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

Presentation to the
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Legislative Request

The Vermont Agency of Education (AOE) was directed, under Section 11 of No. 173 of the 2018 Acts and Resolves of the Vermont General Assembly (Act 173) to undertake a study that examines and evaluates whether:

- The **current weights** for economically-disadvantaged students, English language learners (ELL), and secondary-level students **should be modified**

- **New cost factors** and **weights** should be incorporated into the equalized pupil calculation; and

- The **special education census grant should be adjusted** for differences in the incidence of and costs associated with SWD across school districts.

Study Design

Our approach to this study was focused on six key objectives:

1. Developing a **national profile** of cost factors and funding mechanisms used in state education funding formulae.

2. Obtaining **stakeholder perceptions** and **experiences** with existing funding formulae.

3. Identifying aspects of **student need** and **local educational context** that **account for differences in the cost** of educating students to common standards.

4. Empirically deriving **weights** for a select set of cost factors that can be included in Vermont's school funding formula.

5. Assessing whether **further adjustments** to the census-based **special education block grant** are needed.

6. Developing **simulations** that can be used to **predict the effec**t of various changes to the funding formulae.

Differences in the Cost of Education

- States are **responsible for ensuring equal educational opportunities** for all students. However, equal opportunity **does not** necessarily translate to **equal educational resources.**

    - Students come to school with **dissimilar learning needs** and socioeconomic **backgrounds** that may **require different** types and levels of **educational supports** for them to **achieve common outcomes**.

    - **Schools** in **different contexts** may also require **different levels of resources** to provide **equal opportunities** – e.g., **scale of operations** or the **prices** they must pay for key **resources**.

Framework for Understanding Differences in Educational Costs

Factors Impacting Educational Costs That Are Outside School District Control

Individual Student "Risk" (where specific students require specific programs/services/ interventions)	Social Context of Schooling (collective student population has greater need)	Scale and Sparsity	Geographic Variation in Input Prices
Disability Status English Language Learners (Requires specific staff, with specific credentials to provide services children in need)	Concentration of Economic Disadvantage (Generally requires schoolwide supports involving additional staffing resources such as, expanded pre-k options, smaller class sizes, specific pupil-support staff, etc.)	District and School Enrollment Size (Affects required staffing ratios) Grade Level (Differences in academic and non-academic programming) Population Sparsity (Affects transportation costs) Degree of Rurality (Affects cost of providing specialized services)	Employee Wages (Wage required for recruiting and retaining comparably qualified teachers, administrators and other staff) Non-Personnel Resources (Includes contracted services, fuel and utilities, equipment, materials and supplies)

Adjusting for Differences in Educational Costs

ALL state education funding formula include adjustments for differences in educational costs across school districts.

This is accomplished by:

1. Identifying **specific factors** that account **differences in educational costs** across districts

2. Developing policies that **direct state aid** in ways that **offset (or equalize) cost differences** across school districts

National Profile:
Cost Factors Incorporated In State Funding Policies

Student Need

- Students with disabilities/special education (All)

- Economic disadvantage/at-risk students (47 states)

- English-language learners (48 states)

- Gifted and talented students (35 states)

- Grade level (32 states)

Scale & Sparsity

33 States recognize that small districts and schools, and those located in sparsely-populated areas, face higher per-pupil costs

- 11 states identify districts/schools based solely on size
- 1 state identifies districts based solely on population density
- 21 states condition aid on a small district/school being "geographically-necessary" (both small and isolated)

Geographic Variation in Resource Prices

11 States incorporate "regional cost adjustments" in their formulae

Mechanisms for Allocating Additional State Aid

- All states rely on a variety of different mechanisms for allocating additional aid to school districts to offset differences in costs, including:

    - Single student weights or per capita stipend amounts

    - Multiple student weights

    - Resource-based allocations

    - Cost reimbursement

    - Categorical grant programs

    The "mechanisms" incorporated in policy can differ by cost factor.

Vermont's School Funding Policy

The State's existing policy largely relies on localities to make appropriate adjustments to their annual budgets for cost factors and then adjusts for differences in costs in its funding policy through:

1. **Categorical grants** that provide supplemental funding for specific programs or services.

2. **Weighting** a district's average daily membership for cost factors, and then **using districts' weighted membership** to **equalize local per pupil spending** for the purpose of calculating **local tax rates**.

Vermont's Three Primary Categorical Grant Programs

Categorical Grant	Description	FY19 Appropriation
Special Education	The special education finance program administers the State's special education funding laws. The current state funding formula for K-12 services is a reimbursement system.	$189,382,665
Transportation	Transportation aid is available to reimburse up to half of school district expenditures to transport students to and from school. Exact reimbursement percentages are limited by appropriated amounts and are determined by the amount of district expenditures.	$9,551,507
Small Schools	Small school districts operating at least one school are eligible for a small schools support grant if the two-year average enrollment is less than 100 or if the average grade size is 20 or fewer.	$7,274,974

*Vermont's categorical grant programs provide **explicit**, additional state aid that **offset direct expenditures** in school district budgets.*

Weighting

Vermont's education funding formula uses **weights** to **calculate the number of equalized pupils** in a school district.
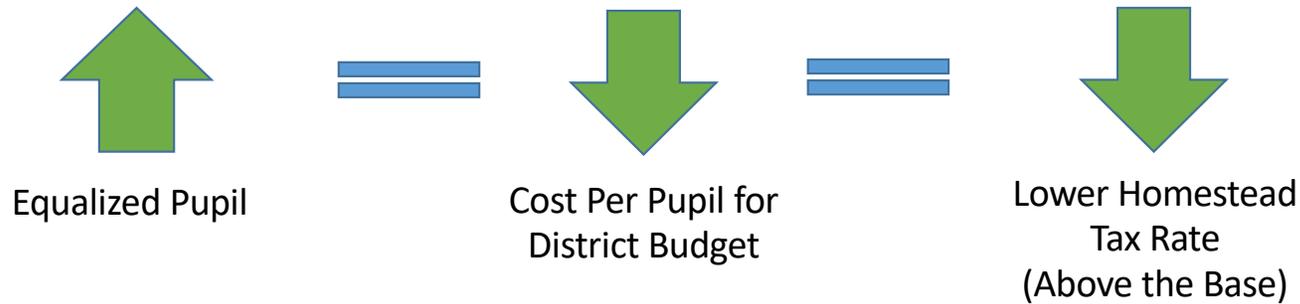
Specifically, the weights:

- **Implicitly adjust** for spending differences by equalizing per pupil spending across districts according to differences in educational costs

- **Impact local tax burden** to pay for the additional cost of ensuring all students achieve common educational standards

Weights DO NOT generate additional state revenue for local school districts; rather they impact local tax capacity to generate education-related revenues

Impact of Equalized Pupil Calculation on Tax Rates

Assuming the same level of education spending in a school district, the number of equalized pupils in a district impacts local tax capacity.

Example 1

Equalized Pupil

Cost Per Pupil for District Budget

Lower Homestead Tax Rate (Above the Base)

Example 2

Equalized Pupil

Cost Per Pupil for District Budget

Higher Homestead Tax Rate (Above the Base)

Existing Weights

Currently, Vermont recognizes four categories of students that are presumed to have higher or lower costs (current weighting in parentheses):

1. **Economically-disadvantaged students (1.25)**

   - The value of the weight predates the passage of Vermont Act 60 (1997), and there is no evidence that the value of the weight was empirically derived

2. **English language learners (ELL) (1.20)**

   - The value of the weight predates the passage of Vermont Act 60, and there is no evidence that it was empirically derived

3. **Secondary students (grades 7-12) (1.13)**

   - 2017 AOE report evaluated secondary weight and found a ratio of 1.18 between secondary and elementary per pupil spending (when elementary spending was about 1.0)

4. **Pre-kindergarten students (0.46)**

Stakeholder Perspectives on Cost Factors & Weights in Vermont's Existing Formula

There was agreement among stakeholders that:

1. The **cost factors** incorporated in the calculation **do not reflect current educational circumstances.**

2. The **values** for the existing **weights** used to calculate districts' equalized pupil counts have **weak ties** with the actual differences in the **costs for educating students** with disparate needs or **operating schools in different contexts**.

3. The State's **Small Schools grant** program is **problematic** in its design and current operation

4. There is a **need** for **specific and targeted grant aid** to support schools struggling to meet different and increased levels of student need due to **childhood trauma** and **mental health concerns.**

Stakeholder Perspectives on Special Education Census Block Grant Calculation

Stakeholders were **mixed in their perspectives** on the **need for potential adjustments** to the census grant calculation for differences in student poverty across school districts.

- In their words:

  - At one end of continuum, ***"The sky is not going to fall."***

  - At the other end of continuum, ***"The correlation between poverty and disability is strong."***

  - Somewhere in the middle, ***"It's too soon to tell whether the grant will be a problem."***

Stakeholders who were concerned about how the census grant will be calculated also recognized that, in part, their **apprehension** was **tied to concerns** about challenges with the **existing system for weighting pupils**.

For example:

- If the weight for poverty was adjusted to reflect what they thought was the *"true differential in costs"* in educating economically-disadvantaged students and students with complex socio-emotional needs stakeholders indicated they would be *"more comfortable"* with the existing census grant calculation.

Stakeholder Perspectives on Small Schools Grant

- Stakeholders were **uniformly opposed** to continuing the Small Schools grant program.

  - In the words of one stakeholder, *"Everyone is looking for a better way forward."*

- Nearly all interview participants viewed the Small Schools grant program as **fundamentally at odds with the policy goals articulated in Act 46**.

- There was general agreement, however, that the state needs to support **geographically-necessary small schools.**

  In the words of one stakeholder, *"We don't want to create disincentives with respect to Act 46 – but, we want to address factors that stress schools and impact risk to equal opportunity."*

- In general, stakeholders felt that **incorporating weights** for **school size** and **"rurality"** in the equalized pupil calculation would **alleviate concerns** related to eliminating the Small Schools grant program.

# Other Considerations Identified by Stakeholders

- Concerns about the impact of Vermont's **Early College Program (ECP)** on a districts' long-term weighted membership.

  - General consensus that ECP students **should be counted** in a district's weighted long-term membership as a **fraction of a full FTE student**, as opposed to the existing practice of not including them at all

- Underlying concern that efforts to **update the equalized pupil calculation** to better reflect costs and introduce *"more equity into the system"* **may not translate** to increased levels of spending in districts with higher need.

  - In some low-spending districts, additional tax capacity generated by a higher equalized pupil count would be seen as an **opportunity to reduce taxes**, **rather than increase spending**.

Evaluating Cost Factors & Weights Included in Vermont's Education Funding Formula

Key task was to consider the appropriateness of the cost factors and weights to be used in Vermont's equalized pupil calculation. Specifically:

1. What **cost factors** should be accounted for in Vermont's equalized pupil calculation?

2. When calculating the number of equalized pupils, what should the **magnitude of the adjustment** (or weight) be for each cost factor?
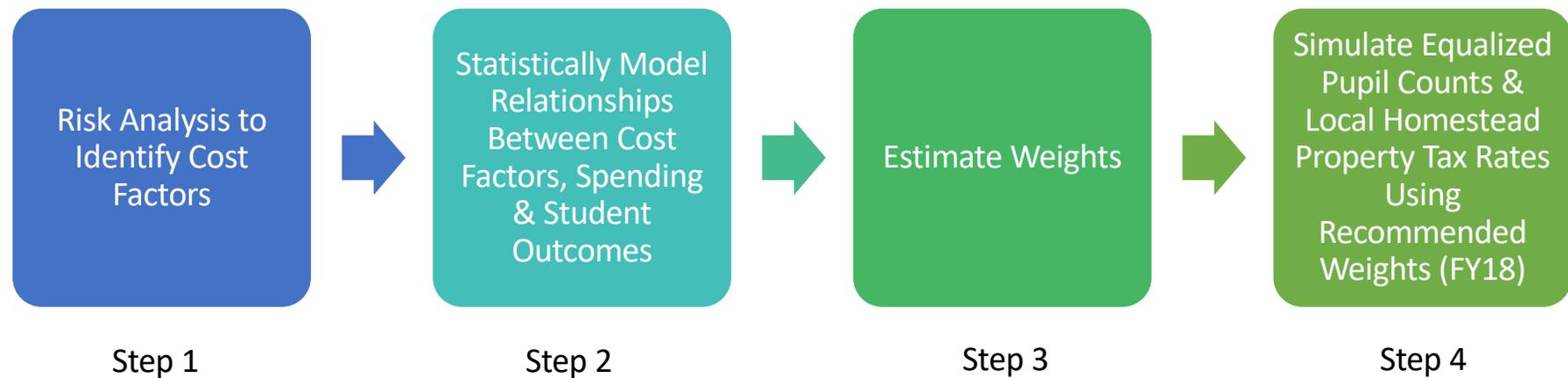
Risk Analysis Findings

School

- The percentages of students who are **economically disadvantaged**, **SWDs (mild and severe),** and **ELLs** are relevant measures of student need.

- The negative relationship between the share of students who are economically disadvantaged in a school and average levels of student achievement is **more pronounced at the middle and secondary levels than at the elementary level**.

- The negative relationship between the share of students who are economically disadvantaged in a school and average levels of student achievement is **weaker in smaller schools than it is in larger schools**

District

- The poverty rate and the percentage of students with mild disabilities were relevant measures of student need.

- The negative relationship between the share of students who are economically disadvantaged in a district and average levels of student achievement is **stronger in districts in more populated areas** than in districts in more sparsely populated areas of the state.

Cost Function Analysis

We estimated three sets of cost function models, each corresponding to a different unit of analysis:

- **Model 1** examined educational spending for **Vermont districts** for the 2009–2018 academic years.

- **Model 2** examined educational spending for **Vermont schools** for the 2009–2018 academic years. The model used data provided by Vermont AOE.

- **Model 3** examined educational spending for districts in the **Northeast region**, including Vermont, New Hampshire, Maine, and Massachusetts (FY 2018)

Estimating multiple cost function models allowed us to evaluate the consistency of our findings across different units of analysis and data sources.

Weight Estimation Models

- Used the **cost function model results** to **estimate weights** that can be incorporated into Vermont's existing school funding formula.

- In the weight estimation, we **gave special consideration** of **students with disabilities** as a **cost factor** when deriving weights:

    - **Models make different assumptions** about whether to include SWD as a cost factor in the statistical models:

        - **Control** for cross-district or –school differences in SWD

        - **Do not control** for cross-district –school differences in SWD

    - Why is this important?

        - **Practical implications** for all how all all **other cost factors are interpreted**

Identified Cost Factors

Five cost factors were identified that are related to differences in educational costs across Vermont school districts.

1. Percentage of students who are **economically disadvantaged**

2. Percentage of students who are **ELL**

3. Percentage of students who are enrolled in the **middle-** and **secondary-grades**

4. Indicators for **geographically-necessary small schools**

5. **Population density** of the community in which a district is located

Recommended Weights

- Recommended weights were derived from the **Vermont-specific school-level models**.

- Weights derived from the school-level model were **most consistent** with those derived using data for **districts in the Northeast region**, particularly the weights for economic disadvantage and ELLs.

			Weight Value	
Cost Factor	Measure	Existing Weight (1)	New Weight Derived from Models *Without Controls for SWDs* (2)	New Weight Derived from Models *With Controls for SWDs* (3)
Student Needs	Poverty Rate (AOE)	0.25	3.14	2.97
	% of ELLs	0.20	0.57	1.58
Context				
Enrollment	<100 Students		0.24	0.26
	101–250		0.12	0.12
Population Density	<36 Persons per Square Mile		0.23	0.23
	36 to <55		0.17	0.17
	55 to <100		0.11	0.11
Grade Range	% Middle Grades Enrollment		1.23	1.23
	% Secondary Grades Enrollment	1.13	1.13	1.20
	Pre-kindergarten	0.46		

The decision to adopt weights from column 2 or 3 depends on whether policymakers decide to adjust for differences in special education costs through the general education funding formula or census block grant calculation.

Adjusting the Census-based Special Education Grant Amount

A census grant might be adjusted in two ways for differences in the level of student poverty across districts:

1. **Increase the uniform base amount** (per-capita flat grant) for districts that serve greater shares of students who are economically disadvantaged; or

2. **Inflate the count of students** to which the per-capita grant amount is applied.

Inflating student count was preferred by stakeholders, since this option retains transparency and predictability in the calculation.

Options Considered for Revising Special Education Census Grant Calculation

Simulation Scenarios	Student Count	Uniform Base Amount
Status Quo	FY2018 PK–12 ADM	$1,930 per capita
Option 1	Equalized Pupil Count	$1,930 per capita
Option 2	Poverty-Weighted Pupil Count	$1,156[a]

[a] For total state special education appropriations to remain unchanged from what is anticipated by current law, the denominator used when calculating the uniform base amount is modified to be the number of poverty-weighted pupils (not PK–12 ADM).

Policymaking Simulations

- In the report, we **simulate** how the **cost factors** and **weights** derived from our empirical analysis might be **integrated into Vermont's existing school funding formula**. The simulations include:

    - **Two scenarios** that **apply** the **cost factors** and **weights** derived from our cost function models

        - **Scenario A**: **Weights** Estimated Using Models **Without** Controls for **Special Education**

        - **Scenario B**: **Weights** Estimated Using Models **With** Controls for **Special Education**

    - **Three approaches** that **adjust** the **census-based special education block grant** to account for differences in special education costs

Summary of Equalized Pupil Calculation Simulation Scenarios

	Existing Weights	Scenario A — Apply Weights Estimated Using Models Without Controls for Special Education		Scenario B — Apply Weights Estimated Using Models With Controls for Special Education	
		Simulation A.1 (VT Estimation)	Simulation A.2 (Substitute Regional ELL Weight)	Simulation B.1 (VT Estimation)	Simulation B.2 (Substitute Regional ELL Weight)
Student Needs					
Economically Disadvantaged Student Count	0.25	3.14	3.14	2.97	2.97
ELL Student Count	0.20	**0.57**	**1.33**	**1.58**	**1.27**
Other Cost Factors					
Grade Range					
% of Students Enrolled in Grades 6–8		1.23	1.23	1.23	1.23
% of Students Enrolled in Grades 9–12	1.13	1.13	1.13	1.20	1.20
Population Density					
<36 persons per square mile		.23	.23	.23	.23
36–54 persons per square mile		.17	.17	.17	.17
55–100 persons per square mile		.11	.11	.11	.11
School Size (conditional on population density)					
<100 students		.24	.24	.26	.26
101–250 students		.12	.12	.12	.12
Prekindergarten Student Count	0.46	0.46	0.46	0.46	0.46
Adjustments to Special Education Census Grant		No adjustment to census grant. Adjustments for special education cost are reflected in a district's equalized pupil calculation.		Revise census grant calculation. Change the number of pupils used in the calculation to either (1) the number of equalized pupils (Option 1) or (2) the number of poverty-weighted pupils (Option 2).	

*Simulations assume that school size weights are applied **only** in districts located in sparsely populated areas of the state (<55 persons per square mile).*

Special Education Simulation Models

Modifying the special education **census block grant formula** to account for differences in special education costs across districts **is appropriate if**:

1. There is **no change** to the **existing formula** for calculating a district's equalized pupil count; or

2. New **weights** are selected, they are derived from *estimation models that include controls for the share of students receiving special education* services in a district or school.

# Special Education Census Block Grant Simulations

The simulations assume **three different equalized pupil counts**:

- **Option 1.1.** The **actual FY2018 number of equalized pupils** in a district, as derived from the State's existing funding formula.

- **Option 1.2.** The **estimated number of equalized pupils in a district**, as calculated using the **new cost factors** and Vermont-specific **weights** recommended by our estimation models.

- **Option 1.3.** The estimated number of equalized pupils in a school district, as calculated for Option 1.2, with one change – i.e., **substitution the regional ELL weight** into the calculation.

A fourth scenario assumes:

- **Option 2.** Assumes the number of **poverty-weighted pupils** in a district.

Applying the Simulations to Policymaking
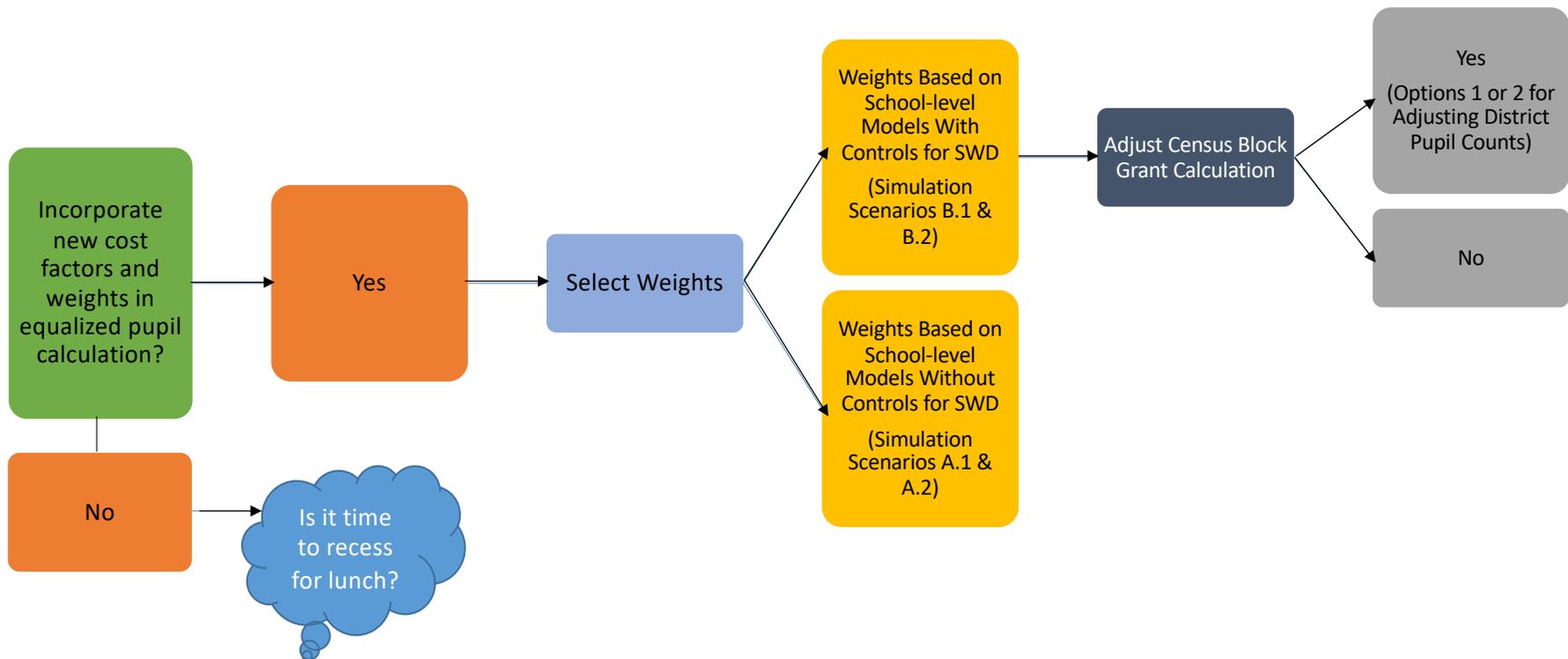
Conclusions

- **Vermont's approach to adjusting for differences in educational costs across school districts has remained relatively unchanged for the past 20 years**.
  - Stagnation in the State's education funding policies has been a source of concern.
    - Existing policies are **widely viewed as outdated** and falling short of equalizing educational costs across school districts and, by extension, opportunities to learn for students across the state.
    - The manner in which the state currently calculates the number of equalized pupils in a school district has been criticized for being **out of step with contemporary educational conditions**.
  - Existing funding programs **fail to recognize significant shifts in the State's educational policies** and practices.
    - Policies such as the Flexible Pathways Initiative, including ECP, pose new challenges for how the state counts the number of students for which a district is responsible.

Conclusions

- Findings from this study suggest that it is **time to incorporate new cost factors and weights** into Vermont's education funding formula.

  - Findings suggest that **existing weights** for **economically-disadvantaged** and **ELL students fall far short of appropriately adjusting for the cost** of educating these students to standards

  - **New cost factors** for **school size** and **population density** could replace the existing Small Schools grant program.

  - **Refining the secondary school weight**, to include middle- and secondary-level adjustments better align weights with educational policy and practice.

Conclusions

- **Modifying** the equalized pupil **calculation**, however, **may not translate** to increased levels of spending in districts with higher need.

    - The additional tax capacity generated by a higher equalized pupil count may be seen as an **opportunity to reduce taxes** rather than increase spending.

    - Need for **new sources of categorical state aid** for student **mental health** and trauma-based instruction.