

A Validation Study of the Oklahoma Education Funding Formulae Weights



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Presentation of Results

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The original unpublished presentation was submitted to the Cooperative Council for Oklahoma School Administration, the Oklahoma Education Association, Oklahoma State School Boards Association, and the United Suburban Schools Association in November, 2001.





Status

- Pupil Grade Level included
- Pupil Category included *
- District Calculation in progress
- Teacher Index forthcoming

* Excludes economically disadvantaged, summer weight



Background

- Oklahoma formulae
 - result in relatively high degree of interdistrict distributional equity
 - Equity has improved over time ¹
- Evidence of weights reflecting costs?
- All weights represent 32.23% of total weighted ADM statewide, FY 1998-2000

1. Maiden, Jeffrey. "A Examination Of Fiscal Effects Of Statewide Education Reform on Oklahoma School Districts." *The Journal of School Business Management* 10, no. 2 (Fall 1998), 17-25; Deering, Pamela Dale and Jeffrey Maiden. "The Fiscal Effects of State Mandated Class Size Requirements in Oklahoma." *Journal of Education Finance*, 25, no. 2 (Fall 1999), 195-210.



Guiding Principles

- Assume inherent validity of weights
- Current study is **STRICTLY** empirical
- Estimate costs, nothing more
- Simplicity (without sacrificing precision)



Limits

- DID NOT examine what any grade level, category, etc. SHOULD receive relative to others
- DID NOT examine any relationships between costs and 'quality' factors (test scores)
- Study limited to providing empirical evidence that may inform decision making



Data Sources

- Fiscal years 1998, 1999, 2000
- Oklahoma COST Accounting System
- Formula, student weighting, class size data from OSDE
- Independent cost data...



Costs versus Expenditures

- Similar studies use PRICES synonymously with COSTS
- Expenditures related to costs (statistically)
- Costs drive expenditures
- Current study utilized expenditure data, compared statistically to cost data



Cost data

- Representative sample
 - Various district sizes
 - All four quadrants of state
 - Represented all three weighted district types (small school, isolation, none)
- Focus on estimates by teaching units



Costs compared to Expenditures

- Positive, statistically significant correlation between costs and expenditures per pupil, FY 98-00*

* $r = .91$, significant at both .05 and .01 levels



Assumptions

- Reported expenditure data provide accurate estimate of costs
- Valid reporting of expenditures
- Irregularities randomly distributed, do not contaminate overall results



Procedures

- Routine quantitative procedures
 - Regression, correlation, mean comparison tests (t-tests)
- Personal contacts
 - Informative, not formal methodology
 - Teachers, administrators
 - Regular and special educators



Grade Level Weight

- Represented 11.58% of weighted ADM statewide, FY 98-00



Grade Level Results

CATEGORIES:	CURRENT	RESULT
EC half	.7	.7505
EC full	1.3	1.1612
KG half	1.3	.7536
KG full	1.3	1.2130
1 st 2 nd	1.351	1.1139
3 rd	1.051	1.1098
4 th 5 th 6 th	1.0	1.0000
7 th – 12 th , NG	1.2	1.3079



Grade Level Statistical Tests

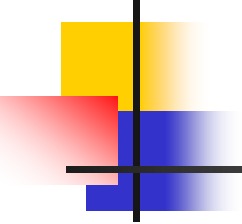
- One sample t-tests:
 - Each grade level weight significantly different from 1.0 (except 4th 5th 6th)
 - Each calculated grade level weight significantly different from it's current weight (except 4th 5th 6th)
 - Statistical power
 - PRACTICAL VERSUS STATISTICAL SIGNIFICANCE



Student Category Weights

- Special Ed weighting represented 5.91% of weighted ADM statewide, FY 98-00
- Gifted weight represented 2.73% of weighted ADM statewide, FY 98-00
- Bilingual weight represented 0.92% of weighted ADM statewide, FY 98-00
- Economically Disadvantaged weight represented 8.07% of weighted ADM statewide, FY 98-00

Pupil Category Results



CATEGORIES:	CURRENT	RESULT
LD	.40	.3587
HI	2.90	2.5121
VI	3.80	2.4281
MH	2.40	3.4346
SI	.05	.2510
Bilingual	.25	.1204
TBI	2.40	2.8984
Autism	2.40	2.2592
MR	1.30	1.3824
ED	2.50	1.6604
PH	1.20	1.1294
Gifted	.34	.3305
D/B	3.80	4.5298
Econ Disadv	.25	.1105



Pupil Category Statistical Tests

- One sample t-tests:
 - Each calculated category weight significantly different from 0
 - Each calculated category level weight significantly different from it's current weight



Small School Weight

- Represented 0.73% of weighted ADM statewide, FY 98-00



Small School Procedures

- Overall costs per pupil estimated, by school district, FY 98-00
- Expenditures minus revenue generated through the weight
- Districts eligible compared statistically to those ineligible



Small School Results

- Independent samples t-test
- Statistically significant difference in mean costs per pupil between small districts and other districts *

* $t = 4.307$, significant at .05 and .01 levels



Small School Results

- Regression analysis to test 529 as a valid constant
 - Among districts with $ADM \geq 529$ no statistically significant relationship between district ADM and per-pupil costs *
 - Among districts with $ADM < 529$ a statistically significant inverse relationship between district ADM and per-pupil costs was determined**

* $b_x = .0018$, not significant at .05 or .01 levels

** $b_x = -3.017$, significant at .05 and .01 levels



Small School Conclusions

- Results of statistical analysis indicate that districts eligible for small school supplement face higher estimated per-pupil costs than districts not eligible
- Statistical evidence in support of 529 ADM as a legitimate line of demarcation for the supplement



References

A full list of references is included in the Full Report (ISEF-003FR)