An Analysis of Poverty and Education in California Public Schools

Executive Summary

Discrepancies in the quality of education between public schools undermines the Department of Educations' mission to foster "educational excellence and ensur[e] equal access." This analysis sheds light on the relationship between student poverty levels, school resource access, and school success. In California schools, fewer students qualifying for subsidized meals, schools having more fully-qualified teachers, and schools meeting their annual learning targets all correlate with one another. This correlation suggests that poorer students receive worse education than affluent students on average. This analysis recommends further study to determine causality and subsequent policy intervention as a remedy.

Motivation

Public school education in the United States is often funded by property taxes of surrounding areas. As a result, affluent neighborhoods tend to have better funded public schools. Well-funded schools tend to do better than underfunded schools. This sequence of reasoning suggests that children from affluent families (and thus neighborhoods) will receive a better education from their public schools than children from poorer families, and would have wide-reaching implications for education equity and policy. This paper will analyze California Schools Academic Performance Index (API) data collected by the California Department of Education to examine whether student poverty is correlated with a decrease in resources among public schools. It will also examine these variables in relation to relative school success.

Research Questions

1. Do schools with lower-income students have equal access to qualified teaching staff?
2. How do the rates of poverty among students and full qualifications among teachers correlate with schools' ability to reach their learning improvement targets?

Data

The California Schools API data provides various instruments at the school-level including:

1. The percentage of students who qualify for subsidized meals (i.e. students whose household income is below 185% of the poverty line),
2. The percentage of teachers who are fully qualified (as opposed to emergency certified),
3. Whether a school met its school-wide growth target and comparable improvement target.

This paper will use the percentage of students qualifying for subsidized meals as a relative indicator of a school's affluence. It will use the percentage of teachers who are fully qualified as an indicator for how well-resourced a school is. And lastly, it will estimate a school's success based on whether or not it met its annual targets.

Hypothesis

This analysis hypothesizes that the percentage of students qualifying for subsidized meals correlates with the qualification rates of the teachers. More generally, it predicts that schools with poorer students have access to fewer resources on average.

Analysis

shows with high confidence that low levels of student poverty and higher levels of fully-qualified teachers predict school success among the greater population. This analysis shows that more qualified schools (90% or more fully-qualified teachers) meet academic success targets more often than less qualified schools ($p < .001$). More qualified sample schools meet targets at a rate of 75.7% while less qualified sampled schools meet theirs 65.5% of the time (Figure 1).

With respect to student family income, higher income schools (less than 50% of students qualifying for subsidized meals) in California meet academic success targets more often than lower income schools ($p<.001$). While 73.2% of sampled higher income schools achieve their targets, 68.8% of sampled lower income schools meet theirs (Figure 2).

Furthermore, California schools with fewer students qualifying for subsidized meals do indeed have more fully-qualified teachers ($p < .001$). In other words, higher-income schools tend to be more qualified. 72.2% of sampled higher-income schools had 90% or more fully-qualified teachers as compared to 36.9% of lower-income schools (Figure 3).

This analysis shows the explicit link between (1) teacher qualification rates and school success, (2) student income level and school success, and (3) student income level and teacher qualification rates. These findings support the hypothesis that student family income and school access to resources are not independent.

Methods, Limitations, and Further Study

This analysis was conducted using standard Z-Tests to make use of the relatively large sample size ($n = 6190$) in California School's API data. While population means likely differ slightly from the sample means above, the large sample size suggests relative stability in those means.

This analysis suffers from limitations in data and equity. While the indicators available are helpful, they do not measure income or resource availability precisely and are estimates at best. This analysis also did not account for race and--given that black and brown Americans tend to be poorer--fails to provide information for a discussion regarding racially equitable education.

Additionally, this analysis does not define causal relationships between student family income, school resource access, or school target achievement. Continued study would benefit from causal analysis of these factors as well as disaggregation by racial and ethnic identities.

Policy Implications

Policymakers seeking to improve school success should focus on the dynamic between student poverty, school resources, and school success. First steps may include allocating funding for schools to hire more fully-qualified teachers but, as noted above, further analyses will provide more targeted direction.

Conclusion

This analysis examines the relationship between loosely defined indicators of student family income, school resource access, and school success. It shows within a 99% confidence interval that schools serving low income students tend to perform worse, that schools with fewer qualified teachers also tend to perform worse, and that lower income students more often attend schools with less qualified teachers.

Figures

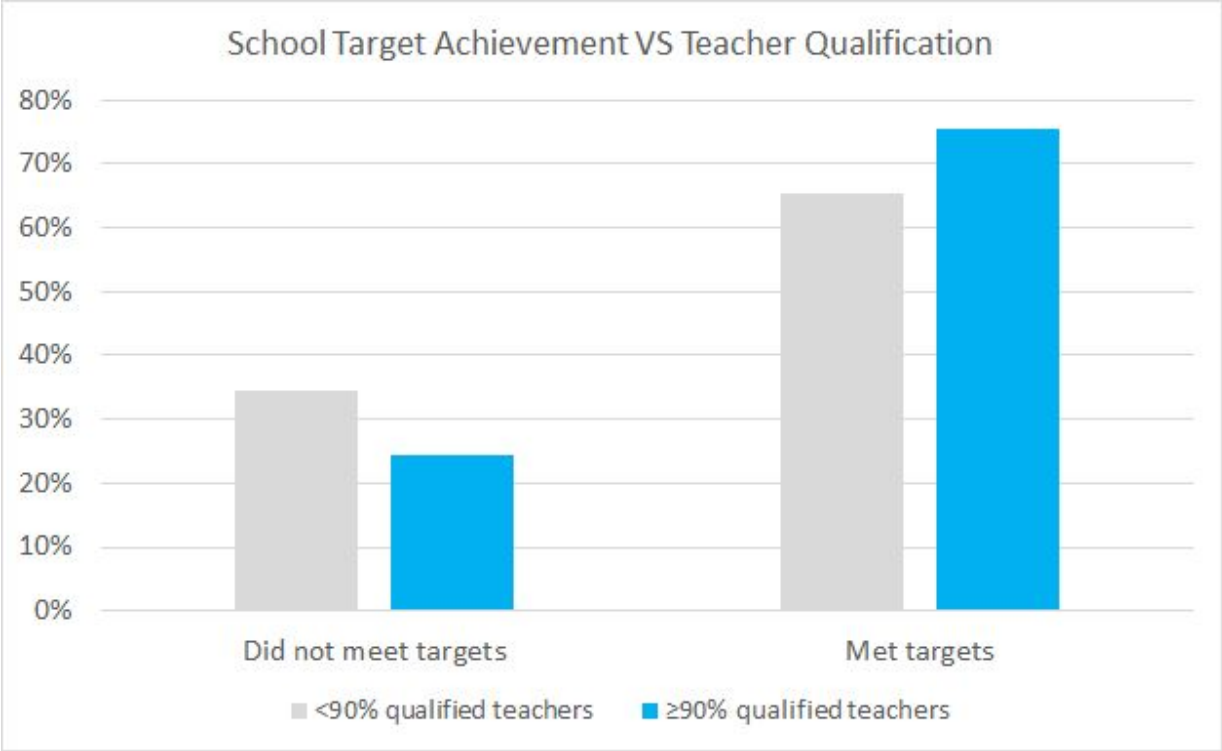

Figure 1

Figure 2

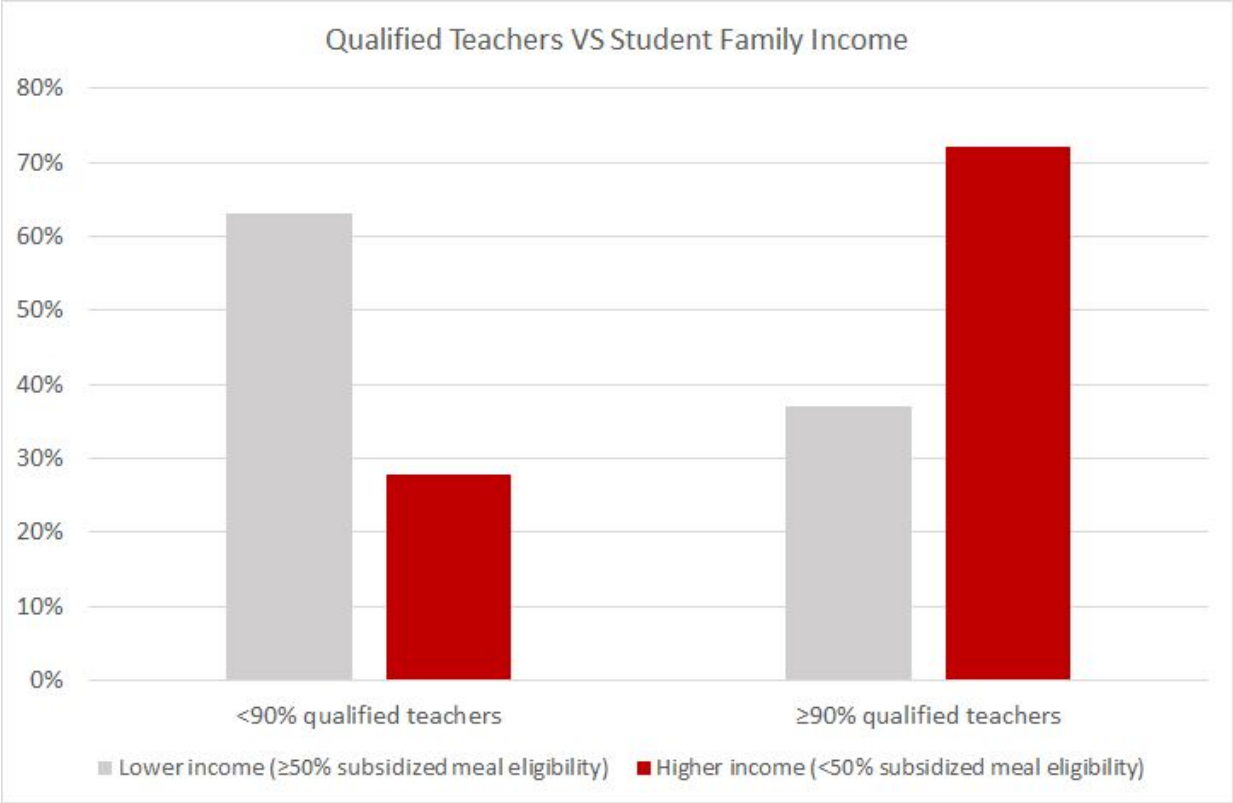
Qualified Teachers VS Student Family Income
80%
70%
60%
50%
40%
30%
20%
10%
0%
<90% qualified teachers
≥90% qualified teachers
Lower income (≥50% subsidized meal eligibility)
Higher income (<50% subsidized meal eligibility)

Figure 3