

Education System's "Seeds of Durable Inequalities"

A Decomposition of Variance in Educational Inequality in Oregon

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Introduction

- Recent research highlights district-level differences in inequality in test scores (Reardon, Kalogrides, and Shores, 2020) and non-test score categorical outcomes such as discipline or gifted (Shores, Kim, and Still, 2020).
- It is unclear to what extent district policies and decisions are the "seeds of durable inequalities" (Domina, Penner, Penner, 2017), as opposed to school practices or student sorting.

Research Question

To assess district contributions to educational inequality, we ask:

- How much of the variation in Hispanic-White gaps in educational outcomes are explained between- or within-districts?
- Does the variance composition of Hispanic-White gap differ for categorical vs. test score outcome?

Data and Methods

Data: Oregon State Education Records, 2009-2017 data restricted to students in grades 4-8. On average, there are 107 Districts, 573 schools per year in this sample.

Methods: Using student-year level data, we create three measures of inequality using...

- M1: student raw outcomes**
- M2: student residualized outcomes controlling for student demographics¹, year-fixed effects**
- M3: student residualized outcomes controlling for student demographics¹, year-fixed effects, and prior year test scores in math and reading**

- We then create school-level Hispanic-White gaps for each outcome and measure
- We estimate the proportion of observed variance in inequality that is between districts based on multilevel models of the form (for school s and district d), pooling across years and controlling for a vector of school-level variables (% economically disadvantaged, % female, % White, % Hispanic, and school-level):

$$Y_{ds} = \beta_0 + \beta_* S_{ds} + \mu_d + \varepsilon_{ds}$$

¹grade-level, age, female, language at home, economic disadvantage, school-level

Findings

- Across the models and outcomes, most of the variation in Hispanic-White gaps are within districts.
- Proportion of variance at the district-level is even smaller for residualized outcomes and test scores.
- Hispanic-White gaps differ based on included control variables

Discussion

- Racial inequality seems to be created more by school practice than district policies and decisions, especially for test scores.
- Pattern is starker when student characteristics are accounted for, meaning observational gaps alone do not make this pattern as apparent.
- District-level analysis of racial gaps, too, will miss much of the variation in racial gap patterns

Limitations and Next Steps

- This analysis is limited to observing within-school processes, but prior literature highlights within-district, between-school processes. So our next step is to compare the two processes.
- We limited this analysis to Hispanic-White gaps, but we plan to extend the analysis to other subgroup differences (e.g., gender, lunch status).

Figure 1: Hispanic-White Gaps in Categorical and Achievement Outcomes

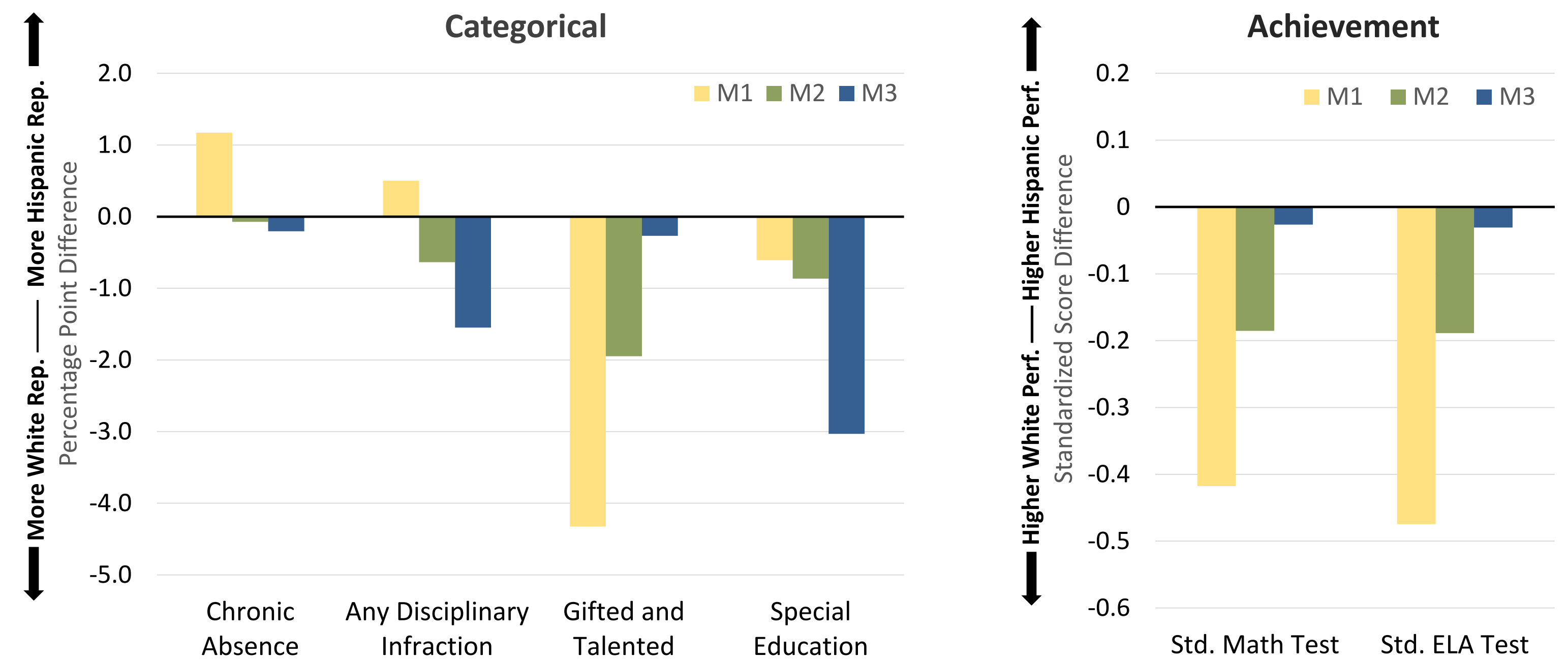


Figure 2: Percent of Total Variance between Districts in Hispanic-White Gaps

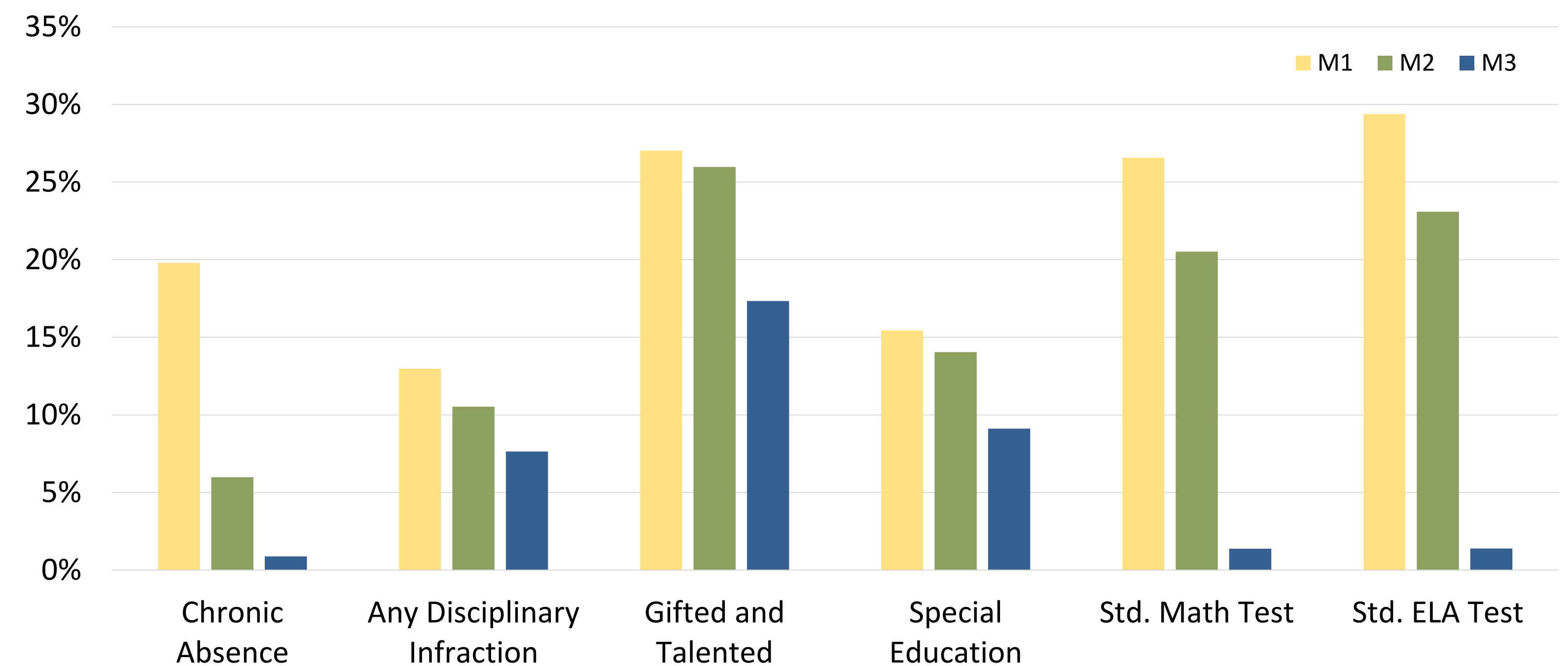


Table A.1: Variance Components of Hispanic-White Gap Outcomes

	Chronic Absence			Any Disciplinary Infraction			Gifted and Talented			Special Education			Std. Math Test			Std. Reading Test		
	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3
Var(Between-District)	0.14%	0.01%	0.00%	0.03%	0.02%	0.04%	0.06%	0.06%	0.08%	0.08%	0.07%	0.09%	0.023	0.015	0.001	0.029	0.018	0.001
Var(Within-District)	0.57%	0.21%	0.49%	0.19%	0.20%	0.53%	0.17%	0.16%	0.39%	0.44%	0.41%	0.90%	0.064	0.057	0.041	0.069	0.059	0.043