

Comparison Among Measures of Student Economic Disadvantage

*Summary of Results from
Study of Pupil Weights in Vermont's Education Funding Formula*

Presentation to the
Weighting Study Task Force

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Risk Model Estimation

First step in work:

- Statistically model relationships between indicators of aggregated student need and average levels of student achievement in Vermont districts and schools

Goal:

- Identify student need factors – and the measures that best describe these factors – that best explain differences in student outcomes across Vermont districts and schools

Measures of Student Economic Disadvantage

School Level

% FRPL-eligible Students:

1. AOE measure
2. US Department of Education Measure in Common Core of Data (CCD)

Key difference:

AOE codes schools with >40% FRPL eligible students as operating a school-wide nutrition program (i.e., %FRPL=100)

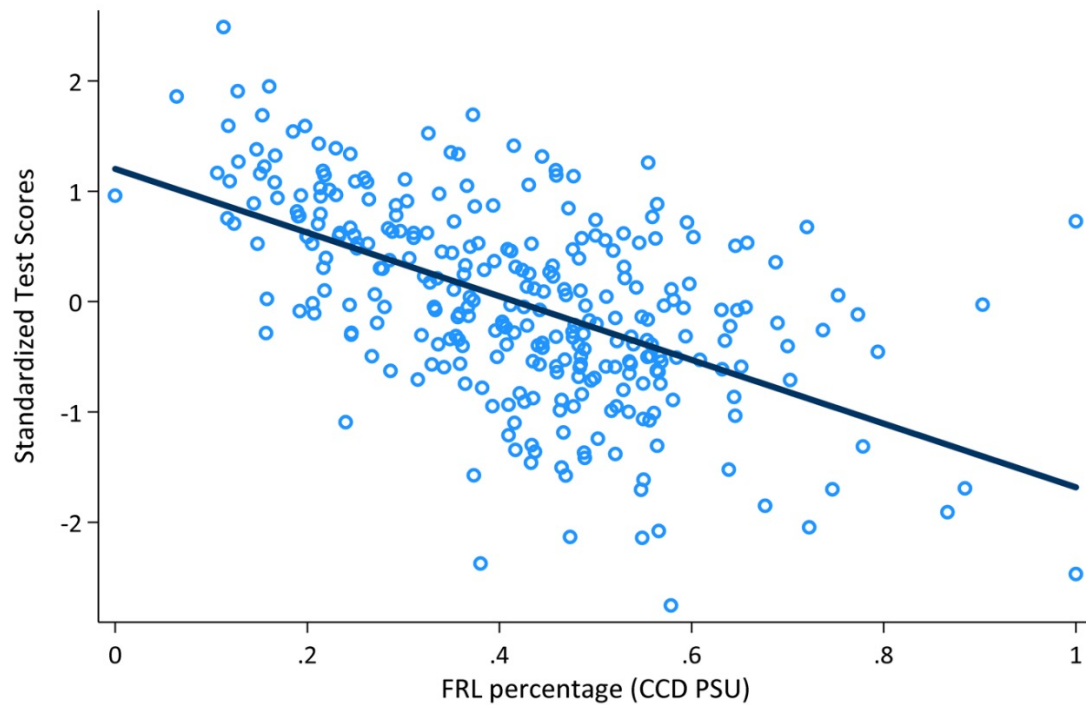
ED/CCD has actual % of students eligible for FRPL

District Level

1. **AOE measure of economic disadvantage**
 - Uses data from VT Department of Child & Families
 - Share of children residing in family units who receive nutrition benefits
 - Currently used in equalized pupil calculations
2. **% of school-aged children residing in a district (ages 5-17) who are identified as living in poverty**
 - Uses data from the US Census Bureau's Small Area Income Poverty Estimate (SAIPE)

Relationship Between School-Level Measures of Student Need and Student Outcomes

	School-Level Average Test Score (1)	% of FRPL Eligibility (CCD) (2)	% of FRPL Eligibility (AOE) (3)	% Free Lunch (AOE) (4)	% Reduced-Price Lunch (AOE) (5)
(1) School-Level Average Test Score	1.00				
(2) % of FRPL eligibility (CCD)	-0.61	1.00			
(3) % of FRPL eligibility (AOE)	-0.55	0.85	1.00		
(4) % Free Lunch (AOE)	-0.48	0.70	0.86	1.00	
(5) % Reduced-Price Lunch (AOE)	-0.23	0.28	0.20	0.17	1.00



The fitted line shows that, on average, schools with the **lowest percentage** of students who are **FRPL-eligible** have student outcomes **approximately a full standard deviation higher** than the state average, whereas schools with comparatively **high percentages** of students who are **FRPL-eligible** perform **more than a standard deviation below** the state average.

Regression Model Fit (School-level), When Including Different Measures of Economic Disadvantage

	Model 1	Model 2	Model 3
% of FRPL Eligibility (CCD)	-3.348*** (0.195)		
% of FRPL Eligibility (AOE)		-2.800*** (0.186)	
% Free Lunch (AOE)			-1.970*** (0.170)
% Reduced-Price Lunch (AOE)			-2.324** (0.783)
Constant	1.149*** (0.0878)	1.062*** (0.0925)	0.761*** (0.108)
N	3,137	3,137	3,137
R ²	0.434	0.365	0.304

Relationship Between District-Level Measures of Student Need and Student Outcomes

	District-Level Average Test Scores (1)	Poverty Rate (AOE) (2)	Poverty Rate (SAIPE) (3)
(1) District-Level Average Test Scores	1.00		
(2) Poverty Rate (AOE)	-0.61	1.00	
(3) Poverty Rate (SAIPE)	-0.49	0.62	1.00

Measure Selection Conclusions

Best-available Proxies for Extent of Student Economic Disadvantage:

- **School-level**

- US Department of Education's FRPL-eligible measure (as reported by CCD)

- **District-level**

- AOE's existing measure of economic disadvantage, used in existing equalized pupil calculation