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**Rules of  
Department of Elementary and  
Secondary Education  
Division 30—Division of Administration  
Chapter 660—School Finance**

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**Title 5—DEPARTMENT OF  
ELEMENTARY AND  
SECONDARY EDUCATION**

**Division 30—Division of  
Administration  
Chapter 660—School Finance**

**5 CSR 30-660.010 Procedures to Determine Indirect Cost Rates for Federal Programs and Grants**  
(Rescinded August 14, 1978)

**5 CSR 30-660.020 Schools Audits**  
(Rescinded August 13, 1982)

**5 CSR 30-660.030 Determination of the Cost of Education Index**

*PURPOSE: On November 2, 1982, Missouri voters approved Proposition C, an initiative measure to increase the sales tax for the schools and to reduce property taxes. The measure also made changes in the distribution formula for state school aid, including the addition of a new cost of education index. The law provides that the cost index for a school district shall be the proportional relationship between a statistically predicted average teacher salary for that district and the average predicted teacher salary for all school districts in the state. The law requires the Department of Elementary and Secondary Education to establish the statistical procedure for determining each district's cost index. This rule establishes the procedure as required.*

(1) Similar to the Consumer Price Index that varies from city to city, the cost of education index indicates the relative price a school district must pay, on the average, to hire a teacher. Average teacher salaries vary among districts not only because of economic factors but also because of local policy and practice. The cost of education index has been developed so as to hold constant those factors within the control of a school district. Variations in the index are based entirely on statistically significant factors beyond the district's control.

(2) Twenty-six (26) independent variable factors for each school district are used in the statistical analysis on which the cost index is based. These factors have been suggested in research elsewhere as being correlated with teacher salaries. The factors are listed in Appendix A. The value of each factor as used to determine the cost of education index for a

given school year will be based on data for the second preceding school year.

(3) In order to predict the average teacher salary for each district, a statistical procedure called stepwise multiple linear regression analysis is used. This procedure is used to determine the combination of variable factors that predicts average teacher salary most efficiently. Appendix A documents the regression model used and indicates the statistical characteristics of the variables selected. To ensure continuity in the calculation and application of the cost of education index, the most efficient model will be determined every three (3) years using the twenty-six (26) variables and the stepwise multiple linear regression analysis described in this rule.

(4) Each district's predicted average salary is determined by an equation in which state average values are used for the controllable factors and actual values for each district are used for the uncontrollable factors. The prediction equation is included in Appendix A. It will be used annually to determine the cost index for each district, with updated values for each variable in the model. The average predicted teacher salary for all school districts in the state is calculated by adding each district's predicted salary and dividing by the number of school districts. The average salary predicted for each district is then divided by the state predicted average salary. The resulting ratio is the cost of education index for that district.

*Auth: section 163.011, RSMo (Cum. Supp. 1992).\* This rule was previously filed as 5 CSR 40-660.030. Original rule filed March 2, 1983, effective Aug. 12, 1983.*

*\*Original authority 1963, amended 1967, 1973, 1977, 1982, 1985, 1986, 1988, 1992.*

**APPENDIX A  
DETERMINATION OF THE COST  
OF EDUCATION INDEX**

This appendix provides additional detail on the statistical procedures used in calculating the cost of education index. It includes a listing of the twenty-six (26) variables studied in preparing the index, the statistical characteristics of the eight (8)-variable model that most efficiently accounts for the variation in teachers salaries among districts and the predicted equation used to calculate each school district's predicted average teacher salary.

**Variables Studied.**

The following variable factors are used in the analysis to determine the cost of education index:

1. Female teachers as a percentage of total teaching staff;
2. Percent of teaching staff with master's degree or above;
3. Percent of nonacademic teaching time (special education and vocational divided by total teaching minutes);
4. Percent of teaching staff tenured;
5. Average years teachers employed;
6. Average years teachers in teaching;
7. Number of students per full-time teachers;
8. Number of students per nonclassroom professional personnel;
9. District classification;
10. District type (elementary and high school);
11. Equalized assessed valuation per eligible pupil;
12. Average income per state income tax return;
13. Aid to families with dependent children (AFDC) pupils as a percentage of enrollment;
14. Minority students as a percentage of enrollment;
15. Handicapped pupils as a percentage of enrollment;
16. Average daily attendance as a percentage of average daily membership;
17. Free lunch students as a percentage of fall enrollment;
18. Fall enrollment;
19. True market value per square mile (equalized assessed value divided by square miles in district);
20. County population divided by square miles in county;
21. Second preceding year's enrollment as a percent of fifth preceding year's enrollment;
22. Student mobility (transfers in plus transfers out divided by fall enrollment);
23. Student dropout rate (number of dropouts divided by fall enrollment plus transfers in minus transfers out);
24. County crime rate (number of offenses reported to Department of Public Safety divided by county population);
25. School district located within thirty (30) miles of a state university; and
26. Average county teacher salary.

**Determining the Best Model—Statistical Characteristics.**

To determine the variables to include in the regression model, a technique is used known as Maximum R improvement (MAXR) from the Statistical Analysis System (SAS), a computer



program proprietary to SAS Institute, Inc. of Raleigh, North Carolina.

The MAXR method first finds the one (1) variable that produces the highest correlation ( $r$ ) and then adds to the model the next variable that would yield the greatest increase in the multiple correlation coefficient ( $R$ ). The program then compares each of the two (2)-selected variables to each variable not in the model, compares possible switches and selects the three (3) variables that yield the greatest increase in  $R$  and so forth.

The program continues until the increase in  $R$  is less than a predetermined value. The present best model contains eight (8) variables and has a square multiple correlation coefficient ( $R^2$ ) of 0.8520. This means that the eight (8)-variable model for the prediction of a district's average salary accounts for eighty-five and two-tenths percent (85.2%) of the variation in average salaries among Missouri school districts. The best model will be determined every three (3) years from all of the variable factors identified for the cost index study.

The F-ratios in the second table indicate the relative power of each variable in this regression model to predict average teacher salaries. The two (2) variables which are the best predictors are the district's enrollment and the average number of years teachers have been employed in the district. The county population density is the weakest predictor in the eight (8)-variable model.

TABLE I—Analysis of Variance for the Eight-Variable Regression Model

	Degrees of Freedom	Sum of Squares	Mean Square	F Ratio	Level of Significance
Regression	8	3,526,421,724	440,802,717	387.76	0.0001
Error	539	612,738,697	1,136,806		
Total	547	4,139,160,421			
Multiple-R <sup>2</sup> =					0.8520

TABLE II—Statistical Characteristics of Variables

Variable	Name of Variable	Prediction Equation Coefficient	F Ratio	Level of Significance
Controllable	X1—Percent of Female Teachers	-2.41	25.03	0.0001
Controllable	X2—Percent of Teachers With Master's Degree or Above	+2.95	46.93	0.0001
Controllable	X3—Average Years Teachers Employed in District	+263.73	152.03	0.0001
Controllable	X4—Type of District	-1,312.32	57.19	0.0001
Noncontrollable	X5—Average Personal Income Within District	+0.09	24.73	0.0001
Noncontrollable	X6—Log of County Population Density	-224.03	5.73	0.0170
Noncontrollable	X7—Log of District Enrollment	+831.03	173.33	0.0001
Noncontrollable	X8—Average Teacher Salary in County	+0.48	73.90	0.0001
	Equation Constant	-4,811.54		

The effect of the four (4) controllable variables on the predicted salary of each district is made uniform by using the state average value instead of district values for each of these variables when calculating the predicted salary for individual school districts. Holding these variables constant has the effect of changing the value of the constant portion of the equation and reducing the actual number of variables used to predict the average salary of teachers in a district. This is done to reduce the effect of local policy decisions which account for part of the actual differences in teacher salaries among districts.

Logarithmic values for county population density and district enrollment are used in this study because previous studies have indicated a curvilinear relationship between these variables and district average teacher salaries across the state.

#### The Prediction Equation.

The coefficients for the prediction equation that resulted from the eight (8)-variable regression model are shown here. Using these coefficients, the prediction equation may be written as follows:

$$Y_p = 4811.54 - 2.41X_1 + 2.95X_2 + 263.73X_3 - 1,312.32X_4 + 0.09X_5 - 224.03X_6 + 831.03X_7 + 0.48X_8$$

The predicted average salary ( $Y_p$ ) for a given district may be obtained by substituting the state average value for each controllable variable and the district's unique value for each noncontrollable variable into the prediction equation in place of each variable's symbol. The algebraic sum of all resulting products is the predicted average salary.

#### 5 CSR 30-660.040 Minimum Salaries

*PURPOSE: This rule provides guidelines for the administration of the minimum salary for public school teachers (section 163.172, RSMo).*

(1) For the purpose of this rule unless the context clearly requires otherwise, the following terms shall mean:

(A) Eligible teacher—A certificated teacher, counselor or librarian with a salary less than the minimum salary who is employed by a public school district for not more than one (1) full-time equivalency (FTE) and assigned to teach fifty percent (50%) or more of the time in the classroom, in the capacity of a counselor or librarian, or both, shall be considered an eligible teacher for the purpose of this rule. A teaching assignment for adult or post-secondary students including assignments in

the librarian/counselor capacities shall not be considered time in the classroom for the purpose of this rule;

(B) Salary—Compensation for regular duties during the school term not to include supplemental pay for extra duties or extended contracts;

(C) Eligible district—A public school district which has adopted a salary schedule that is available to the public in the administrative office of the board of education and to the Department of Elementary and Secondary Education on request which complies with the provisions of this rule as it relates to equitable distribution of other funds for salary purposes;

(D) Minimum salary—Fifteen thousand dollars (\$15,000) for the 1986-87 school year; sixteen thousand dollars (\$16,000) for the 1987-88 school year; seventeen thousand dollars (\$17,000) for the 1988-89 school year; eighteen thousand dollars (\$18,000) for the 1989-90 school year; and subsequent years as established by the general assembly. The minimum salary for a fully certified teacher employed on a less than full-time basis shall be prorated to reflect the amounts stated previously; and

(E) Department—Department of Elementary and Secondary Education.

(2) Each eligible district shall identify each eligible teacher employed by the district on the forms designated by the department.

(3) Participating districts shall continue to provide to all eligible teachers appropriate annual district salary increases from all other sources other than the minimum salary program.

(4) For a district to meet the requirements of section 163.172, RSMo to maintain a regular salary schedule funded by revenues other than those provided through the minimum salary provisions, the district must provide previously eligible teachers whose salaries during the prior year were below the current minimum salary a percentage increase which is at least eighty-eight percent (88%) as large as returning teachers received.

(5) To determine whether a district meets the requirements of section (4), the department shall compute from the data reported in the Core Data Collection System—October cycle the average percentage increase of all teachers employed the previous year and compare that percentage increase with the average increase provided to eligible teachers. If the average percentage increase for previously eligible teachers is at least eighty-eight percent (88%) as large as the average percentage increase for all returning teachers, and if the percentage

increase for the base salary for beginning teachers is at least fifty-seven percent (57%) as large as the increase for all returning teachers, and if no full-time teacher is paid less than the base salary, and if no part-time teacher is paid less than the full-time equivalency portion of the required salary, the district will have complied with section (4).

(6) Section (5) requirements are waived for a district when less than twenty percent (20%) of its full-time teachers are eligible for state-paid minimum salary supplements and when the district's minimum salary entitlement is less than one percent (1%) of its prior year's expenditure for certificated salaries.

(7) Upon receipt of the data reported in the Core Data Collection System—October cycle and determination of the district's eligibility, the department will compute the district's entitlement under section 163.172, RSMo by summing the differences between the district salaries of eligible teachers and the minimum salary.

(8) The department will send to each district a list of eligible teachers determined from the Core Data Collection System along with the computation for the minimum salary supplement. The district will verify the list of eligible teachers and certify its accuracy to the commissioner of education within ten (10) days of receipt of the list.

(9) Upon receipt of the certified list for districts new to the program and districts with a previous year allocation of ten thousand dollars (\$10,000) or less, the department will divide the district's entitlement by twelve (12) and pay the district the portion equal to the number of months lapsed in the fiscal year and pay the remainder in equal monthly payments according to the number of months remaining in the fiscal year. If the previous year's allocation was greater than ten thousand dollars (\$10,000), unless otherwise advised in writing by the district, the minimum salary supplement shall continue to be paid monthly to the district based on the previous year's allocation with adjustments made on the current year's payment subsequent to the district's certification to the commissioner.

(10) Eligible districts receiving a minimum salary supplement monthly shall pay each teacher an amount which when added to the teacher's salary will provide a *pro rata* amount of the minimum salary. If staffing changes occur subsequent to the certification of minimum salary supplement entitlement which cause the district to receive more or fewer funds necessary to implement the provisions of section 163.172, RSMo, the

department shall be notified when the district certifies its minimum salary for the succeeding year and adjustments will be made.

(11) In the event a district does not show appropriate increases in teachers' salaries or does not pay the minimum as prescribed by law, that district shall not receive any revenues for minimum salary supplement sources until failures have been corrected.

*Auth: section 163.172.3., RSMo (Cum. Supp. 1990). \* This rule was previously filed as 5 CSR 40-660.040. Original rule filed Nov. 25, 1985, effective Feb. 24, 1986. Amended: Filed Dec. 30, 1987, effective April 28, 1988. Amended: Filed Nov. 16, 1990, effective June 10, 1991.*

*\*Original authority 1985, amended 1986, 1990.*

#### 5 CSR 30-660.050 Calculation of the Previous Amounts Per Eligible Pupil

*PURPOSE: This rule requires each public school district's previous amount per eligible pupil to be calculated in the same manner.*

In calculating the minimum guarantee, effective with the 1991-92 school year, the amount received per eligible pupil for the previous year should be determined by dividing the amount received the previous year by the number of eligible pupils on which the state aid was based.

*Auth: section 163.031.5., RSMo (1986). \* Original rule filed April 24, 1990, effective July 1, 1991.*

*\*Original authority 1963, amended 1965, 1965, 1967, 1967, 1969, 1975, 1976, 1977, 1982, 1984, 1985, 1986.*

#### 5 CSR 30-660.060 Erection of Public School Buildings (Rescinded February 26, 1995)

#### 5 CSR 30-660.065 Definition of Non-athletic, Classroom, Instructional Facilities and Classroom Instructional Capital Outlay

*PURPOSE: Subsection 165.011.5., RSMo applies only to the leasing of buildings, or structures, and defines the eligibility criteria for local districts to transfer funds from the incidental fund to the Capital Projects Fund. Paragraph*

*165.011.5(d), RSMo limits those transfers to the leasing of nonathletic, classroom, instructional facilities. Subsection 165.011.2., RSMo authorizes expenditures from the incidental fund to include expenditures for classroom instructional capital outlay. These provisions were contained in Senate Bill 676, which was passed by the 87th General Assembly and signed by the governor.*

(1) The term nonathletic, classroom, instructional facilities shall mean facilities or parts of facilities used for instructional purposes or in support of the instructional process as provided in the approved curriculum of the school district for students under twenty-one (21) years of age, but shall not include football, baseball, track, soccer, swimming or other athletic facility, gymnasium or auditorium used primarily for nonacademic extracurricular activities.

(2) The term classroom instructional capital outlay shall mean expenditures for apparatus used within a classroom or other instructional area or in direct support of a teacher engaged in the instructional process that is necessary for or enhances that process. Direct support activities may include guidance, psychological speech, library resource or other related services. Classroom instructional capital outlay shall not include expenditures for furniture.

*Auth: section 165.011, RSMo (Cum. Supp. 1993). \* Original rule filed July 22, 1994, effective Feb. 26, 1995.*

*\*Original authority 1988.*