Introduction to Conventional Methods of Costing Out an Adequate Education

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Meet the Presenter

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Session Overview

1. Costing-Out Study Background
2. Overview of Costing-Out Methods
3. Comprehensive Costing-Out Study
4. Discussion

1. Costing-Out Study Background

Two Fundamental Adequacy Questions

1. What is the cost of providing an adequate educational opportunity to all students in a state's public school system?
2. How should resources be allocated in order to achieve an equitable distribution of funding capable of providing an adequate educational opportunity to all public school students, regardless of need or circumstance?

The Costing-Out Process

Costing out is not just an isolated study with findings, but rather represents a comprehensive process

- Underlying Motivation and Support for Study
- Conducting Research to Provide Findings
- Translating Findings into Policy
- Review and Update of Research and Policy

Examples of Motivations for Conducting Costing-Out Studies

Studies Conducted As a Result of Litigation

- New York
- Kansas

Proactive Studies on the Part of State Legislatures

- New Mexico

Independent Investigations Conducted by Researchers

- California

2. Overview of Adequacy and Costing-Out Methods

Methods for Costing Out Educational Adequacy

Input-oriented approaches – Uses "ingredients" approach (Levin et al., 2018) to determine spending.

- Evidence-based
- Professional judgment

Outcome-oriented approaches – Spending directly observed without determining ingredients.

- Cost functions
- Successful schools

Three key cost factors that must be taken into account!

- Student needs (socioeconomically disadvantage, English learner designation and special education status)
- Scale of operations (enrollment size)
- Price level of inputs

Input-Oriented 1: Evidence-Based

Select studies of educational effectiveness from the research literature and determine per-pupil costs of necessary personnel and nonpersonnel resources.

Input-Oriented 1: Evidence-Based

Pros

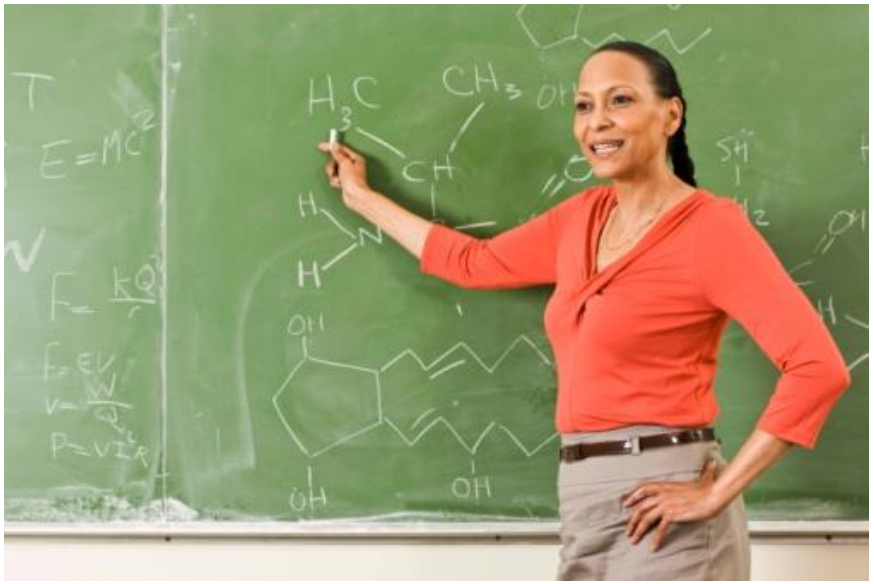
- Intuitive and practical
- Transparent and easily explainable
- Requires limited effort (extant data collection)
- Based on research (at least correlational) linking outcomes and resources

Cons

- Lack of (conclusive) research evidence
- Outcomes limited to those found in research literature, which may not be aligned with those in which policy makers are interested
- Difficult to make assertions about effectiveness of whole-school model consisting of resources from multiple independent interventions
- Lacks external generalizability and tends to promote a highly prescriptive “one-size-fits-all” model irrespective of the school or district context

Input-Oriented 2: Professional Judgment

Convene comprehensive panels of expert educators to design prototypes of schools capable of providing an adequate education to different types of students/contexts and determine per-pupil costs of necessary personnel and nonpersonnel resources.



Input-Oriented 2: Professional Judgment

Pros

- Can accommodate a wide range of outcomes in a goals statement
- Is transparent and easily explainable
- Is context sensitive
- Provides rich program documentation showing how combinations of resources would be used to produce outcomes
- Involves stakeholder involvement

Cons

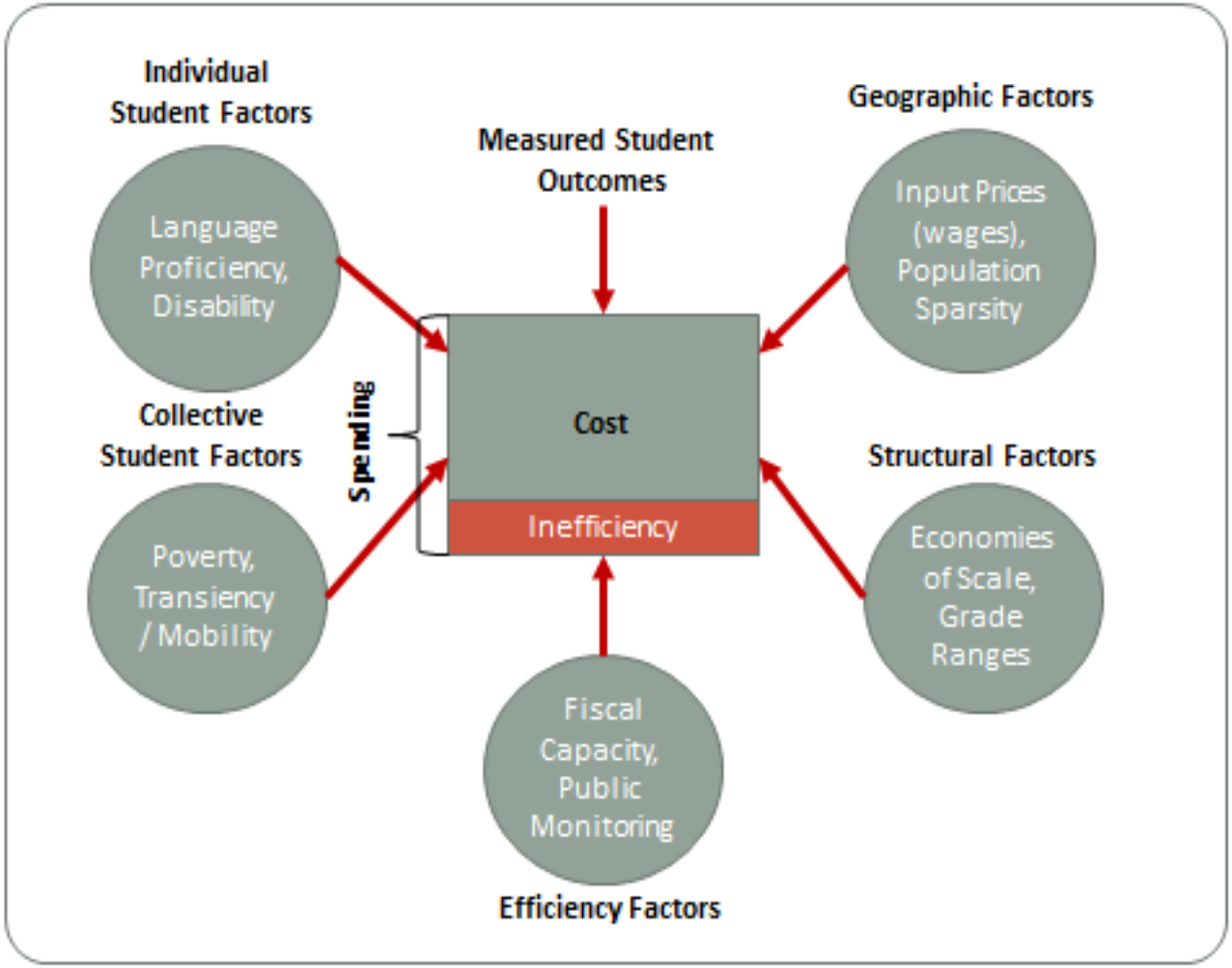
- Risk of overly rich school program resource specifications
- Based on hypothetical (nonvalidated) relationship between resources and outcomes
- Requires significant effort (both extant and primary data collection)

Outcome-Oriented 1: Cost Functions

Statistically evaluate the relationship among spending, outcomes, and cost factors. Then use model to predict cost to achieve specific level of outcome:

$$\textbf{Per-Pupil Spending} = f\,(\textbf{Outcomes}, \underbrace{\textbf{student needs}, \textbf{scale}, \textbf{price levels}}_{\textbf{Cost factors}})$$

Outcome-Oriented 2: Cost Functions



Source: Baker & Levin, 2014

Outcome-Oriented 1: Cost Functions

Pros

- Grounded in real data on existing spending, outcomes, and cost factors
- Empirical (validated) relationship between spending and outcomes
- Makes use of full range of outcomes and cost factors
- Generates measure of efficiency

Cons

- Not transparent at all and difficult to explain; cost function serves as a “black box”
- Outcomes limited to those for which data are collected; outcomes may not be aligned with those in which policy makers are interested
- Large data requirements
- Perform poorly when desired outcomes far exceed those observed in data

Outcome-Oriented 2: Successful Schools

Determine adequate cost by calculating average expenditure among (lowest spending) districts that have been identified as successful in terms of academic achievement.

Outcome-Oriented 2: Successful Schools

Pros

- Intuitive and practical
- Transparent and easily explainable
- Requires very little effort (limited extant data collection)

Cons

- Method fails to control for any cost factors (student needs, scale of operations or input price levels)
- Trimming higher spending portion from sample of successful schools in the name of efficiency is extremely misleading (i.e., there could be multiple reasons why some schools spend more/less than others not related to efficiency)

Outcome-Oriented 2: Successful Schools

- Successful schools is equivalent to performing a cost function, but not conditioning on any cost factors.

$$\textbf{Per-Pupil Spending} = f\,(\textbf{Outcomes}, \underbrace{\textbf{student needs, scale, price levels}}_{\textbf{Cost factors}})$$

- Reaction to Use of Successful Schools Approach in New York

  "*Using only the lowest spending schools is equivalent to assuming that the lowest-spending schools are the most efficient and that other schools would be just as efficient if they were better managed. Both parts of this assumption are highly questionable. The successful schools approach on which these figures are based makes no attempt to determine why some schools spend less per pupil than others; the low spending in the selected schools could be due to low wage costs and a low concentration of disadvantaged students, not to efficiency. Moreover, even if some schools get higher performance for a given spending level than others, controlling for wages and student disadvantage, there is no evidence that the methods they use would be successful at other schools.*"
  (Yinger & Duncombe, 2004)

New Hybrid Approach

Cost function and professional judgment approaches complement each other

- **Limited breadth of outcomes**
  - Cost function con: Outcomes may be narrowly defined.
  - Professional judgment pro: Outcomes can be broadly defined.
- **Tentative efficiency**
  - Professional judgment con: Specified resources may be overly rich (inefficient).
  - Cost function pro: Estimated costs are efficient.

3. Comprehensive Costing-Out Study

Comprehensive Costing-Out Study

Three necessary components to comprehensive costing-out study

1. Defining adequacy
2. Costing out adequacy
3. Developing a funding formula

Case study example of a hybrid approach

- An Independent Comprehensive Study of the New Mexico Public School Funding Formula
- Link to Diagram

Comprehensive Costing-Out Study

Phase I: Defining adequacy

- Goals Statement: Definition of what an adequate education produces in terms of expected student outcomes.
  - Sources – Education code, stakeholder engagement (surveys and town hall meetings), policy maker discussion.
  - Final Statement – Broad in terms of outcomes including both knowledge/skills and personal qualities.

Phase II: Costing out adequacy

- Recruit expert educators for multiple professional judgment panels (PJPs) each consisting of comprehensive panelist roles.
- Advance materials provided to panels.
- Convene PJP Workshop – Panels design adequate programs and specify resources necessary for school prototypes serving students of varying needs (at-risk, English learners, special education) in different circumstances.
- PJP deliberations must adhere to the acronym **GEER**:
  - Deliver the Educational **G**oals
  - Be Supported by **E**vidence-Based Approaches
  - Represent **E**fficient (Minimum Cost) Resource Specifications
  - Be **R**ealistic in Terms of Implementability

Comprehensive Costing-Out Study

Phase II: Costing out adequacy (continued)

- Use PJP data to determine school-level cost variations and project for all schools.
- Project district-level costs (administration, maintenance/operations, ancillary special education costs) for all districts.
- Aggregate school and district costs and determine overall cost projections for each district.
- Adjust overall cost projections for geographic differences in input price levels (this was not done in New Mexico).
- Important checks and balances:
  - Multiple panels working independently
  - PJP workshop materials (expert briefs and resource profiles)
  - Workshop facilitation (GEER)
  - Public transparency
  - Stakeholder and panel review

Comprehensive Costing-Out Study

Phase III: Develop Appropriate Formula

- Use final district-level projections to determine variation in adequate costs (develop formula) and project necessary funding on district-by-district basis (and for charter schools).
- Formula Development – Desirable Properties of Funding Formulas

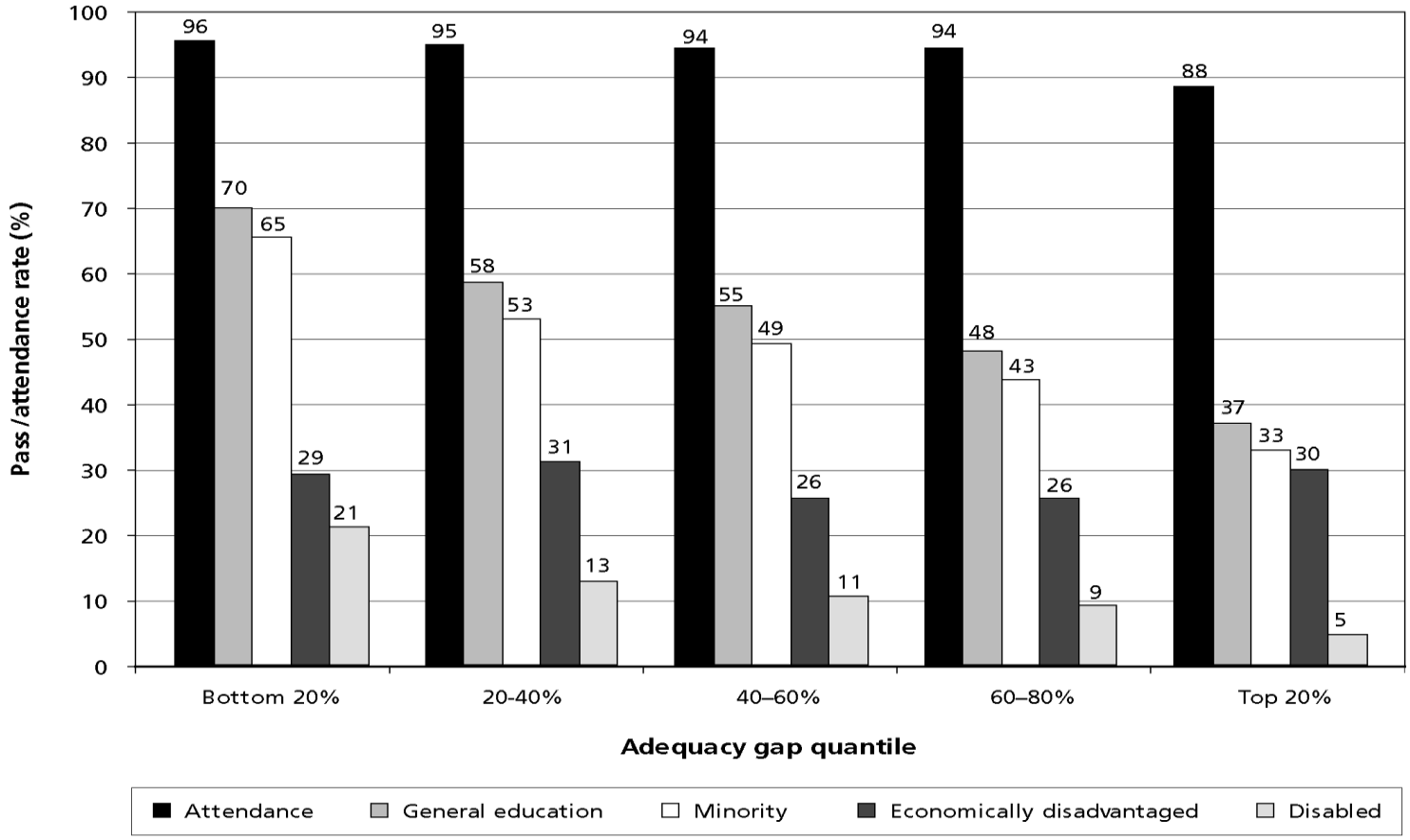
Adequate and Equitable	Predictable, Stable and Timely
Transparent, Understandable and Accessible	Outcome Accountability and Spending Flexibility
Cost-Based	Politically Acceptable
Minimizes Incentives	Reasonable Administrative Costs

- Validate Results – Test whether funding projections demonstrate a clear link between outcomes and resource needs.
  - Calculate adequacy gap (relative funding shortfall)

$$Adequacy\ Gap = \frac{Adequate\ per\text{-}pupil\ funding}{Actual\ per\text{-}pupil\ funding}$$

Comprehensive Costing-Out Study

Example of validation analysis of middle school outcomes in New York



Note: Pass rate is defined as the lower of the percentages of test takers scoring at level 3 or above on the English and mathematics CTB tests.

Source: Chambers et al. (2006).

Implementation Considerations

Phasing in funding reform

- Phase-in duration
- Hold-harmless policies

Enrollment shocks: Navigating large enrollment increases and decreases

- Smooth out shocks using moving averages.
- Employ maximum and minimum rules.

Periodic review and adjustment

- Technology with which services are delivered may change.
- Distribution of student needs may change.
- Suggest review and adjustment every five years.

4. Discussion

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Slides Excluded from Presentation

Evolving Concepts of Equity and Opportunity

Equity determination framed around questions of what and for whom.

Of what: Financial inputs, real resources, and outcomes

For whom: Students/families and taxpayers

Evolving Concepts of Equity and Opportunity

Objects of equity

- Spending per pupil
- Real resources
- Outcomes

Standards of equity

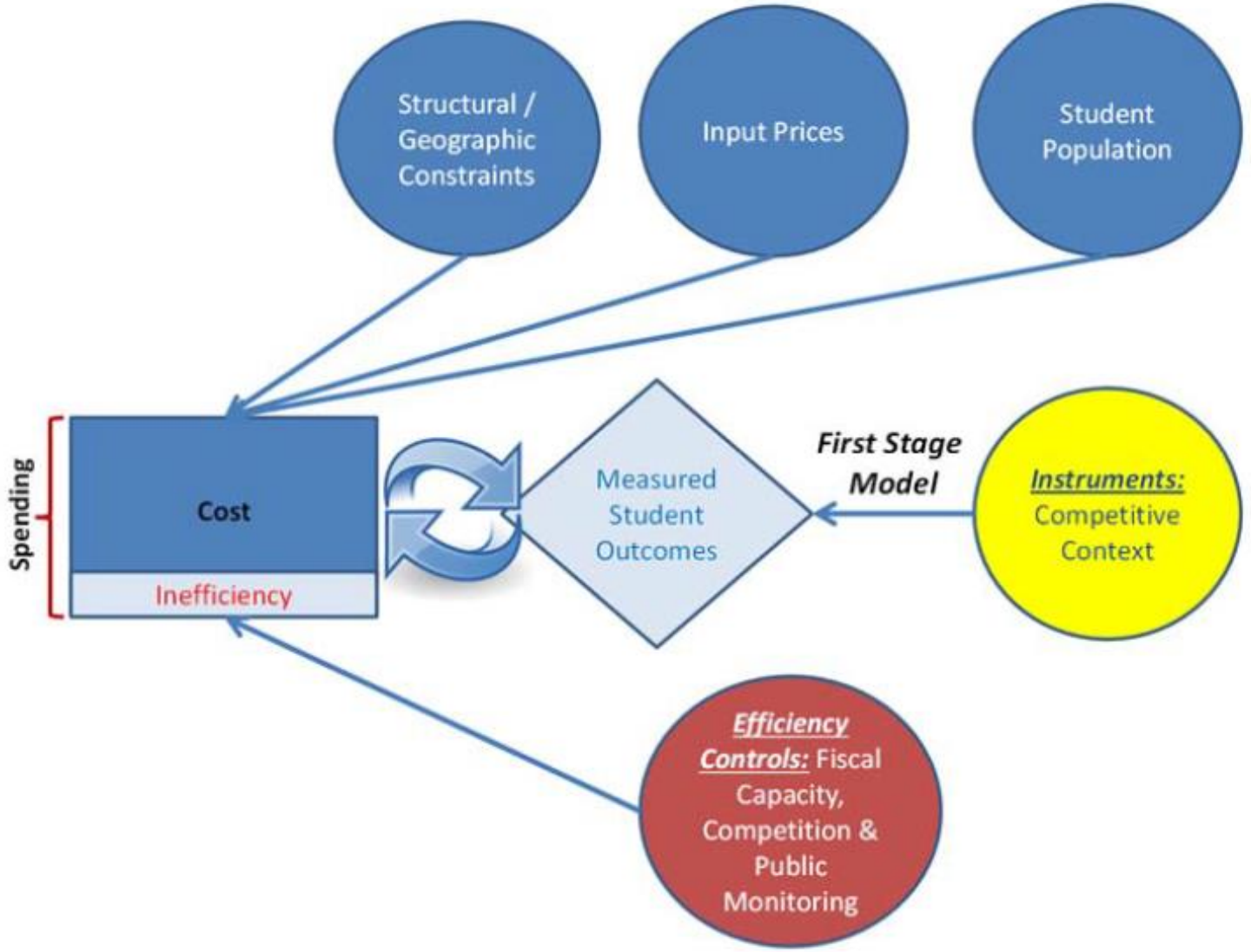
- **Access equality:** Local tax effort set such that revenue per dollar of property value is equal across districts.
- **Wealth neutrality:** Educational spending and local wealth are not related.
- **Equality:** All districts provide the same level of education defined by spending, resources, or opportunities.
- **Adequacy:** All districts provide a minimum level of education defined by spending, resources, or opportunities.

Evolving Concepts of Equity and Opportunity

Educational opportunity

Providing access to services sufficient to allow for a reasonable expectation of achieving educational outcomes given an individual makes a reasonable effort

Outcome-Oriented 2: Cost Functions



Source: Baker et al., 2018

Phase I: Defining Adequacy

Goals statement: Definition of what an adequate education produces in terms of expected student outcomes

Sources for developing goals statement

- Existing state education code
- Public input through stakeholder engagement
  - Surveys and town hall meetings
  - Outcomes: knowledge/skills and personal qualities
- Adequacy clause of state constitution (usually extremely vague)

Additional benefits of stakeholder engagement

- Opportunity to gain a better understanding of those educational program elements the public feels are most important
- Obtain public buy-in for costing-out process

Back to Diagram

Phase II: Determining Costs to Achieve Adequacy

Recruitment of professional judgment panelists

- Statewide nomination process
- Six panels made up of expert educators from different districts (two urban, two suburban, and two rural)
- Panels comprehensive with respect to roles (superintendents, principals, teachers, English learners, and special education specialists, etc.)

Phase II: Determining Costs to Achieve Adequacy

Professional judgment panel (PJP) workshops

- Panelists must design adequate programs and specify resources necessary for school prototypes serving students of varying needs (at-risk, English learners, special education) in different circumstances.
- PJP programs need to do the following (GEER):
  - Deliver the educational **g**oals
  - Be supported by **e**vidence-based approaches
  - Represent **e**fficient (minimum cost) resource specifications
  - Have a **r**ealistic chance of being implemented

Phase II: Determining Costs to Achieve Adequacy

PJP workshop materials

- Goals statement
- Expert briefs by nationally recognized scholars on programmatic elements of schools successfully serving different student populations (evidence-based)
- School-level personnel resource profiles
  - Typical (average) schools
  - Schools performing better than would be expected given their student needs and context (successful schools)

Use PJP data to determine school-level cost variations and project for all schools.

Phase II: Determining Costs to Achieve Adequacy

- Develop district-level costs and project for all districts.
  - Ancillary special education costs
  - Overhead (administration and maintenance/operations)
- Aggregate school and district costs and determine overall cost projections for each district.
- Adjust overall cost projections for geographic differences in input price levels.

Phase II: Determining Costs to Achieve Adequacy

- Review of programs and costs by stakeholders and review panel.
- Important checks and balances:
  - PJP workshop materials (expert briefs and resource profiles)
  - Workshop facilitation (GEER)
  - Multiple panels working independently
  - Public transparency
  - Stakeholder and panel review
- Back to Diagram

Phase III: Develop Appropriate Formula

Adequate and Equitable

- **Adequate:** Funding is sufficient for all districts to provide appropriate programs for the unique populations of students served.
- **Student equity:** Funding is distributed to ensure comparable program quality regardless of where the student attends school.
- **Wealth equity:** The availability of overall funding is not correlated with local wealth.
- **District-to-district fairness:** All districts receive comparable resources for students who are comparable with respect to their needs.

Phase III: Develop Appropriate Formula

Transparent, Understandable, and Accessible

- Funding system and policy objectives should be transparent and understandable by all concerned parties (legislators and other policymakers, local administrators, teachers, parents, etc.).
- The concepts underlying the formula and the procedures to implement it are straightforward.
- Allocations stemming from the formula should be replicable using publicly available data, calculation tools, and associated documentation.

Phase III: Develop Appropriate Formula

Cost-based: Funding received by districts should be linked to the unique costs a district faces per their various cost factors (student needs, scale of operations and local prices of inputs).

Minimize incentives: The funding formula should minimize incentives to overidentify or misclassify students with special needs or manipulate enrollment size.

Phase III: Develop Appropriate Formula

Reasonable administration costs

- Costs to maintain and update the funding system should be minimized at both the local and state levels.
- Data requirements, recordkeeping, and reporting should be kept at reasonable levels.

Predictable, stable, and timely

- Funding system allows policymakers to predict future demands for funding accurately.
- State and local education agencies can count on stable funding across years.
- Local education agencies are provided budgets sufficiently in advance to allow them to develop a plan to allocate resources properly.

Phase III: Develop Appropriate Formula

- **Flexibility and accountability:** Districts should be given maximum latitude in how resources are used.
- **Outcome and spending accountability**
  - State monitoring of local agencies is based on multiple measures of student outcomes.
  - A statewide system for demonstrating satisfactory progress for all students in all schools is developed.
  - Schools showing positive results for students are given maximum program and fiscal latitude to continue producing favorable results.
- **Political acceptability:** Implementation avoids large negative funding shocks and major disruption of existing services.

Phase III: Validate Projected Costs

- Test whether projected costs represent link between outcomes and resource needs.
- **Validation steps**
  - Calculate adequacy gap (relative funding shortfall)

$$\textbf{Adequacy Gap} = \frac{\textbf{Adequate per-pupil funding}}{\textbf{Actual per-pupil funding}}$$

  - Sort districts by adequacy gap and group into quintiles (five equally sized groups).
  - Calculate within-group average outcomes and analyze patterns across groups.
  - Example Finding from New York study: The average district pass rate on the eighth-grade standardized test ranged from 70% for those districts with the smallest adequacy gaps to 37% for those districts with the largest adequacy gaps.

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