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Funding Flows: Which Students Receive a Greater Share of School Funding?

Technical Appendix

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We calculate a measure of school funding progressivity that estimates average spending on students from families with low incomes (earning below the federal poverty level) relative to families with higher incomes.[1] For each state, we calculate a weighted average of each district's per student funding, where the weights are the number of students from families with low incomes in each district. We then calculate the same figure weighted by the number of students from families with higher incomes.

Our progressivity measure for each state is the ratio of the average district-level funding for students from families with low incomes and students from families with higher incomes. For example, an estimate of 1.1 implies that, on average, students from households living in poverty attend districts that receive 1.1 times (i.e., 10 percent more than) the per student funding than the districts where students from households not living in poverty attend. Of course, students from households both experiencing and not experiencing poverty are enrolled in every district—our measure estimates whether students from households living in poverty tend to be enrolled in districts with higher (or lower) funding levels than students from households not living in poverty.

We measure funding progressivity for all states except for Hawaii (which is a single district) and Washington, DC (which includes only one traditional school district). But we include both these places (as single districts) in our national estimates of progressivity.

Our funding progressivity measure is based only on data on traditional public school districts, defined as those that have a geographic district footprint. We exclude districts containing only charter schools[2] and other nontraditional districts, such as online and alternative education programs. As a result, changes in the share of students enrolled in nontraditional districts may affect the trends in funding progressivity and levels we report.

We also use our progressivity measure to capture funding differences by school geography and enrollment by race and ethnicity. Before 2005, there were 9 types of school geography categorizations, and after 2005, there were 12 categories.[3] The US Department of Education updates the categories to incorporate the latest decennial census population and geographic information, once available. For 2005 forward, we use the share of students enrolled in schools that are classified as urban (inside an urbanized area and inside a principal city), suburban (outside a principal city and inside an urbanized area), town (territory inside an urban cluster), and rural (census-defined rural territory). We use the same categorizations for data before 2005 but with slightly different definitions of urban (large or midsize city), suburban (urban fringe of a large or midsize city), town (large or small town), and rural (rural inside or outside a core-based statistical area). In general, these categories align well across this dataset (correlation = 0.94), but large changes in geographic funding around 2005 should be interpreted with caution. Our interactive tool allows users to generate 14 different combinations of urban, suburban, town, and rural districts.

Category differences are also present in student enrollment counts by race and ethnicity. Before 2009, there were five racial and ethnic categories, and after 2009, enrollment counts by race and ethnicity included seven categorizations.[4] For 2009 forward, we use student enrollment counts for seven racial and ethnic categories: American Indian or Alaska Native (AIAN), Asian, Black, Hispanic, Native Hawaiian or other Pacific Islander (NHPI), two or more races, and white. Before 2009, the five categories excluded Asian and two or more races, and students were classified as white, Black, Hispanic, American Indian, or Asian/Pacific Islander. Our tool allows users to select from 162 different combinations of race and ethnicity.

Because the geographic, race, and ethnicity data are measured at the school level (instead of the geographic district level), we can generate equity measures for nearly all states and all combinations, but there are exceptions. For example, all schools in Washington, DC, are urban schools, so a geographic comparison with rural, town, or suburban schools is unavailable. And Hawaii is a single district without charter districts (where charter schools are operated by independent managing boards), so equity measures are unavailable.

Some states have small shares of students from certain racial or ethnic backgrounds enrolled in their schools. For states where these students make up less than 3 percent of total students, we provide the data with a gray overlay. The data are correct, but users should note that large changes may be the result of the movement of a small number of students and are less likely to be the effect of policy interventions.

Data

We calculate our measures of funding progressivity using data on the federal, state, and local revenues of nearly all regular public school districts in the United States from the US Department of Education's Common Core of Data Local Education Agency Finance Survey (F-33) for each year from 1994–95 to 2018–19.

In previous versions of this tool, we presented revenues as reported to the Department of Education without any adjustments to the reported revenue amounts. In the current version, we adjust revenue streams to account for payments to charter schools, private schools, and other school systems. Because these payments are not tied to a local, state, or federal revenue source, we must approximate the impact on different revenue types. To do this, we decrease each revenue source by a proportion of the amount of the payments to other schools. For example, if a district receives 10 percent of its revenue from federal sources and spends $200,000 overall on payments to other districts, we decrease the federal revenue amount by $20,000 ($200,000 * 0.10) and do the same for state and local revenue shares.

This adjustment for payment to other schools or districts does not change results substantially in most states. But it does cause substantial changes in our estimates for a few states, especially in the most recent 5 to 10 years of data. To scope out the impact of these changes, we present labor-adjusted progressivity measures for 2018 using both the payment-adjusted revenue data and the previous estimates (table 1). This adjustment changes our 2018 progressivity estimate by at least 1 percentage point in nine states: Connecticut, Louisiana, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, and Rhode Island. In Pennsylvania, accounting for these payments flips, our interpretation of the allocation of revenue per pupil changes from progressive to regressive.

TABLE 1

Comparison of 2018 Revenue Progressivity after Adjusting for Payments to Other Schools

Changes in progressivity after accounting for payments are largest in Ohio and Pennsylvania

	Cost-Adjusted Revenue Progressivity Rate				Cost-Adjusted Revenue Progressivity Rate		
State	Old	New	Difference	State	Old	New	Difference
US	1.006	1.001	-0.005	MS	1.036	1.036	0.000
AK	1.230	1.230	0.000	MT	1.061	1.062	0.001
AL	1.002	1.002	0.000	NC	1.026	1.026	0.000
AR	1.030	1.029	0.000	ND	1.057	1.056	-0.001
AZ	1.054	1.055	0.001	NE	1.052	1.053	0.001
CA	1.030	1.032	0.002	NH	0.986	0.996	0.010
CO	1.043	1.042	-0.001	NJ	1.040	1.006	-0.034
CT	0.987	0.973	-0.014	NM	1.034	1.034	0.000
DC	N/A	N/A	N/A	NV	0.988	0.989	0.000
DE	0.993	0.994	0.001	NY	1.036	1.017	-0.019
FL	1.006	1.006	0.000	OH	1.084	1.043	-0.041
GA	1.037	1.037	0.000	OK	1.027	1.027	0.000
HI	N/A	N/A	N/A	OR	1.018	1.015	-0.003
IA	1.007	1.007	0.000	PA	1.044	0.975	-0.069
ID	1.020	1.020	0.000	RI	0.985	0.975	-0.010
IL	0.963	0.963	0.000	SC	1.030	1.027	-0.003
IN	1.036	1.035	-0.001	SD	1.164	1.165	0.002
KS	1.029	1.030	0.000	TN	1.028	1.028	0.000
KY	1.029	1.029	0.000	TX	1.018	1.017	-0.001
LA	1.021	1.009	-0.013	UT	1.048	1.048	0.000
MA	1.045	1.019	-0.026	VA	1.039	1.037	-0.002
MD	1.029	1.029	-0.001	VT	1.025	1.031	0.006
ME	1.005	0.999	-0.006	WA	1.012	1.012	0.000
MI	1.012	1.010	-0.002	WI	1.040	1.038	-0.002
MN	1.060	1.060	0.000	WV	1.010	1.010	0.000
MO	1.006	1.004	-0.002	WY	1.025	1.024	-0.001

Source: Urban Institute analysis of the US Department of Education's Common Core of Data Local Education Agency Finance Survey F-33 data and Small Area Income and Poverty Estimates data.

Notes: N/A = not applicable. Old revenue progressivity is calculated using only reported local, state, and federal resources by district, and new progressivity is reported accounting for payments to other schools and districts. Ratios are adjusted for local labor costs.

We merge the finance data with district-level poverty data from the Census Bureau's model-based Small Area Income and Poverty Estimates (SAIPE) from 1995 through 2019 (matched to the later calendar year of the school finance data—that is, 2019 SAIPE data are matched to 2017–19 school finance data). We calculate district-level poverty rates by dividing the number of children ages 5 to 17 living in poverty by the total number of children ages 5 to 17. SAIPE data are not available for 1996 and 1998, so for these years, we use the average of the surrounding years (e.g., for 1996, we use the average of 1995 and 1997).[5]

We apply the estimated poverty rates from SAIPE to each district's total enrollment to obtain the estimated numbers of students who are and are not living in poverty, which function as weights in our progressivity measure. The SAIPE data cover students who live in a geography-based school district, some of whom are not enrolled in that district.

Additionally, we use Common Core of Data information on school-level urbanization and enrollment by race and ethnicity to create a ratio by dividing the target group average by the nontarget group average. For example, to understand how much funding is distributed for a particular target group, we create a weighted average funding amount for Black students versus all other students in each state.

Our tool's default option presents funding progressivity adjusted for an estimate of the costs districts face. We divide each district's funding data by a Comparable Wage Index (CWI), a measure of the salaries of college graduates who are not teachers in the district's labor market.[6] This adjustment implicitly uses the wage index as a proxy for all costs districts face, including labor and nonlabor costs.

The CWI is consistently measured at the district level for each year from 1997 to 2013, which we associate with the spring of the academic year in the finance data (e.g., linking 1996–97 finance data to the 1997 CWI). We extend the data series by using the 1997 values for 1995 and 1996 and the 2013 values for 2014. We renormalize the CWI to have a mean of approximately 1 in each year by dividing by the national CWI for that year. In other words, we adjust for estimated cost differences across districts (and states) in each year (and allow those relative costs to change over time), but we do not adjust for aggregate changes in the costs districts face.

The American Community Survey Comparable Wage Index for Teachers (CWIFT) is an updated measure of wage and salary differences for college graduates, modeled after the original CWI.[7] CWIFT provides three-year estimates of local labor market geographic areas based on counties. In comparison, the initial CWI produces one-year labor cost estimates based on aggregates of place-of-work areas. CWIFT yields more precise index values for districts, generating a population-weighted average of the CWIFTs for each county in the district. Other differences in CWIFT, compared with the CWI, include changes in the hedonic wage model from a continuous measure of weeks worked per year to a categorical measure and the inclusion of undergraduate field of degree. CWIFT also includes the interaction between sex and age and indicators for whether the worker is Hispanic or does not speak English and incorporates the interaction between year indicators and the occupation or industry effects. We append updated 2015–19 CWIFT data for a complete CWI dataset.

Notes

[1] Our description of this measure is adapted from Matthew M. Chingos and Kristin Blagg, "Do Poor Kids Get Their Fair Share of School Funding?" (Washington, DC: Urban Institute, 2017).

[2] We include traditional districts that have charter schools.

[3] For more information on the National Center for Education Statistics Common Core Data, see Chen-Su Chen, Jennifer Sable, Lindsey Mitchell, and Fei Liu, *Documentation to the NCES Common Core of Data Public Elementary/Secondary School Universe Survey: School Year 2009–10* (Washington, DC: US Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2011).

[4] See Chen et al., *Documentation to the NCES Common Core of Data*.

[5] If only one adjacent year is available, we use that value rather than computing an average.

[6] For more on the CWI, see "Extending the NCES CWI," Texas A&M University, accessed January 25, 2022, http://bush.tamu.edu/research/faculty/Taylor_CWI/. In Chingos and Blagg, "Do Poor Kids Get Their Fair Share," we used a CWI based on the American Community Survey, but here, we use the district-level measure that is calculated consistently for 1997 to 2013.

[7] Stephen Q. Cornman, Laura C. Nixon, Matthew J. Spence, Lori L. Taylor, and Douglas E. Geverdt, "Education Demographic and Geographic Estimates (EDGE) Program: American Community Survey Comparable Wage Index for Teachers (ACS-CWIFT)" (Washington, DC: US Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2018).

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