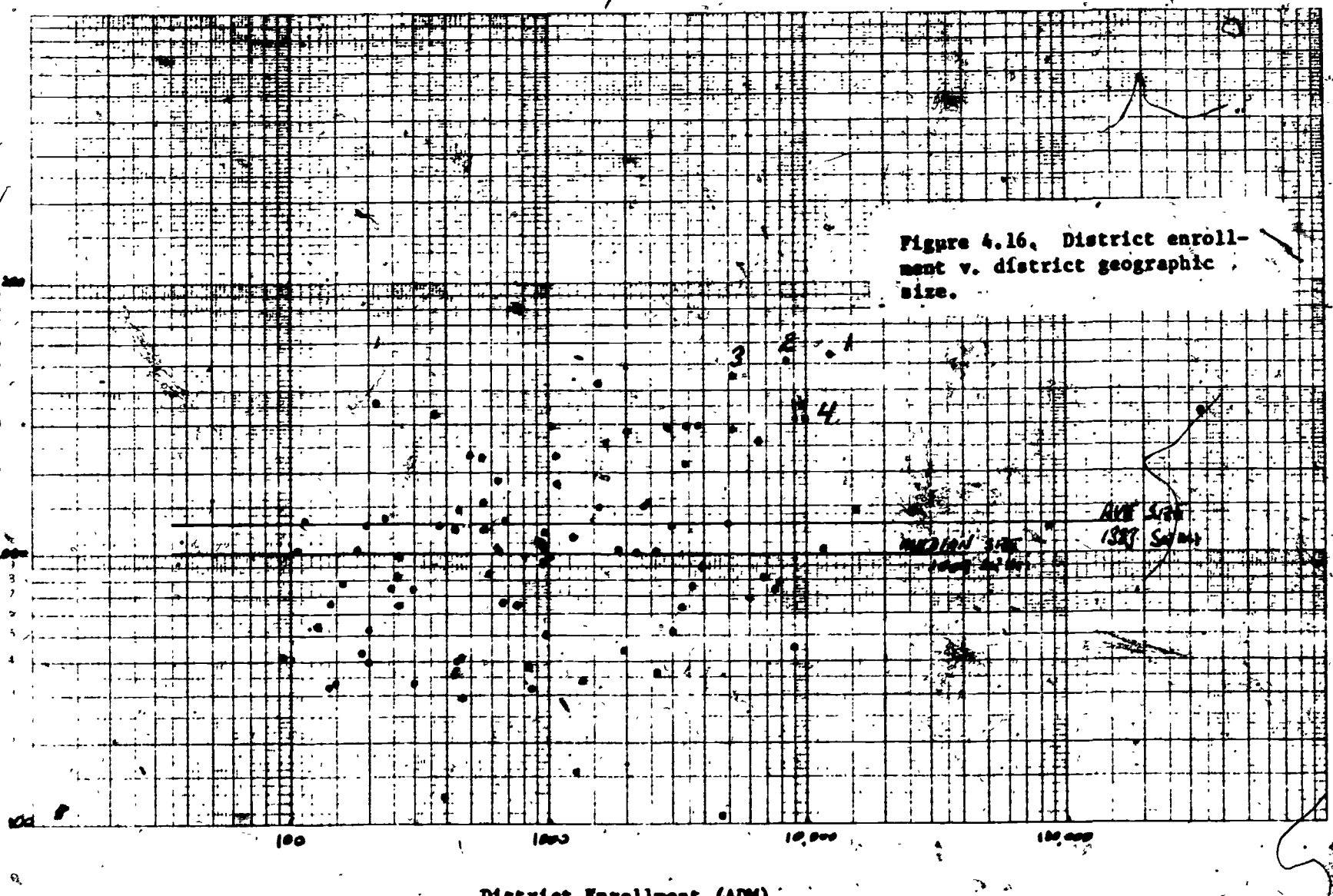


Figure 4.16. District enrollment v. district geographic size.

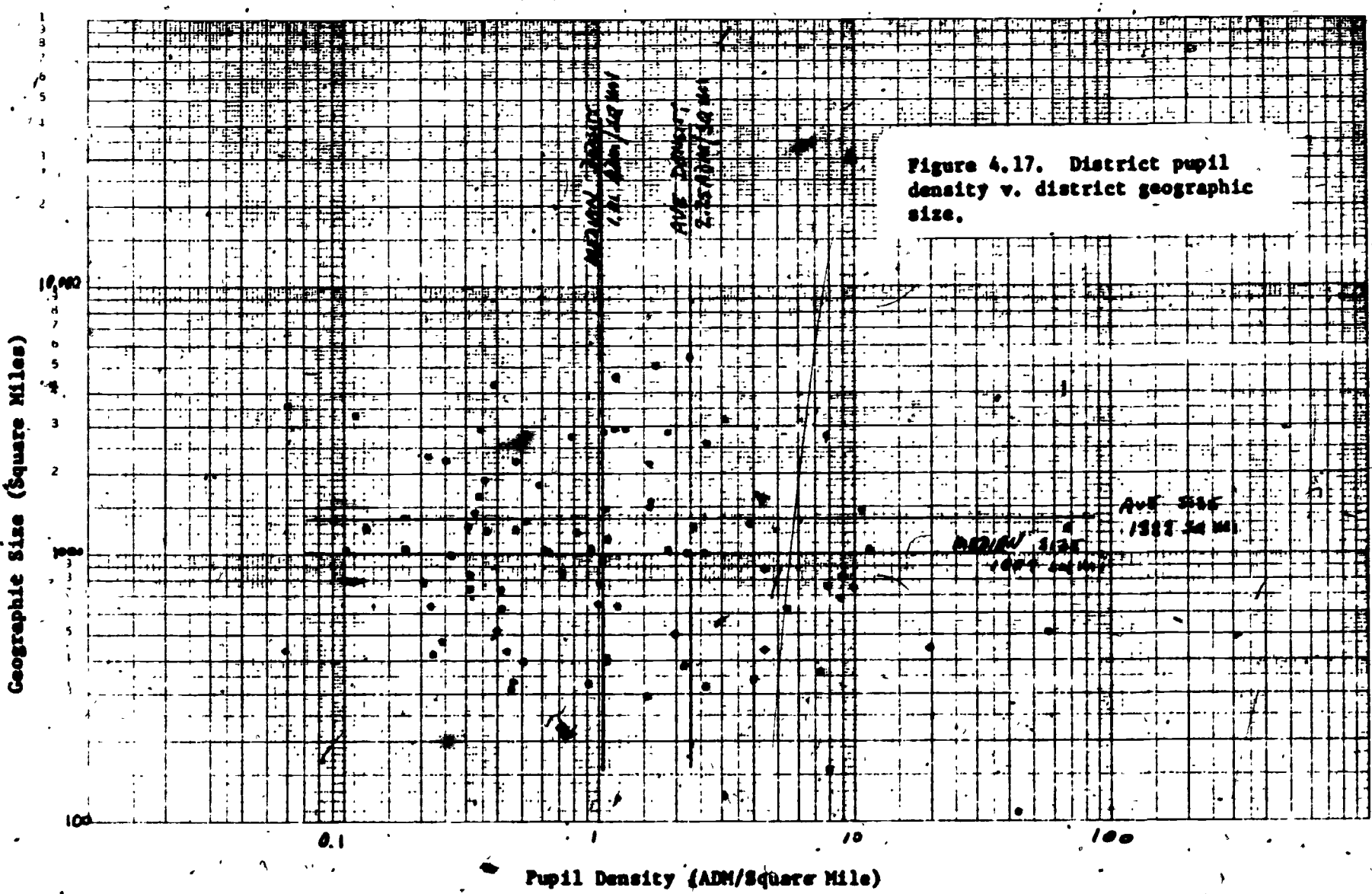


Figure 4.17. District pupil density v. district geographic size.

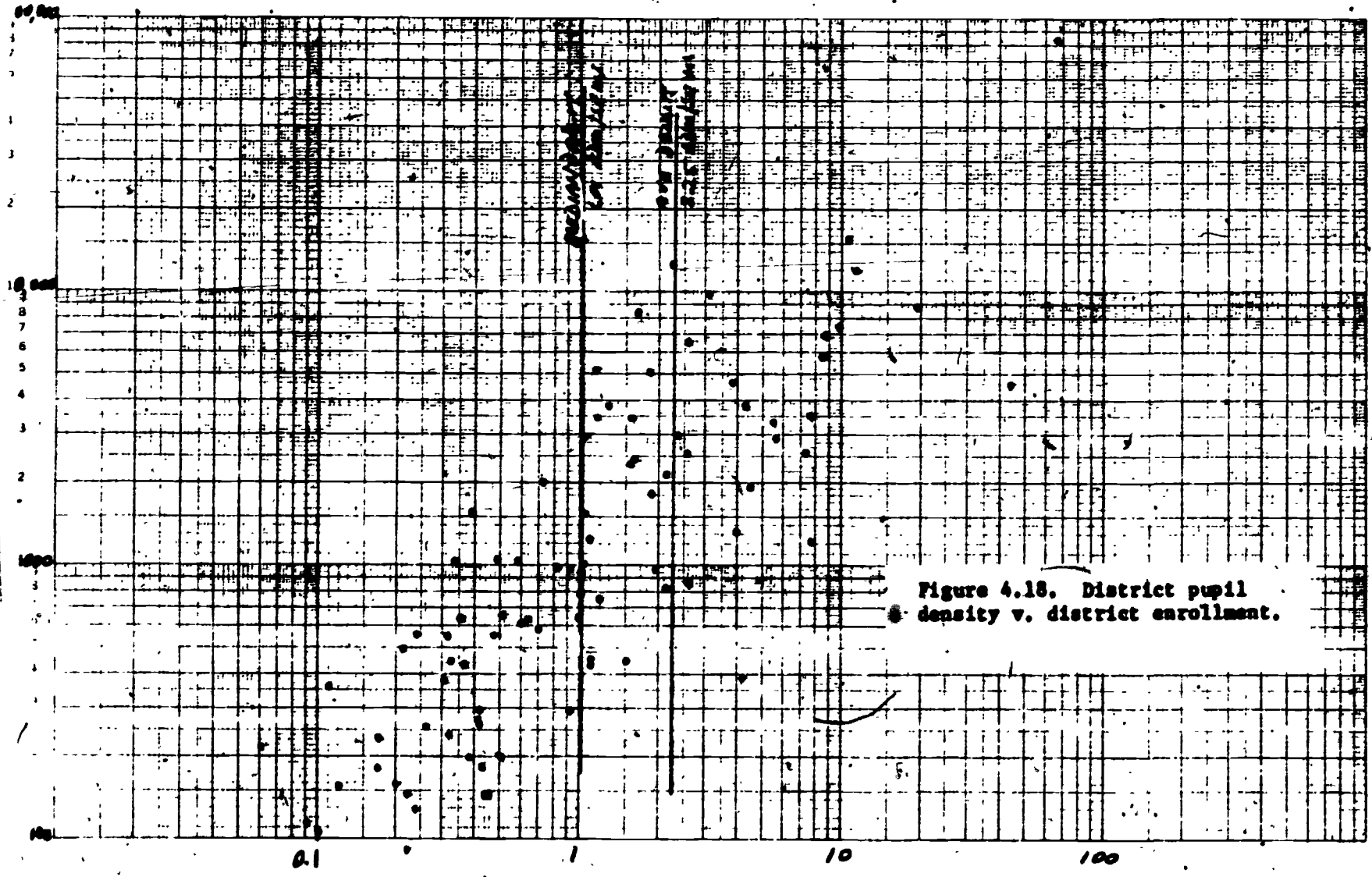


Figure 4.18. District pupil density v. district enrollment.

district should be considered as a possible separate variable. It is, of course, the fringes of the points plotted in Figure 4.16 which are of interest:

-districts of low enrollment, regardless of the geographic size, are recognized by both district size adjustment and school size adjustment for their inherently small schools;

-districts small in geographic size have no need to operate small, isolated schools regardless of the district enrollment;

-districts of large and dense enrollment may have a need for a density factor, but are of little concern for small size adjustment except for an occasional isolated school; but

-districts of large enrollment and large geographic size are an area of concern shown in Figure 4.16 which is not dismissed quickly.

The numbered points on Figure 4.16 are 1. Gallup-McKinley County School District, 2. Alamogordo, 3. Grants, and 4. Roswell. These are the districts considered earlier in the discussion of the rural/isolation factor. From that discussion it was apparent that although Gallup-McKinley County is in need of some special recognition, the other three districts are not.

It can be concluded, therefore, that for New Mexico and with the exception of Gallup-McKinley County, district enrollment is an adequate recognition of all three variables of enrollment, geographic size, and density. Gallup-McKinley County, of course, is recognized with the rural/isolation factor.

There are some other considerations. Johns used the number of approved high schools "not in excess of three" in his measure of sparsity because "if more than three centers are approved in a district it is due

more to density of population than to sparsity." (P 170.) In New Mexico there are 10 districts with more than one high school. Six meet the Johns' criterion:

Albuquerque--10 high schools all due to density

*Alamogordo)
Grants)
Central) -- two high schools due to isolation/sparsity, of which an isolated high school in the districts indicated (*) has enrollment of less than 200 ADM and thus qualifies for school size adjustment.
*Silver City)
*Clayton)

Four, however, fail to meet the criterion:

Gallup--five high schools due to isolation/sparsity

Las Cruces)
Roswell) -- two high schools due to density

Carlsbad--two high schools due to density and grade-level structure

A final point: the district with the lowest enrollment in Florida had 777 FTE. In New Mexico, 40 of the 88 districts have an enrollment of less than 777 ADM. Small--in terms of enrollment--in New Mexico is very much different from small in Florida, thus making an application of the Johns' formula to New Mexico districts difficult.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

School Size Adjustment

Elementary and Junior High School Size Adjustment

There is no evidence to suggest that the current elementary and junior high school size adjustment factor should be changed.

> Recommendation 1. It is recommended that the elementary-junior high school size adjustment factor be retained without change.

High School Size Adjustment

There is considerable evidence that the high school size adjustment factor requires revision. The needed revisions include both the enrollment at which smallness is recognized and the multiplier.

A. Threshold size. The following evidence indicates that a change is required in the enrollment at which a high school is recognized for smallness:

- Although the administrative expenditures as a proportion of the net operational expenditures increase as the district enrollment decreases, the increase is most pronounced for districts of 1000 ADM and fewer (Figure 4.4).

- The increased administration expenditures in small districts occurs to the detriment of instructional support expenditures (Figure 4.6). The decrease in the instructional support expenditures as a proportion of net operational expenditures is most pronounced for districts of 1000 ADM and fewer.

-The pupil-professional ratio decrease is most pronounced for districts of 1000 ADM and fewer (Figure 4.10).

-The secondary school breadth of program is strongly correlated with school enrollment (Figure 4.14). The plot indicates both a midrange and a median breadth of program at a school enrollment of 500 ADM. From Figure 5.1, a high school enrollment of 500 ADM occurs in districts of 1000 to 2000 ADM, depending upon the district organization.

-There is a discontinuity in the distribution of size adjustment units as a proportion of grand total program units (Figure 4.1). This discontinuity occurs at district enrollments of between 500 and 1000 ADM.

In comparison with other states which recognize school smallness:

-The enrollment at which small secondary schools in other states are considered to be small generally is larger than the 200 ADM recognized in New Mexico (Table 3.1).

> Recommendation 2. It is recommended that high school be recognized for size adjustment at enrollments of 500 ADM and fewer.

Incorporating this recommendation into the current high school size adjustment formula yields:

$$\frac{500 - ADM}{500} \times 2.0 \times ADM = \text{additional units}$$

The plot of this formula, compared with the plot of the current high school size adjustment formula, is shown in Figure 5.2. It is readily apparent that all districts with high schools of 500 ADM or fewer would gain under such a formula, but districts with high schools of 100 ADM or fewer would not gain as much as districts with high schools of more than 100 ADM.

It also is apparent from Figure 5.2 that no district would lose.

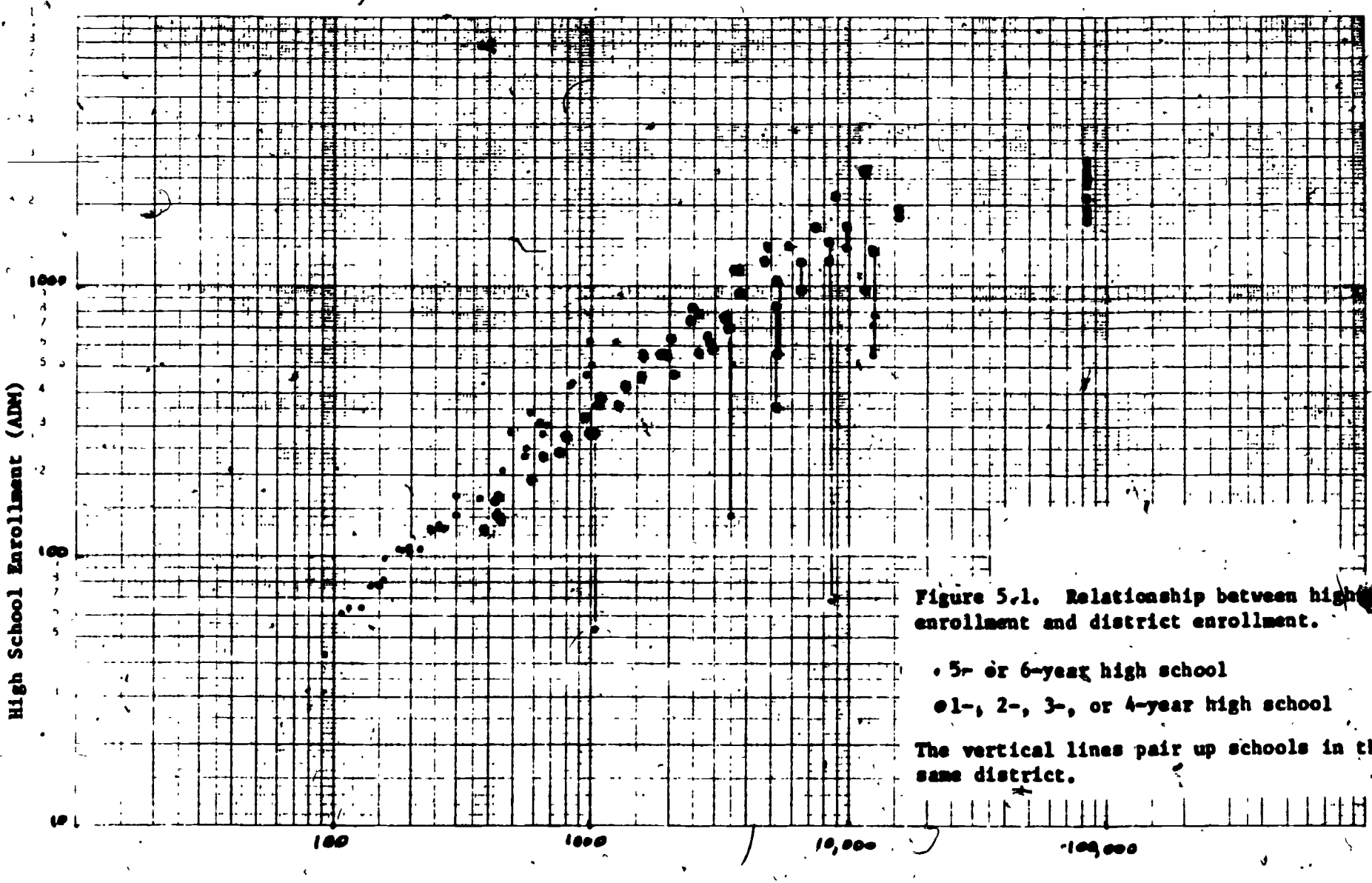


Figure 5.1. Relationship between high school enrollment and district enrollment.

• 5- or 6-year high school

○ 1-, 2-, 3-, or 4-year high school

The vertical lines pair up schools in the same district.

Figure 5.2. Comparison of the current high school size adjustment formula with the revised formula of Recommendation 2.

——— current: $\frac{200 - ADM}{200} \times 2.0 \times ADM$

— — — Rec'n 2: $\frac{500 - ADM}{500} \times 2.0 \times ADM$

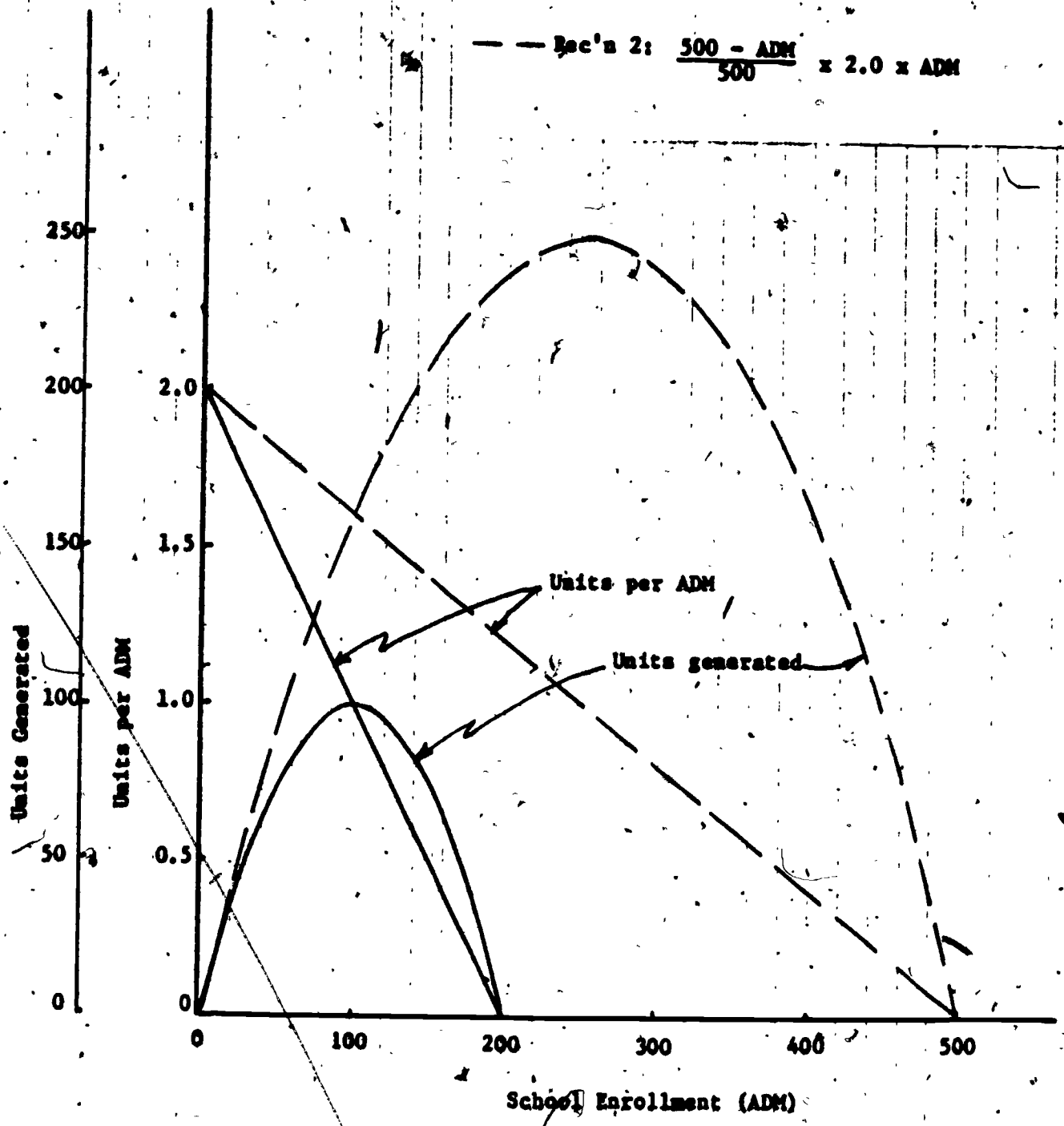


Table 5.1 indicates the extent of the gain for each New Mexico school district for the 1975-1976 school year. Districts of fewer than 130 ADM would have realized a gain in total units of less than 10%; the greatest gains (from 10% to as much as 34%) would have occurred in districts of from 137 to 782 ADM, with one exception: Loving, having no high school, fails to participate in the benefits of this recommendation--or of the current formula.

Except for the three districts which operate small, remote high schools (Clayton, Silver City, Alamogordo), gains for districts of greater than 950 ADM depend upon district organization. For example, Questa, a 6-6 district with 975 ADM would have gained nothing. Chama, with a mixed organization, 977 ADM, and a four-year high school, would have gained 16.8%.

In toto, 57 districts would have gained, 31 would have neither gained nor lost, and none would have lost.

This recommendation would have increased the total number of units by 7556.036--a 2.1% increase in the statewide total program units for 1975-1976. This increase, at $703 per unit, would have required an additional $5,382,193. Although this appears to be a large increase, it must be considered in a context of total program cost.

The actual 1975-1976 total size adjustment recognition amounted to $9,125,537 of a total program cost of $256,387,104--3.6%. The cost of recognizing high schools at 500 ADM would have resulted in total size adjustment cost of $14,507,730 in a total program cost of $261,769,297--or 5.5%.

Table 5.1

Effect of Recommendation 2

High School Size Adjustment (HSSA) Units = $\frac{500 - ADM}{500} \times 2.0 \times ADM$

#	District Name	ADM	Rec'n 2 HSSA Units	1975-76 HSSA Units	Change in Units	1975-76 Total Units	Percent Change in Total Units
50	House	91	77.775	66.938	10.837	230.903	4.7
83	Encino	105	107.116	84.790	22.326	260.861	8.6
28	Mosquero	113	110.871	86.678	24.193	290.553	8.3
58	Elida	129	110.871	86.678	24.193	319.450	7.6
15	Grady	137	130.284	94.710	35.574	328.361	10.8
52	San Jon	144	133.036	93.498	39.538	355.076	11.1
11	Maxwell	149	130.975	94.938	36.037	352.332	10.2
38	Corona	152	137.104	96.760	40.344	354.721	11.3
27	Roy	156	156.364	99.910	56.454	366.962	15.4
85	Des Moines	179	167.056	99.640	67.416	403.861	16.7
59	Floyd	182	164.736	98.840	64.896	410.148	15.8
51	Logan	198	167.631	99.578	68.053	443.289	15.4
7	Lake Arthur	199	163.564	99.910	63.654	436.263	14.6
3	Quemado	218	168.204	99.510	68.694	477.628	14.4
39	Hondo	237	187.999	93.478	94.521	489.137	19.3
26	Vaughn	240	190.464	92.162	98.302	459.123	21.4
45	Wagon Mound	255	191.919	92.438	99.481	509.507	19.5
60	Dora	256	188.496	93.240	95.256	505.034	18.9
40	Capitan	263	185.991	94.478	91.513	517.977	17.7
48	Cloudcroft	297	223.756	52.390	171.366	539.934	31.7
14	Melrose	298	202.039	83.598	118.441	558.880	21.2
2	Reserve	365	220.416	59.040	161.376	593.724	27.2
37	Carrizozo	377	185.991	94.478	91.513	752.034	12.2
21	Loving	388	0	0	0	541.443	0
5	Hagerman	425	219.024	61.560	157.464	806.338	19.5
82	Mountainair	433	205.056	80.640	124.416	655.722	19.0
13	Texico	439	222.444	55.110	167.334	769.482	21.7
35	Tatum	440	201.600	84.000	117.600	796.253	14.8
8	Cimarron	454	240.591	0	240.591	707.654	34.0
16	Ft. Sumner	499	245.775	0	245.775	712.593	34.4
56	Jemez Mtn.	551	248.775	0	248.775	740.135	26.5
30	Animas	557	249.424	0	249.424	735.263	33.9
63	Jemez Springs	576	216.511	0	216.511	764.883	28.3
78	Ojo Caliente	589	236.775	14.438	222.337	886.678	25.1
10	Springer	613	236.775	0	236.775	923.613	25.6
80	Estancia	630	237.231	0	237.231	852.624	27.8
75	Magdalena	639	246.279	0	246.279	842.083	29.2
6	Dexter	659	249.516	0	249.516	1,043.772	23.9
54	Dulce	671	237.900	0	237.900	917.243	25.9
32	Eunice	756	249.919	0	249.919	1,086.810	23.0
34	Jal	782	244.224	0	244.224	1,190.251	20.5
70	Pecos	811	110.871	0	110.871	1,157.740	9.6
77	Penasco	841	95.551	0	95.551	1,217.462	7.8
81	Moriarty	947	223.104	0	223.104	1,289.162	17.3
18	Hatch	966	57.279	0	57.279	1,326.867	4.3
79	Questa	975	0	0	0	1,375.169	0
53	Chama	977	245.511	0	245.511	1,458.125	16.8
44	Mora	1,000	0	0	0	1,447.937	0
84	Clayton	1,014	339.280	78.840	260.440	1,493.541	17.4
62	Cuba	1,053	192.879	0	192.879	1,385.107	13.9
25	Santa Rosa	1,062	164.151	0	164.151	1,477.448	11.1
36	Ruidoso	1,226	0	0	0	1,671.263	0
29	Lordsburg	1,249	208.791	0	208.791	1,673.578	12.5
72	Pojoaque	1,331	0	0	0	1,798.528	0
47	Tularosa	1,535	60.775	0	60.775	1,983.559	3.6
73	T or C	1,575	43.884	0	43.884	2,182.515	2.0
9	Raton	1,878	37.479	0	37.479	2,598.952	1.4
64	Aztec	1,931	0	0	0	2,648.823	0
74	Socorro	2,000	0	0	0	2,693.972	0
49	Tucumcari	2,129	53.751	0	53.751	2,808.959	1.9
66	Bloomfield	2,328	0	0	0	3,070.764	0
69	E. Las Vegas	2,480	0	0	0	3,466.970	0
24	Cobre	2,537	0	0	0	3,522.225	0
57	Portales	2,607	0	0	0	3,632.788	0
68	W. Las Vegas	2,884	0	0	0	4,108.272	0
61	Bernalillo	2,904	0	0	0	3,895.354	0
31	Lovington	2,919	0	0	0	4,096.010	0
22	Artesia	3,323	0	0	0	4,395.854	0
76	Taos	3,357	0	0	0	4,511.021	0
23	Silver City	3,445	202.911	82.778	120.133	4,595.583	2.6
86	Los Lunas	3,571	0	0	0	4,516.515	0
42	Deming	3,744	0	0	0	4,012.149	0
87	Belen	3,790	0	0	0	4,961.966	0
41	Los Alamos	4,637	0	0	0	6,294.352	0
19	Gadsden	4,846	0	0	0	5,710.632	0
67	Central	5,122	208.384	0	208.384	6,026.402	3.4
88	Grants	5,148	0	0	0	6,247.115	0
55	Espanola	5,847	0	0	0	8,107.124	0
20	Carlsbad	6,495	0	0	0	8,987.411	0
65	Farmington	6,918	0	0	0	8,631.703	0
33	Hobbs	7,395	0	0	0	9,770.562	0
46	Alamogordo	8,344	118.956	90.390	28.566	10,920.714	0.3
12	Clovis	8,794	0	0	0	11,492.957	0
4	Roswell	9,751	0	0	0	13,002.383	0
71	Santa Fe	11,757	0	0	0	15,092.067	0
43	Gallup	12,310	0	0	0	14,806.971	0
17	Las Cruces	15,434	0	0	0	19,595.307	0
1	Albuquerque	82,277	233.616	25.178	208.438	109,739.321	0.2
Total					7,556.036	366,927.744	2.1

The plot of the effect of Recommendation 2 in terms of size adjustment units as a proportion of grand total program units is shown in Figure 5.3. Compared with Figure 4.1:

-The discontinuity which exists in Figure 4.1 at enrollments between 500 and 1000 ADM has been softened considerably and appears as a flexure in the curve. The flexure occurs between 800 and 1500 ADM.

-The shape of the curve has been altered between 100 and 1000 ADM. Figure 4.1 is quite linear in this area; Figure 5.3 has a slight curve.

There are some specific districts which stand out in Figure 5.3 for the following reasons:

1. Loving (388 ADM, 18.1%). Lacking a high school, Loving does not share in the benefits of either the current high school size adjustment factor or the size adjustment formula of Recommendation 2.

2. Jemez Mountain (551 ADM, 43.1%). Due to the isolated nature of the district, Jemez Mountain maintains six schools (five elementary and one high school). In contrast, other districts of similar enrollment each maintain a total of two or three schools.

3. Chama (977 ADM, 28.7%). Due to isolation and the distribution of the population centers in the district, Chama maintains six schools (three elementary, two mid, and one high school). Other districts of similar enrollment each maintain three or four schools.

4. Clayton (1014 ADM, 30.7%). The Clayton district maintains a small (54 ADM) high school at Amistad, 39 miles south of Clayton. Clayton is the district with the smallest enrollment which maintains a second high school.

5. Lordsburg (1249 ADM, 23.0%). The Lordsburg district maintains five schools (three elementary--K-3, 1-3, 1-5--one mid, and one high school). Other districts of similar enrollment maintain three or four schools. All of the schools in the Lordsburg district are located in Lordsburg; perhaps the existing facilities dictate three elementary schools, two with enrollments of about 120 ADM.

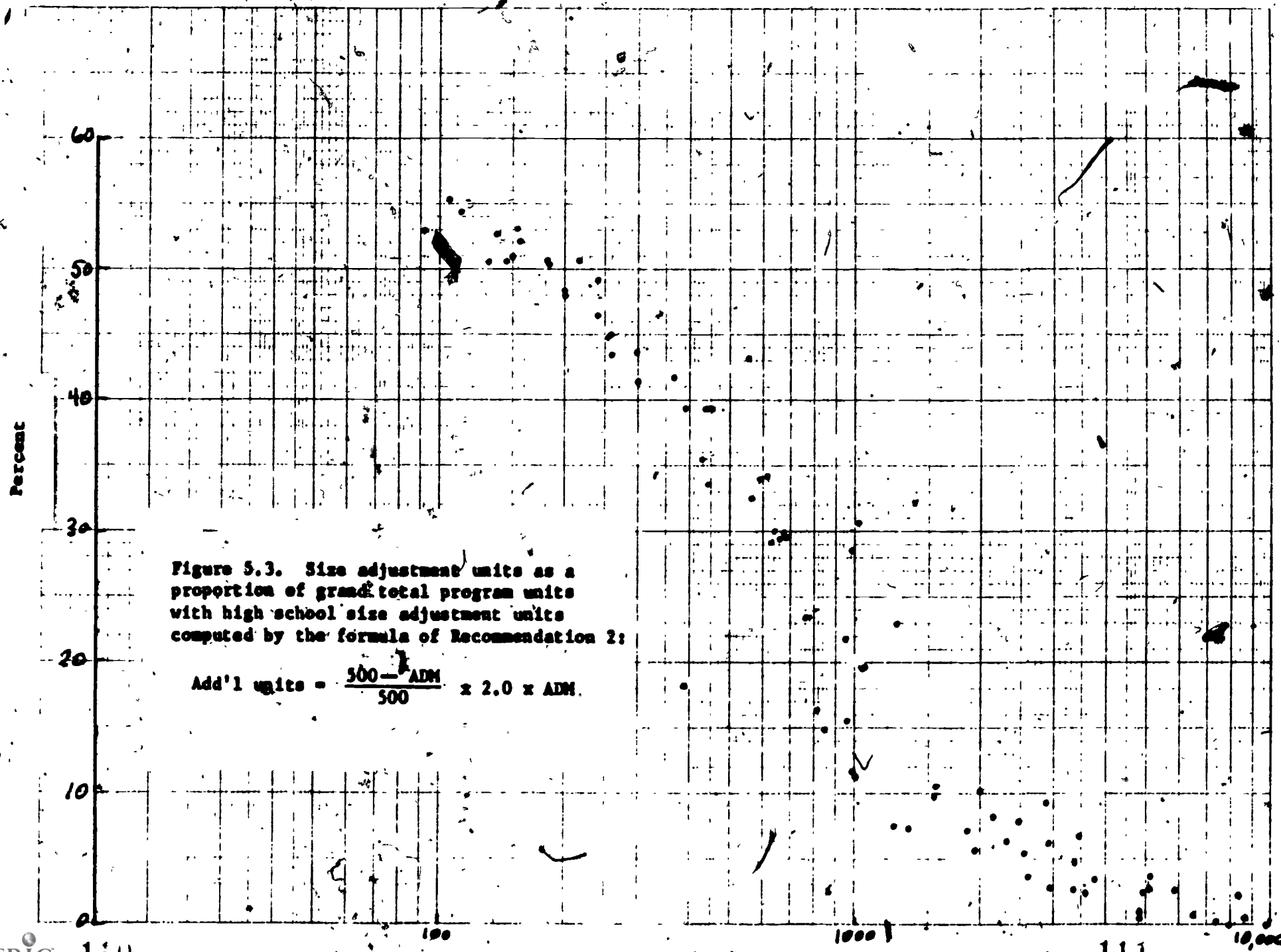


Figure 5.3. Size adjustment units as a proportion of grand total program units with high school size adjustment units computed by the formula of Recommendation 2:

$$\text{Add'l units} = \frac{500 - \text{ADM}}{500} \times 2.0 \times \text{ADM}$$

With the exception of the above districts, all of the districts tend to group around some continuous curve.

B. Multiplier.. The following evidence indicates that the high school size adjustment multiplier should be changed:

-The pupil-teacher ratio rationale used for justification of the multiplier 2.0 in the high school size adjustment formula compared with the multiplier 1.0 for the elementary-junior high school formula is not substantiated (Figure 4.11).

-The ratio of elementary-junior high school pupil-professional ratio to high school pupil-professional ratio (Figure 4.11) exceeds 1.2 only in districts with high schools of 310 ADM and fewer; only 12 high school attendance centers exceed a ratio of 1.5.

-The average cost of grades 7-9 in small districts is little different from the average cost in large districts and from the state average; the average cost of grades 10-12 in small districts does not exceed 1.40 times the average cost in large districts and the state average (Table 4.1).

-The comparative recognition of high schools to elementary and junior high schools in New Mexico is at or near the median of wide range of comparative recognition in other states for schools of 25 and 100 ADM (Table 3.3).

-Adoption of Recommendation 2, however, will increase the comparative recognition in New Mexico.

> Recommendation 3. It is recommended that in conjunction with Recommendation 2, the multiplier in the high school size adjustment formula be reduced to 1.5.

Recommendation 3 results in a high school size adjustment formula where:

$$\text{additional units} = \frac{500 - \text{ADM}}{500} \times 1.5 \times \text{ADM}.$$

A comparison of the weight per student in various size small schools in New Mexico under the current size adjustment formulas and under the revised formulas of Recommendations 2 and 3 is shown in the following table:

School size	Unit Weight per Student			
	Current Elem/JHS	Current Hi Sch.	Rec'n 2 Hi Sch.	Rec'n 3 Hi Sch.
25	0.88	1.75	1.90	1.425
100	0.50	1.00	1.60	1.20
150	0.25	0.50	1.40	1.05
200	-0-	-0-	1.20	0.90
250	-0-	-0-	1.00	0.75
400	-0-	-0-	0.40	0.30
500	-0-	-0-	-0-	-0-

Figure 5.4 compares the revised formula of Recommendation 3 with the current high school size adjustment formula. Comparing Figure 5.4 with Figure 5.2, it is apparent that the benefits of Recommendation 3 are not as great as the benefits of Recommendation 2, and that some districts would lose due to the reduced multiplier.

The crossover point is 71 ADM. Thus the districts with high schools of fewer than 71 ADM will lose slightly under Recommendation 3.

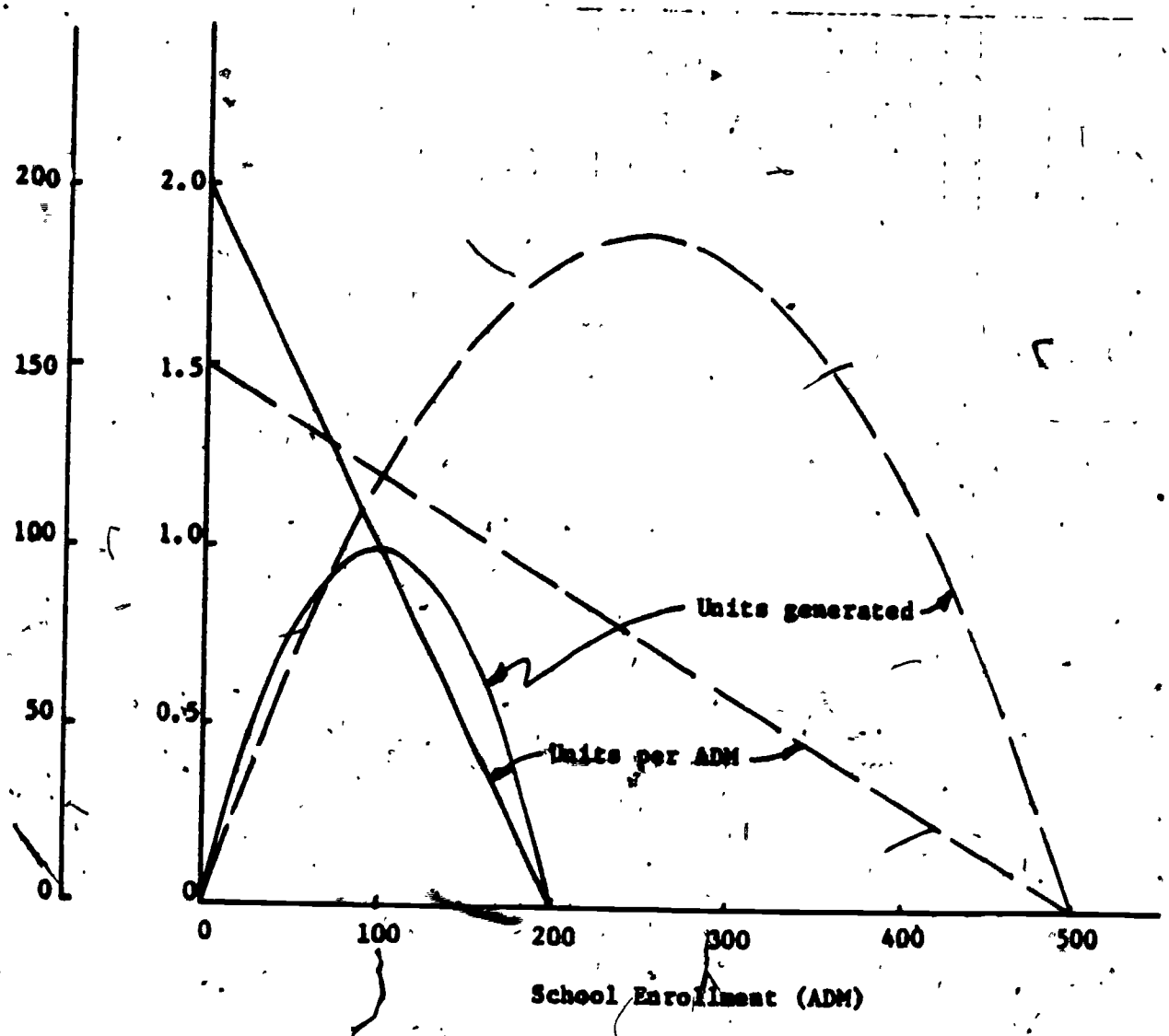
The district-by-district tabulations of the effect of Recommendation 3 for the 1975-1976 school year is shown in Table 5.2.

There are six high schools with enrollments of fewer than 71 ADM. Four of these high schools are located in one-high-school districts

Figure 5.4\ Comparison of current high school adjustment formula with the revised formula of Recommendation 3.

——— current: $\frac{200 - ADM}{200} \times 2.0 \times ADM$

— — Rec'n 3: $\frac{500 - ADM}{500} \times 1.5 \times ADM$



(House, Encino, Mosquero, and Elida) which would have lost under the revised formula. In the Clayton district (1014 ADM), the high school at Amistad would have generated fewer units than under the current formula, but Clayton High School would have gained substantially yielding a net gain to the district. In the Alamogordo district (8344 ADM), however, the loss to Weed High School would have resulted in a very slight decrease in total program units to the district since the other high schools in Alamogordo do not and would not qualify for size adjustment units.

Districts of 129 ADM and fewer would have lost slightly. Increases in total units of less than 10% would have been realized by districts with enrollments between 137 and 237 ADM--districts with 77 to 126 students in the high school and thus at the top of the curve (Figure 5.4) of units generated under the present formula. Greater gains would have been realized in districts of 240 to 782 ADM; four districts would have received more than a 25% increase. The four districts are those which have about 250 students in the high school and thus would have generated nearly the maximum number of units possible under the proposed formula. The maximum increase of 25.9% compares with a maximum increase of 34.4% which would have accrued to Fort Sumner (499 ADM) under Recommendation 2.

As with Recommendation 2, gains for districts with greater than 950 ADM depend on district organization.

In toto, under Recommendation 3, 52 districts would have gained, 31 districts would have neither gained nor lost, and five districts would have lost slightly.

Table 5.2

Effect of Recommendation 3

High School Size Adjustment (HSSA) Units = $\frac{500 - ADM}{500} \times 1.5 \times ADM$

#	District Name	ADM	Rec'n 3 HSSA Units	1975-76 HSSA Units	Change In Units Increase (Decrease)	1975-76 Total Units	Percent Change In Total Units
50	House	91	58.331	66.938	(8.607)	230.903	(3.7)
83	Encino	105	80.337	84.790	(4.453)	260.861	(1.7)
28	Mosquero	113	83.153	86.678	(3.525)	290.553	(1.2)
58	Elida	129	83.153	86.678	(3.525)	319.450	(1.1)
15	Grady	137	97.713	94.710	3.003	328.361	0.9
52	San Jon	144	99.777	93.498	6.279	355.076	1.8
11	Maxwell	149	98.231	94.938	3.293	352.332	0.9
38	Corona	152	102.828	96.760	6.068	354.721	1.7
27	Roy	156	117.273	99.910	17.363	366.962	4.7
85	Des Moines	179	125.292	99.640	25.652	403.961	6.4
59	Floyd	182	123.552	99.840	23.712	410.148	5.8
51	Logan	198	125.723	99.578	26.145	443.239	5.9
7	Lake Arthur	199	122.673	99.910	22.763	436.263	5.2
3	Quemado	218	126.153	99.510	26.643	477.628	5.6
39	Hondo	237	140.999	93.478	47.521	489.137	9.7
26	Vaughn	240	142.848	92.162	50.686	459.123	11.0
45	Wagon Mound	255	143.939	92.438	51.501	509.507	10.1
60	Dora	256	141.372	93.240	48.132	505.034	9.5
40	Capitan	263	139.493	94.478	45.015	517.977	8.7
48	Cloudcroft	297	167.817	52.390	115.427	539.934	21.4
14	Melrose	298	151.529	83.598	67.931	558.880	12.2
2	Reserve	365	165.312	59.040	106.272	593.724	17.9
37	Carrizozo	377	139.493	94.478	45.015	752.034	6.0
21	Loving	388	0	0	0	541.443	0
5	Hagerman	425	164.268	61.560	102.708	806.338	12.7
82	Mountainair	433	153.792	80.640	73.152	655.722	11.2
13	Texico	439	166.833	55.110	111.723	769.482	14.5
35	Tatum	440	151.200	84.000	67.200	796.253	8.4
8	Cimarron	454	180.443	0	180.443	707.654	25.5
16	Ft. Sumner	499	184.331	0	184.331	712.593	25.9
56	Jemez Mtn.	551	186.581	0	186.581	740.135	25.2
30	Animas	557	187.068	0	187.068	735.263	25.4
63	Jemez Springs	576	162.383	0	162.383	764.883	21.2
78	Ojo Caliente	589	177.581	14.438	163.143	886.678	18.4
10	Springer	613	177.581	0	177.581	923.613	19.2
80	Estancia	630	177.923	0	177.923	852.624	20.8
75	Magdalena	639	184.709	0	184.709	842.083	21.9
6	Dexter	659	187.137	0	187.137	1,043.772	17.9
54	Dulce	671	178.425	0	178.425	917.243	19.5
32	Eunice	756	187.439	0	187.439	1,086.810	17.2
34	Jal	782	183.168	0	183.168	1,190.251	15.4
70	Pecos	811	83.153	0	83.153	1,157.740	7.2
77	Penasco	841	71.663	0	71.663	1,217.462	5.9
81	Moriarty	947	167.328	0	167.328	1,289.162	13.0
18	Hatch	966	42.959	0	42.959	1,326.867	3.2
79	Questa	975	0	0	0	1,375.169	0
53	Chama	977	184.133	0	184.133	1,458.125	12.6
44	Mora	1,000	0	0	0	1,447.937	0
84	Clayton	1,014	254.460	78.840	175.620	1,493.541	11.8
62	Cuba	1,053	144.659	0	144.659	1,385.107	10.4
25	Santa Rosa	1,062	123.113	0	123.113	1,477.448	8.3
36	Ruidoso	1,226	0	0	0	1,671.263	0
29	Lordsburg	1,249	156.593	0	156.593	1,673.578	9.4
72	Pojoaque	1,331	0	0	0	1,798.528	0
47	Tularosa	1,535	45.581	0	45.581	1,983.559	2.3
73	T or C	1,575	32.913	0	32.913	2,182.515	1.5
9	Raton	1,878	28.109	0	28.109	2,598.952	1.1
64	Aztec	1,931	0	0	0	2,648.823	0
74	Socorro	2,000	0	0	0	2,693.972	0
49	Tucumcari	2,129	40.313	0	40.313	2,808.959	1.4
66	Bloomfield	2,328	0	0	0	3,070.764	0
69	E. Las Vegas	2,480	0	0	0	3,466.970	0
24	Cobre	2,537	0	0	0	3,522.225	0
57	Portales	2,607	0	0	0	3,632.788	0
68	W. Las Vegas	2,884	0	0	0	4,108.272	0
61	Bernalillo	2,904	0	0	0	3,895.354	0
31	Lovington	2,919	0	0	0	4,096.010	0
22	Artesia	3,323	0	0	0	4,395.854	0
76	Taos	3,357	0	0	0	4,511.021	0
23	Silver City	3,445	152.183	82.778	69.405	4,595.583	1.5
86	Los Lunas	3,571	0	0	0	4,516.515	0
42	Deming	3,744	0	0	0	4,912.149	0
87	Belen	3,790	0	0	0	4,961.966	0
41	Los Alamos	4,637	0	0	0	6,294.352	0
19	Gadsden	4,846	0	0	0	5,710.632	0
67	Central	5,122	156.288	0	156.288	6,026.402	2.6
88	Grants	5,148	0	0	0	6,247.115	0
55	Espanola	5,847	0	0	0	8,107.124	0
20	Carlsbad	6,495	0	0	0	8,987.411	0
65	Farmington	6,918	0	0	0	8,631.703	0
33	Hobbs	7,395	0	0	0	9,770.562	0
46	Alamogordo	8,344	89.217	90.390	(1.173)	10,920.714	(0.17)
12	Clovis	8,794	0	0	0	11,492.957	0
4	Roswell	9,751	0	0	0	13,002.383	0
71	Santa Fe	11,757	0	0	0	15,092.067	0
43	Gallup	12,310	0	0	0	14,806.971	0
17	Las Cruces	15,434	0	0	0	19,595.307	0
1	Albuquerque	82,277	175.212	25.178	150.034	109,739.321	0.1
Total					5,084.116	366,927.744	1.4

Recommendation 3 would have increased the total number of units by 5084.116--a 1.4% increase in the statewide total program units for 1975-1976. At $703 per unit, an additional $3,574,134 would have been required.

The actual 1975-1976 total size adjustment recognition amounted to $9,125,537 of a total program cost of $256,387,104--or 3.6%. The cost of recognizing high schools at 500 ADM and with a multiplier of 1.5 would have resulted in a total size adjustment recognition of $12,699,671 in a total program cost of $259,961,238--or 4.9%.

The effect of Recommendation 3 on the size adjustment units as a proportion of grand total program units as they would have existed in 1975-1976 is shown in Figure 5.5.

In comparison with Figures 4.1 and 5.3:

-No district would have attributed more than 50% of its total units to size adjustment.

-In districts of fewer than 200 ADM, the curve of Figure 5.3 is flatter than the curve of Figure 4.1 or Figure 5.3.

-Most of the districts show a higher proportion of size adjustment units in Figure 5.5 than in Figure 4.1, but a lower proportion than shown in Figure 5.3. Overall, the configuration of Figure 5.5 is closer to that of Figure 5.3 than to the configuration of Figure 4.1.

-The slight curve which was apparent in Figure 5.3 between 100 and 1000 ADM is apparent still in Figure 5.5, but the curve is not as obvious.

-The same five districts stand out in Figure 5.5 as in Figure 5.3 and for the same reasons. The differences from the general curve formed by all of the districts, however, are not as great for the five districts in Figure 5.5 as they were in Figure 5.3.

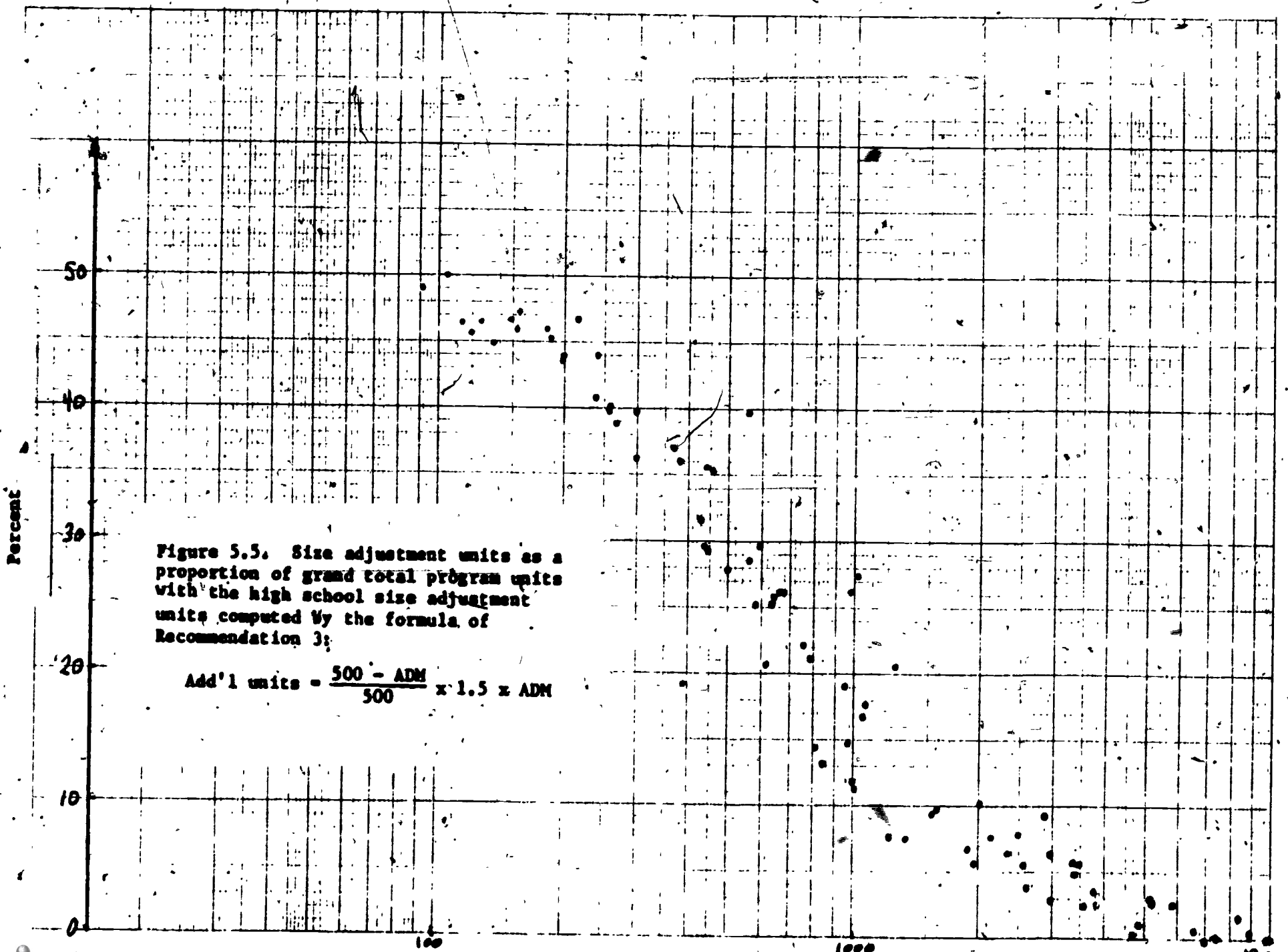


Figure 5.5. Size adjustment units as a proportion of grand total program units with the high school size adjustment units computed by the formula of Recommendation 3:

$$\text{Add'l units} = \frac{500 - \text{ADM}}{500} \times 1.5 \times \text{ADM}$$

District Size Adjustment

Although the discussion of Chapter 4 indicates that the district size adjustment factor is justified primarily on political grounds, there is statistical evidence to justify the factor in its present form:

-The administrative expenditures as a proportion of net operational expenditures (Figure 4.4) are greater for districts of 4000 ADM and fewer than for districts of more than 4000 ADM. (It is not readily apparent from Figures 4.5, 4.6, 4.8, and 4.9, however, if any other line item suffers accordingly for districts with enrollment between 1000 and 4000 ADM.)

-The PPR and PAR curves (Figure 4.10) indicate that these ratios generally decrease as the district enrollment decreases. Although a threshold, or breaking point, is not apparent, it is apparent that additional costs are incurred by districts which operate with low PPR and PAR.

-With the exception of four schools, the high school breadth of program (Figure 4.14) is at or above the median for schools whose enrollment is 500 ADM or greater, corresponding to district enrollment of 1000 ADM or greater (Figure 5.1). Although the district size adjustment factor contributes less than 8% of the grand total program units to districts of 1000 to 4000 ADM (Figure 4.2), the additional assistance may permit the decreased PPR and PAR (Figure 4.10) necessary to maintain the breadth of program.

-Although New Mexico is unique (for practical purposes) in recognizing both school and district size as separate entities, the New Mexico district recognition for districts of 500 ADM and fewer is generally less than the recognition in states which recognize only district size (Table 3.5).

Thus the district size adjustment factor appears to be justified and adequately offsets the higher administrative expenditures and the additional costs of maintaining an adequate breadth of program at the high school level through decreased PPR and PAR.

Recommendation 4. It is recommended that the district size adjustment be retained without change.

Recommendation 4 notwithstanding, it is of interest to observe what would happen if the district size adjustment were removed while incorporating the school size adjustment change of Recommendation 3. Table 5.3 provides a tabulation by district of the effect of such a revision for the 1975-1976 school year.

Under this scheme, 35 districts would have received more units in 1975-1976, 42 districts would have neither gained nor lost, and 41 districts would have lost. In general, districts with enrollments of 218 ADM and fewer--the approximate point at which the increase in the extended high school recognition offsets the loss in district size adjustment--would have lost. The loss, in both absolute units and in percent of total units, increases as the enrollment decreases below 218 ADM.

In districts with enrollments greater than 218 ADM the change generally is positive, increasing to a maximum increase of 17.0% in Cimarron (454 ADM); thereafter the increase falls off and at 811 ADM the change is negative. As the districts' enrollments increase thereafter, except for a few districts which would have gained due to district organization, the districts generally would have suffered a loss until the enrollment exceeded 4000 ADM--the cutoff point for the district size recognition.

The extended high school recognition would have required an additional 5084.116 units and 5623.625 units were attributed to the district size adjustment factor resulting in a net "saving" of 539.509 units. At $703 per unit, this would have amounted to $379,275--slightly more than 0.1% of the total program cost of $256,387,104. A slight saving with a large redistribution of resources throughout the districts of the state.

Table 5.3

Effect of Recommendation 3 with the District Size Adjustment Factor Removed

#	District Name	ADM	Rec'n 3 Change In HSSA Units (Fm Table 5.2) A	1975-76 District S.A. Units B	Change In S.A. Units A-B	1975-76 Total Units	Percent Change In Total Units
50	House	91	(8.607)	13.411	(22.018)	230.903	(9.5)
83	Encino	105	(4.453)	15.265	(19.718)	260.861	(7.6)
28	Mosquero	113	(3.525)	16.400	(19.925)	290.553	(6.9)
58	Elida	129	(3.525)	18.772	(22.297)	319.450	(7.0)
15	Grady	137	3.003	19.846	(16.843)	328.361	(5.1)
52	San Jon	144	6.279	20.753	(14.474)	355.076	(4.1)
11	Maxwell	149	3.293	21.448	(18.155)	352.332	(5.2)
38	Corona	152	6.068	21.934	(15.866)	354.721	(4.5)
27	Roy	156	17.363	22.487	(5.124)	366.962	(1.4)
85	Des Moines	179	25.652	25.614	.038	403.861	0.1
59	Floyd	182	23.712	26.081	(2.369)	410.148	(0.6)
51	Logan	198	26.145	28.162	(2.017)	443.239	(0.5)
7	Lake Arthur	199	22.763	28.365	(5.602)	436.263	(1.3)
3	Quemado	218	26.643	30.851	(4.208)	477.628	(0.9)
39	Hondo	237	47.521	33.378	14.143	489.137	2.9
26	Vaughn	240	50.686	33.840	16.846	459.123	3.7
45	Wagon Mound	255	51.501	35.789	15.512	509.507	3.0
60	Dora	256	48.132	35.877	12.255	505.034	2.4
40	Capitan	263	45.015	36.791	8.224	517.977	1.6
48	Cloudcroft	297	115.427	51.342	64.085	539.934	11.9
14	Melrose	298	67.931	41.306	26.625	558.880	4.8
2	Reserve	366	106.272	49.693	56.579	593.724	9.5
37	Carrizozo	377	45.015	51.220	(6.205)	752.034	(0.8)
21	Loving	388	0	52.555	(52.555)	541.443	(9.7)
5	Hagerman	425	107.708	56.917	50.791	806.338	6.3
82	Mountainair	433	73.152	57.860	15.292	655.722	2.3
13	Texico	439	111.723	58.662	53.061	769.482	6.9
35	Tatum	440	67.200	59.382	7.818	796.253	1.0
8	Cimarron	454	180.443	60.313	120.130	707.654	17.0
16	Ft. Sumner	499	184.331	65.512	118.819	712.593	16.7
56	Jemez Mtn.	551	186.581	71.265	115.316	740.135	15.6
30	Animas	557	187.068	71.916	115.152	735.263	15.7
63	Jemez Springs	576	162.383	73.905	88.478	764.883	11.6
78	Ojo Caliente	589	163.143	75.358	87.785	886.678	9.9
10	Springer	613	177.581	77.807	99.774	923.613	10.8
80	Estancia	630	177.923	79.616	98.307	852.624	11.5
75	Magdalena	639	184.709	80.512	104.197	842.083	12.4
6	Dexter	659	187.137	82.514	104.623	1,043.772	10.0
54	Bulce	671	178.425	84.395	94.030	917.243	10.3
32	Eunice	756	187.439	91.967	95.472	1,086.810	8.8
34	Jal	782	183.168	94.368	88.800	1,190.251	7.5
70	Pecos	811	83.153	96.985	(13.832)	1,157.740	(1.6)
77	Penasco	841	71.663	99.583	(27.920)	1,217.462	(2.3)
81	Moriarty	947	167.328	108.380	58.948	1,289.162	4.6
18	Hatch	966	42.959	109.907	(66.948)	1,326.867	(5.0)
79	Questa	975	0	110.602	(110.602)	1,375.169	(8.0)
53	Chama	977	184.133	110.755	73.378	1,458.125	5.0
44	Mora	1,000	0	112.500	(112.500)	1,447.937	(7.8)
84	Clayton	1,014	175.620	113.506	62.114	1,493.541	4.2
62	Cuba	1,053	144.659	116.370	28.289	1,385.107	2.0
25	Santa Rosa	1,062	123.113	116.971	6.142	1,477.448	0.4
36	Ruidoso	1,226	0	127.506	(127.506)	1,671.263	(7.6)
29	Lordsburg	1,249	156.593	128.822	27.771	1,673.578	1.7
72	Pojoaque	1,331	0	133.191	(133.191)	1,798.528	(7.4)
47	Tularosa	1,535	45.581	141.874	(96.293)	1,983.559	(4.9)
73	T or C	1,575	32.913	143.227	(110.314)	2,182.515	(5.1)
9	Raton	1,875	28.109	149.440	(121.331)	2,598.952	(4.7)
64	Aztec	1,931	0	149.819	(149.819)	2,648.823	(5.7)
74	Socorro	2,000	0	150.000	(150.000)	2,693.972	(5.6)
49	Tucumcari	2,129	40.313	149.381	(109.068)	2,808.959	(3.9)
66	Bloomfield	2,328	0	145.966	(145.966)	3,070.764	(4.8)
69	E. Las Vegas	2,480	0	141.360	(141.360)	3,466.970	(4.1)
24	Cobre	2,537	0	139.186	(139.186)	3,522.225	(4.0)
57	Portales	2,607	0	136.206	(136.206)	3,632.788	(3.7)
68	W. Las Vegas	2,884	0	120.729	(120.729)	4,108.272	(2.9)
61	Bernalillo	2,904	0	119.388	(119.388)	3,895.354	(3.1)
31	Lovington	2,919	0	118.363	(118.363)	4,096.010	(2.9)
22	Artesia	3,323	0	84.114	(84.114)	4,395.854	(1.9)
76	Taos	3,357	0	80.997	(80.997)	4,511.021	(1.8)
23	Silver City	3,445	69.405	71.753	2.348	4,595.583	0.1
86	Los Lunas	3,571	0	57.507	(57.507)	4,516.515	(1.3)
42	Deming	3,744	0	35.942	(35.942)	4,912.149	(0.7)
87	Belen	3,790	0	29.846	(29.846)	4,961.966	(0.6)
41	Los Alamos	4,637	0	0	0	6,294.352	0
19	Gadsden	4,846	0	0	0	5,710.632	0
67	Central	5,122	156.288	0	156.288	6,026.402	2.6
88	Grants	5,148	0	0	0	6,247.115	0
55	Espanola	5,847	0	0	0	8,107.124	0
20	Carlsbad	6,496	0	0	0	8,987.411	0
65	Farmington	6,918	0	0	0	8,631.703	0
33	Hobbs	7,395	0	0	0	9,770.862	0
46	Alamogordo	8,344	(1.173)	0	(1.173)	10,920.714	(0.1)
12	Clovis	8,794	0	0	0	11,492.957	0
4	Roswell	9,751	0	0	0	13,002.383	0
71	Santa Fe	11,757	0	0	0	15,092.067	0
43	Gallup	12,310	0	0	0	14,806.971	0
17	Las Cruces	15,434	0	0	0	19,595.387	0
1	Albuquerque		150.034	0	150.034	109,739.321	0.1
Total			5,084.116	5,623.625	(539.509)	366,927.744	(0.1)

Figure 5.6 is the plot of the total size adjustment units with school size adjustment formulas as per Recommendations 1 and 3, but without the district size adjustment.

In comparison with Figures 4.1, 5.3, and 5.5:

-No district would attribute more than 47% of its total units to size adjustment.

-All of the districts show a lower proportion of size adjustment units in Figure 5.6 than in Figure 5.5.

-The discontinuity of Figure 4.1 is sharpened in Figure 5.6. The benefits of size adjustment under the scheme of Figure 5.6 are very apparent.

-The same five districts stand out as in Figure 5.3 and for the same reasons.

The losses would be particularly severe for districts whose enrollments are between 750 and 4000 ADM, including some of the districts which may be best assisted by the expanded high school recognition formula. For these districts the needed benefits of the expanded high school recognition would be offset--completely, or more, for some districts--by the loss of the district size adjustment units.

Rural/Isolation Factor

As discussed in Chapter 4, the Gallup-McKinley County School district realizes some economies of scale in central office administration, but encounters diseconomies of isolated attendance areas. Lacking more definitive data, it appears appropriate to recognize the situation at some point between no recognition and the additional units which the combined districts would receive for district size adjustment were the district to be deconsolidated around each high school attendance center.

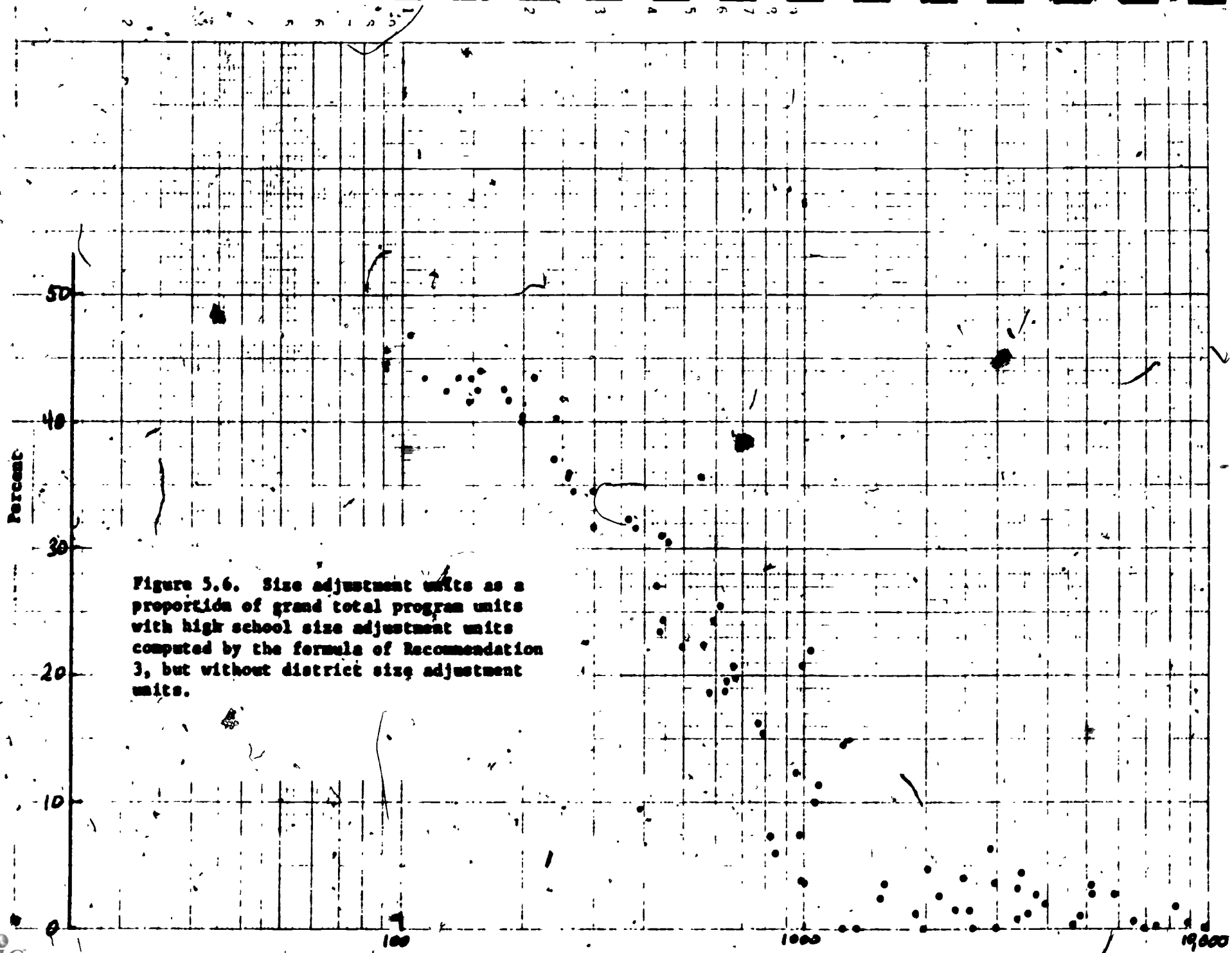


Figure 5.6. Size adjustment units as a proportion of grand total program units with high school size adjustment units computed by the formula of Recommendation 3, but without district size adjustment units.

Which is exactly what the current Rural/Isolation factor does.

Information presented in Chapter 4 also indicates that by at least three measures (geographic size, number of high schools and feeder schools maintained, and enrollment in relation to geographic size and number of high schools and feeders), the Gallup-McKinley County district is unique and should be recognized uniquely. There is no evidence that indicates the rural/isolation factor should be revised so that it is applicable to any other districts.

> Recommendation 5. It is recommended that the current Rural/Isolation factor be retained without change.

School and District Consolidation

The current district and school size adjustment factors and the recommendations made thus far offer no incentive for school or district consolidation. Yet it appears inefficient to provide large amounts of size adjustment money to many of the districts with low enrollment and to districts with small schools located near larger attendance centers.

In the case of very small secondary schools, it appears from Figures 4.10, 4.13, and 4.14 that even with very low PPR it is possible to offer only a relatively narrow program. It is doubtful that sufficient money could be provided to the very small districts to provide a secondary school breadth of program approaching the statewide median of 35 programs. Thus, those districts with very small enrollments and/or very small secondary schools should be encouraged to consolidate schools and districts wherever possible. Indeed:

-If it is the desire of the state to provide equal educational opportunity to students throughout the state (an assumption firmly supported by the public school funding formula); and

-If equal educational opportunity can be defined in terms of breadth of program, particularly at the secondary level; and

-If it is impossible to provide an adequate breadth of program in small secondary schools regardless of the funding level; then

-It is incumbent upon the legislature to adopt measures which will provide strong incentives for the consolidation of small secondary schools and small school districts other than those schools which are considered to be necessarily existent.

The incentives may be internal to the operational funding formula, external to the formula, or both. This investigation is limited to the operational funding mechanisms; external incentives are not considered.[1]

In Chapter 3 it was mentioned that within the operational budget pegalties appear to be more effective than rewards. Rewards generally must come to an end--it is not equitable to continue forever a benefit which similar districts do not enjoy.

One possible penalty is a reduction in the amount of size adjustment units which a secondary school may generate unless the school is declared to be necessarily existent. Since any reduction in funds may reduce further, to the detriment of the students, the breadth of program and instructional support services provided, the consolidation pressures should be applied increasingly with, perhaps, eventual phaseout of all

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[1]According to Langston (1969), the School Construction Assistance Act (Chapter 306, Laws 1965), which provided capital improvement funds for consolidating schools, was largely responsible for closing almost 100 small elementary schools and 11 secondary schools and for eliminating four districts through consolidation.

school size adjustment units to small secondary schools which are not necessarily existent.

Planning time, however, must be provided; penalties should not be imposed until one or two years after enactment of such provisions.

Not all secondary schools which qualify for school size adjustment need be subjected to the penalties. The breadth of programs for secondary schools (Figure 4.14) may be improved considerably for secondary schools whose enrollments range from 250 to 500 ADM through adoption of Recommendation 3. It would be appropriate, then, to require only secondary schools of less than 250 ADM to be declared as necessarily existent in order to qualify for full school size adjustment benefits.

If consolidation of small secondary schools and small districts is to be encouraged, each district should be required to be unified, i.e., offer grades K through 12. Thus if the penalties are successful in forcing consolidation of the secondary schools in small districts, the districts, too, should be consolidated.

Recommendation 6. It is recommended that New Mexico incorporate requirements that secondary schools of fewer than 250 ADM must be declared "necessarily existent" in order to qualify for full school size adjustment units. It is further recommended that:

-the criteria for "necessarily existent" be established in law, that the law place the burden of proof upon the local school board, and that the decisions be made by the State Board of Education according to its regulations;

-the penalties not be imposed for two years after enactment, and that the penalties be increasingly severe so that after some few years (perhaps five years after imposition) school size adjustment units would be eliminated for small secondary schools not declared to be necessarily existent; and

-all school districts be required by law to be unified, i.e., offer grades K-12.

Criteria for determining a "necessarily existent," school should be based on bus-ride time, distance, or combination thereof, by the usually-traveled route from the school to a larger, similar-level attendance center.

In regard to the limiting size for necessarily existent, the school which hovers about the cut-off point must be protected from periodic flip-flops. Some steady-state below the cut-off point for some period of time should be considered, as well as current trends and projections for the near future.

In regard to consolidation, it is not necessary--nor necessarily desirable in many instances--for a small district to consolidate entirely with one larger district, nor for a small secondary school to consolidate entirely with one larger secondary school. Geography, road patterns, county lines, and residence locations of the district population may suggest that a district be consolidated with two, three, or even more neighboring districts.

Although an infinite set of combinations of the above factors could be selected, one possible set which is chosen for analysis consists of:

> Size: secondary schools of 250 ADM or fewer.
>
> Distance/time to larger similar-level attendance center: 1 hour 15 minutes but not less than 30 miles except under unusual circumstances.

Had the above requirements been in effect in 1975-1976, and assuming the 1975-1976 ADM had been steady over the immediate past few years with little chance of increasing, and assuming the 30-mile limitation (road conditions not well known to this researcher), the districts whose

secondary schools would have to be proven to be necessarily existent and the possible school size adjustment liability would have been as shown in Table 5.4. All of the districts with secondary schools with enrollments of fewer than 250 ADM are listed in the table, together with the name of and the distance to the nearest larger secondary school. Liability computations are made, however, only for those schools which are within 30 miles of the larger secondary school.

Table 5.4 incorporates Recommendation 3.

From Table 5.4 it may be noted that:

-There are 23 secondary schools with enrollments of fewer than 250 ADM which are located within 30 miles of larger secondary schools.

-The high school size adjustment money (under Recommendation 3) which would have flowed to the 23 districts in which the schools are located would have amounted to $2,288,588.

-The cost of transporting all of the secondary school students to the larger school would have been $365,816; thus,

-The schools could have been closed and the students bused to larger schools with their inherently broader program, with a saving of $1,922,772.

Further savings could be possible: size adjustment units to the larger, consolidated schools and districts would be less than for the schools and districts as currently configured.

It is not the intention of this recommendation to force the closing of small elementary schools. Decisions on closing small elementary schools may be made by the local boards of education of the larger (geographically) and bigger (enrollment) school districts resulting from the consolidation of small secondary schools and small school districts. If the recommendation

Table 5.4

Effect of "Necessarily Existent" Criteria on School Districts with Secondary School Enrollments of 250 ADM or fewer and with Distance to Nearest Larger Secondary School Less than 30 Miles

#	District Name	Sec ADM	Nearest Larger Sec School/ Distance(mi)	1975-76 Total Units with Rec'n 3	HSSA Units Rec'n 3	Possible Penalty (%)	Possible Penalty at $703/ Unit($)	Possible Add'l Trans. Costs*
50	House	43	Ft. Sumner-36					
83	Encino	61	Vaughn-18	256.440	80.337	31.3	56,477	5,638
28	Mosquero	64	Roy-18	287.028	83.153	29.0	58,457	5,638
58	Elida	64	Portales-24	315.925	83,153	26.3	58,457	7,517
15	Grady	77	Clovis-35					
11	Maxwell	78	Springer-13	355.625	98.231	27.6	69,056	8,143
52	San Jon	79	Tucumcari-24	359.263	99.777	27.8	70,143	15,034
34	Corona	82	Vaughn-31					
27	Roy	97	See Mosquero					
7	Lake Arthur	103	Artesia-8	458.306	122.673	26.8	86,239	5,011
59	Floyd	104	Portales-18	433.860	123.552	28.5	86,857	11,275
85	Des Moines	106	Raton-37					
51	Logan	107	Tucumcari-22	469.384	125.723	26.8	88,383	13,781
3	Quemado	107	Magdalena-77					
40	Capitan	123	Carrizozo-20	560.992	139.493	24.9	98,063	12,528
37	Carrizozo	124	See Capitan					
39	Hondo	126	Ruidoso-22	536.638	140.999	26.3	99,122	13,781
60	Dora	126	Portales-14	553.166	141.372	25.6	99,385	8,770
26	Vaughn	128	See Encino					
45	Wagon Mound	130	Springer-24	562.148	143.939	25.6	101,189	15,034
35	Tatum	140	Lovington-22	863.453	151.200	17.5	106,294	20,671
14	Melrose	141	Clovis-24	626.811	151.529	24.2	106,525	22,550
82	Mountainair	144	Estancia-33					
5	Hagerman	162	Artesia-16	909.046	164.268	18.1	115,480	15,034
2	Reserve	164	Silver City-92					
13	Texico	167	Clovis-9	881.205	166.833	18.8	117,284	8,456
48	Cloudcroft	169	Alamogordo-19	655.361	167.817	25.6	117,975	17,852
78	OjoCaliente	193	Espanola-27	1,039.821	177.581	17.1	124,839	25,369
8	Cimarron	207	Springer-25	888.097	180.443	20.3	126,851	31,320
56	Jemez Mtn.	233	Cuba-25	1,126.717	186.581	16.6	131,166	31,320
6	Dexter	240	Roswell-17	1,230.955	187.183	15.2	131,590	21,298
32	Eunice	246	Hobbs-18	1,274.249	187.439	14.7	131,770	22,550
21	Loving	0	Carlsbad-10	541.443	—	—		
84	Clayton Amistad	54	Clayton-39					
23	Silver City Cliff	142	Silver City-29	9,839.967	152.183	1.5	106,985	27,248
46	Alamogordo Mesa	69	Cloudcroft-22 Alamogordo-41	If Mesa area were consolidated w/Cloudcroft, Cloudcroft may remain as "necessarily existent."				
Total				24,356.516	3,255.459	13.2	2,288,588	365,816

*Determined by the state average route-mile cost ($.87) in 1975-1976 and the round-trip distance between the schools. It was assumed that one bus would be used for up to 66 students, 2 buses for 67 to 132 students, etc. On a route-mile cost basis, these figures are higher than would have been realized, for in all but four of the districts for which transportation costs were calculated, the route-mile cost was less than the state average.

is adopted, it is anticipated that a number of the secondary schools listed in Table 5.4 will be consolidated into larger districts.

Even if savings were not as great as might be indicated from Table 5.4; indeed, if there were no monetary savings at all, this investigator would recommend efforts to force consolidation of small secondary schools in order to improve the availability of equal educational opportunity as measured by breadth of program at the secondary level.

Alternative Schools

It was stated in Chapter 4 that for alternative schools to be recognized within the program structure of the funding formula, it would be necessary to provide statutory and/or regulatory definition of need and services to be provided.

In his study of transformation in alternative schools, West (1977) points out that

> . . . alternative schools are not all of a kind. They appear in a variety of formats ranging from Free Schools and Schools Without Walls to Learning Centers and Schools Within Schools. (P 7.)

In order to survive without drastic transformation, West believes that an alternative school must be protected from the bureaucratic structure, free to serve students according to the students' needs.

Part of the success of an alternative school can be attributed to the struggle--a struggle of students and staff--to meet their needs. Success in the struggle may contribute to transformation. The alternative school generally becomes institutionalized, must meet specified (often external) goals, and is subjected to the same or similar policies and

regulations as the other schools in the system. Thus many alternative schools are short lived--at least as alternatives. The schools may be disbanded, or they continue to exist not as alternatives, but as bureaucratic, as structured, and as institutionalized as the "regular" schools.

To recognize alternative schools in statute and by regulation (assuming that such schools must be "approved"--meet external standards--in order to qualify for funding recognition) is to place severe limitations on the alternative schools in developing programs which meet the needs of their students. Limiting statutes and regulations are antithetical to the concept of alternative schools.

To provide funding recognition by statute but without delineation of services--minimum standards--would permit and encourage a school district to establish a separate facility, label it an alternative school, reap the monetary benefits, and provide no more or no different services than are provided in the "regular" school.

> Recommendation 7. It is recommended that at least for the present, alternative schools not be recognized for additional funding either by program cost differential or by school size adjustment.

School districts must meet a variety of needs. If there is a need for an alternative school, the local school board must determine if the need is of sufficient priority to allocate necessary resources from within the operational budget.

Johns' Added Cost Due to Sparsity

Neither the Johns' formula nor any modification thereof is appropriate for New Mexico. Although some modification of the formula may have

applicability to New Mexico districts with enrollments of 750 ADM or greater, the formula does not meet adequately the needs of districts with 425 ADM and fewer.

The many differences between Florida, New Mexico, and other states argue that funding distribution plans should be designed specifically for the conditions present in each state. The current formula structure in New Mexico is designed for New Mexico characteristics; periodic analyses of the effects of the formula and adoption of changes to the formula indicated by those analyses are necessary to ensure the continued viability of the formula. This study is an analysis of one portion of the New Mexico funding formula; the recommendations of this study are presented for the continued improvement of the formula in meeting the needs of the students of New Mexico.

Summary of Recommendations

Despite the dearth of data on which to base the recognition of small schools and small districts, the designers of the funding formula including the school, district, and--later--the rural/isolation size adjustment factors planned exceedingly well. In regard to the three size adjustment factors, the analyses presented in this study indicate changes only in the high school size adjustment formula. The other recommendations (consolidation incentives and recognition of alternative schools) are integral to the study, but are separate from the recommendations concerning the size adjustment factors, per se.

For the convenience of the reader and future analysts, the recommendations based on the findings of this analysis are listed below:

1. It is recommended that the elementary-junior high school size adjustment factor be retained without change.

2. It is recommended that high schools be recognized for smallness at enrollments of 500 ADM and fewer.

3. It is recommended that in conjunction with Recommendation 2, the multiplier in the high school size adjustment formula be reduced to 1.5.

4. It is recommended that the district size adjustment be retained without change.

5. It is recommended that the current rural/isolation factor be retained without change.

6. It is recommended that New Mexico incorporate requirements that secondary schools of fewer than 250 ADM must be declared "necessarily existent" in order to qualify for full school size adjustment units. It is further recommended that:

-the criteria for "necessarily existent" be established in law, that the law place the burden of proof upon the local school board, and that the decisions be made by the State Board of Education according to its regulations;

-the penalties not be imposed for two years after enactment, and that the penalties be increasingly severe so that after some few years (perhaps five years after imposition) school size adjustment units would be eliminated for small secondary schools not declared to be necessarily existent; and

-all school districts be required by law to be unified, i.e., offer grades K-12.

7. It is recommended that at least for the present, alternative schools not be recognized for additional funding either by program cost differential or by school size adjustment.

The recommendations are designed to provide the resources or the means for small schools and districts with small schools to provide an adequate breadth of program, particularly at the secondary level, and thereby enhance the availability of equal educational opportunities to all students of New Mexico.

Suggestions for Further Analysis

In order to maintain the viability of the size adjustment recognition, it is suggested that a similar study be conducted two or three years following any changes in the size adjustment formulas to determine the effect of the changes and to make recommendations for further adjustments.

If the recommendation concerning school and district consolidation incentives (Recommendation 6) is adopted within the operational funding formula, it is suggested that a study of possible concurrent incentives external to the operational formula be conducted.

Appendix A

GLOSSARY[1]

Adjusted Program Units--the product of the sum of the program units and the Training and Experience (T&E) Index.

Average Daily Attendance (ADA)--the sum of the number of students in attendance each school day over a given period divided by the number of days in the period.

Average Daily Membership (ADM)--the total enrollment of students for each school day of the school year used, minus withdrawals of students, divided by the number of school days in the year used. Withdrawals of students, in addition to students formally withdrawn from the school, includes students absent from the school for as many as ten consecutive days.

Basic Program ADM--the average daily membership of students in the basic program and includes the ADM in special education Classes A and B but excludes the full-time equivalent ADM in early childhood education programs and ADM in special education programs Classes C and D.

Cost Differential or Cost Differential Factor--the numerical expression of the ratio of the cost of a particular segment of the school program to the cost of the basic program grades four through six.

Grand Total Program Units--sum of the adjusted program units and the size adjustment units.

Line Item--a budget or expenditure classification as specified in the Manual of Procedure for Uniform Financial Accounting and Budgeting for New Mexico School Districts. The line items are subsummed under the following major classifications:

1.xxx	Administration
2.xxx	Direct Instruction
3.xxx	Instructional Support
4.xxx	Health Services
5.xxx	Pupil Transportation Services

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[1]The definitions reflect, as appropriate, the Public School Finance Act (Sections 77-6-1 through 77-6-46 NMSA 1953); the Manual of Procedure for Uniform Financial Accounting and Budgeting for New Mexico School Districts; and the Instructions for Budget Preparation 1975-76.

6.xxx Operation of Plant
7.xxx Maintenance of Plant
8.xxx Fixed Charges
9.xxx Food Services
10.xxx Noninstructional Student Support
11.xxx Community Services
12.xxx Capital Outlay
14.xxx Outgoing Transfer Accounts
15.xxx Special Projects
16.xxx Operational Emergency Account
20.xxx Building Fund
21.xxx Debt Service
22.xxx Special Projects (other funds)

Net Operational Budget (Expenditures)--the money budgeted (expended) in line items 1.xxx through 4.xxx and 6.xxx through 8.xxx (see Line Item).

Operational Budget--the money budgeted in line items 1.xxx through 16.xxx (see Line Item).

Operational Expenditures--the money expended in line items 1.xxx through 15.xxx (see Line Item).

Program Element--that component of a public school system to which a cost differential factor is applied to determine the number of program units to which a school district is entitled, including but not limited to ADM, full-time equivalent ADM, teacher, classroom or public school.

Program Units--the product of the number of program elements and the applicable cost differential factor.

Pupil-Adult Ratio (PAR)--the number of pupils in the district (school) divided by the number of adults (FTE) employed in the district (school).

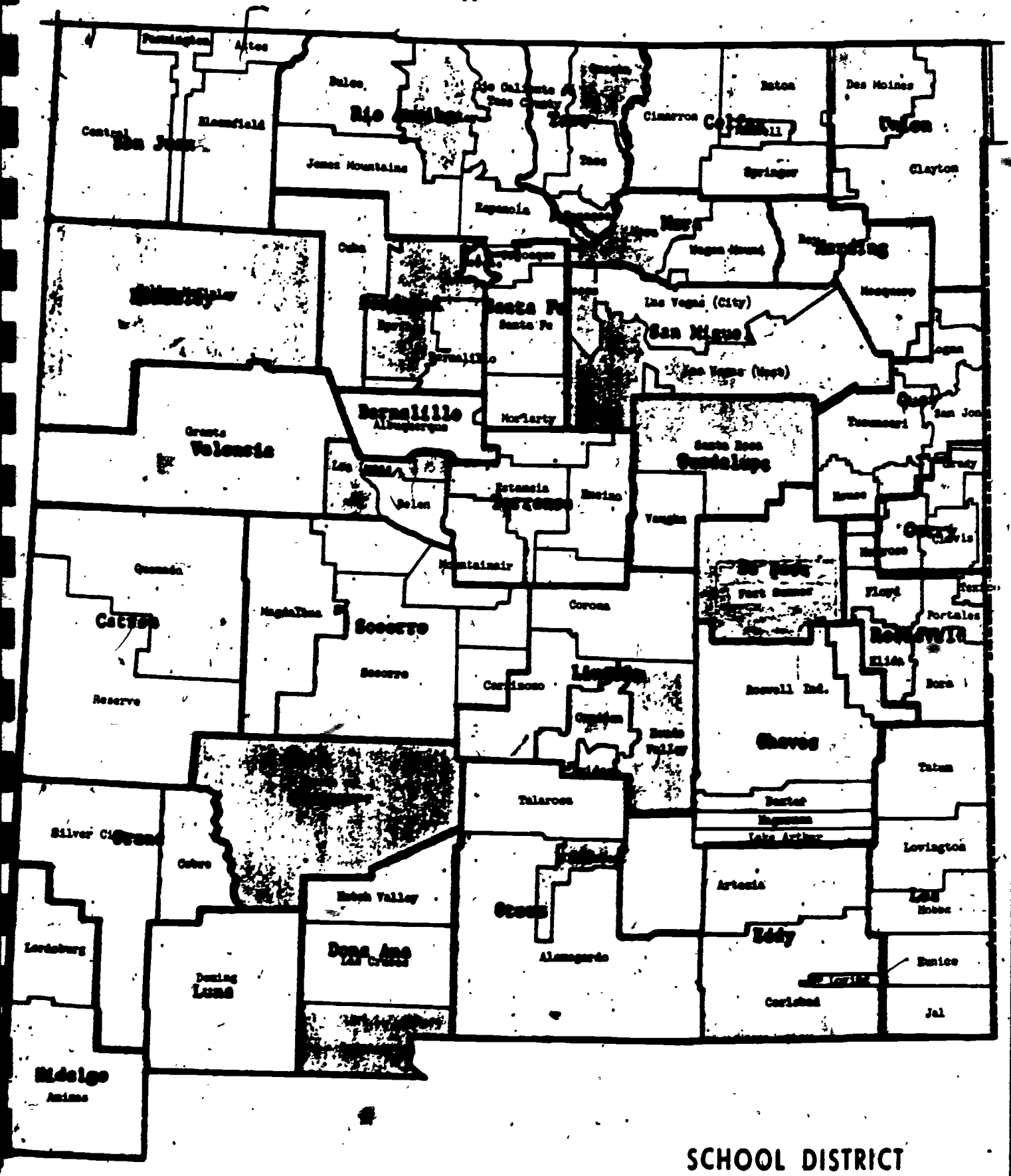
Pupil-Professional Ratio (PPR)--the number of pupils in the district (school) divided by the number of certificated professionals (FTE) employed in the district (school).

Pupil-Teacher Ratio (PTR)--the number of pupils in the district (school) divided by the number of certificated classroom instructors (FTE) employed in the district (school).

Total Program Cost--the product of the grand total program units to which a school district is entitled and the dollar value per program unit established by the legislature.

Training and Experience (T&E) Index--a factor obtained by use of a T&E matrix which recognizes instructor academic hours and degrees and years of experience.

Unit Value--the dollar value per unit assigned annually by the legislature in the General Appropriations Act.



SCHOOL DISTRICT MAP OF NEW MEXICO COUNTIES

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