GETTING DOWN TO FACTS II

Technical Report

Assessing Equity in School Leadership in California

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About: The *Getting Down to Facts* project seeks to create a common evidence base for understanding the current state of California school systems and lay the foundation for substantive conversations about what education policies should be sustained and what might be improved to ensure increased opportunity and success for all students in California in the decades ahead. *Getting Down to Facts II* follows approximately a decade after the first *Getting Down to Facts* effort in 2007. This technical report is one of 36 in the set of *Getting Down to Facts II* studies that cover four main areas related to state education policy: student success, governance, personnel, and funding.

Stanford University

PACE Policy Analysis for California Education

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Summary

Leadership is important for school improvement, but evidence from other states suggests that states and districts systematically place less qualified, less effective principals in the schools that need them most. We draw on survey and publicly available data to describe the sorting of school leaders in California across schools in different categories of need, proxied by the proportions of low-income students and students of color, and the level of student achievement in the school. Our findings:

- There is evidence of inequitable sorting among California principals. Principals in the lowest-achieving schools and in schools with the highest proportions of low-income students and students of color are more likely to be novice principals and have been in their schools less time than principals in more advantaged schools. For example, 53% of principals in the bottom 20% of schools in student achievement are in their first three years on the job, compared to only 26% of principals in the schools in the top 20%. The difference in average length of tenure as the principal between those two groups of schools is a full year.
- Principals in high-needs schools have much higher turnover rates. Annually, 21% of principals in high-poverty schools turn over, compared to just 17% of principals in low-poverty schools. This problem is not just an urban one; we find sizable disparities in principal turnover between high- and low-needs schools across urban, suburban, and rural districts.
- Principal satisfaction is somewhat lower in high-needs schools, particularly when measured by student poverty.
- Districts are not compensating principals for the challenges of taking on leadership of high-needs schools. Adjusting for principal experience, principals of high-poverty and low-achieving schools, in fact, report lower salaries than principals of other schools.
- Other states have made sustained investments in collecting data on the job performance of school leaders and making information about school leaders available to stakeholders, including researchers, alongside other data about their schools. Research conducted in those states, such as Tennessee, find that principal pipeline, hiring, and placement differences across schools and districts combine with disparities in principal turnover to create gaps in leadership quality across schools with different student populations. Data currently available in California are not sufficient for the kinds of deep analysis that can inform human capital policy around school leadership in the state.

Introduction

The quality of a school's leadership is a key determinant of its performance. Research links effective leadership to a variety of school outcomes, including more positive school learning climates (Sebastian & Allensworth, 2012), lower rates of teacher turnover (Boyd et al., 2011; Grissom & Bartanen, 2018; Ladd, 2011), and greater parental satisfaction (Grissom & Loeb, 2011). These impacts on the school community translate into greater gains in student achievement. Studies using large-scale data in a variety of settings have demonstrated sizable effects providing a school with a high-quality principal on student test score growth (e.g., Branch, Hanushek, & Rivkin, 2012; Coelli & Green, 2012; Grissom, Kalogrides, & Loeb, 2015). Moreover, effective principals and assistant principals are especially important in high-needs schools where the leadership challenges are greatest (Grissom, 2011; Leithwood et al., 2008).

The central role that school leaders play in school success makes it essential that California and its school districts ensure not only that they are increasing the overall quality of school leadership in the state, but also that they are getting effective principals into the schools that need them most. Another *Getting Down to Facts II* (GDTF) report focuses on this first issue, surveying the landscape of the state's investment in pre-service and in-service learning opportunities to prepare and support principals to do the job well (Sutcher et al., GDTF). In this study, we focus on the second issue, bringing together some evidence on the distribution of leaders across schools with historically different levels of need.

Evidence from other states, including some research we have conducted on this topic, suggests that high-needs schools—such as those with large numbers of low-income and low-achieving students—are less likely to be led by effective principals than their more advantaged neighbors (Clotfelter, Ladd, Vigdor, & Wheeler, 2007; Grissom, Bartanen, & Mitani, 2018). This research documents a number of pressures that combine to create inequities in the distribution of leadership across relatively advantaged and disadvantaged schools. Among these, principal turnover appears to be a particularly important culprit. Principal turnover rates in high-needs schools are substantially higher, meaning that leadership vacancies in such schools arise more often. Districts tend to fill these vacancies with less qualified, less experienced principals. Because on-the-job experience is a primary means through which principals increase their efficacy in the role, turnover and the transition to a new school leader represents a loss of essential human capital. In addition, there is also some evidence that principals in high-needs schools may improve at lower rates than principals in other schools, perhaps because the skills for leading challenging schools take longer to obtain or because they have less access to opportunities for support and development (Grissom, Bartanen, & Mitani, 2018).

Contextual differences, however, mean that patterns observed in states like Tennessee and North Carolina need not arise in California. Unfortunately, we have little evidence about sorting among principals in California. This absence of evidence is not particular to this state; research on the leadership labor market across the United States generally is sparse, and certainly less developed than research on mobility among teachers. This study pulls together available data in an attempt to document patterns of leadership sorting in California and

provide insight into these patterns. We build directly on our own research on leadership sorting in Tennessee, which provides a potentially useful comparison to the research we describe here.

We ask the following research questions. First, how are measures of principal quality distributed across California schools with different concentrations of traditionally marginalized students? Second, to what degree does differential principal turnover contribute to gaps in principal qualifications among different types of schools? And finally, can we provide insight into the reasons for leadership turnover in high-needs schools through analysis of principal survey or other data?

Before proceeding, we want to highlight that we originally set out to answer a more ambitious set of questions regarding school leader sorting in California. We proposed to examine the distribution of principal qualifications across measures of school advantage over time, to dig into patterns of school principal hiring and placement, to describe pipelines into leadership around the state, and to link to policy factors such as accessibility of administrator preparation programs. Unfortunately, we were unable to obtain the kinds of data that have been used in other states to understand the principal labor market from the California Department of Education (CDE), which made these more illuminating analyses impossible. Inaccessibility of education data for research and evaluation in California is a broader problem that is addressed in depth by another GDTF report (Phillips, Reber, & Rothstein, GDTF); inability to learn about the landscape of leadership across the state is just one consequence. To illustrate what can be learned from such data in this arena, later in this paper we describe some of the findings of the work on leadership sorting we have done in Tennessee.

In the absence of the finer-grained data we requested from CDE, we made use of survey and aggregated data on school administrators to examine the distribution of leaders' qualifications across schools, and to look at related patterns in leader turnover. Our descriptive analysis reaches three main conclusions. First, as in other states, there is evidence that principals in high-poverty and low-achieving schools have less experienced principals. These differences are large. For example, half of principals of schools in the lowest quintile (i.e., bottom 20%) of achievement in the state have fewer than 3 years of experience, compared to only about 25% of principals of schools in the top achievement quintile. Principals in high-needs schools also have been in their current school less time: 3.4 years in the lowest-achieving schools, on average, compared to nearly 5 years in the highest-achieving schools.

Second, administrator turnover rates in high-needs schools are substantially higher. For example, 21% of principals in high-poverty schools (those with more than 80% low-income students) leave their schools each year, compared to just 17% of principals in schools in which fewer than 20% of students are low-income. Moreover, we find that the problem of high principal turnover in high-needs schools is not just an urban phenomenon, with California's suburban and rural schools facing many of the same turnover challenges in their more traditionally disadvantaged schools that the urban districts face.

Third, consistent with the idea that challenging working conditions may contribute to higher turnover rates in high-needs schools, our analysis of principal survey data finds that

there is a "satisfaction gap" between principals in schools at opposite ends of the student poverty distribution. There is little evidence in the data that principals are compensated monetarily for leading more challenging schools. In fact, adjusting for principal experience, the average principal in a high-poverty California school reports a salary that is nearly 10% lower than a principal in a low-poverty school (a difference of approximately $12,000). This difference points to a potential strategy for districts aiming to keep qualified principals in the schools that can most benefit from strong, consistent leadership.

Research on Leadership Sorting

We motivate our analysis with a review of the small body of existing research on principal labor markets. The goal of this discussion is to describe what we know about the dynamics of leadership sorting from empirical work outside of California.

A substantial literature on the teacher labor market demonstrates that teachers sort across school environments such that higher-performing teachers tend to concentrate in more advantaged schools (e.g., Clotfelter et al., 2005; Goldhaber, Lavery, & Theobald, 2015; Glazerman & Max, 2011). The reasoning studies often employ in explaining this phenomenon begins with recognition that teachers' total compensation for a given position comprises both a pecuniary component—that is, pay—and a non-pecuniary component, which includes other benefits of the job, such as the enjoyment the teacher gets from working with students. Working conditions in a school are key to this second part of total compensation, and working conditions often are tougher in schools with larger numbers of historically marginalized students; schools with large populations of low-income students, students of color, and low-achieving students, for example, often have inadequate resources, worse facilities, and less supportive environments (Grissom, 2011; Ladd, 2011; Loeb, Darling-Hammond, & Luczak, 2005; Simon & Johnson, 2015). Because the uniform salary schedule means that, at least within the same school district, *pecuniary compensation* for teachers typically is the same from one school to the next, less positive working conditions in high-needs schools exert pressure on teachers to leave for a school in which total compensation is higher. More effective teachers will be more attractive to more advantaged schools and, thus, will have more opportunities to respond to that pressure (Grissom, Viano, & Selin, 2015).

Principals are also educators, and many of the same pressures of salary and school working conditions likely apply to them as well. However, the evidence on whether principals sort across schools in the same ways that teachers do is thin, and in fact, there are reasons to question whether conclusions from examining the work decisions of teachers translate directly to school leadership. For example, typically school districts are less constrained by uniform salary schedules in setting compensation for principals, so they may have more freedom to adjust salaries to compensate for more challenging working conditions. Leaders also are further along in their careers, on average, than teachers, which may raise the costs of moving.

Less tangibly but perhaps more importantly, unlike teachers, principals are "middle managers" in the school district organization, giving school districts more direct authority over where leaders work. Principals do not have the options open to them to transfer schools that

teachers often do, at least within the same school district. If districts strategically make principal placement decisions with the goal of putting their best principals in their highest-need schools, we may not observe the same inequitable distributional patterns.

Unfortunately, existing research on the principal labor market suggests that sorting patterns for leaders are similar to those for teachers. In their study of principals in Miami-Dade County Public Schools in Florida, Loeb, Kalogrides, and Horng (2010) found that schools serving higher numbers of low-income and low-achieving students tended to be led by principals with less experience and who had attended less selective colleges. Moreover, when surveyed about their preferences for where they work, principals stated preferences for the kinds of favorable working conditions that typically were found in the district's more advantaged schools. Clotfelter et al. (2006) found similar patterns of sorting among principals in North Carolina, observing that principals of high-poverty schools had attended less selective institutions, had obtained lower licensure assessment scores, and had served as leader of the school less time.

Inequitable sorting patterns can arise from both differential hiring/placement and differential turnover in high-needs schools. In Miami, Loeb et al. (2010) found evidence for both: less qualified principals matched to higher-poverty, lower-achieving schools, and those schools also had higher rates of principal transfers and exits that schools with fewer traditionally marginalized students. The North Carolina study observed similar patterns, finding both that high-poverty schools were more likely to fill a vacancy with an inexperienced principal and that high-poverty schools lost their principals at higher rates (Clotfelter et al., 2006).

The tendency for principals to leave schools with larger numbers of low-income students, low-achieving students, and students of color has been documented in other studies as well (e.g., Fuller & Young, 2009; Gates et al., 2006; Grissom & Bartanen, in press). Aside from the short-term negative effects of principal turnover on teachers and students (Miller, 2013), frequent churn can have a longer-term detrimental impact on principal quality. Turnover typically leads districts to replace the outgoing principal with a less experienced colleague—often a principal who is new to school leadership. Moreover, because principals become more effective as they gain experience (Grissom, Blissett, & Mitani, 2018), frequent replacement of principals who have accumulated position-specific human capital with principals with less such capital can undercut leadership effectiveness in the school.

In our study of principal sorting in Tennessee over the period from 2007 to 2017, we found similar evidence that both hiring and placement decisions made regarding leaders in high-needs schools and frequency of turnover in those schools contribute to pronounced differences in measures of principal quality by school characteristics (Grissom, Bartanen, & Mitani, 2018). In addition to measures employed in some prior studies, such as principal experience, length of tenure in the school, and licensure examination scores, a nice feature of this analysis is that we could include potentially more direct proxies for leadership effectiveness, such as teachers' survey-based assessments of leadership effectiveness in their schools and supervisors' assessments of school leader performance. This latter measure, which was based on ratings using a rubric aligned to state leadership standards, was available for

nearly all principals and assistant principals in the state beginning with the introduction of the state's educator evaluation system in 2011-12.

By essentially every measure examined, we found that schools serving low-income, low-achieving populations in Tennessee were led by less qualified, less effective principals. These patterns were found across urban, suburban, and rural districts. As in Loeb et al. (2010) and Clotfelter et al. (2006), both hiring and turnover contributed to these patterns, and, in fact, when we ran simulations of principal sorting behavior based on the patterns we observed in the data, we found that the relative importance of hiring or turnover as the driver of sorting varied depending on the quality measure we focused on, suggesting that addressing disparities in both processes is important for addressing leadership sorting in the state.

Data, Measures, and Methods

Our analysis of principal sorting in California draws on four main data sources. Two come from surveys, while two come from publicly available information about schools and school personnel.

Surveys

The first is a survey of California principals fielded by the RAND Corporation. Specifically, Stanford University contracted with RAND to field a survey through the American School Leader Panel (ASLP), which is a nationally representative panel of K-12 principals who have agreed to participate in surveys several times each school year. California is one of the states that is oversampled in the survey, which allowed for a sampling frame that includes all principals in the state. Of the 1,037 principals in the ASLP who were invited to complete the survey, 318 responded, for a final response rate of 30.7%. From the survey, we draw on principals' self-reported years of principal experience, length of tenure in their current school, job satisfaction, and salary. We employ survey weights provided by RAND which help to adjust for differential nonresponse and oversampling of certain types of educators.

The second data source is a different survey of California principals administered by the American Institutes for Research (AIR) via a contract with the Learning Policy Institute (LPI). The intended sampling frame was California principals in K-12 public schools, and was stratified by Association of California School Administrators membership (this group was oversampled because the anticipated response rates were greater) and school level. Of the 900 sampled schools, 462 principals responded to the survey for a final response rate of 51.4%. Similar to the RAND survey, we draw on principals' reported experience, tenure, and job satisfaction. We also analyze principals' self-reported turnover intention (i.e., do you intend to remain as a principal in this school?). Sampling weights were employed to adjust for the sampling design and differential rates of nonresponse.

Publicly Available School Information

Our third data source is publicly available data for California schools and school staff. We accessed school-level performance information and staff demographic files via the California Department of Education website. We use the school performance data to construct a measure of school achievement level, which becomes one of our measures of school advantage. The staff demographic data allow us to construct a plausible measure administrator turnover at the building level. Specifically, we are able to draw on person identifiers that are longitudinally consistent for a subset of school districts. For those districts, we use the identifiers to construct a turnover measure which takes a value of 1 if the administrator was in a given school in 2015 but does not appear in that school in 2016, and 0 otherwise.

To identify districts where person IDs were longitudinally consistent, we calculated the percentage of IDs from 2015 that appeared in the same school in 2016. Next, we dropped from the turnover analysis districts that had match rates below 60% or fewer than 10 administrators. The 60% threshold allows for a modest to high rate of turnover (since non-matches are instances of turnover in districts with consistent IDs) while dropping districts where the IDs are clearly not consistent. The restriction of 10 or more administrators is because we cannot distinguish between data error and true administrator turnover in districts with only a few administrators. As a check, we construct an alternative measure of longitudinal consistency by using the observable characteristics of administrators. For instance, we can check whether IDs are actually identifying the same individuals by comparing their demographic characteristics (gender, years of experience, educational level). Overall, we find that our match rate using IDs is consistent with matching using observable characteristics. We also tested the extent to which our results changed if we moved the inclusion cutoffs and found that they were fairly consistent. Therefore, we believe our turnover measure is reasonable. One of the many downsides of these publicly available data is that we cannot distinguish principals from other types of administrators. Thus, we can only speak to differences across schools in terms of turnover among full-time administrators.

The final data source is school demographic information obtained from the Common Core of Data files via the National Center for Education Statistics. We are able to connect these files to each of our other data sources, such that we can categorize schools according to student demographics. Specifically, we examine the percentage of Black/Hispanic students in the school and the percentage of students that qualify for free/reduced-price lunch (FRPL).

Methods

Our methods are descriptive. Primarily, we describe measures of principal qualifications and our constructed administrator turnover measure by measures of school disadvantage, including proportions of students receiving FRPL, the proportion of students who are Black or Hispanic, and school achievement level. The first two we divide into low, medium, and high categories using (somewhat arbitrary) cutoffs of *less than 20%*, *20–80%*, and *80% or more*. For achievement, we divided schools into quintiles by average achievement level, then compare schools in the highest quintile (top 20%) to schools in the bottom quintile and the middle 60%.

For nearly all analyses, we employ simple tests of differences in means to make these comparisons.

Evidence of Inequitable Sorting of School Leaders in California

Table 1 shows the distribution of principal experience by the three categories of school characteristics. Along with the means for each group, we test for significant differences by estimating a regression model with the top row as the omitted category (i.e., the lowest FRPL category, the lowest Black/Hispanic category, and the highest achievement quintile). We show two measures of principal experience: total priors years of principal experience and the proportion of principals with two or fewer years of prior principal experience (i.e., who are in their first three years as a principal); this latter measure captures the percentage of novice principals, who likely are at the least effective points in their careers. The first two columns show the results from the RAND principal survey and the remaining two columns show the results from the LPI principal survey.

Table 1. Distribution of Principal Experience by School Characteristics

	RAND Survey (n = 318)		**LPI Survey (n = 462)**	
	Principal Experience	0-2 Years of Experience	Principal Experience	0-2 Years of Experience
	(1)	(2)	(3)	(4)
FRPL 0-20%	6.7	0.28	7.8	0.26
FRPL 20-80%	6.6	0.28	6.9	0.28
FRPL 80-100%	5.7	0.41	6.7	0.39*
Black/Hispanic 0-20%	7.4	0.30	7.0	0.25
Black/ Hispanic 20-80%	6.7	0.26	7.5	0.26
Black/ Hispanic 80-100%	5.2*	0.44	6.0	0.45***
Achievement Highest Quintile	6.3	0.27	7.0	0.26
Achievement 2nd-4th Quintiles	6.5	0.30	7.3	0.28
Achievement Lowest Quintile	5.6	0.53***	5.7	0.51***

Notes: Asterisks denote significant differences between the given cell and the first cell in each category.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The table shows that the most "disadvantaged" schools have less experienced principals. While these differences are often substantively meaningful—they highest and lowest category typically differ by at least a year of experience—small survey sample sizes mean that they are estimated imprecisely and thus only in one case statistically significant at conventional levels. The exception is comparing schools with 80–100% Black/Hispanic students to those with 0–20%; the difference of 2.2 years of experience is significant at the 0.1 level.

We find more consistent patterns for the share of principals who are in their first three years as a principal. Across each school category, the most disadvantaged schools are substantially more likely to have an inexperienced principal. This difference is most stark for achievement. Using the RAND survey, we find that 27% of principals working in schools in the highest quintile of achievement are novices, compared to 53% of principals in lowest quintile schools ($p < 0.01$). We find almost the same difference in the LPI survey (26% vs. 51%). The differences for schools according to FRPL and Black/Hispanic students are smaller in magnitude, but still fairly substantial. In the LPI survey, for instance, 39% of high-poverty schools have an inexperienced principal, compared to 26% in low-poverty schools ($p < 0.10$). Similarly, the percentage of inexperienced principals is much larger (45%) in schools with 80-100% Black/Hispanic students compared to schools with few Black/Hispanic students (25% of principals). These differences are similar for the RAND survey but not statistically significant at conventional levels.

Table 2 shows the distribution of principal tenure (i.e., how many years a principal has been at their current school) by school characteristics. The structure of the table is parallel to Table 1. Here, we find more substantial differences between the RAND and LPI surveys compared to the results for principal experience. For instance, we find a consistent pattern of lower average tenure among principals in disadvantaged schools for the RAND survey. The average principal in a low-poverty school has been in their school for 5.1 years, compared to only 4.1 for principals in high-poverty schools ($p < 0.05$). We find a similar gap when categorizing schools by percentage of Black/Hispanic students.

Table 2. Distribution of Principal Tenure by School Characteristics

	RAND Survey (n = 318)		LPI Survey (n = 462)	
	Principal Tenure	0-2 Years of Tenure	Principal Tenure	0-2 Years of Tenure
	(1)	(2)	(3)	(4)
FRPL 0-20%	5.1	0.35	4.5	0.58
FRPL 20-80%	4.6	0.44	4.7	0.53
FRPL 80-100%	4.1**	0.53*	5.3	0.64
Black/Hispanic 0-20%	5.0	0.43	4.4	0.57
Black/ Hispanic 20-80%	4.8	0.42	4.3	0.52
Black/ Hispanic 80-100%	3.8**	0.54	3.6	0.68
Achievement Highest Quintile	4.9	0.35	4.6	0.56
Achievement 2nd-4th Quintiles	4.6	0.44	4.2	0.56
Achievement Lowest Quintile	3.4***	0.68***	3.5**	0.69*

Notes: Asterisks denote significant differences between the given cell and the first cell in each category. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

For achievement, this gap is even larger; principals working in schools in the lowest quintile have 3.4 years of tenure, compared to 4.9 for principals in highest quintile schools ($p < 0.01$). Perhaps the most striking finding in Table 2 is that, in both surveys, almost 70% of principals in low-achievement schools have been the principal in that school for less than three years, marking substantial leadership instability.

Principals of High-Needs Schools in California Turn Over at Substantially Higher Rates

We pick up on this instability them in Table 3, which shows difference in estimated administrator turnover rates by school characteristics. We find that across all measures of school disadvantage, the most disadvantaged schools have the highest principal turnover rates. For example, 17% of principals in schools in the highest quintile achievement left their positions

between 2014-15 and 2015-16, compared to 23% of principals in schools in the lowest quintile of achievement ($p < 0.01$). This is a startling difference of 6 percentage points. Stated differently, the principal of one of California's lowest achieving schools is approximately 35% more likely to turn over in any given year than the principals of one its highest achieving schools. They are 15% more likely to turn over than a principal in a medium-achievement school. Differences between high-poverty and low-poverty schools, and schools with high and low proportions of students of color, are similar in magnitude.

Table 3: School Administrator Turnover Rates by School Characteristics

	Turnover Rate	Intent to Remain in School (1-4 scale)
	(1)	(2)
FRPL 0-20%	0.17	2.9
FRPL 20-80%	0.20*	3.0
FRPL 80-100%	0.21**	3.1
Black/Hispanic 0-20%	0.16	2.8
Black/ Hispanic 20-80%	0.20**	3.0
Black/ Hispanic 80-100%	0.21***	3.2**
Achievement Highest Quintile	0.17	2.8
Achievement 2nd-4th Quintiles	0.20***	3.1**
Achievement Lowest Quintile	0.23***	3.1

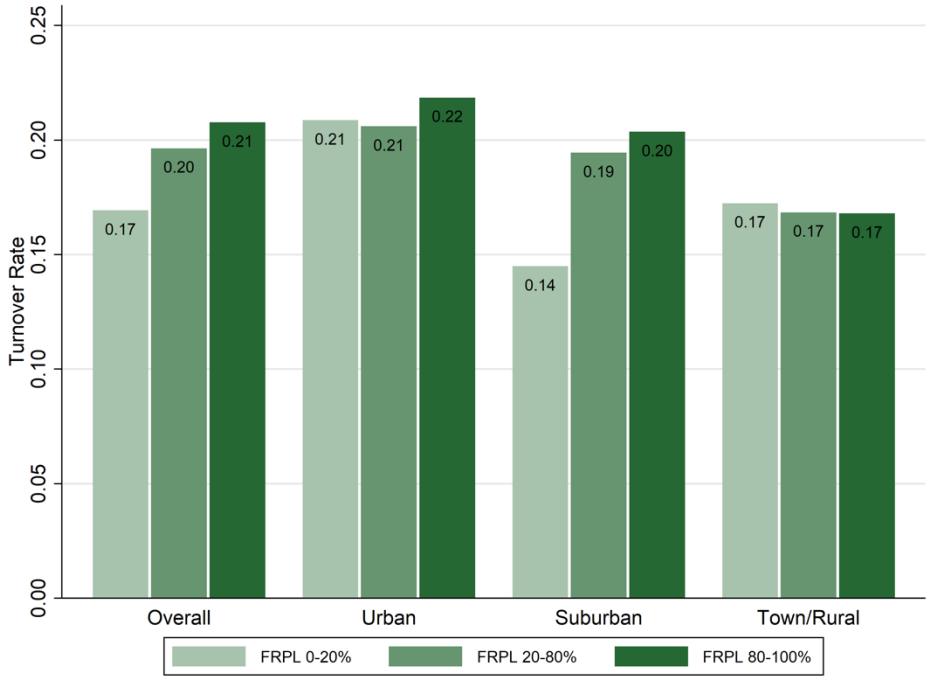
Notes: Asterisks denote significant differences between the given cell and the first cell in each category. For turnover rate, the sample includes 8,284 (44% of statewide total) full-time school administrators in 2014–15 in districts with at least 10 total administrators and district-level match rates above 70%. See methods section for detailed explanation of matching. Intent to remain in school comes from LPI survey (n = 386).
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Given differences in the distribution of student characteristics by urban, suburban, and rural locales in California, we next ask whether these patterns are more apparent in some locale types than others. We often associate educator turnover with urban districts, for example, so perhaps the finding that turnover is higher in low-achieving schools reflects clusters of low achievement in cities, where mobility is more feasible.

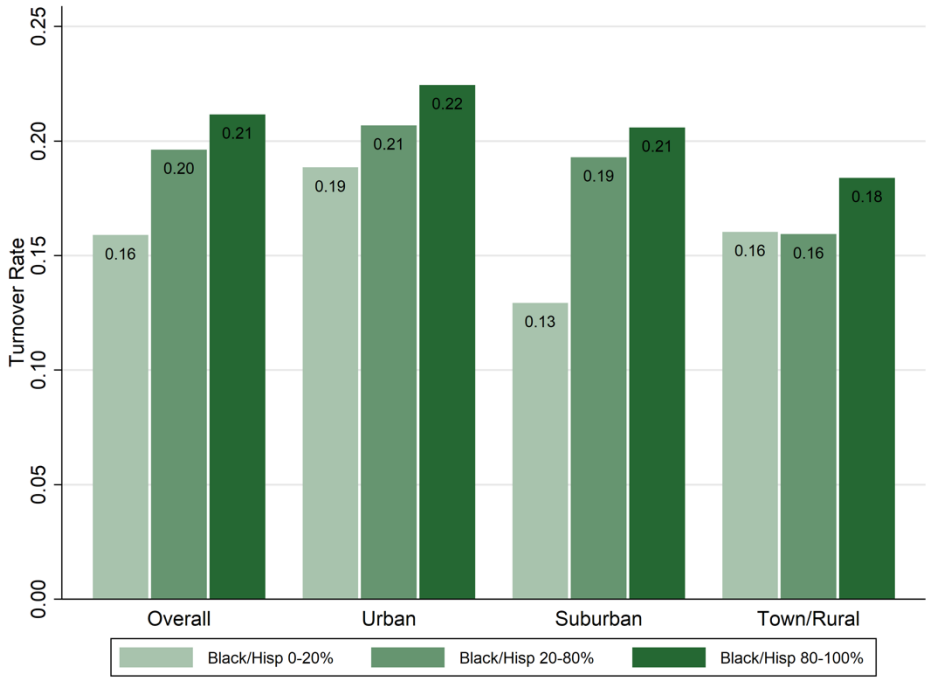
Figure 1 shows this conjecture to be unfounded. In almost every case, the overall disparities in turnover rates by school demographics persist within each locale type. For example, the difference in turnover between the lowest-achieving and highest-achieving schools is 6 percentage points in urban districts (23% to 17%), 8 percentage points in suburban districts (24% to 16%), and 2 percentage points in rural and town districts (19% to 17%).

Figure 1. Principal Turnover by School Characteristics in California

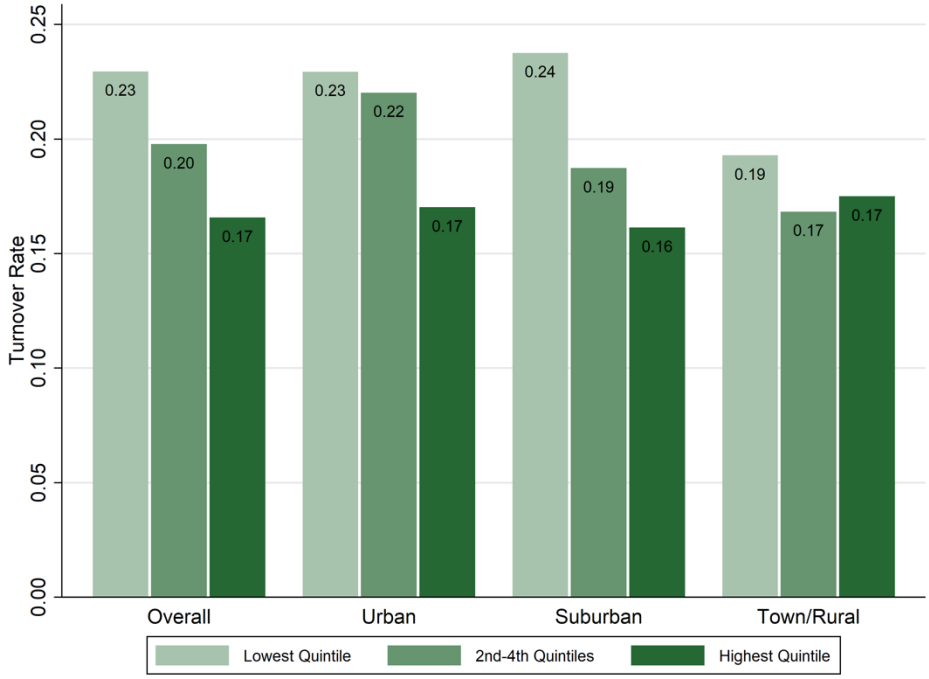
Panel A: Student Poverty



Panel B: Black/Hispanic Students



Panel C: School Achievement



Overall, we do find that principal turnover rates are slightly higher in urban schools. Additionally, the differences in turnover rates between categories of school advantage tend to be smaller in town/rural areas. Across categories, the largest disparities in turnover between advantaged in disadvantaged schools appear to be in California's suburban areas.

The other column in Table 3 examines principals' intent to remain in the school, which was measured on the LPI principal survey. We wanted to know whether patterns of actual turnover were consistent with principals' survey responses about whether they were likely to leave. We found, in fact, that they were not. Principals in disadvantaged schools typically expressed *greater* intent to remain in their schools, though these differences are small and not consistently significant. The difference between survey reports and those from the publicly available data could signal that higher turnover rates in disadvantaged schools are not anticipated by principals, perhaps because principals experience involuntary separations at higher rates. Consistent with this possibility, prior research in other states shows that low-performing principals indeed are more likely to exit or to be demoted to a non-leadership position in the school (Grissom & Bartanen, in press). These results, however, are far from definitive on this point.

Table 4. Job Satisfaction and Salary (RAND Survey)

	Job Satisfaction (1-4 scale)	Satisfaction w/ Recognition (SD)	Satisfaction w/ Salary (1-6 scale)	Adjusted Salary ($1000s)
	(1)	(2)	(3)	(4)
FRPL 0-20%	3.59	0.32	4.30	130.42
FRPL 20-80%	3.35**	-0.05***	4.39	122.61
FRPL 80-100%	3.34*	-0.10**	4.03	118.74**
Black/Hispanic 0-20%	3.48	0.07	4.25	117.53
Black/ Hispanic 20-80%	3.37	0.03	4.42	124.40
Black/ Hispanic 80-100%	3.33	-0.14	4.01	121.00
Achievement Highest Quintile	3.46	0.11	4.14	126.28
Achievement 2nd-4th Quintiles	3.35	-0.07	4.34	122.88
Achievement Lowest Quintile	3.34	-0.07	4.10	115.14**

Notes: Asterisks denote significant differences between the given cell and the first cell in each category. A total of 318 principals responded to the survey.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Why Do Principals in High-Needs Schools Turn Over?

Next, we draw on survey data to look for evidence of why principals in schools with large numbers of marginalized students are less likely to remain in their positions. Our measures here are limited, but do provide some insight.

Table 4 analyzes principals' responses from the RAND survey regarding their job satisfaction and salary. The first column shows differences on self-reported job satisfaction (1 to 4 scale). Job satisfaction is very high across all school categories, ranging from 3.3 to 3.6. We do find evidence of differences in satisfaction between principals working medium- and high-poverty versus low-poverty schools. Principals in low-poverty schools rate their satisfaction as 3.59 out of 4, compared to 3.35 for principals in medium-poverty schools ($p < 0.05$) and 3.34 for principals in high-poverty schools ($p < 0.10$).

Column 2 shows results for principals' reported satisfaction with recognition from different sources: district board of education, the superintendent, teachers at your school, families of your students, and society. We found similar patterns across each of these responses, though many of the estimates were not statistically significant. To increase

precision, we factor analyzed these responses into a single standardized score. Similar to the job satisfaction results, the only significant differences were for school poverty. However, these differences are fairly substantial. Compared to principals in low-poverty schools, principals in medium- and low-poverty schools had 0.37 SD and 0.42 SD lower satisfaction with recognition, respectively. Both of these differences are statistically significant at the 95% level. While the patterns are similar in terms of direction for Black/Hispanic students and achievement, they are smaller in magnitude and not statistically significant.

The final two columns in Table 4 examine differences related to salary. Column 3 shows principals' reported satisfaction with their salary on a six-point scale. We find no significant differences in satisfaction with salary across school characteristics.

The similarity across categories is somewhat surprising given the results shown in column 4, which show reported average salaries. To be specific, the survey asks principals to choose from several different salary buckets rather than enter their exact salary. We construct an approximate salary measure by imputing the midpoint of the salary bucket that each principal chooses. For instance, a principal who chose $100,000 to $125,000 has an approximate salary of $112,500. Because salaries likely are driven in part by principal experience, which we have already shown is lower in high-needs schools we adjust salaries for the number of years a principal has been in the district as a principal, though results for unadjusted salaries were similar.

We find substantial salary differences between high-poverty and low-poverty schools, as well as between high-achievement and low-achievement schools. The average principal in a low-poverty schools makes $130,000, compared to $119,000 for the average principal in a high-poverty school ($p < 0.05$). The difference between principals in high-achievement versus low-achievement schools is similar ($126,000 vs. $115,000, $p < 0.05$). California districts do not appear to be compensating principals for the challenging leadership assignments they find in high-poverty, low-achieving schools.

Implications, Recommendations, and Conclusions

As in other states, appears that California principals are inequitably distributed by school characteristics, at least according to the two measures of qualifications we could obtain from survey data. That is, in schools with large numbers of students from low-income backgrounds and students of color—and especially in schools with low achievement levels—principals have fewer average years of experience and fewer years leading the school. By the same token, they are more likely to be in the earliest years of their career and in serving as a principal in their current school.

Research on the connection between experience (or length of tenure) and leadership effectiveness, as well as similar distributional analysis from other states, suggests that principals in high-needs schools in California likely are less effective as well. This problem is a significant one. School leadership is essential for school improvement, and matters even more in more challenging school environments. To paraphrase Leithwood and colleagues' (2008) oft-repeated

observation based on their review of research on the role of school leadership in school improvement: low-achieving schools simply do not successfully turn around in the absence of talented school leadership. All schools need highly qualified, effective principals, but schools with the most challenges need them the most. The evidence presented here suggests that California is not meeting that need.

Unfortunately, data limitations prevent us from exploring principal effectiveness directly. These data limitations come both from the state's lack of investment in systematic collection of information on the effectiveness of educators, including school leaders, and from the inaccessibility of the data the state does collect to stakeholders, including researchers. The absence of longitudinal data on principals in the state is particularly debilitating to our analysis.

These same limitations prevent us from adequately exploring how the pipeline of leaders into positions in high-needs schools and the hiring and placement processes for those leaders contribute to the inequitable distribution of principals across schools that our analysis begins to document. We gain some traction with principal turnover, however. We uncover wide disparities in the turnover rates among principals across measures of school disadvantage. We suspect that these high turnover rates are an important driver of leadership gaps across California schools. Stemming leadership churn in high-needs schools should be an important policy goal. Evidence suggests that principal turnover is harmful, on average, to school performance in the short term and can lead to longer-term disparities in leadership effectiveness between advantaged and disadvantaged schools.

How can California address principal turnover in high-needs schools? Again, our data here are limited. However, we find satisfaction gaps between principals in high- and low-poverty schools, in particular, which suggest that addressing principal working conditions to increase job satisfaction may be productive on this front. We also find little evidence that California districts differentiate salary to provide additional compensation to principals who take on more challenging leadership assignments in less advantaged schools. In fact, we see the opposite: adjusting for principal experience, principals in high-poverty schools are paid about 8% less than principals in low-poverty schools. Of course, districts vary in compensation levels across the state (e.g., between rural and urban districts), these numbers of self-reported, and principal pay can be affected by other factors we do not account for, such as education level or job performance, which we cannot account for. Still, more strategic compensation for principals may be one way to increase the matching and retention of effective leaders to California's most challenged schools.

The Promise of Robust Data on School Leadership: The Tennessee Case

The unavailability of suitable data for measuring characteristics of school leaders and their performance is a real challenge for understanding school leadership in California and the labor market dynamics—sorting, hiring, retention—that lead to differences in the distribution of high-quality leaders across schools. The conclusions that can be drawn from publicly available data files and small-scale surveys are limited. In contrast, longitudinal administrative data with principal job history data, good information about their characteristics, and multiple

measures of effectiveness can permit much more robust analyses to inform school leadership policy.

As an illustration of this point, we briefly summarize results of analysis we have undertaken with Tennessee data as part of our work with the Tennessee Education Research Alliance (TERA), a research partnership between Vanderbilt University and the Tennessee Department of Education (TDOE). This analysis, detailed in a working paper that is currently under review (Grissom, Bartanen, & Mitani, 2018), leverages high-quality administrative and survey data sets TERA researchers and TDOE leaders have partnered to build over several years. It takes advantage of the state's investment in a statewide educator evaluation system, called "TEAM," which has collected multiple measures of effectiveness for both teachers and leaders each year since 2011-12. In particular, principals are scored by their supervisors against a rubric aligned to the Tennessee Instructional Leadership Standards. These validity of these scores as measures of principal job performance finds support in other research (Grissom, Blissett, & Mitani, 2018).

Our analysis described principal qualifications, such as experience, and measures of effectiveness, including average TEAM practice ratings, by measures of student poverty, student race/ethnicity, and student achievement in the spirit of the analysis presented above. This analysis provided compelling evidence of leadership deficits in high-needs schools in Tennessee. For example, 38% of principals in high-poverty schools were novices, compared to 26% in low-poverty schools, and the average gap in TEAM practice ratings was more than a full standard deviation.

Fortunately, the data permitted useful analyses of mechanisms that produced these patterns. To aid this description, we include a selection from these results in Table 5. The rows in Table 5 are similar to those in other tables in this paper, categorizing schools by quintiles of achievement, proportions of students receiving free/reduced lunch, and so forth. In the columns, we present descriptive analyses of both hiring and turnover that go further than our California analyses in important ways.

Table 5. Hiring and Turnover in Tennessee

	Characteristics of New Hires				Principal Turnover Rates				
		Supervisor Ratings							
	Total Principal Experience	First year in school	Prior years (Principal)	Prior years (AP)	All Turnover	Transfer	Promote	Demote	Exit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Achievement Index									
Highest quintile	2.00	0.03	0.13	0.51	0.14	0.03	0.03	0.01	0.06
Middle 60%	1.54***	-0.41***	-0.19***	0.03***	0.17***	0.03	0.03	0.03***	0.07
Lowest Quintile	1.90	-0.63***	-0.48***	-0.05***	0.23***	0.07***	0.03	0.05***	0.09***
Free/Reduced Price Lunch %									
0-20%	1.96	0.29	0.26	0.69	0.17	0.03	0.03	0.02	0.08
20-80%	1.60	-0.38***	-0.17***	0.08***	0.17	0.03	0.03	0.03	0.07
80-100%	2.00	-0.63***	-0.45***	-0.10***	0.22***	0.06***	0.03	0.04***	0.09
Nonwhite %									
0-20%	1.52	-0.35	-0.15	0.10	0.16	0.03	0.03	0.03	0.07
20-80%	1.90***	-0.34	-0.20	0.07	0.18***	0.04***	0.03	0.03	0.08*
80-100%	1.85*	-0.67***	-0.41**	0.04	0.23***	0.07***	0.02***	0.04***	0.10***
Locale									
Suburban	2.08	-0.27	-0.02	0.30	0.16	0.05	0.03	0.02	0.07
Town/Rural	1.34***	-0.38*	-0.21*	0.04***	0.17	0.03**	0.03*	0.03***	0.07
Urban	2.06	-0.49***	-0.35***	0.02***	0.21***	0.06**	0.02	0.04***	0.09***

Notes: Supervisor ratings are standardized factor scores from rubric-based ratings. Transfers are principals who move to another principal position. Promotions are principals who move to a central office position. Demotions are principals who move to a non-principal school-level position (e.g., AP). Exits are principals who are no longer working in the K-12 system (e.g., retirement, moves out of state). Asterisks indicate significant differences from the base categories (Highest quintile of achievement, 0-20% FRPL, 0-20% Nonwhite, Suburban).

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

On the left, we present characteristics of new principal hires—that is, principals who are new to their school in a given school year. Column 1 reveals that new hires in schools with larger traditionally disadvantaged student populations are not necessarily less experienced than those hired into other schools, though new-hire experience is lower in rural schools. However, columns 2–4, which focus on supervisor ratings form the evaluation system, show a more complete story. Column 2 shows that new principals in disadvantaged schools are rated much more poorly in their first year in the school (units are standard deviations). More important, they were rated substantially worse the *prior* year, when they held a different job (columns 3 and 4). Principals transferring from another principal position into a low-achieving school, for example, scored about 0.6 SD lower on their evaluation last year than a transfer into a high-achieving school. Principals moving out of assistant principal positions into new principal roles show gaps of approximately the same magnitude. This evidence suggests some negative selection; Tennessee districts are not successfully identifying and recruiting their best leaders to move into their most challenged schools, and the relatively poor performance of those leaders in their prior roles appears to carry forward into their new schools.

On the right, we examine turnover. Here, because the data are longitudinal and contain position codes, we can move beyond binary turnover (the principal stays in the school or not) to look at pathways out, including transfers, promotions to central office, demotions to other school-level positions (e.g., to an assistant principal role), and exits from the state system. As in California, principals in high-needs schools turn over at much higher rates than those in low-needs schools (column 5). However, here we can see some potentially revealing differences in turnover types. For simplicity, we focus on school poverty. Looking across columns 6–9, we observe that differences in promotions and exits constitute little of the turnover gap. In contrast, transfers to other schools (nearly all in the same district), are about two-thirds of the gap, and demotions make up the remainder. There are two implications. First, districts hold sway over principal transfers within their borders, and likely could do more to reduce principal turnover of this type. Second, because demotions are concentrated among low performers (Grissom & Bartanen, in press), this kind of turnover may not be a net negative. However, the connection between performance and demotions also means that districts likely can reduce turnover in high-poverty schools indirectly by focusing on hiring high-performers into those roles on the front end. Intervening with districts to improve their strategies around principal placement and retention may be a successful way to address inequities in leadership in the state.

Recommendations

- Invest in the collection of systematic information about the job performance of California's principals—for example, through leadership standards-based observational protocols completed by principals' district supervisors—that can permit closer scrutiny of differences in leader effectiveness by key school characteristics across the state.
- Make data on school leaders, including measures of qualifications and effectiveness, available to stakeholders, including education researchers, so that more in-depth research into issues of leadership sorting can be conducted to inform policy in this area.

- Create awareness for school districts of the importance of getting their best principals into the schools that need them most.
- Increase compensation for principals in high-needs schools. Create opportunities or incentives for differential compensation to give districts a tool for recruiting high-quality leaders to their most challenged schools and keep them there over time.
- Address principal working conditions, particularly in high-needs schools. Build targeted supports for principals in these schools, such as principal networks, coaching, or mentoring, which can increase principal efficacy and job commitment.

Future Work

The modest evidence provided in this paper suggests that California's schools face the same challenges with inequitable distributions of principal quality across low-and high-needs schools that are evident in other states. Future analysis should make use of longitudinal administrative data with more robust measures of principal qualifications and effectiveness to better document this sorting and explore its causes.

There are a number of straightforward descriptive questions that would be valuable to answer with better data. Is sorting changing over time such that patterns are becoming more or less pronounced in response to education reform in the state? What does variation look like across the state, perhaps regionally or at the county level? What counties or districts are excelling at disrupting the connection between school advantage and leadership quality? What could we learn about their approaches to recruiting, hiring, and placing school leaders?

Deeper analysis also could connect leadership sorting to leadership preparation, pipelines into the principalship from other school leadership positions (e.g., coaching, teacher leadership, the assistant principalship), and school district hiring and placement practices. District strategies around building cadres of principal candidates and hiring and placing them deserve particular analysis. On the survey of human resources directors conducted as part of GDTF, 29% of respondents reported that it is "difficult" or "very difficult" to find qualified principals to fill leadership vacancies in their districts; only 17% described it as "easy." Constraints on the supply of good leaders likely interacts with sorting to create leadership disadvantages for high-needs schools.

What are the policy factors that influence the composition of the school leader workforce in California and the distribution of leaders across schools? These might include local factors, such as salaries, features of employment contracts, pipeline programs, or proximity to administrator preparation programs. Research should also explore leader turnover in California in greater depth to better understand principal movement across schools within and across districts and exits from the profession, as well as promotions and demotions.

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