School Funding Disparities and the Plight of Latinx Children

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Abstract: This article provides a systematic decomposition of disparities in school funding by race and ethnicity using two new data resources. First, we use a national district level panel of data from the School Finance Indicators Database to evaluate recent (2012 – 2017) disparities in school revenue and spending by race in addition to poverty, across and within all states and within selected states. Next, we use data from the National Education Cost Model (NECM) to evaluate disparities in spending against estimates of "costs" of achieving national average student outcomes to determine racial differences in gaps between current spending and costs of equitable outcomes. As Latinx shares increase, per pupil spending and revenue decrease, respectively by about 4% to 7% for districts that are approximately 100% Latinx compared to those that have few or no Latinx students, controlling for poverty. More striking, when controlling for poverty, a district that is 100% Latinx is nearly 2.5 times as likely as a district that is 0% Latinx to be financially disadvantaged (have revenue <90% of labor market average, and poverty greater than 120%), when controlling for poverty and

28.5 times as likely when not controlling for poverty. Finally, spending is less adequate to achieve national average outcomes, across states, in districts serving larger shares of Latinx students.
Keywords: School Funding; Equity; Latinx; Education Policy

Las disparidades en la financiación escolar y la difícil situación de los niños latinx
Resumen: Este artículo proporciona una descomposición sistemática de las disparidades en la financiación escolar por raza y etnia utilizando dos nuevos recursos de datos. Primero, usamos un panel de datos a nivel de distrito nacional de la School Finance Indicators Database para evaluar las disparidades recientes (2012-2017) en los ingresos y gastos escolares por raza, además de la pobreza, en todos los estados y dentro de ellos y dentro de los estados seleccionados. A continuación, usamos datos del National Education Costs Model (NECM) para evaluar las disparidades en el gasto contra estimaciones de los "costos" de lograr los resultados promedio de los estudiantes a nivel nacional para determinar las diferencias raciales en las brechas entre el gasto actual y los costos de los resultados equitativos. A medida que aumenta la participación de Latinx, el gasto por alumno y los ingresos disminuyen, respectivamente, entre un 4% y un 7% para los distritos que son aproximadamente 100% Latinx en comparación con aquellos que tienen pocos o ningún estudiante Latinx, controlando la pobreza. Más sorprendente, cuando se controla la pobreza, un distrito que es 100% Latinx tiene casi 2.5 veces más probabilidades que un distrito que tiene 0% Latinx de tener una desventaja financiera (tener ingresos <90% del promedio del mercado laboral y pobreza superior al 120%), cuando se controla por pobreza y 28,5 veces más probable cuando no se controla por pobreza. Finalmente, el gasto es menos adecuado para lograr resultados promedio nacionales, en todos los estados, en distritos que atienden a una mayor proporción de estudiantes latinos.
Palabras-clave: Financiamiento Escolar; equidad; Latinx; Política educativa

Disparidades no financiamento escolar e a situação difícil das crianças latinx
Resumo: Este artigo fornece uma decomposição sistemática das disparidades no financiamento escolar por raça e etnia usando dois novos recursos de dados. Em primeiro lugar, usamos um painel de dados de nível distrital nacional do School Finance Indicators Database para avaliar disparidades recentes (2012-2017) na receita escolar e gastos por raça, além da pobreza, em todos os estados e em estados selecionados. Em seguida, usamos os dados do National Education Cost Model (NECM) para avaliar as disparidades nos gastos em relação às estimativas dos "custos" de obtenção da média nacional de resultados dos alunos para determinar as diferenças raciais nas lacunas entre os gastos atuais e os custos dos resultados equitativos. À medida que as ações do Latinx aumentam, os gastos por aluno e as receitas diminuem, respectivamente, em cerca de 4% a 7% para distritos que são aproximadamente 100% Latinx em comparação com aqueles que têm poucos ou nenhum aluno Latinx, controlando para a pobreza. Mais impressionante, ao controlar a pobreza, um distrito que é 100% Latinx tem quase 2,5 vezes mais probabilidade de ser financeiramente desfavorecido do que um distrito 0% Latinx (tem receita <90% da média do mercado de trabalho e pobreza maior que 120%), ao controlar para a pobreza e 28,5 vezes mais provável quando não controlar para a pobreza. Finalmente, os gastos são menos adequados para atingir os resultados médios nacionais, entre os estados, em distritos que atendem a uma parcela maior de alunos Latinx.
Palavras-chave: Financiamento Escolar; equidade; Latinx; Política educacional

Introduction

This study decomposes disparities in school funding within and between states, with respect to Black and Latinx enrollments. Our primary interest here is on school funding disparities affecting Latinx communities, as a larger body of research already exists on Black-white disparities. Latinx students make up over 25% of public district enrollments in the US (compared to less than 15% for Black enrollments). In theory, state school finance systems are designed to a) remediate disparities between local public-school districts that arise from differences in wealth and revenue raising capacity of those districts and b) provide supplemental resources to districts serving needier student populations or facing other cost pressures (Baker, 2018). But these formulas vary widely both in the efficacy of their design and in the extent to which they are sufficiently funded to achieve design goals. Many state school finance systems attempt to explicitly compensate for differences in child poverty rates across districts, though few actually achieve progressive distributions of funding wherein districts serving needier student populations actually sufficient additional resources to meet their students' needs (Baker et al., 2020).

Most evaluations of inter and intra-state disparities in school funding focus on disparities by wealth and income because these are the very disparities state school finance systems are designed explicitly to mitigate. There exists a strong correlation between wealth, income and race, much as a function of policy actors over time establishing and reinforcing racially and economically segregated housing, which is strongly linked to local school district boundaries and attendance areas. As such, where low income families are disadvantaged by state school finance systems, we would expect Black and Latinx families to be similarly disadvantaged. And they are. Less clear is why a handful of studies also find that racial disparities in school funding exist above and beyond disparities by wealth and income, or why race, in some recent analyses remains such a strong predictor of disparities in school funding. Our goal herein is to untangle these disparities and elaborate on their magnitude using new and more comprehensive data than previously available.

Identifying racial disparities, their magnitude and causes is a first step toward identifying appropriate remedies for those disparities, whether those disparities are caused by some correlate of race that state school finance systems have failed as of yet to address, or by race itself (Baker & Green, 2005). We cannot fix what we do not see or choose not to measure. This article provides a systematic decomposition of racial disparities in school funding using two new data resources. First, we use a national district level panel of data from the School Finance Indicators Database (1993 to 2017) to specifically evaluate recent (2012–2017) disparities in school revenue and spending by race in addition to poverty, across and within all states and then within selected states. Next, we use forthcoming data from the National Education Cost Model (NECM) to evaluate disparities in spending against estimates of "costs" of achieving national average student outcomes to determine racial differences in gaps between current spending and costs of equitable outcomes. This new data is presented at the district level.

Specifically, we set out to untangle differences in disparities by child poverty concentrations, and shares of enrolled children that are Black or Latinx, separating the two populations as they tend to be distributed differently both across states and across locales within states. Knowing how these populations are affected differently can serve to better inform policy remedies, including litigation strategies. Further, understanding how these populations are affected differently across states as well across districts within states, can inform the design of both future federal aid programs, improved state school finance formulas and provide guidance for applying federal pressure to improve state school finance formulas.

Background & Related Literature

The impetus for this study comes from the 2014 Center for American Progress Report, which found that predominantly Latinx school districts were significantly more likely to be high need, low spending districts (Baker, 2014). Using a national panel of district level expenditure and child poverty data, the report identified those districts that had both greater than average needs and less than average resources in their geographic area.[1] The search to identify financially disadvantaged districts was prompted by a realization that many state school finance systems appeared relatively equitable on average, or even progressive compared to others, but still, some districts and children were being left out. That is, a state school finance system could appear as if, on average, districts serving high poverty populations were spending more per pupil than districts serving lower poverty populations, but some districts serving high poverty student populations still had far fewer resources. Existing national reports characterizing the "fairness" of state school funding systems overlooked this problem (see: schoolfundingfairness.org). The districts left out had something in common. These overlooked districts often served high proportions of Latinx students[2].

In fact, Latinx population shares were a significant predictor of financial disadvantage. These disparities were more striking in some states, including Illinois and Pennsylvania, than others. And financially disadvantaged predominantly Latinx districts were often not major urban centers but rather what we might call "second cities," and large towns, including Utica, New York; Reading and Allentown, Pennsylvania; and Waukegan, Illinois. Further, financially disadvantaged Latinx districts were often in otherwise progressively funded states, such as New Jersey—Union City, West New York, Passaic, and New Brunswick—and Massachusetts—Everett, Lowell, and Revere.

Most prior literature on disparities in school funding has focused either on economic status alone or on race, presuming substantial overlap between the two. Others have noted the 'Synonymization' threat of assuming poverty-driven funding to fully accommodate racial disparities (Alexander & Jang, 2019). Baker (2008) elaborates on this point by showing statistically, that racial composition itself, above and beyond other economic conditions, affects the costs of achieving common outcome goals. Race-neutral alternatives (poverty alone, non-linear poverty measures and poverty interacted with urbanicity and/or population density) fail to capture the apparently independent effects of race on education costs.

Further, much of the literature on racial disparities in school funding over time has focused on Black-white, or "disadvantaged minority" (Black or Latinx) vs. White funding disparities. For example, a widely publicized 2019 report from EdBuild found that school districts serving predominantly Black *and* Latinx students ("non-white" districts) had $23 Billion[3] less in total education funding than school districts that are predominantly white. But Black and Latinx populations are distributed differently both across and within states, and cursory findings such as those in the Center for American Progress report suggest a more significant financial disadvantage facing districts serving Latinx populations. This warrants further disaggregation in order to more precisely guide state and federal policy remedies.

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[1] Where geographic area was defined as their labor market based on the National Center for Education Statistics Education Comparable Wage Index. Labor markets were largely defined by "core based statistical areas," which are similar to metropolitan (areas around cities with population of 50k or more) areas, but also include areas surrounding smaller cities and towns (micropolitan areas, or areas around cities or towns with 10k to 50k population), and organize rural areas into their own labor markets.

[2] We use Latinx as a gender-inclusive group name rather than the masculine Latino or Hispanic used by public reporting systems. But we acknowledge that the terminology is under considerable debate.

[3] https://edbuild.org/content/23-billion

Ng and Baker (2006) illustrate that the most dramatic increases in Latinx population in U.S. public school districts through the 1990s and early 2000s occurred in smaller cities, and large towns, often in outlying areas like Lexington, Nebraska, Dodge City, Kansas, or Walla Walla, Washington, hubs of the agriculture industry (meat packing and produce). School finance research on funding disparities and racial gaps often focuses either explicitly, or by way of enrollment weighted analysis, on major metropolitan areas and large urban centers and less with less populated, smaller cities and towns.[4]

Predominantly Latinx smaller cities and towns range from agricultural hubs in the high plains and pacific Northwest to old New England mill towns like Lowell, Massachusetts, or Waterbury, Connecticut. Smaller cities and towns often lack the robust commercial and industrial tax bases of larger cities, limiting their capacity to raise local revenues. Further, smaller cities and towns often carry less weight in state legislatures than do major urban centers. And smaller cities and towns are more likely to be predominantly, or increasingly Latinx than their large urban counterparts, which may have more mixed demography by race and class.

Mounting Evidence that School Finance Reforms Matter

Prerequisite to the analyses that follow is that money matters for the improvement of school quality. That disparities in school funding have consequences for children and that school finance reforms mitigating these disparities can benefit those previously disadvantaged. A robust and growing body of literature confirms that substantive and sustained school finance reforms positively affect both intermediate (test scores, graduation rates) and longer-term outcomes of those exposed to increased schooling resources for sufficient durations (Baker, 2016; Jackson, 2018). In past decades when school funding has been increased, students have benefited from those increases (Jackson, 2018). The mechanism of those positive effects has been relatively straightforward. Where funding increased substantially, leading to improved outcomes, that funding was typically leveraged toward more competitive teacher wages and smaller class sizes (Baker, 2017). Baker and Weber (2016) illustrate that states with greater investment in k12 schooling tend to leverage that investment toward increased staffing ratios, which in turn support higher achievement levels, especially for low income children. Conversely, when school funding has been cut, students have suffered the consequences. Several recent studies reveal the adverse effects of the great recession on student outcomes (Jackson et al., 2018; Shores & Steinberg, 2017). Unfortunately, when substantial cuts were levied during the most recent recession, those cuts fell most significantly on districts serving greater shares of children from families in poverty (Knight 2017).

Empirical Estimates of Racial Disparities in School Funding

A 2005 article by Bifulco explored Black-White funding disparities from 1987 through 2002, using need-weighted cost adjustment to account for child poverty, economies of scale and adjusting for regional variation in teacher wages. Bifulco relied on a compilation of research studies on costs and cost variation to apply weights to adjust spending for child poverty. The premise behind Bifulco's cost adjustment scheme was to, as fully as possible, based on existing research on "costs," adjust current spending for the costs associated with achieving common outcome goals. At the time

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[4] From a U.S. Census Bureau classification, we consider as second cities, those locales that, under the Core Based Statistical Area (CBSA) classifications range from "mid-size" cities to "large towns," which may fall within the (outer) boundaries of a major metropolitan area (though not immediate inner urban fringe), or may be the hubs of "micropolitan" areas (where the hub has population of 10k to 50k).

of Bifulco's article, several studies had addressed costs and cost variation within states in relation to achieving state specific outcome goals (Baker, 2005).

Bifulco's method thereby characterizes differences in spending between Black and non-Black students, with spending adjusted for the "costs" associated with achieving common outcome goals. In such an approach, child poverty concentration has a substantial influence on the costs associated with common outcome goals – significantly reducing "cost adjusted" spending. So, if nominal spending was similar between higher and lower poverty settings, cost adjusted spending would then be much lower in higher poverty settings. To the extent that Black students are more likely to attend school districts serving higher poverty student populations, spending on Black students, on average, is likely to be lower than spending on non-Black students. That is, if state school finance systems fail to sufficiently account for poverty related costs. Bifulco found:

> The estimates of black-white funding disparities presented here the average black student's district has between 3% and 16% less needs to provide its students an equal expectation of achieving as students in the average white student's district. (p. 192)

Bifulco's conceptual approach provides a framing for one of our approaches herein, wherein we take advantage of new data and methodological advancements to estimate a national education cost model, yielding comprehensive cost estimates for all districts, nationwide.

If one doesn't account for cost differences associated with student needs or geographic variation, and takes simple averages of per pupil spending, one can show little or no difference in education spending by race (Richwine, 2011) or poverty (See Aud et al., 2010, p. 282). Richwine (2011) of the Heritage Foundation, for example, found:

> that public education spending per pupil is broadly similar across racial and ethnic groups. To the extent that funding differences exist at all, they tend to slightly favor lower-performing groups, especially blacks. (p. 1)

Do School Finance Reforms and Demographic Shifts Affect Disparities?

Rothbart (2019) explored whether and to what extent state school finance reforms led to changes in racial spending gaps – given that those reforms are not designed to explicitly remedy racial spending gaps. Rothbart decomposed changes by racial group, for Blacks, Latinos, Asians and Whites. Rothbart's general conclusion was that school finance reforms can lead to reductions in racial funding gaps but that those impacts are moderate. More specifically, by race, Rothbart found:

> As outlined previously, about 20% of districts have Black student representation of at least 10%. Using the point estimates from column 6 of Table 2, SFR increases state aid in these districts by at least $171 more per pupil than in districts with less than 1% Black shares (the bottom 30%). Similarly, about 30% of districts are at least 10% Hispanic, leading to a $52 larger SFR impact on state aid than in districts that are less than 1% Hispanic (about 15% of districts). Conversely, the few districts with large shares of students who are Asian (3.7% of districts are at least 10% Asian) have an SFR effect that is $493 per pupil smaller than those with small shares (less than 1%). (p. 28)

In another recent paper, Sosina and Weathers (2019) explored the extent to which changes in demographics over time relate to changes in school expenditures, focusing specifically on Black-White and Latino-White segregation, finding that "changes in racial/ethnic segregation within a state from 1999 through 2013 are associated with racial/ethnic disparities in spending, even after accounting for disparities in poverty. (p. 1)" Specifically, "the typical Black student's district in a state

that experienced a 0.04 unit increase in Black–White segregation would experience a $199.45 relative decrease (i.e., −$4,986.22 × 0.04) in per pupil total expenditures for every $10,000 of average spending." (p. 11) Regarding Latinx populations, the authors found smaller differences, and only found changes for spending on infrastructure and "other" expenditures (p. 12). That is, growth in Latinx populations in that study appeared not to exacerbate spending disparities over time.

Empirical Studies Illuminating Potential Causes of Racial Disparities

In many aspects of American society, racial disparities persist above and beyond but also coupled with socioeconomic disparities. Many of these disparities, especially those related to public schooling and public-school finance can be tied to a history of racial district boundary gerrymandering and the decades of highly orchestrated racial segregation of America's residential housing stock (Rothstein, 2017). These factors certainly explain the vast wealth and capacity differences that exist across predominantly Black urban centers surrounded by predominantly White suburbs in our major metropolitan areas.

Explanations are perhaps less clear for why predominantly Latinx cities, towns and school districts outside of major metropolitan areas would experience under-investment in their public services. Possible explanations have been documented in empirical literature in public economics for decades. When it comes to local voter spending decisions on local public services, differences between the racial composition of the voter population and population accessing those services seems to influence spending choices. Figlio and Fletcher (2012) observe:

> we find that the share of elderly adults who age in place is negatively related to the level of support for public schooling, and that this is particularly true for school districts in metropolitan areas where the school-aged population is more heavily nonwhite relative to the elderly population. (p. 1144)

Ladd and Murray (2001) and Poterba (1997) identify similar patterns. Specifically, Poterba (1997) found:

> Panel data for the states of the United States over the 1960–1990 period suggests that an increase in the fraction of elderly residents in a jurisdiction is associated with a significant reduction in per-child educational spending. This reduction is particularly large when the elderly residents and the school-age population are from different racial groups. (p. 48)

It is conceivable that these findings from studies of local public finance also translate to the actions of state policymakers, the racial composition of state legislatures and their choice on how much to spend on public services like education and how to allocate those resources, and that state legislatures might find very specific mechanisms by which to reinforce racial disparities (Baker & Green, 2005; Matsubayashi & Rocha, 2012). Baker and Green (2005) for example, identify states with racial (Black – White) spending gaps, controlling for poverty and other factors, and then explore how state school finance policies contribute directly (and seemingly with legislative intent) to those disparities.

Insufficient Direct Attention to ELLs and Latinx Communities

Green, Baker and Oluwole (2008) explain the legal barriers to tackling racial disparities explicitly in state school finance formulas, but do not rule out the possibility altogether. In fact, they argue that because race-neutral factors are insufficient for fully addressing differences in costs and needs, thus fully providing equal educational opportunity to all children, race-based adjustments to state school finance formulas are, in fact, necessary. Such racial "plus factors" in state school finance

formulas, however, would be subjected to strict scrutiny. Green, Oluwole and Baker address specifically Black-white disparities and their connection to racial residential segregation and concentrated Black urban poverty.

A small but important body of literature has addressed the plight of Latinx children and families in specific states, including Texas and California (Jimenez-Castellanos et al., 2019; Rodriguez, 1997; Rolle & Jimenez-Castellanos, 2014). Many of these studies acknowledge the overlay between concentrations of English language learners and recent Latinx immigrants. Our data used herein reveal that nationally, the correlation between Latinx share and ELL share across all districts is quite high (.80, weighted for student enrollment). As such, policies targeted to meet the needs of ELLs should also counterbalance disparities faced by predominantly Latinx school districts. But, authors of these studies point out that in states like California and Texas, while formulas take into account ELL children, adjustments to accommodate the needs of these children are far from sufficient – showing no measurable effect on overall formula resources available to local public school districts (Rolle & Jimenez-Castellanos, 2014), and local actions may also undermine state (or federal) policy intent (Jimenez-Castellanos et al., 2019).

Finally, Knight and Mendoza (2017) found that spending cuts during the Great Recession of 2008 disproportionately impacted districts serving greater concentrations of low-income ELLs, leading to increases in the number of students per teacher, the number of students per counselor, and the number of students per support staff member.

Gaps in the Literature and Goals Herein

What the present body of literature lacks is a thorough documentation, decomposition and illustration of the patterns of disparity in school funding between Black, Latinx and White student populations, both across and within states. That is, to what extent are nationwide disparities a function of predominantly Latinx states (AZ, CA, NM, TX) spending less on schools versus the extent to which predominantly Latinx districts even in well-funded and progressively funded states simply have fewer resources. The present study provides four perspectives on disparities between Black, Latinx and White student populations using short (post-recession 2012-2017) and long-run (1993 to 2017) panels of school district spending data, coupled with census poverty data, and taking advantage of comprehensive cost estimates from an updated version of the National Education Cost Model (NECM; Baker et al., 2018).

Data, Methods and Models

We run four sets of models. Our first two models are based on measures of revenue and spending using the approach taken in the CAP report on Financially Disadvantaged Districts. First, we estimate disparities across districts within and across states where our resource measures are expressed as a ratio to the average for their labor market. We use a measure of current operating expense per pupil and a measure of state and local revenue per pupil. A key difference between these measures is that current spending per pupil is inclusive of all revenue sources, including federal aid, which is targeted to higher poverty settings. Thus, districts with higher minority concentrations that also have higher poverty concentrations are likely to show less disadvantage by this measure. State and local revenue by contrast is the best measure for evaluating the effects of state school finance policies, which collectively control local revenue generation and provide for the distribution of state aid. Total state and local revenue may include revenue for non-current expenses, such as capital.

Expressing revenue or spending as a ratio to labor market averages accomplishes two goals. First, this ratio addresses both geographic differences in costs from one labor market to the next and

changes over time in average spending and revenue. It also allows for straightforward interpretation. Districts with larger shares of children in poverty should have more than average resources per pupil, not the same, or less. That is, they should have a value of greater than 1.0. A progressive state system should have higher poverty districts at greater than 1.0 and lower poverty districts at less than 1.0 on spending or revenue per pupil. As explained in the CAP report in 2014:

> It is important to understand that the value of any given level of education funding, in any given location, is relative. That is, it does not matter whether a district spends $10,000 per pupil or $20,000 per pupil. It matters how that funding compares to other districts operating in the same regional labor market—and, for that matter, how that money relates to other conditions in the regional labor market. The first reason relative funding matters is that schooling is labor intensive. The quality of schooling depends largely on the ability of schools or districts to recruit and retain quality employees. The largest share of school districts' annual operating budgets is tied up in the salaries and wages of teachers and other school workers. The ability to recruit and retain teachers in a school district in any given labor market depends on the wage a district can pay to teachers relative to other surrounding schools or districts and relative to nonteaching alternatives in the same labor market. The second reason is that graduates' access to opportunities beyond high school is largely relative and regional. The ability of graduates of one school district to gain access to higher education or the labor force depends on the regional pool in which the graduate must compete. (p. 8)

In our second model, we create a binary outcome measure, based on the CAP Financially Disadvantaged Districts report. That binary measure identifies as financially disadvantaged, any district with a census poverty rate greater than 20% above its labor market mean and revenue per pupil less than 90% of its labor market mean. Expressing poverty rates as a ratio to labor market averages negates the problem that income levels for determining poverty are not adjusted for regional differences in costs (see Baker et al., 2014).

In our third model, we estimate the "relative adequacy" of spending toward achieving national average outcomes, based on an updated version of the National Education Cost Model (NECM) (see Baker et al., 2018). Each district's current spending per pupil is expressed as a ratio to the amount predicted to be needed for that district to achieve national average outcomes in reading and math, grades 3 to 8. That is, a "percent adequate" measure, presuming adequacy to be represented by the cost of achieving average outcomes. This measure differs from the first two in that it accounts more completely for differences in costs from one location to the next, due to economies of scale and population sparsity and due to variations in student populations served. Cost estimation accounts for costs associated with child poverty concentration but does not separately account for racial and ethnic population differences. So, the models here explore whether, after accounting for those other factors, racial disparities persist.

Finally, in a fourth model, we test the within district fixed effect over time of demographic change on relative spending (to surrounding districts).

Modeling Centered (Labor Market) Revenues and Expenditures

Here, our dependent measures are "state and local revenue per pupil" and "current spending per pupil" expressed as a ratio to their labor market[5] averages, and using data from the post-

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recession period 2012 to 2017 from the district level panel of the School Finance Indicators Data system (SFID).[6]

That is:

State and Local Revenue per Pupil = (SLOCREV + TLOCREV) / V33

And:

Current Spending per Pupil = PPCSTOT

Where the centering calculation is:

Centered State & Local Revenue per Pupil$_{ijl}$ = State & Local Revenue per Pupil$_{ijl}$ / State & Local Revenue per Pupil$_{ijl}$

That is, relative state and local revenue per pupil (or current expenditures) for district "i" in year "j" in labor market "l," is divided by the mean state and local revenue per pupil in year "j" in labor market "l," for all districts in all years. Labor market averages are within year. Labor markets may be interstate, for example, like the New York City metropolitan area. As such, districts sharing this labor market, in three separate states, are compared against the same within year labor market mean.

We estimate two separate models to each of our two dependent measures (meaning four models). In the first models we do not include state dummy variables (state fixed effects). Notably, our centering procedure creates a labor market fixed effect – removing labor market means from the dependent measure, which to a large extent also removes state means. But, there are still relevant differences in the results from our models where we do separately include state fixed effects (dummy variables). The models without state fixed effects convey the nationwide patterns across districts by poverty and race, controlling for grade ranges served and within year (averaged across years).

CTR Resources$_{ijk}$ = f (CTR Poverty$_{ijk}$, % Latinx$_{ijk}$, % Black$_{ijk}$, % Grades 6 to 8$_{ijk}$, % Grades 9 to 12$_{ijk}$, Year$_j$)

That is, Centered Resources in district "i" in year "j" in state "k" are associated with Census Poverty Rate, also centered on labor market averages, district Latinx and Black shares, and grade range distributions of students which tend to be associated with revenue and expenditure variation.

The models with state fixed effects convey the nationwide average patterns of within state variations in resources with respect to poverty and race, controlling for grade ranges served and within year (averaged across years).

CTR Resources$_{ijk}$ = f (CTR Poverty$_{ijk}$, % Latinx$_{ijk}$, % Black$_{ijk}$, % Grades 6 to 8$_{ijk}$, % Grades 9 to 12$_{ijk}$, State$_k$, Year$_j$)

That is, the first models include between state differences, whereas the second models focus exclusively on within state differences (averaged across all states and years).

Modeling the Likelihood of Being "Financially Disadvantaged"

Here, the dependent measure is a binary measure indicating that a district is financially disadvantaged, or that the district has a poverty ratio to its labor market mean of greater than 1.2 and revenue ratio to its labor market mean of less than .90. So, in this case, poverty is baked into the

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[6] Data source: http://schoolfinancedata.org/download-data/

dependent measure, so we can expect that poverty rates will be a significant predictor of disadvantage.

      Here we use logistic regression models to determine the predictors that a district is financially disadvantaged (high poverty, low resource), similar to the approach taken in the CAP report, but inclusive of grade range covariates and using more recent, post-recession years of data. We estimate models with and without the poverty measure:

$$\textbf{\textit{Financially Disadvantaged}}_{ijk} = \textbf{\textit{f (CTR Poverty}}_{ijk}\textbf{\textit{, \% Latinx}}_{ijk}\textbf{\textit{, \% Black}}_{ijk}\textbf{\textit{, \% Grades 6 to 8}}_{ijk}\textbf{\textit{, \%}}$$
$$\textbf{\textit{Grades 9 to 12}}_{ijk}\textbf{\textit{, Year}}_{j}\textbf{\textit{)}}$$

Again, because poverty is a component of financially disadvantaged status, relative poverty rate will undoubtedly be a very strong determinant of that status. The question here is whether Latinx and Black population shares are also determinants above and beyond poverty and to what extent? But, we also explore whether Latinx and Black population shares are determinants of financial disadvantage inclusive of the fact that districts that are predominantly Latinx or Black also tend to be relatively high in poverty, by estimating a model that does not separately account for poverty.

$$\textbf{\textit{Financially Disadvantaged}}_{ijk} = \textbf{\textit{f (\% Latinx}}_{ijk}\textbf{\textit{, \% Black}}_{ijk}\textbf{\textit{, \% Grades 6 to 8}}_{ijk}\textbf{\textit{, \% Grades 9 to}}$$
$$\textbf{\textit{12}}_{ijk}\textbf{\textit{, Year}}_{j}\textbf{\textit{)}}$$

Modeling Spending Gaps relative to "Cost" of National Average Outcomes

      The final set of models uses our spending "relative adequacy" measure as the dependent variable.

$$\textbf{Pct\_adeq = Ppcstot2017 / Costpp2016}$$

"Percent Adequacy" is determined by taking the actual 2017 current spending per pupil (Ppcstot2017) as a percent of our NECM predicted per pupil cost (Costpp2016) of achieving national average reading and math outcomes in 2016, based on a cost model estimated with data from 2009 to 2016 (Model estimates provided in Appendix A). That is, how much more, or less does each district in the country spend relative to what it would need to spend to achieve national average outcomes? Importantly, this measure takes into account a wide array of factors that affect the costs of achieving common outcome goals, including student population characteristics (poverty, disability, English language proficiency), economies of scale and population density, and regional variation in labor costs. In addition, the cost model accounts for factors that might predict less (or more) efficient spending.

      As with the first set of models, we estimate these models both with and without state fixed effects, so as to evaluate broadly, variation in relative adequacy of funding across all districts nationwide, with respect to poverty and race, controlling for grade ranges served, and variation in relative adequacy within states, across states on average, by removing state mean differences in relative adequacy. First, without state fixed effects:

$$\textbf{\textit{\% Adequacy}}_{ijk} = \textbf{\textit{f (CTR Poverty}}_{ijk}\textbf{\textit{, \% Latinx}}_{ijk}\textbf{\textit{, \% Black}}_{ijk}\textbf{\textit{, \% Grades 6 to 8}}_{ijk}\textbf{\textit{, \% Grades 9 to}}$$
$$\textbf{\textit{12}}_{ijk}\textbf{\textit{, Year}}_{k}\textbf{\textit{)}}$$

Then with state fixed effects:

$$\textbf{\textit{\% Adequacy}}_{ijk} = \textbf{\textit{f (CTR Poverty}}_{ijk}\textbf{\textit{, \% Latinx}}_{ijk}\textbf{\textit{, \% Black}}_{ijk}\textbf{\textit{, \% Grades 6 to 8}}_{ijk}\textbf{\textit{, \% Grades 9 to}}$$
$$\textbf{\textit{12}}_{ijk}\textbf{\textit{, State}}_{k}\textbf{\textit{, Year}}_{j}\textbf{\textit{)}}$$

State Specific Models

We also run a set of separate state models on states that reveal particularly strong disparities for Latinx serving districts either or both on our centered resource measures or percent adequacy measures. These states include: Connecticut, Colorado, Nebraska, Virginia, New Jersey, New York and Illinois. We run state specific models of both our centered revenue and spending adequacy dependent variables.

District Fixed Effects Models

Finally, we estimate models to determine whether changes in racial composition over time lead to changes in relative spending and revenue over time. Using our full panel of data from 1993 to 2017, we estimate a district fixed effects model to determine whether increases to Latinx enrollments are coupled with declining relative spending or revenue, while controlling for changes in poverty rates.

Findings

We begin with our models of relative revenue and spending in Table 1. Again, state fixed effects models estimate differences within states, averaged across all states and years. The models in Table 1 show:

- As Latinx shares increase, relative per pupil revenue and spending decrease, as Black share increases, revenue and spending increases, when controlling for poverty.
- Relative revenue is "flat" (neither progressive nor regressive) with respect to poverty and relative spending slightly positive (slightly progressive).

Table 1

Global Models of Relative Revenue and Spending

| | State Fixed Effect | | | | No State Effect | | | |
| | Relative Revenue | | Relative Spending | | Relative Revenue | | Relative Spending | |
	coef	R.S.E.	Coef	R.S.E.	coef	R.S.E.	coef	R.S.E.
Ratio of district pct. in poverty, 5-17 to labor market	0.006	0.007	0.067***	0.006	-0.006	0.007	0.071***	0.007
Racial Composition								
Pct. Latinx	-0.072***	0.020	-0.036**	0.016	-0.021	0.015	-0.038***	0.012
Pct. Black, not Latinx	0.072***	0.023	0.081***	0.019	0.075***	0.020	0.057***	0.013
Grade Ranges Served								
Pct. Grades 6-8	-0.500***	0.073	-0.349***	0.073	-0.647***	0.074	-0.377***	0.068
Pct. Grades 9-12	0.060**	0.026	0.060**	0.027	0.009	0.027	0.053**	0.026
Data Year (2013=Base)								
Year = 2014	-0.000	0.001	0.002*	0.001	-0.000	0.001	0.002*	0.001
Year = 2015	0.000	0.001	0.002*	0.001	-0.000	0.001	0.002*	0.001
Year = 2016	0.001	0.002	0.003**	0.002	0.000	0.002	0.003**	0.001
Year = 2017	0.003	0.002	0.005***	0.002	0.002	0.002	0.005***	0.002
Constant	1.088***	0.040	0.989***	0.037	1.119***	0.026	0.990***	0.023
Number of observations	65,354		65,354		65,354		65,354	
R2	0.074		0.123		0.039		0.109	

note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Specifically, a district that is 100% Latinx is expected to have relative revenue per pupil that is 7.2% lower with respect to labor market averages than a district that is 0% Latinx. When state dummy variables are not included, differences include between and within state differences.

- As Latinx population share increases relative spending decreases (e.g. across the country, where Latinx shares are higher, relative spending is lower but revenue flat. Recall, however, that because our spending and revenue measures are centered on labor market averages, they, in effect, include a labor market level fixed effect).
- Again, districts with larger Black population shares have marginally higher revenue and spending per pupil.

The models in Table 2 take us back to the original finding in the CAP report, where districts are identified as "financially disadvantaged" by having poverty greater than 20% above labor market averages and state and local revenue less than 90% of labor market averages. Again, poverty is a component of the dependent measure. As such, it is no surprise that poverty rate strongly predicts that measure in the first regression. As we go from 50% of labor market average poverty to 150% of labor market average poverty (a one-unit shift) a district is nearly 18x as likely to be financially disadvantaged.

Table 2

Likelihood of being High poverty Low Resources

	With Poverty		Without Poverty	
	Odds Ratio	SE	Odds Ratio	SE
Ratio of district pct. in poverty, 5-17 to labor market	17.641***	0.015		
Racial Composition				
Pct. Latinx	2.467***	0.005	28.548***	0.046
Pct. Black, not Latinx	0.248***	0.001	18.112***	0.028
Grade Ranges Served				
Pct. Grades 6-8	93.340***	1.088	0.035***	0.000
Pct. Grades 9-12	0.544***	0.002	0.029***	0.000
Data Year (2013=Base)	.	.	.	.
Year = 2014	1.001	0.001	1.004***	0.001
Year = 2015	0.967***	0.001	0.997***	0.001
Year = 2016	0.897***	0.001	0.945***	0.001
Year = 2017	0.987***	0.001	1.022***	0.001
Constant	0.000***	0.000	0.085***	0.001

note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

But, even when controlling for poverty, a district that is 100% Latinx is nearly 2.5x as likely as a district that is 0% Latinx to be financially disadvantaged. When not separately controlling for poverty, the 100% Latinx district is nearly 30X more likely to be financially disadvantaged.

When accounting for poverty, a district that is 100% Black is only about 25% (or .25x) as likely as a district that is 0% Black to be financially disadvantaged. However, the reality is that most if not nearly all predominantly Black districts are also high in poverty. When not accounting separately for poverty, districts that are predominantly Black are nearly 20x as likely as districts with no Black children to be financially disadvantaged.

The models in Table 3 address the relationship between race and the extent to which districts spend as much as is estimated that they would need in order to provide their students with equal opportunity to achieve national average outcomes, based on our national education cost model. This approach is most analogous to Bifulco's approach, where he applied "weights" to account for differences in costs to achieve common outcome goals ("equal opportunity").

Table 2

Global Models of Relative Adequacy

		State Fixed Effect		Global	
DV Current Spending / Estimated Need		coef	R.S.E.	coef	R.S.E.
Ratio of district pct. in poverty, 5-17 to labor market		-3.217***	0.115	-2.933***	0.178
Racial Composition					
	Pct. Latinx	-0.031	0.029	-0.343***	0.027
	Pct. Black, not Latinx	0.156***	0.031	0.078*	0.041
Grade Ranges Served					
	Pct. Grades 6-8	0.464***	0.113	0.418**	0.175
	Pct. Grades 9-12	-0.152***	0.039	-0.150**	0.060
Data Year (2013=Base)					
	Year = 2014	0.017***	0.001	0.020***	0.001
	Year = 2015	0.016***	0.003	0.023***	0.002
	Year = 2016	0.018***	0.004	0.028***	0.005
Constant		2.006***	0.076	1.569***	0.060
Number of observations		52,304		52,304	
R2		0.791		0.469	

note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

In these models, a one-unit shift in relative poverty (from 50% to 150% average labor market poverty) is associated with a reduction of about 3% spending adequacy. When a state fixed effect is included, so that we are modeling the within state differences averaged across all states and years, % Latinx is not a determinant of the adequacy of funding, independent of poverty. Districts with 100% Black population do have smaller adequacy gaps than districts with 0% Black population when controlling for poverty. But, consider that the predominantly Black district is also likely to be (at least) a unit higher in relative poverty, such that the district spending is 3.217% less adequate as a function of poverty, but 0.156 better off in relation to race. The net difference for the poor, Black district is still negative (-3.217 + 0.156 = -3.061).

When a state fixed effect is not included, Latinx share is a significant determinant of reduced adequacy of funding. Spending is less adequate (with respect to costs of achieving national average outcomes) where there are more Latinx students. Poverty is also a significant determinant, such that where predominantly Latinx districts are also high in poverty, spending adequacy is additively compromised (over 3.33%).

Table 4 shows separate models for states revealed as having either or both Latinx disparities in relative revenue and spending or in the adequacy of spending. Table 4 shows the models of relative revenue. The largest negative effects are in New Jersey and Nebraska, despite very different geo-demographic landscapes. Nebraska is home to agricultural industries concentrated in Latinx towns of Lexington and Grand Island. New Jersey has several midsize towns including Dover,

Bound Brook and Freehold Boro which experienced substantial increases in Latinx immigration over the past several decades, but were not part of prior litigation over school funding inequities or subsequent court orders leading to state funding increases.

When it comes to the relative adequacy of funding, the negative Latinx effect is largest in Connecticut. Connecticut was also notably home to several financially disadvantaged districts in the CAP report, including Bridgeport, Waterbury and New Britain, the latter two of these being predominantly Latinx cities.

Table 3

Centered Revenue Model for Selected States

	CT		CO		NE		VA	
	coef	R.S.E.	coef	R.S.E.	coef	R.S.E.	coef	R.S.E.
Ratio of district pct. in poverty, 5-17 to labor market	-0.014	0.056	0.089*	0.047	0.145***	0.036	-0.066	0.056
Racial Composition								
Pct. Latinx	-0.252	0.204	-0.254**	0.102	-0.495***	0.087	-0.423***	0.147
Pct. Black, not Latinx	0.319**	0.125	0.083	0.385	-0.162	0.167	-0.112	0.091
Grade Ranges Served								
Pct. Grades 6-8	0.146	0.345	-1.295*	0.730	-0.131	0.616	-3.883**	1.739
Pct. Grades 9-12	-0.119	0.111	-0.525	0.386	0.632	0.384	-2.284**	1.029
Data Year (2013=Base)								
Year = 2014	0.001	0.008	0.004	0.006	0.006	0.007	-0.002	0.009
Year = 2015	0.007	0.010	0.008	0.007	0.011	0.008	0.002	0.009
Year = 2016	0.011	0.010	0.011	0.008	0.012*	0.007	0.015	0.014
Year = 2017	0.014	0.012	0.014	0.013	0.014*	0.008	0.021	0.014
Constant	0.983***	0.103	1.416***	0.236	0.757***	0.192	2.655***	0.710
Number of observations	830		890		1,227		660	
R2	0.086		0.052		0.199		0.251	

Centered Revenue Model for Selected States (cont'd)

	NJ		NY		IL	
	coef	R.S.E.	Coef	R.S.E.	coef	R.S.E.
Ratio of district pct. in poverty, 5-17 to labor market	0.162***	0.027	-0.010	0.024	-0.106***	0.033
Racial Composition						
Pct. Latinx	-0.324***	0.053	-0.135*	0.070	-0.194***	0.070
Pct. Black, not Latinx	0.023	0.061	0.218**	0.104	0.080	0.084
Grade Ranges Served						
Pct. Grades 6-8	0.087	0.131	0.331	0.660	0.563*	0.338
Pct. Grades 9-12	0.081*	0.048	-0.388*	0.210	0.552***	0.120
Data Year (2013=Base)						
Year = 2014	-0.001	0.004	0.004**	0.002	0.001	0.008
Year = 2015	-0.000	0.004	0.009*	0.005	0.001	0.011
Year = 2016	-0.013	0.008	0.019*	0.011	0.002	0.018
Year = 2017	-0.015	0.010	0.023	0.017	0.010	0.014
Constant	0.833***	0.049	1.059***	0.127	0.824***	0.115
Number of observations	2,709		3,382		4,232	
R2	0.245		0.043		0.338	

note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4

Percent Adequacy Model for Selected States

	CT		CO		NE		VA	
	Coef	R.S.E.	coef	R.S.E.	coef	R.S.E.	coef	R.S.E.
Ratio of district pct. in poverty, 5-17 to labor market	-4.303***	0.235	-2.236***	0.085	-3.466***	0.121	-3.712***	0.136
Racial Composition								
Pct. Latinx	-1.172***	0.141	-0.376***	0.032	-0.212***	0.033	-0.591***	0.065
Pct. Black, not Latinx	0.432***	0.129	0.272***	0.076	0.069	0.068	-0.060	0.044
Grade Ranges Served								
Pct. Grades 6-8	0.238	0.352	-0.520*	0.277	1.222***	0.312	-5.618***	0.628
Pct. Grades 9-12	-0.480***	0.122	-0.403***	0.122	0.122	0.151	-3.152***	0.338
Data Year (2013=Base)								
Year = 2014	0.119***	0.030	0.027***	0.010	0.009	0.012	-0.010	0.016
Year = 2015	0.140***	0.030	0.039***	0.010	-0.016	0.012	-0.044***	0.016
Year = 2016	0.161***	0.031	0.046***	0.010	-0.010	0.013	-0.030*	0.016
Constant	2.711***	0.109	1.546***	0.086	1.432***	0.090	3.947***	0.176
Number of observations	664		712		948		528	
R2	0.864		0.850		0.724		0.732	

Percent Adequacy Model for Selected States (Cont'd)

	NJ		NY		IL	
	coef	R.S.E.	coef	R.S.E.	coef	R.S.E.
Ratio of district pct. in poverty, 5-17 to labor market	-3.679***	0.104	-7.350***	0.110	-4.490***	0.116
Racial Composition						
Pct. Latinx	-0.321***	0.049	0.158***	0.051	0.120***	0.034
Pct. Black, not Latinx	0.133***	0.048	0.806***	0.080	0.724***	0.048
Grade Ranges Served						
Pct. Grades 6-8	0.678***	0.125	2.358***	0.540	2.724***	0.292
Pct. Grades 9-12	-0.627***	0.047	-1.264***	0.164	0.691***	0.099
Data Year (2013=Base)						
Year = 2014	0.024	0.018	0.024	0.019	0.033**	0.016
Year = 2015	0.148***	0.018	-0.027	0.019	0.016	0.016
Year = 2016	0.029	0.018	-0.049**	0.019	0.018	0.016
Constant	2.355***	0.046	2.998***	0.115	1.042***	0.105
Number of observations	2,170		2,704		3,335	
R2	0.795		0.840		0.622	

note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Figure 1 shows the relationship between Latinx shares and a) relative revenue and spending (upper panels) and b) relative adequacy of spending (lower panels). In the upper panels of the Figure we can see that on average districts serving predominantly Latinx populations have no more and no fewer resources per pupil than districts serving few Latinx students. Spending is slightly positive and revenue slightly negative with respect to Latinx shares. But to the extent that Latinx districts are also higher in poverty or other need factors, simply having equal dollar inputs would be insufficient. The bottom panels account for those other cost factors and show that districts that serve predominantly Latinx populations have systematically fewer resources per pupil.

The lower right panel adds state abbreviations to the points to show that to a large extent these disparities are a between-state problem. Clustered to the right in the figure are districts in

California, Arizona, Texas and other southwest states which are poorly funded and predominantly Latinx. Clustered to the upper left? Districts with few Latinx children that are NOT in these same states. So, as much as there are huge disparities in relative adequacy of funding by Latinx shares in states like Connecticut and New Jersey, the broader problem of Latinx school spending inadequacy is a function of especially low funding levels in states where many districts have very large Latinx populations, including states where the public schooling system enrollment is now predominantly Latinx.

Figure 1

Spending Disparities and Latinx Population Shares
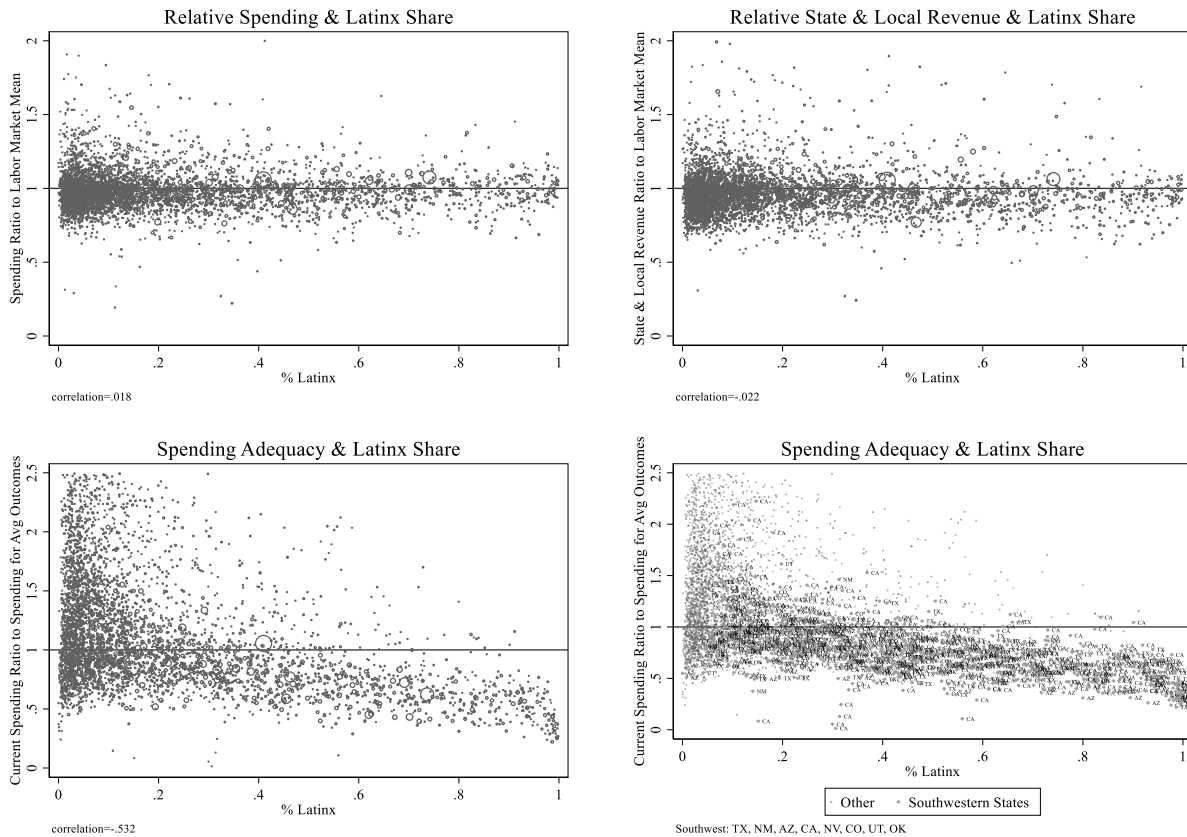
Table 5

Fixed Effects 93 to 17

	Relative Revenue		Relative Spending	
	coef	**se**	**coef**	**Se**
Ratio of district pct. in poverty, 5-17 to labor market	-0.002	0.001	0.008***	0.001
Pct. Latinx	-0.077***	0.003	0.007***	0.003
Pct. Black, not Latinx	-0.227***	0.006	-0.040***	0.004
Pct. Grades 6-8	-0.072***	0.012	-0.062***	0.009
Pct. Grades 9-12	0.072***	0.008	0.131***	0.006
Constant	1.029***	0.004	0.968***	0.003
Number of observations	334,390		334,428	
R2	0.006		0.003	

note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Finally, we test a long run fixed effects model to determine whether increased Low Income, Black or Latinx populations lead to decreased relative revenue or spending over time. We find:

- As Poverty rates increase relative to surroundings, relative revenue stays unchanged but relative spending increases slightly, perhaps due to increased federal aid and state aid poverty weighting.
- As Latinx shares increase, relative revenue decreases but relative spending increases slightly.
- Interestingly, while districts with larger Black student shares had a marginal advantage cross sectionally, as Black populations increase, revenue and spending both decline, net of poverty changes.

On the one hand, while funding disparities with respect to Latinx populations have not worsened substantially as Latinx shares have grown, they have also not improved. The gaps we see in the most recent post-recession years are perhaps slightly larger for revenue than they were 20+ years ago, and perhaps marginally smaller for spending than they were 20+ years ago.

Conclusions & Policy Implications

School spending disparities facing America's Latinx populations are systematic and substantial. They occur in both the form of predominantly Latinx states spending much less on schools, given their costs and needs and the form of predominantly Latinx districts in generally better funded states being left out, even where predominantly Black districts have fared somewhat better. These disparities persist above and beyond poverty-related disparities. While these disparities have not worsened over time with growth in Latinx populations, they have also not improved.

Seemingly inexplicable at face value, disparities facing Latinx districts are quite strong in states like Connecticut and New Jersey. These states have relatively high average spending and selective targeting of higher spending to high poverty districts. In both of these states, Black student populations have fared somewhat better. Desegregation remedies (*Sheff v. O'Neill*) in Connecticut drove additional resources for magnet schooling to predominantly Black districts of Hartford and New Haven from the 1990s through mid-2000s. In New Jersey, targeted remedies resulting from

school finance litigation also focused more heavily on the state's urban Black centers and exclusively on districts in the original named plaintiff class (from the 1980s and 1990s), thus leaving behind emerging Latinx districts. While 2009 reforms might have smoothed out these disparities, those reforms were never adequately funded (Baker, 2019).

Resolving these disparities will require both state by state school finance reforms and significant new federal aid coupled with pressure on states more widely depriving their school systems of resources. State by state action to mitigate these disparities will likely require increased representation of Latinxs in state legislatures and executive branches, including stronger representation for predominantly Latinx "second cities" and large towns. Resolving disparities state by state will also require state courts to exert pressure for legislative action in response to cases brought on behalf of children attending school in financially disadvantaged districts. Decades of litigation brought on behalf of children in predominantly Latinx large towns in Kansas, including Dodge City, has resulted in favorable judicial rulings and improvements to school funding *Gannon v. State*, 319 P.3d 1196, 298 Kan. 1107 (2014), *Montoy v. State*, 279 Kan. 817, 112 P.3d 923 (2005)). But in other states including Connecticut, courts have backed down, even where substantial disparities persist for predominantly Latinx districts and children (*CONNECTICUT COALITION FOR JUSTICE v. Rell*, 176 A.3d 28, 327 Conn. 650 (2018)). In the absence of court intervention, this makes state legislatures an even more important lever of change in education finance policy.

Because these disparities do fall explicitly along race/ethnicity lines, federal policy should consider measuring racial disparities as a condition for participating in new, expanded federal aid programs. Federal government can pressure states to mitigate racial disparities in funding, but requiring race-targeted remedies would face larger legal hurdles (Green, Baker and Oluwole, 2008). Mitigating racial disparities starts with acknowledging that those disparities exist and measuring and documenting the extent and nature of those disparities as we have herein. The Office of Civil Rights (OCR) should monitor racial disparities in school funding, require consistent state reporting, investigate and intervene where necessary, just as it should (and has) in cases of racially disparate disciplinary actions or disability classifications. We offer that the modeling approaches used herein provide the appropriate empirical framework for identifying and measuring those disparities. Similar approaches can be used for evaluating disparities with school level data.

But these interventions can only help mitigate racial disparities within states. Our findings herein suggest that states with large populations of Latinx students have disinvested in their schooling systems. Many low spending states with large Latinx populations have substantially cut school funding over the past decade, and the proportion of their economic capacity spent on schools, including Arizona, New Mexico and Texas. California also remains among the lowest effort and spending states in the nation, despite a modest uptick in effort in recent years. Solving these interstate disparities will require a much larger federal role – one that involves substantial increases in federal aid coupled requirements that states provide their fair share of revenue to support adequate public schooling. Just as state school finance systems in many states set "adequate" spending targets, require local districts to raise a local fair share, and then attempt to fill the gap with state aid, the federal government should establish adequacy goals, require states to level up their effort (share of economic capacity spent on schools) to specific targets, and provide additional federal aid to states that fall short. A significant portion of the interstate disparities identified herein result from lacking state effort, not lacking state capacity.

Appendix

Table A1

Cost Models for Adequacy Estimation

	Aggressive Estimates[1]		Conservative Estimates[2]	
	Estimate	**R.S.E.**	**Estimate**	**R.S.E.**
Outcome Index	1.619***	0.083	1.103***	0.044
Education Comparable Wage Index	0.446***	0.033	0.514***	0.028
Student Needs				
Adjusted Poverty Rate	3.106***	0.172	2.126***	0.092
State Mean Centered SWD Rate	2.363***	0.123	2.040***	0.096
% ELL	0.976***	0.085	0.618***	0.059
Grade Ranges Served				
% Enrollment in Pre-k	0.371***	0.131	0.316***	0.103
% Enrollment in Secondary Grades	0.549***	0.038	0.492***	0.03
Economies of Scale				
Less than 100 Students	0.601***	0.096	0.609***	0.076
101 to 300 Students	0.370***	0.018	0.348***	0.014
301 to 600 Students	0.213***	0.014	0.208***	0.011
601 to 1200 Students	0.130***	0.011	0.126***	0.009
1201 to 1500 Students	0.094***	0.013	0.089***	0.011
1501 to 2000 Students	0.086***	0.012	0.082***	0.01
Log of Population per Square Mile	-0.032***	0.005	-0.020***	0.004
Efficiency Factors				
% Population between 5 & 17 yrs of age	-0.084	0.09	-0.038	0.07
Ratio of Housing Values to Surrounding Districts	-0.300***	0.023	-0.178***	0.015
Herfindahl Index	-0.017	0.033	-0.067**	0.029
Year	-0.004***	0.001	-0.004***	0.001
Constant	17.110***	2.283	15.512***	1.845
Number of observations	92,039		92,039	
R2	-1.051		-0.306	

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

R.S.E. = Robust Standard Errors (clustered on district I.D.)

[1] Excluded instruments: School Neighborhood Poverty Index (mean of surrounding districts), % of surrounding district enrollment that is Black or Latinx

Partial F of Instruments = 256.97 (R^2 = 0.0453)

Hansen J = 0.097 (*p*-value = 0.7552)

[2] Excluded instruments: School Neighborhood Poverty Index (mean for district's own schools), % of surrounding district enrollment that is Black or Latinx

Partial F of Instruments = 708.51 (R^2 = 0.0923)

Hansen J = 22.754 (*p*-value = 0.0000)

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