Exit or Invest: How segregation still shapes public education

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Abstract

Does segregation help or hurt support for public education? Previous literature has identified diversity, and more recently segregation, as key predictors for spending less on public goods. Because of schools' historical legacy with segregation, segregation could play a very different role in funding public education. To test this, I have collected data on the 11,000 plus school district in the United States from 1995 to 2011. Using multi-level models with a state-school district nested design, I find that white-black integration leads to less investment in public education while white-Hispanic integration, as well as segregation by income, has no effect. This result is robust across a broad array of alternative specifications, including an instrumental variable analysis using the number of years after an overturned court desegregation order as an instrument for school segregation. The results imply that segregation is still shaping public education.

Data and Methods

Using several different data sources from the U.S. Census to the The Local Education Agency (School District) Universe Survey, I collected financial and demographic data from 1995 to 2011 on more than 11,000 school districts across the United States. I used both tract level and school level data to calculate the H index, a measure of segregation, for all school districts for white-black, white-Hispanic, white-nonwhite, and income segregation. In some cases, data were joined based on spatial location.

Figure 1: Joining Data Spatially
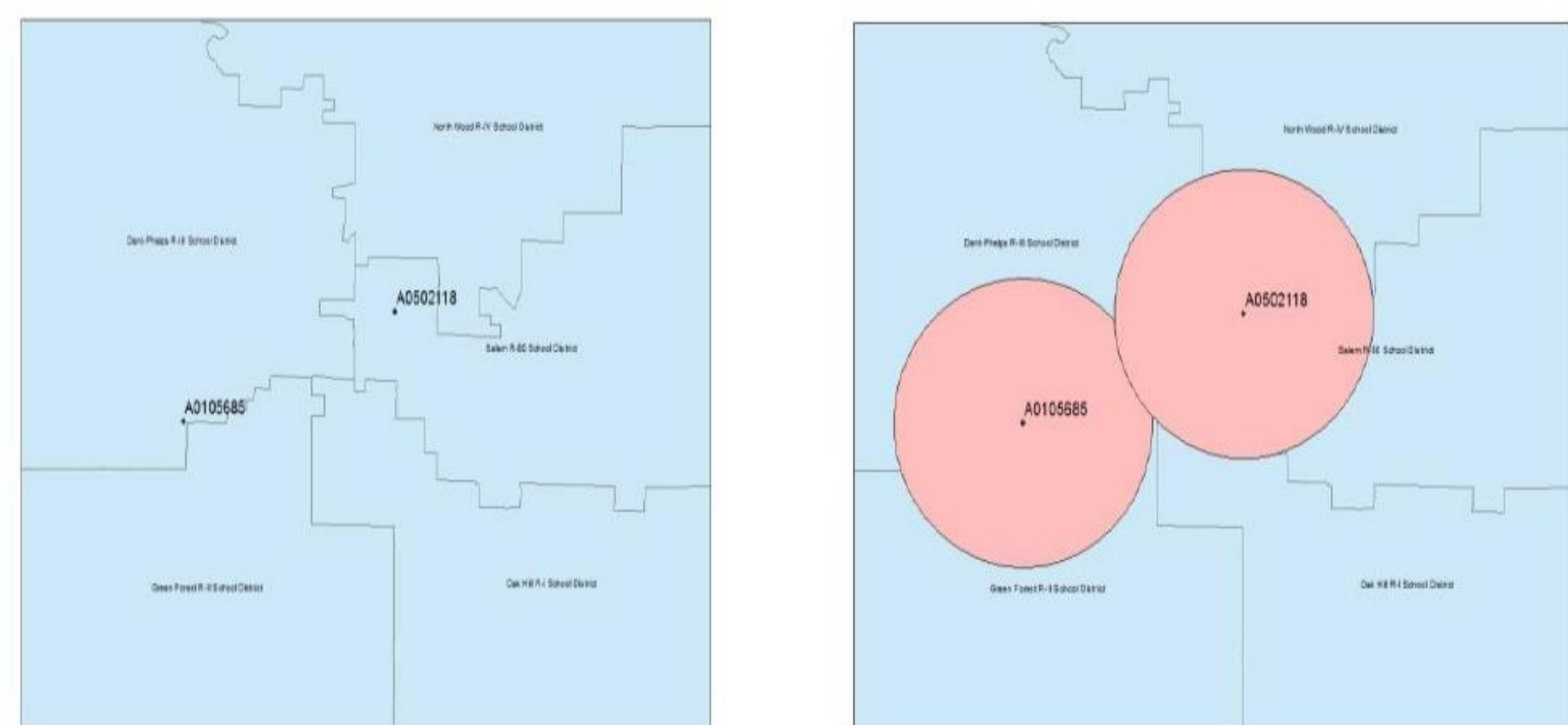
Note: This is an example of joining data spatially. Access to private schools is not determined by public school boundaries. Therefore, I created 10 mile boundary around private schools to identify districts in which students could access private schools.

State-School District Multi-Level Model

Local school districts are not independent entities from the state. States fund education at different levels and set the rules that districts must follow in generating education funds. Multi-level modeling allows a nested design, with district intercepts nested within state-level intercepts. I use a three-level model. The model has two random-effects equations. The first is a random intercept at the state level (level three) and the second is a random intercept at the school district level(level two). I also include dummies for year and cluster standard errors at the state level.

Figure 2: Differences by State
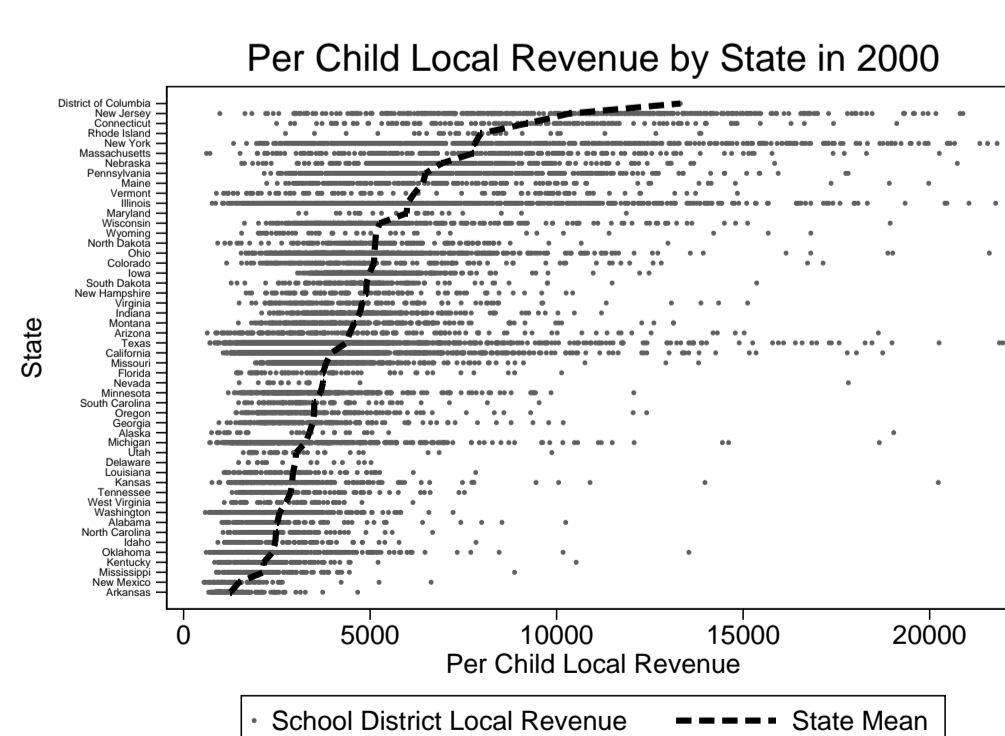
Note: This graph reflects the variation in per child local revenue by state in 2000. Each black dot represents a school district and the dashed line represents the mean per child local revenue in each state.

White-Black Segregation Predicts More Investment

Going from the 75th to the 25th percentile in *White-Black Segregation, Residential* (0.10 to 0.02; i.e. becoming less segregated) would result in $110.27 less dollars per child. With the average district enrolling 3,887 students in 2010, this is a $428,619.49 difference. *White-Hispanic Segregation, Residential* is not statistically significant.

Figure 3: Marginal Effect of Segregation
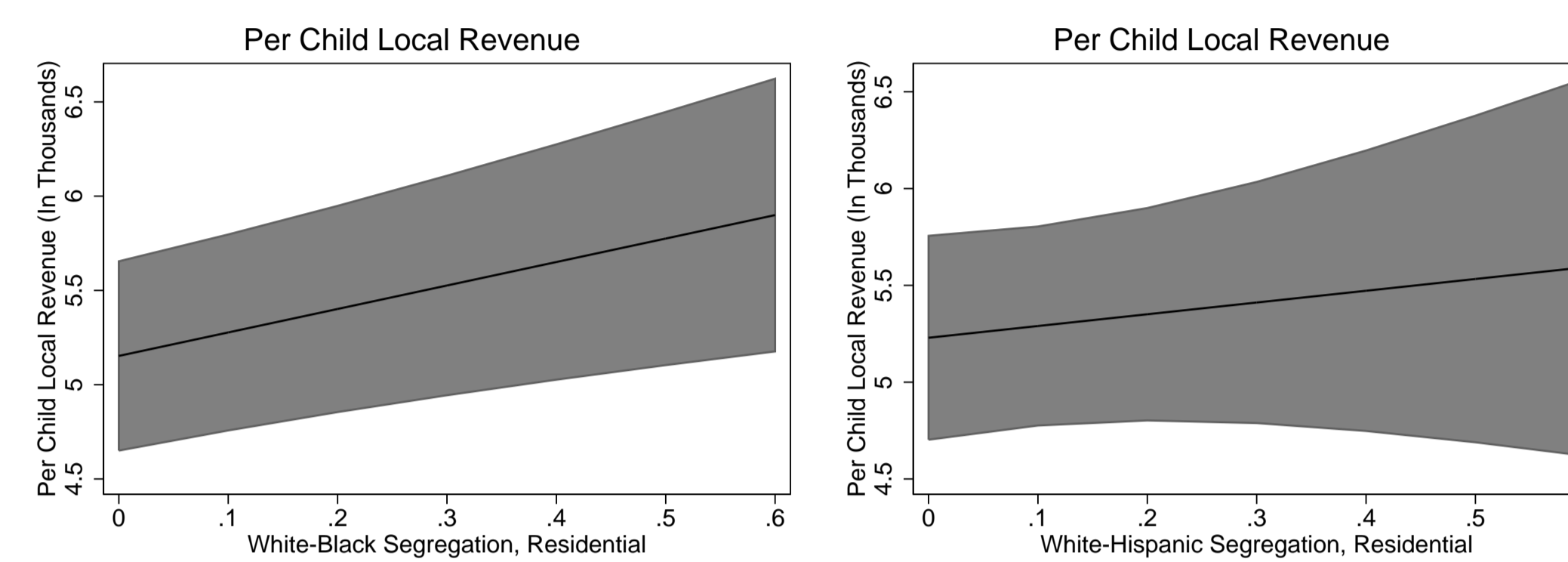
Note: This is the effect of a marginal change in white-black segregation (left) and white-Hispanic segregation (right) on per child local revenue. Model includes the following controls: % Black in district,% Hispanic in district, 5 year Δ % Black, 5 year Δ % Hispanic, Students Enrolled, Median Household Income, Log of the Population, % Residents with Bachelor degree or Higher, % Vote for Democrat for President, Per Child State revenue, and Per Child Federal revenue.

Model Robust to Alternative Models

Figure 4: Robustness Checks when Changing the Model
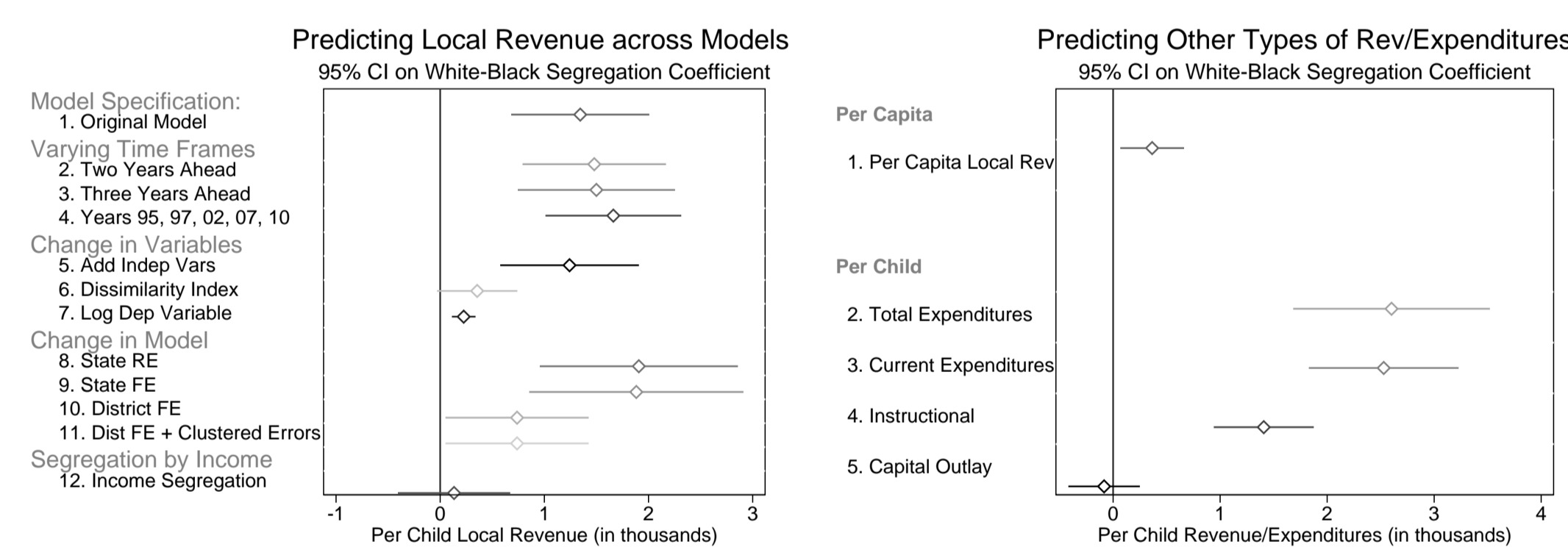
Note: The graph on the left plots the 95% confidence interval for the white-black segregation coefficient across 12 different models with *per child local revenue* as the dependent variable. Each row is a new model with changes in either time, independent variables, or model structure. For the graph on the right, each 95% confidence interval is a new model with a change in dependent variable to reflect different revenue and spending categories, but with the same independent variables and model structure. With the exception of the first measure, which is per capita, these are adjusted to per child measures.

Different than Other Public Goods

Figure 5: Comparing the Coefficient Across City versus School Revenue Models
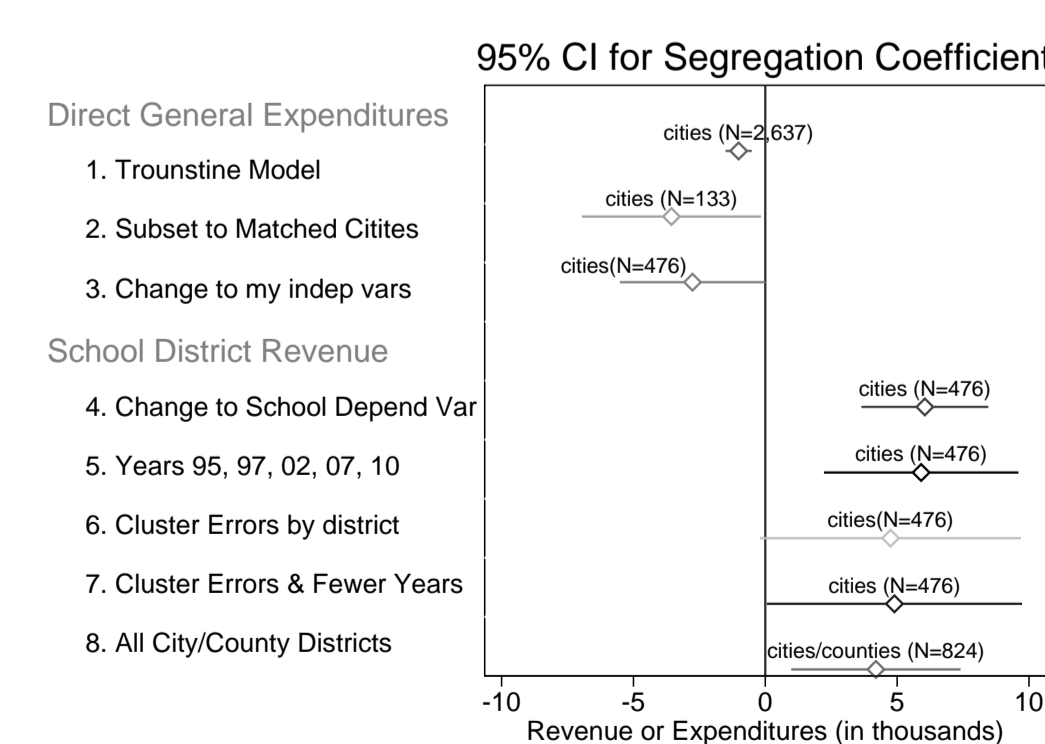
Note: This graph plots the 95% confidence interval from 8 different models to show how the independent variable *White-Black Segregation* changes when predicted *Direct General Expenditures per capita* for city spending and *Local Revenue per child* for school district revenue.

Overturned Court Desegregation Orders as an Instrument for School Segregation

Figure 6: Districts Under Court Desegregation Order
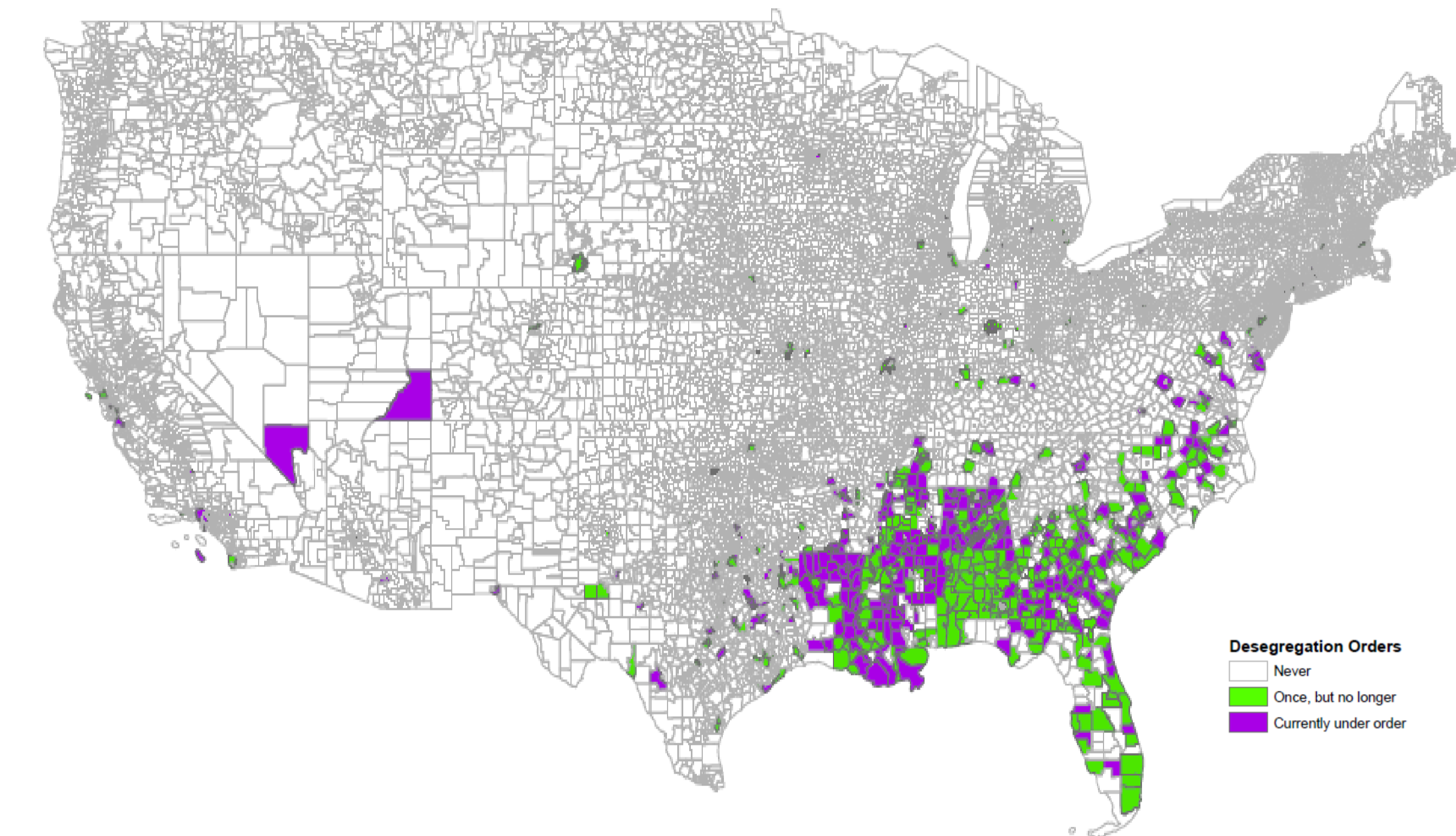
Since *Brown V. Board of Education*, over 700 school districts have been placed under court order to desegregate. Since 1995, 249 have been overturned in a "quasi-random" event. Overturning the order leads to increased school-level segregation, which predicts more investment in schools.

Figure 7: Instrumental Variable Analysis
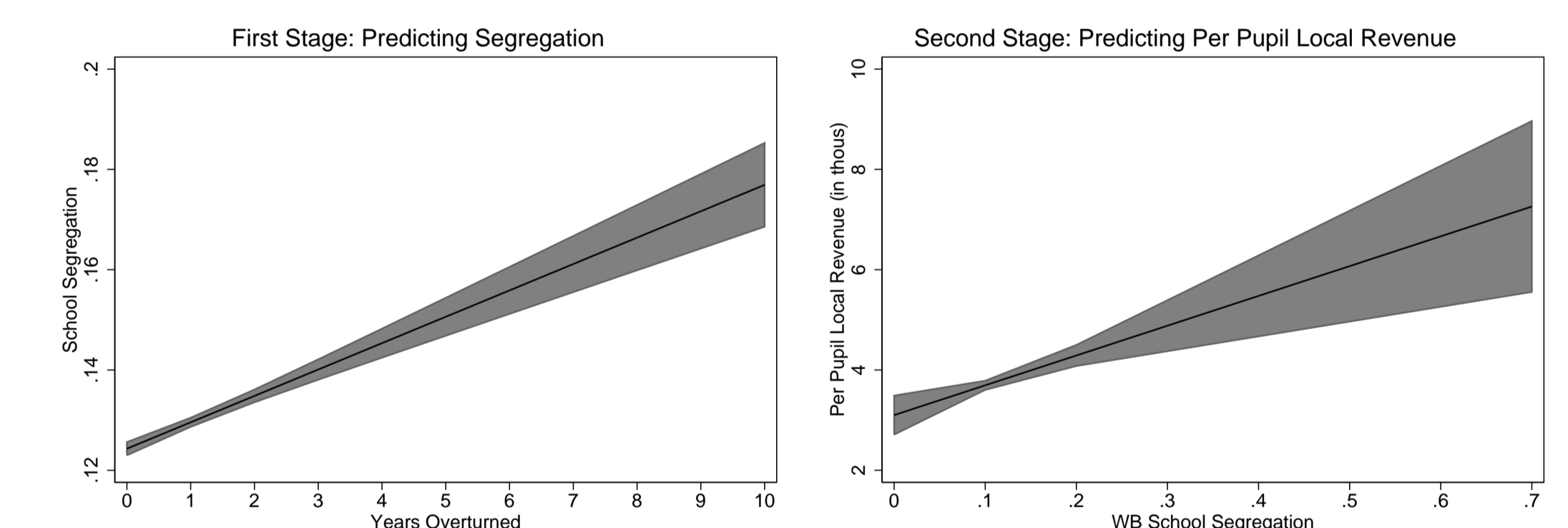
Note: The figure on the left plots the marginal effect and 95% confidence interval for number of years since a court order has been overturned predicting the white-black segregation from the first stage of the IV (the F-statistic on the excluded instruments is 61.82). The figure on the right plots the marginal effect and 95% confidence interval for the predicted segregation from the first stage on per child local revenue.

But More Money Does Not Imply Higher Quality

Research has continually pointed to the level of diversity, but the ways in which neighborhoods are arranged, the type of public good, and the users of the good are all important in understanding when communities will choose to invest or when they may exit the public system in favor of private options. When a shared space is involved, integration can result in lower levels of revenue for schools. But this does not mean that integration shouldn't be the goal or that more money in these segregated districts is better. A few case studies have revealed that variation in spending exists within school districts. Therefore, even if segregated communities are raising more revenue, it does not follow that every one will benefit.

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