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January 2010

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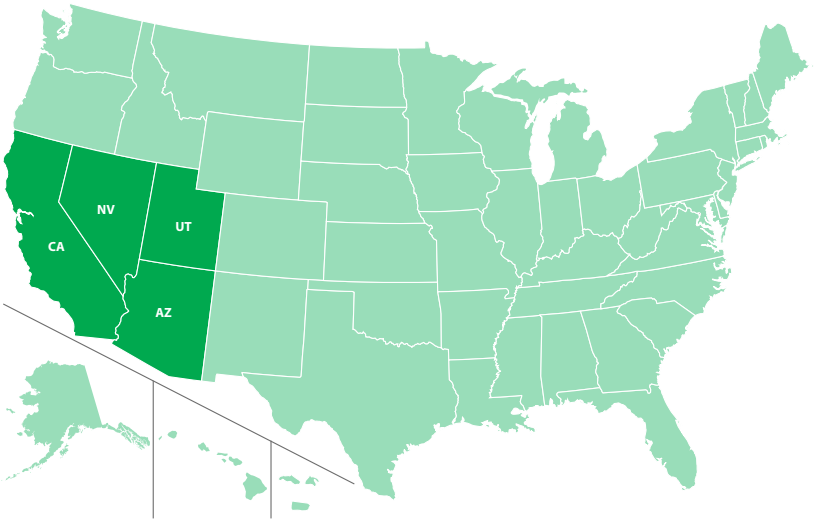

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January 2010

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Summary

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School-site administrators: a California county and regional perspective on labor market trends

This study explores the differences among California's counties and regions in their needs for new school-site administrators in the coming decade, as driven by a combination of projected administrator retirements and projected student enrollment changes. The projected need for new school-site administrators, based solely on these combined factors, ranges from 9 percent to 71 percent of counties' 2007/08 administrator workforce, with the highest need counties generally in the Central Valley and Inland Empire regions.

School leadership makes a difference. Numerous studies have concluded that school-site administrators are central to developing and maintaining effective schools (for example, Brewer 1993; Hallinger and Heck 1998; Leithwood et al. 2004). But leading a school is a complex job. Some evidence suggests that the increasingly demanding nature of the work may deter some qualified candidates from pursuing vacant positions (Darling-Hammond and Orphanos 2007; Whitaker 2003; Farkas et al. 2001). In California, leadership challenges may be even greater because of the large number of students needing extra support (such as English language learner students and students from low-income households) and some of the highest student–administrator ratios in the country (EdSource 2007; Darling-Hammond and Orphanos 2007).

While research shows no evidence of a national shortage of potential candidates with administrator credentials (Gates et al. 2003; Papa and Wyckoff 2002), it does show evidence of a limited supply of qualified principal and vice-principal candidates for specific types of schools and districts (Clotfelter et al. 2007) and for schools and districts in specific types of geographic areas (Farkas et al. 2001; Roza et al. 2003). The challenges these schools and districts already face in attracting qualified school-site administrator candidates may be exacerbated by two demographic trends: the aging administrator workforce as the baby boom generation begins to retire (Mitgang 2003) and rising student enrollments in some geographic areas (Bureau of Labor Statistics 2008).

Across a state as large and diverse as California, these trends would not be expected to play out uniformly. This study was designed to explore the differences among California's counties and regions in their needs for new school-site administrators in the coming decade, as driven by a combination of projected administrator retirements and projected student

enrollment changes. Although this report does not analyze projected county-level attrition, incoming school-site administrator supply, or other labor market variables, it highlights county and regional variation in these two key variables influencing school-site administrator labor markets, an important step in ensuring an adequate supply of administrators in areas facing high retirements or high student enrollment growth, or both.

This study uses three primary datasets. Data on administrator retirements are from the California State Teachers' Retirement System (CalSTRS), which serves most public school administrators in California and maintains data on their retirement patterns. Because the CalSTRS data do not distinguish among school-site administrators, teachers, student-services staff, and other certificated employees, the California Department of Education Professional Assignment Information Form dataset was used to adjust the CalSTRS data to reflect only school-site administrators. Historical and projected data on student enrollment are from the California Department of Finance 2008 Enrollment Series dataset.

Administrator retirements were projected using five-year historical retirement rates specific to each county and each age within each county. To calculate projected administrator demand due to changes in student enrollment, five-year historical student–administrator ratios for each county were used. These two demographic trends—retirements and enrollment changes—were then merged to calculate projected need for new administrators in each of California's 58 counties. Projected retirements for 2008/09–2017/18 range from a low of 18 percent of the 2007/08 workforce in Merced County to a high of 72 percent in Santa Cruz County. The counties with higher retirement projections tend to lie in two parallel geographic bands, one along the coast and one along the state's eastern border, whereas the counties with lower retirement projections are generally located in the center of the state, in the Inland Empire and the Central Valley (North and South San Joaquin Central Valleys and the Upper and Sacramento Metropolitan Valleys).

Projected enrollment changes for the period range from a low of –17 percent of the 2007/08 enrollment in Nevada County to a high of 41 percent in Riverside County. Seventeen of the 24 counties projected to experience double-digit enrollment growth over the 10 years following 2007/08 are in the Central Valley and Inland Empire regions.

Based on key assumptions detailed in the report, including that conditions not directly controlled in the analysis remain constant when projected retirements and enrollment-driven demand are combined, the projected need for new school-site administrators ranges between 9 percent and 71 percent of counties' 2007/08 administrator workforce, with the highest need counties generally in the Central Valley and Inland Empire regions. As a whole, the counties in these two regions are expected to need to hire 46 percent of their 2007/08 workforce (or more than 2,200 principals and vice-principals) over the next decade—compared with an average of 27 percent across California's other regions. Many counties in these two regions face other challenges as well as high projected need for school-site administrators, including high poverty rates, low educational attainment, and diverse student populations.

Without a complete analysis of all the school-site administrator labor market variables in these and other regions of the state (not undertaken in this study), it is not possible to predict any resulting school-site administrator supply–demand imbalances. Thus, as local decisionmakers consider the implications of the findings in this report, they may want to seek additional county- or district-level data to gain a fuller picture of their regional school-site administrator labor market. Further investigation at the state level, such as research into the extent to which the supply of new school-site administrators in California is localized rather than uniform across the state, could help state policymakers decide what interventions might effectively address the anticipated differential needs for new school-site administrators across counties and regions. When the state's new longitudinal database, which will include all certificated school staff, becomes available in a few years, it could facilitate a more complete analysis of the regional school-site administrator labor market issues that this report highlights.

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WHY THIS STUDY?

School leadership makes a difference. Numerous studies have concluded that school-site administrators—principals and vice-principals—play a central role in developing and maintaining effective schools with high levels of student achievement (see, for instance, Brewer 1993; Hallinger and Heck 1998; Leithwood et al. 2004). But leading a school is a multifaceted and complex job, and there is some evidence that the increasingly demanding work of principals and vice-principals may be deterring qualified candidates from pursuing some vacant positions (see, for instance, Darling-Hammond and Orphanos 2007; Whitaker 2003; Farkas et al. 2001). The challenges for school leaders may be even greater in California than in other states because of the disproportionate number of California students who need extra support (for example, English language learner students and students from low-income households) and because California has some of the highest student–administrator ratios in the country (EdSource 2007; Darling-Hammond and Orphanos 2007).

While there is no evidence of a national shortage of potential candidates with administrator credentials (Gates et al. 2003; Papa and Wyckoff 2002), there is evidence of a limited supply of qualified principals and vice-principals for specific types of schools and districts (Clotfelter et al. 2007) and in specific geographic areas (Farkas et al. 2001; Roza et al. 2003). A University of Washington study surveyed human resources directors in 83 districts in 10 regions around the country (including 3 regions in California) that had high population growth or reports of education labor shortages (Roza et al. 2003). Data from the survey, which asked about applicant pools per opening, showed that districts with high concentrations of students from low-income households and of a racial/ethnic minority and lower salaries for principals had the most trouble recruiting qualified candidates—they had fewer applications per job opening than other districts in the study. The study also found geographic differences. Suburban districts received more applicants per position (often more than 40 per vacancy) compared

The challenges facing certain types of schools, districts, and geographic areas in attracting qualified principal and vice principal candidates may be exacerbated by two demographic trends: the aging administrator workforce as the baby boom generation begins to retire and rising student enrollments in some geographic areas

with rural districts, which received fewer (an average of 10 per vacancy). The average number of applicants across all vacancies was 17. Similarly, a 2001 Public Agenda Survey of a national random sample of public school superintendents and principals found that 61 percent of superintendents in large urban districts stated that they were experiencing at least a somewhat serious shortage of principals; the corresponding figure across the full sample was 41 percent (Farkas et al. 2001).[1]

The challenges facing certain types of schools, districts, and geographic areas in attracting qualified principal and vice-principal candidates may be exacerbated by two demographic trends that are expected to increase the pressure on certain administrator labor markets: the aging administrator workforce as the baby boom generation begins to retire (Mitgang 2003) and rising student enrollments in some geographic areas (Bureau of Labor Statistics 2008). For example, a 2003 analysis of National Center for Education Statistics School and Staffing Survey data showed that nationwide the average age of public school principals rose from 47.8 years in 1988 to 49.3 years in 2000, more than half (53 percent) of school principals were between the ages of 46 and 55, and many had begun retiring at age 55 (Gates et al. 2003). As increasing numbers of school administrators near retirement, growth in student enrollment appears to be driving up the number of principal positions, and the number is expected to continue to rise. The National Center for Education Statistics (U.S. Department of Education 2007) predicts an 8 percent increase in enrollment nationwide between 2006 and 2016, and the Bureau of Labor Statistics (2008) predicts an 8 percent increase in administrator positions in elementary and secondary schools over the same period.

Across a state as large and diverse as California, these two demographic trends are unlikely to play out uniformly. Preliminary information suggests that the age distribution of the current administrator labor force in California is likely to vary by county. For example, data from the California State Teachers' Retirement System show wide county to county variations in age distribution of certificated school staff (White and Fong 2008). To the extent that these general patterns for all certificated staff also apply to school-site administrators, such variation will likely result in variable county-level administrator retirement rates over the next decade. At the same time, while public school enrollment in the state as a whole is projected to grow just 3.3 percent between 2007/08 and 2017/18, 24 counties are projected to experience double-digit enrollment growth (10.4–43.1 percent) and 17 counties are expected to experience declining enrollment over the period (California Department of Finance 2008). Recent projections from the Public Policy Institute of California indicate that California's Inland Empire, Sacramento region, and San Joaquin Valley will experience the fastest population growth in coming years (Johnson 2009). School enrollment projections from the California Department of Finance (2008) suggest that growth in school enrollments will follow overall population trends.

Labor markets—overlapping areas of open positions and qualified applicants desiring to fill them—are generally local phenomena (Martin 2003; Boyd et al. 2005). Because administrator mobility tends to be fairly limited (Gates et al. 2003), county-level needs may persist over time. Retirements of administrators and changes in student enrollment will influence labor market equilibrium, but so will the supply of new administrators, administrator preretirement attrition, and changes in compensation, working conditions, and student–administrator ratios.[2] A substantial change in any one of these factors, without corresponding adjustments in other factors, can lead to imbalances in the labor markets.

Understanding how the two key demographic trends considered in this study—anticipated administrator retirements and projected changes in student enrollment—could affect future needs for school administrators in California counties and regions is an important step toward ensuring an adequate supply

of administrators in areas that may face either high retirements or high student enrollment growth, or both. Thus, local data, rather than state- or national-level data, are necessary to understand the differing needs in different parts of the state.

There have been no comprehensive studies of the administrator labor market in California, though a few studies have examined aspects of the market. Specifically, EdSource (2007) studied the demographic characteristics of California's principal and superintendent workforce and the varied responsibilities associated with their work, while Darling-Hammond and Orphanos (2007) studied the state's policies on principal credentialing and development.[3]

The need for additional research on the administrator labor market was identified in two key leadership initiatives under way in California. One is the Integrated Leadership Development Initiative (ILDI), which focuses on strengthening school and district leadership in California. This collaborative is made up of representatives from the California Department of Education, Curriculum and Instruction Steering Committee of the California County Superintendents Educational Services Association, Association of California School Administrators, California Commission on Teacher Credentialing, California institutes of higher education, and the California Comprehensive Center (Integrated Leadership Development Initiative 2008). The other initiative, cosponsored by the Center for the Future of Teaching and Learning (CFTL), is called Education Leadership and California's Future. This effort aims to create a sustainable infrastructure for tracking the status of education leadership in California.

The CFTL recently noted an "urgent and basic need" for a more thorough understanding of the status of education leadership in California, including the aggregation of existing information about the school administrator workforce (Center for the Future of Teaching and Learning 2009, p. 10). With that need in mind, representatives of both ILDI and the Education Leadership and California's Future initiative requested that Regional Educational Laboratory West build on its previous study of teacher labor markets (White and Fong 2008) to examine aspects of California's school leader labor markets using available state data. This study addresses those requests by estimating future administrator needs based on projected administrator retirements and projected changes in student enrollment. It uses county-level data to examine variations in these labor market trends. However, because of state data limitations, the study does not examine other labor market factors and conditions that might interact with changes in retirements and student enrollment to influence labor markets for school-site administrators. Specifically, this analysis does not account for the supply of new administrators, administrator preretirement attrition, or changes in compensation, working conditions, or student–administrator ratios.

This study estimates future administrator needs based on projected administrator retirements and projected changes in student enrollment using county level data to examine variations in these labor market trends

RESEARCH QUESTIONS

Using existing quantitative data, this study investigated three research questions concerning the labor market for California school-site administrators over the next decade:

- How does projected retirement of school-site administrators vary at the county level?
- How does projected demand for school-site administrators, based on projected changes in student enrollment, vary at the county level?
- Assuming that other factors remain unchanged, how will changes in projected retirement rates and student enrollment intersect in particular counties to produce differential needs for school-site administrators?

For study definitions, data sources, and projection assumptions, see box 1 and appendix A.

BOX 1

Study data sources and methodology

The study uses longitudinal data to examine two major demographic trends at the county level: retirements of school-site administrators and changes in student enrollment. The study focuses on school-level site leaders, generally principals and vice-principals.

Data sources. Data on student enrollment are from the California Department of Finance 2008 Enrollment Series, which includes actual annual county-level student enrollment data (for 1998/99–2007/08) and enrollment projections for the following 10 years (2008/09–2017/18).[1] Data on administrator retirements are from the California State Teachers' Retirement System (CalSTRS), which serves most public school administrators in California (California State Teachers' Retirement System 2007b). The historical CalSTRS data show the number of active members, retiring members, and new members for each age within each county over each of the last 12 years. Because the total counts also include teachers, pupil-services staff, and other certificated employees, the CalSTRS retirement data were adjusted to represent the retirement patterns of administrators only using administrators' age data from the California Department of Education's Personnel Assignment Information Form (PAIF) for 2003/04–2007/08. The PAIF collects annual data on the K–12 workforce. (The PAIF data were obtained through a special request to the California Department of Education.)

Methodology. Administrator retirements were projected using historical retirement rates for each county and each age. The five-year retirement rate for each age was calculated for each of California's 58 counties and applied to the school-site administrator counts for each age within each county as of 2007/08. For instance, if there were 100 administrators age 60 in a county in 2007/08, the following steps were used to project the number of 61-year-old administrators in the county in the following year (2008/09): historical age- and county-specific retirement rates were used to project how many of those 60-year-old administrators would retire, how many would be expected to remain in 2008/09 (using the adjustment rate; see appendix A for details), and how many new 61-year-olds who would be expected to enter the system. These calculations were completed for all ages for 2008/09 through 2017/18, and the annual projections were summed.

To project demand for administrators due to changes in student enrollment, five-year student–administrator ratios were calculated for each county, along with projected changes in student enrollment between 2007/08 and 2017/18. The projected change in enrollment was then divided by the five-year student–administrator ratio.

Finally, to calculate combined demand due to administrator retirements and changes in student enrollment, the totals from the two sets of calculations were summed. For instance, if 50 administrators were projected to retire over the next decade and 30 new administrators were expected to be needed due to student enrollment growth, the combined administrator demand would be 80 administrators.

Key assumptions of the projections. Three assumptions were made in projecting retirement- and enrollment-driven needs, based on current school conditions and the historical behavior of school-site administrators (for details, see appendix A):

- For projected administrator needs based on student enrollment growth, counties were assumed to maintain the same student–administrator ratios over the next 10 years (2008/09–2017/18) as they had had over the past 5 years (2003/04–2007/08). (Table A1 in appendix A lists these average ratios by county.)
- For projected administrator needs based on administrator retirement, CalSTRS members and K–12 administrators of the same age in a given county are assumed to retire at the same rate and enter the workforce at the same rate, and all other factors not directly controlled in these analyses are assumed to remain constant.
- For combined needs, administrator retirements and student enrollment growth are assumed to be independent.

If these assumptions are incorrect, the projections could understate or overstate the need for school-site administrators.

Note

1. www.dof.ca.gov/research/demographic/reports/projections/k-12.

WHAT WE LEARNED

The study divided California into 11 regions (map 1). This section details the county and regional variations in the two independent trends, projected retirement and projected enrollment, and how the two trends will intersect in particular counties and regions. For simplicity, the findings are presented in percentages representing the number of administrators expected to be needed based on analyzed trends relative to the size of the workforce in 2007/08 in particular counties or regions (box 2). Appendix B offers county by county results for each primary analysis and is the basis for much of the discussion in this section.

Retirement projections by county

In 2007/08 California's 14,474 school-site administrators ranged from 24 to 83 years old (figure 1). More than 5,000 of them (37 percent) were ages 51–60.

The analysis focuses primarily on school-site administrators who are in their 50s and will reach peak retirement ages within the next 10 years. Since at least 1989, the average retirement age among all CalSTRS members has remained stable at around age 61 (California State Teachers' Retirement System 2008, 1999). Over the past five years, most of California's school-site administrators have put off retirement until at least age 60 (figure 2). Among the 470 administrators who retired in 2007/08, the average retirement age was 60.2 years.

However, these state-level data mask county variation in the proportions of school-site administrators reaching average retirement age in the next decade (figure 3). In most California counties (38 of 58), 41–60 percent of principals were over age 50 in 2007/08. Eleven counties had lower proportions, and nine had higher proportions.

There are similar variations in predictions by county of the proportion of the administrator workforce that will retire by 2017/18 (see

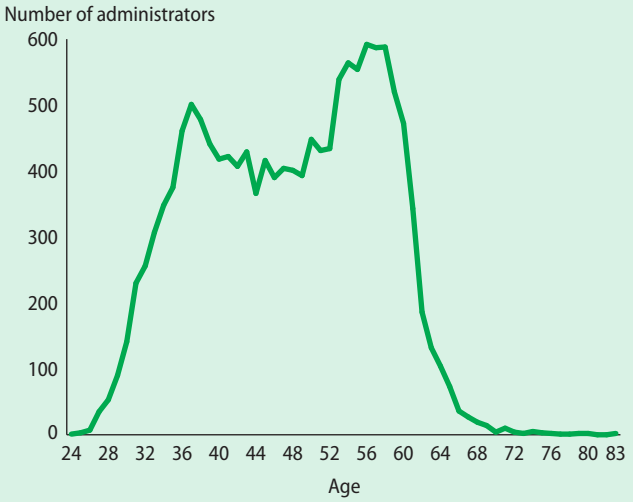
MAP 1

Regional categories of California counties

Source: White and Fong (2008). The Central Valley regions are based on Johnson and Hayes (2004); the Inland Empire region is based on Downs (2005).

FIGURE 1

Age distribution of California school-site administrators, 2007/08



Source: Authors' analysis based on data obtained by request from California Department of Education Personnel Assignment Information Form dataset.

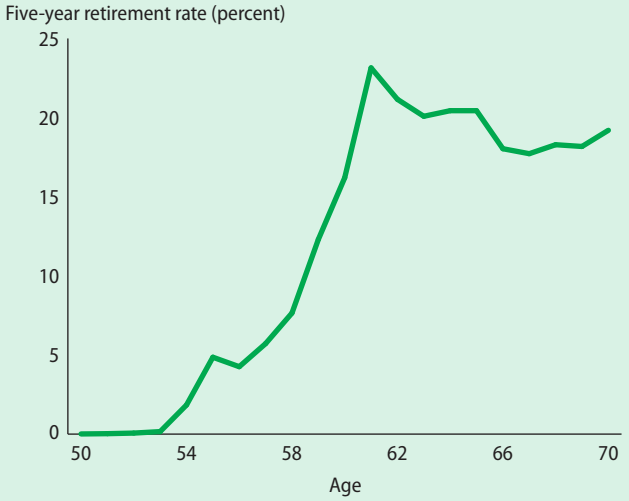
BOX 2

Reporting results in percentages

This study presents results in percentages to maintain a single metric throughout the report and to offer a broader perspective on administrator demand. Reporting numeric counts would make this largely a story about the 10 California counties with the highest student enrollments (Los Angeles, Orange, San Diego, San Bernardino, Riverside, Santa Clara, Sacramento, Alameda, Fresno, and Kern, from highest to lowest). The use of percentages makes it easier to consider future needs relative to current workforce size in a given area and helps convey the relative impact of changes in the need for new administrators across counties or regions that might differ in their capacity to address future needs. For example, the need to hire 40 administrators over the next decade will pose a greater challenge for a county currently employing 60 administrators than for one employing 400; the first county will need to replace two-thirds of its current administrators, while the second will need to replace only 10 percent. To offer some insights on the differences in absolute need for administrators, box 3 later in this report shows the estimated number of administrators needed in the state's 10 largest counties in the coming years. (Together, these 10 counties provide educational services to more than 70 percent of California's students.)

FIGURE 2

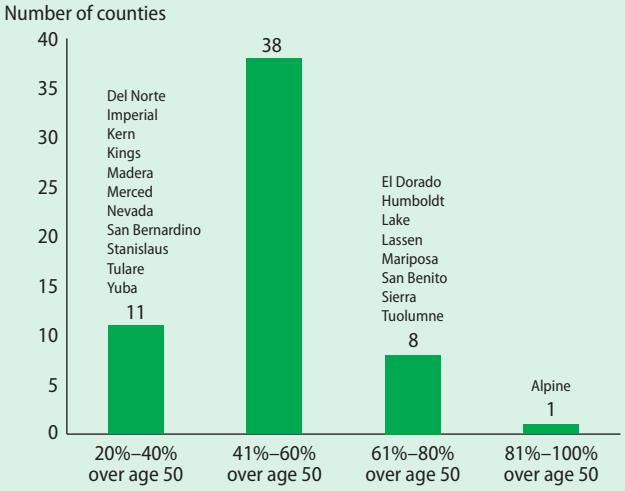
Five-year retirement rates of California school-site administrators ages 50–70, 2003/04–2007/08



Source: Authors' analysis based on data obtained by request from the California State Teachers' Retirement System.

FIGURE 3

California counties grouped by percentage of school administrators over age 50 in 2007/08



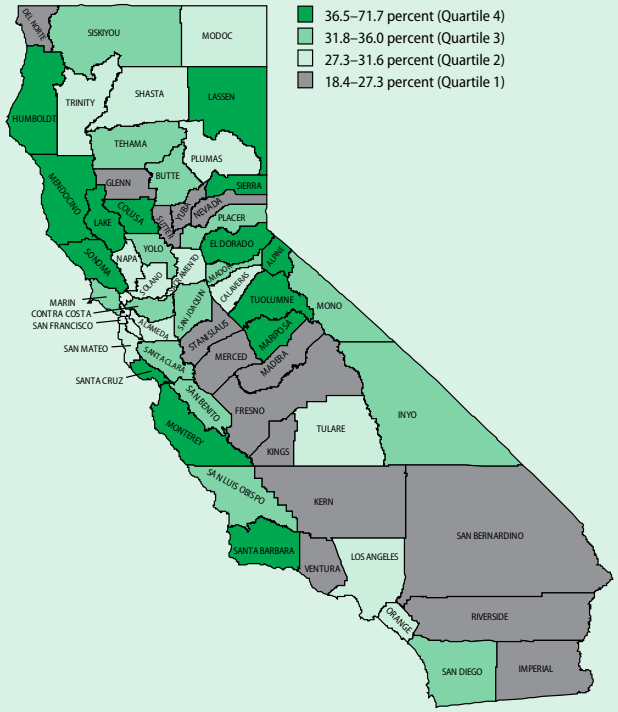
Source: Authors' analysis based on data obtained by request from California Department of Education Personnel Assignment Information Form dataset.

appendix A for the retirement projection formula, which accounts for variation in current age distributions and in several other factors, such as historical retirement behavior). Merced County has the lowest percentage of administrators expected to retire by 2017/18 (18 percent of the 2007/08 school-site administrator workforce), and Santa Cruz County has the highest percentage (72 percent).

The counties in the top quartile of retirements are projected to lose 37–72 percent of their school-site administrators over the next decade. These high-retirement areas tend to lie in two long, parallel geographic bands. One band runs along the Pacific Coast and includes Humboldt, Mendocino, and Lake Counties in the North Coast region, Sonoma and Santa Cruz Counties in the San Francisco Bay Area, and Monterey and Santa Barbara Counties in the Central Coast region (map 2). The other band is on the state's eastern border and includes Mariposa,

MAP 2

Estimated percentage change from 2007/08 in the number of school-site administrators needed based on projected administrator retirements for 2008/09–2017/18, by county



Note: See box 1 and appendix A for details of the analysis. Underlying data are reported in table B1 in appendix B.

Source: Authors' analysis based on data obtained by request from the California State Teachers' Retirement System for 2003/04–2007/08 and the California Department of Education Personnel Assignment Information Form dataset.

Tuolomne, and Alpine Counties in the East Inland region and Sierra and Lassen Counties in the Northeastern Inland region.

Counties in the bottom quartile of retirements are projected to lose 18–27 percent of their school-site administrators over the coming decade. Most are located in the Central Valley (Fresno, Kern, Kings, Madera, Merced, and Stanislaus) or in the Inland Empire (San Bernardino and Riverside), two regions that have experienced rapid population growth for years and are projected to continue to do so (Johnson 2009). Several Upper Sacramento Central Valley counties (Glenn, Sutter, and Yuba) are also in this lowest projected retirement quartile.

There are exceptions to these general geographic patterns, however. For example, both Del Norte County in the North Coast region and Nevada County in the Northeastern Inland region are in the lowest quartile of projected retirements, unlike several of their neighboring counties with high retirement projections. Conversely, Colusa County is in the highest retirement quartile, at 39 percent, while several of its neighbors in the Upper Sacramento Central Valley are in the lowest retirement quartile.

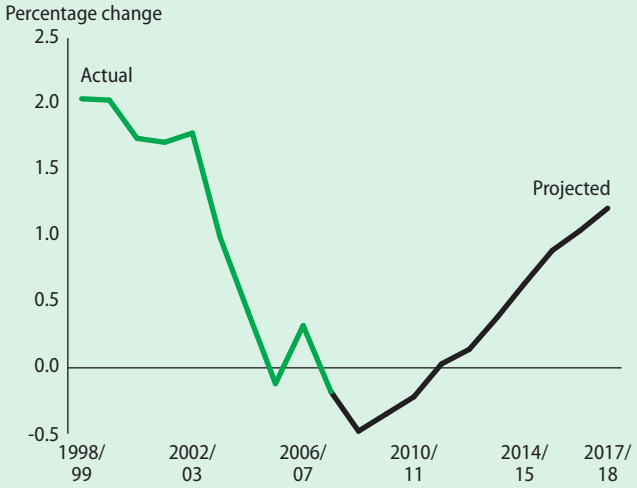
The 10 California counties with the largest student enrollments (see table B7 in appendix B)—Los Angeles, Orange, San Diego, San Bernardino, Riverside, Santa Clara, Sacramento, Alameda, Fresno, and Kern, from highest to lowest—are expected to lose 22–34 percent of their principals and vice-principals to retirement over the coming decade, though none of these highest enrollment counties is in the top quartile of projected retirements. The top retirement quartile does include several of the smallest enrollment counties in the state, however: Alpine (127 students), Sierra (497), Mariposa (2,313), Colusa (4,534), and Lassen (5,133). Nevertheless, there is no consistent relationship between a county's enrollment size and its projected retirements.[4]

Student enrollment projections by county

Student enrollment growth statewide has recently leveled off after a period of gradual increases during 1998/99–2005/06. Annual enrollment change has slowed from an approximately 2 percent growth rate in 1998/99 to a –0.2 percent decline from 2006/07 to 2007/08. However, the state is projecting that this downward trend will be reversed over the next decade, with cumulative enrollment growth during 2008/09–2017/18 projected at about 1.7 percent (figure 4; California Department of Finance 2008). State estimates show growing enrollments at the elementary school level during this projection period and declining enrollment at the high school level (California Department of Finance 2008).

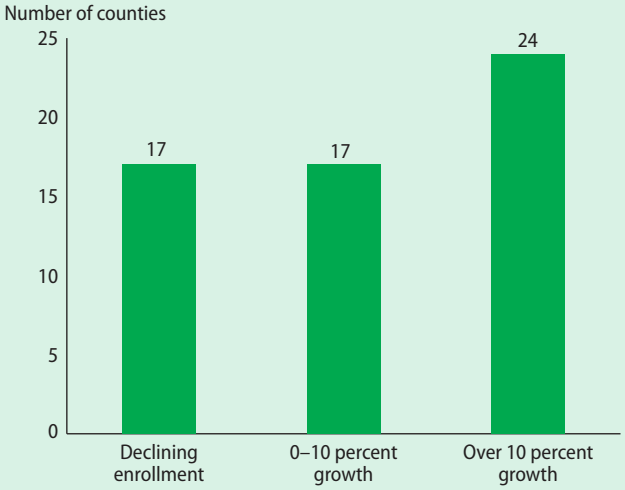
As with retirements, there is considerable variation in enrollment projections by county and

FIGURE 4
Annual percentage change in California student enrollment, 1998/99–2017/18



Source: Authors' analysis based on data from California Department of Finance (2008).

FIGURE 5
California counties grouped by projected enrollment growth, 2008/09–2017/18



Source: Authors' analysis based on data from California Department of Finance (2008).

region. For more than 30 years, California's inland areas have experienced faster population growth than have coastal areas, and these trends are expected to continue. The Inland Empire (Riverside and San Bernardino Counties) and the Central Valley (North and South San Joaquin Central Valleys and Upper and Sacramento Metropolitan Valleys) have grown considerably in recent decades, and state projections indicate that these areas will grow much faster than other areas of the state in years to come (Johnson 2003, 2009).

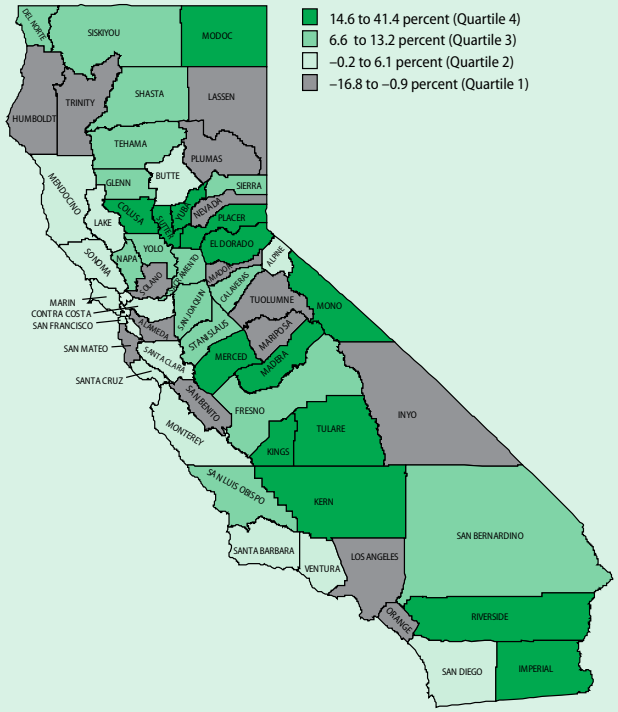
During 2008/09–2017/18, 24 counties are expected to experience double-digit (10.4–43.1 percent) enrollment growth over enrollment in 2007/08, while 17 counties are expected to experience declining enrollment (–0.02 to –15.7 percent; figure 5). Of the 24 counties projected to experience double-digit enrollment growth over the next 10 years, 17 are in the Central Valley and Inland Empire regions. And among the 10 counties with the largest student enrollments in 2007/08, enrollments are expected to increase through 2017/18 in 6 (in all but 1 by double digits) and to decline in 4 (Alameda, Los Angeles, Orange, and Santa Clara).

Based on five-year average student–administrator ratios (see table A1) for converting projected student enrollment growth into projected demand for school-site administrators, the counties in the top quartile of enrollment-driven demand—10 of them in the Central Valley and Inland Empire regions (map 3)—are projected to need 15–41 percent more school-site administrator positions over the next 10 years. The state's top enrollment-growth county (as a percentage of current demand) is Riverside, in the Inland Empire, while Central Valley counties in the top quartile extend from the Sacramento Valley (Colusa, Sutter, Yuba, Placer, and El Dorado) down to the San Joaquin Valley (Merced, Madera, Kings, Tulare, and Kern). Riverside County's southern neighbor, Imperial County, is also in the top quartile of projected enrollment-driven administrator demand, as is Modoc County in the state's northeast corner. At the opposite extreme is Nevada County, which has the largest expected enrollment decline in the state and is projected to need 17 percent fewer administrators in 2017/18 than in 2007/08.

In a general pattern that is largely the converse of the geographic retirement trends discussed earlier,[5] California's coastal counties (and some

MAP 3

Estimated percentage change from 2007/08 in the number of school-site administrators needed based on projected student enrollment for 2008/09–2017/18, by county



Note: See box 1 and appendix A for details of the analysis. Underlying data are reported in table B3 in appendix B.

Source: Authors' analysis based on data obtained by request from the California State Teachers' Retirement System for 2003/04–2007/08 and the California Department of Education Personnel Assignment Information Form dataset.

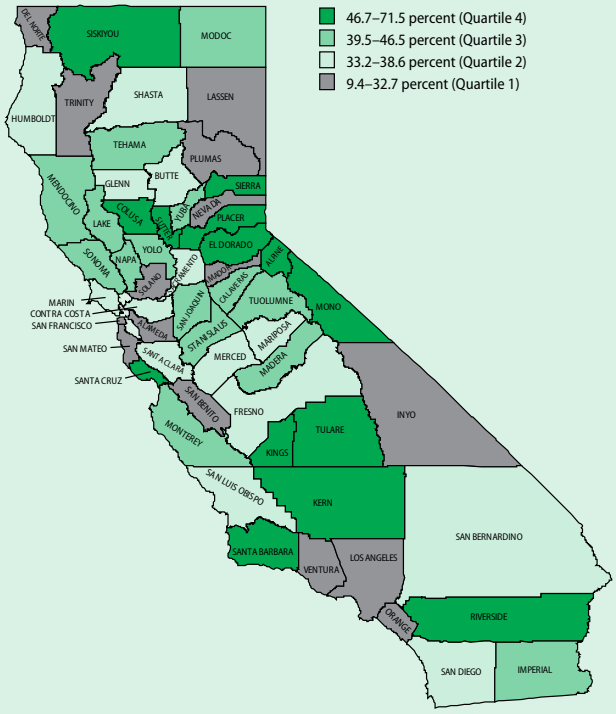
eastern counties) are expected to experience low levels of administrator demand (the bottom two quartiles) based on student enrollment over the next decade. Of the state's 24 counties in regions considered coastal for this study—those extending from the North Coast through the Bay Area to the Central and South Coasts (see map 1)—20 fall into the two bottom quartiles of enrollment-driven demand (see map 3). Migration from coastal to inland communities has been occurring over the last three decades and is expected to continue into the foreseeable future (Johnson and Hayes 2004; Johnson, Reed, and Hayes 2008). Nonetheless, statewide projections suggest that 62 percent of California residents will be living in coastal counties in 2040 (Johnson 2008).

Combining projected administrator retirements and changes in student enrollment

To answer the third research question, the two sets of projections (projected administrator retirements and administrators expected to be needed due to changes in student enrollment) for the next decade were combined by county. A gap of 62 percentage points separates the counties facing the highest (Santa Cruz, at 71 percent) and lowest (Nevada, at 9 percent) projected net needs for new administrators based on these retirement and enrollment patterns (table B5 in appendix B). Twelve counties in the top quartile for net need of new administrators are located in or near the Central Valley (map 4). Two coastal California counties

MAP 4

Estimated percentage change from 2007/08 in the number of school-site administrators needed based on projected administrator retirements and student enrollment for 2008/09–2017/18, by county



Note: See box 1 and appendix A for details of the analysis. Underlying data are reported in table B5 in appendix B.

Source: Authors' analysis based on data obtained by request from the California State Teachers' Retirement System for 2003/04–2007/08 and the California Department of Education Personnel Assignment Information Form dataset.

Recent expansion in some fast growing counties has led to the employment of younger administrators; as a result, the high projected need for administrators is driven by enrollment rather than upcoming retirements

(Santa Cruz and Santa Barbara) are also in the top 25 percent of the distribution for the combined projections, as are Riverside County in the south and Siskiyou County in the north.

Counties in the bottom quartile of the combined projections tend to be less geographically clustered. These lower need areas include counties in the Bay Area (Alameda, San Francisco, San Mateo, and Solano), the South Coast (Los Angeles, Orange, and Ventura), Northeastern Inland (Lassen, Nevada, and Plumas), North Coast (Del Norte and Trinity), and East Inland (Amador and Inyo) regions.

Overall, the Central Valley and Inland Empire regions stand out for their projected net needs for administrators. To meet combined retirement- and enrollment-driven needs, the 19 counties in the Central Valley region are expected to have to hire the equivalent of 44 percent of the region's 2007/08 school-site administrator workforce. The Inland Empire region is expected to need to hire the equivalent of 50 percent of its 2007/08 workforce. All remaining counties in the state are projected to need to hire an average of 27 percent of their 2007/08 workforce.[6] (Average estimated need is 27 percent among the counties in regions defined on map 1 as coastal and 33 percent among counties in the two regions on the eastern border of the state—East Inland and Northeastern Inland.)

Relative contribution of administrator retirements and enrollment growth

Many counties along the California coast, such as Santa Cruz and Santa Barbara, are projected to have little growth in student enrollment in coming years but can expect relatively high rates of administrator retirements in the next decade. By contrast, recent expansion in some fast-growing inland counties, such as Riverside and Kings, has led to the employment of younger principals and vice-principals, and as a result, the high projected need for administrators in these areas is driven more by student enrollment than by upcoming staff retirements. See box 3 on the need for school-site administrators in the 10 counties with the highest student enrollment.

There is no simple answer to the question of which of the two demographic factors examined in this study is driving the combined projections. Looking at the issue from several perspectives shows that each one offers a different take on the issue. The enrollment-driven demand projections shown in map 3 reveal geographic patterns similar to the results of the combined projections shown in map 4. Both maps suggest lower need in areas along the coast and higher need in areas in the central part of the state (Central Valley and Inland Empire). The map of retirement-driven need (map 2), by contrast, indicates higher needs in coastal and eastern inland regions. Overall, the correlation ($r = 0.72$) between the enrollment-related projections and the combined projections is higher than that ($r = 0.46$) between the retirement projections and the combined projections.

It cannot be concluded from this, however, that enrollment growth is driving the combined projections. In fact, from a state-level numeric perspective, total retirements outnumber new administrators needed solely because of enrollment growth by a ratio of 9 to 1. That difference is due largely to the stable or declining student enrollments projected for many of the state's larger counties (see table B7), including Los Angeles (–13.4 percent), Orange (–6.9 percent), Alameda (–4.6 percent), Santa Clara (0.0 percent), and San Diego (0.8 percent).

Finally, for the 25 percent of California counties with the highest projected combined needs for administrators, the contribution of the two demographic factors together is almost equal: 54 percent of administrators are needed because of retirements and 46 percent because of student enrollment growth. Nonetheless, for 10 of these 14 top-quartile counties, retirement accounts for more than half of the new administrators needed (figure 6).

BOX 3

Need for school-site administrators in the 10 counties with the highest student enrollment

Ten California counties accounted for 73 percent of the state's student enrollment in 2007/08 (Los Angeles, Orange, San Diego, San Bernadino, Riverside, Santa Clara, Sacramento, Alameda, Fresno, and Kern; see table B7 in appendix B), and these large counties will drive much of the overall demand in number of school-site administrators needed in the coming decade. Study projections indicate that these 10 counties will together need to hire an estimated 2,924 administrators over the next decade (see table B6 in appendix B), or 61 percent of the overall projected need of 4,815 hires statewide.

As shown in the table, of these 10 counties, Riverside and Kern face the greatest need for school-site administrators due to retirement and student enrollment growth. Based on these two factors alone, by 2017/18 each county will have to hire enough new principals and vice-principals to replace more than half of its 2007/08 administrator workforce. This means Riverside will need to hire more than 540 school-site administrators over the next decade, with Kern needing to hire close to 200 (see table B6 in appendix B). At the other end of the spectrum is Los Angeles County, which will need to hire approximately 16 percent of its 2007/08 workforce, or about 560 administrators. In percentage terms, 8 of the top 10 enrollment counties have projected enrollment- and retirement-driven needs that are below the median level of projected need across California's 58 counties.

Estimated percentage change from 2007/08 in the number of school-site administrators needed based on projected administrator retirements and student enrollment for 2008/09–2017/18 in the 10 counties with the highest enrollments

County	Rank by enrollment, 2007/08	Projected share of 2007/08 workforce to retire (percent)	Projected student enrollment growth (percent)	Projected share of 2007/08 workforce needed to hire due to retirement plus enrollment (percent)	Statewide rank for percentage of 2007/08 workforce needed to hire due to retirement plus enrollment
Riverside	5	25	41	67	2
Kern	10	26	26	51	9
Sacramento	7	28	10	38	34
Santa Clara	6	34	0	34	40
Fresno	9	22	12	34	41
San Diego	3	33	1	34	42
San Bernardino	4	23	11	33	43
Alameda	8	30	–4	26	52
Orange	2	29	–7	23	54
Los Angeles	1	29	–13	16	57

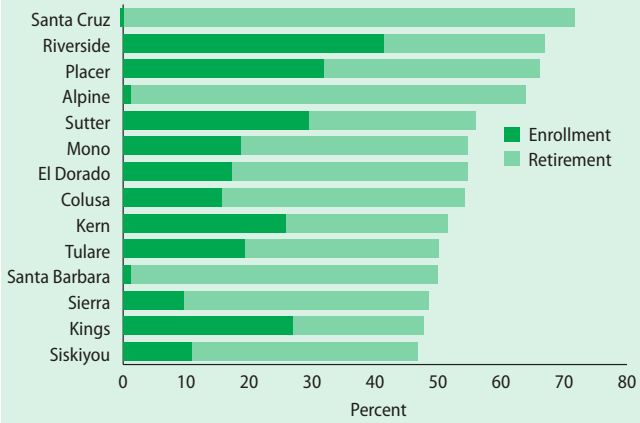
Source: Authors' analysis based on data from California Department of Finance (2008); California Department of Education (2009); California State Teachers' Retirement System data for 2003/04–2007/08 obtained by request; and California Department of Education Personnel Assignment Information Form dataset, obtained by request; see box 1 and appendix A for details of the analysis. See tables in appendix B for parallel information for all counties.

CONCLUSIONS AND IMPLICATIONS

There have been no comprehensive studies of the school-site administrator labor market in California. This study examines two key demographic trends that affect the labor market for school-site administrators and highlights county and regional differences. While not a complete analysis of all labor market factors, the study is a first step toward a more thorough understanding of this important issue. It provides information that state, county, and district officials, and those who work in administrator preparation programs, can use for workforce planning in the next decade.

FIGURE 6

Estimated percentage change from 2007/08 in the number of school-site administrators needed based on projected administrator retirements and student enrollment for 2008/09–2017/18 for California's top quartile of counties for projected combined need for administrators



Note: See box 1 and appendix A for details of the analysis. See tables B1 and B3 in appendix B for parallel information for all counties.

Source: Authors' analysis based on data from California Department of Finance (2008); California Department of Education (2009); California State Teachers' Retirement System data for 2003/04–2007/08, obtained by request; and California Department of Education Personnel Assignment Information Form database.

The study found that the counties along the Pacific Coast and along the state's eastern border are projected to have higher retirement rates and lower relative demand due to changes in enrollment than other counties. The counties with lower retirement rates are mostly in the Central Valley and Inland Empire, where high projected enrollment-driven demand also tends to be concentrated. The combined projections reveal patterns similar to those for the enrollment-related projections. Taken as a whole, the counties in the Central Valley and Inland Empire are expected to need to hire 46 percent of their 2007/08 workforce (or more than 2,200 principals and vice-principals) over the next decade—compared with an average of 27 percent across California's other regions.

In the Central Valley regions, other challenges will accompany the high projected need for school-site administrators. As noted in the recent study projecting county-level need for teachers (White and Fong 2008), the Central Valley counties tend to have higher poverty rates and lower education attainment than the rest of the state. Excluding the Sacramento Metropolitan Central Valley region (which, at 8 percent, has relatively low levels of poverty and close to the same proportion of college graduates as the rest of the state), about 20 percent of Central Valley residents live in poverty, compared with 13 percent for the rest of California (Public Policy Institute of California 2006). Also, migration trends have resulted in a net loss of college graduates in the area. In 2000, only 14 percent of San Joaquin Valley residents and 17 percent of Upper Sacramento Valley residents were college graduates, compared with 28 percent in the rest of California, excluding the Central Valley (Johnson and Hayes 2004). In the Inland Empire, Riverside has lower average household incomes and lower educational attainment than does the rest of the state (Johnson, Reed, and Hayes 2008).[7]

Taken together, these economic and socio-demographic trends and indicators suggest that efforts to retain school-site administrators and to hire new ones could face several impediments in the Central Valley and Riverside County. The relatively low proportions of college-educated adults in most parts of those areas (and in the Inland Empire in general) may translate into fewer potential administrator candidates. Efforts to recruit principals and vice-principals from other parts of the country or state may fail, possibly in part because of preferences for working close to one's hometown (Boyd et al. 2005). Such preferences, coupled with a projected statewide shortage of college-educated adults through at least 2025 (Johnson and Sengupta 2009), will make careful regional and county workforce planning essential.

Uncertainties

To verify the accuracy of key aspects of the results, several sensitivity tests were run that examined the impact of the analytic decisions undergirding the projections related to such issues as retirements in small counties. These tests—which checked the reported results against those

obtained using different approaches (different operational decisions)—found no material differences in results. Using different retirement rates over the next 10 years from those assumed in the study had an impact on total projected retirements, but only limited impact on county rankings. (For a complete discussion of these sensitivity tests, see appendix A.)

That said, without a complete analysis of all labor market variables in these regions, it is impossible to predict whether there will in fact be supply–demand mismatches in coming years (White and Fong 2008). Specifically, this analysis does not account for supply of new administrators, preretirement administrator attrition, or changes in compensation, working conditions, or student–administrator ratios. Nor can it account for potential effects of the current economic downturn on administrator retirement rates or student enrollment (box 4). In addition, as noted in box 1, the study projections rely on some key assumptions that, if incorrect, could result in the projections understating or overstating the need for school-site administrators. (For a complete discussion of those assumptions, see appendix A.)

Potential next steps

This report offers some important information about key aspects of the local and regional labor market for school-site administrators. But it does not provide a complete picture of county-level or regional supply and demand. Additional research would be needed to fill out the picture of local administrator labor markets that is sketched out in this report and thus to inform appropriate policy interventions to balance supply and demand. The possibilities for conducting further research and analysis related to local labor markets are likely to expand once the California Longitudinal Teacher Integrated Data Education System (CalTIDES) becomes operational, as projected for 2011 (California Senate Office of Research 2009). Notwithstanding its title, the database will include information about all certificated staff in public schools—not just teachers. It is expected to facilitate workforce analyses, including investigation of mobility, retention, and attrition (Senate Bill 1614; Chapter 840, Statutes of 2006), although retirement data are not currently slated to be part of CalTIDES.

In the meantime, district and county resources could be used to further explore local administrator labor market issues in several ways.

Counties and districts that maintain their own longitudinal data systems that include data on staff could explore the impact of preretirement attrition on their future need for administrators. This information would round out the estimates in this report that are based on projected retirements and enrollment growth. Additional investigations might explore the differential needs for elementary and secondary school administrators.

Statewide student enrollment projections show growth at the elementary level during the 10-year projection period, while high school enrollment is projected to decline (California Department of Finance 2008). Because of data limitations, the present study did not investigate projected needs for new administrators by school level, though such information could prove especially useful in county planning efforts.

On the supply side, county offices of education and school districts could identify the administrator preparation programs that are their primary sources of new administrators and then collaborate with those programs in determining whether the supply of administrators is likely to meet demand in the coming years. District and county offices could also identify the programs that have turned out administrators who are best prepared to work in the unique contexts of local schools.

County offices of education and school districts could identify the administrator preparation programs that are their primary sources of new administrators and then collaborate with those programs in determining whether the supply of administrators is likely to meet demand in the coming years

BOX 4

Uncertainties related to current economic context

The current economic downturn and the corresponding budget crisis in California will affect the state's schools and educators in many ways in the months and years ahead. Although the full impact is hard to predict, it is possible that population growth patterns and retirement patterns will change in ways not reflected in the projections here.

The Legislative Analyst's Office (2008) of California discusses some of the caveats associated with population forecasts in its annual fiscal outlook report. It notes, in particular, that net inmigration (persons moving into California from other states and countries minus those leaving California) is "highly sensitive to the condition of the economy" (p. 14). Net inmigration is one of the factors considered in the California Department of Finance's enrollment projections used in the present analysis. Nonetheless, according to data from the Department of Finance (2008), which tracks how well its projections match actual enrollment data as they become available, the 2008 series used in the present analysis shows initial signs of relatively high accuracy.[1] The actual data for the first year (2008/09) of the projected data are now available for comparison. The one-year-out mean absolute percentage error (the average value over past projections of the absolute values of errors expressed in percentage terms) for the 2008 series is 0.12 percent. By comparison, the mean absolute percentage error for the one-year-out projection in 22 prior Department of Finance projection series was 0.39 percent.[2]

Retirement projections may also be sensitive to current economic conditions. On the one hand, administrators may choose to delay retirement in an environment of financial insecurity. A recent analysis by the California Budget Project found that the share of employed Californians ages 55–69 (which increased considerably between 1995 and 2008) has continued to rise during the current economic downturn—reversing the pattern of declining employment rates for older Californians seen during the downturns of the early 1980s and early 1990s (Anderson 2009). Citing national survey data, the author suggests that these changes are due, in part, to older workers' diminished confidence in their retirement security. On the other hand, school administrators, like others with defined-benefit pension programs, may be less exposed to financial insecurities than are private sector workers with a job-based pension, who are likely to have a defined-contribution plan, such as a 401(k) plan, that will not provide a guaranteed annuity in retirement. The promise of a fixed income after retirement might make California school administrators less likely than other workers to delay retirement.

Even though the California State Teachers' Retirement System (CalSTRS) defined-benefit program offers options for retirement timing, the average retirement age among all CalSTRS members has remained stable, at around 61 years, since at least 1989 (California State Teachers' Retirement System 2008, 1999). But if older administrators were considering working longer because of current financial uncertainties, they would encounter no explicit disincentives for doing so.[3] Some of them may stay in the labor force—either inside or outside the California public education system. For those who work outside California public education, there are no restrictions on their earnings in those new jobs while they collect retirement income from CalSTRS (California State Teachers' Retirement System 2009). In 2007/08, the average retirement benefit for members (including the longevity bonus) was $4,239 per month (California State Teachers' Retirement System 2008).

Other factors that may influence retirement choices for some administrators are early retirement incentives or buyouts that districts are offering as a way to address their budget deficits. For example, in spring 2009, the Los Angeles Unified School District offered early retirement to older teachers, counselors, and administrators for the first time in 17 years. To be eligible, district employees had to be at least 50 years old with 30 years of service or 55 years old with 5 years of service. The package consists of five or more annual payments of 40 percent of 2009/10 salaries, on top of the normal pension. As of the end of April 2009, nearly 1,400 teachers, counselors, and administrators had accepted the offer.[4] In districts that do not offer retirees full health benefits until they are at least age 65, some administrators may delay

BOX 4 (CONTINUED)

Uncertainties related to current economic context

retirement until age 65, when they can receive Medicare.

Other districts may choose to handle their budget deficits differently, perhaps by eliminating administrator positions entirely, thereby increasing student–administrator ratios at their schools. In the near term, one-time American Reinvestment and Recovery Act of 2009 funds that districts are using to offset their budget deficits could mitigate staffing cuts that districts might otherwise make.

Notes

1. www.dof.ca.gov/research/demographic/reports/projections/k-12/.
2. For context, the mean absolute percentage error across the same 22 other projection series is 3.48 percent 5 years out and 6.80 percent 10 years out.
3. Member of the CalSTRS defined-benefit program are eligible to retire at age 50 with at least 30 years of service or at age 55 with at least 5 years of service (California State Teachers' Retirement System 2007a). Members can retire early, but there are some financial incentives to working longer—members who retire after age 60 receive certain age-determined premiums, and there are also longevity bonuses for service beyond 30 years. Plus, the retirement benefit continues to increase as members work longer and earn more service credit. However, the longevity bonuses are capped at 32 years of service, and age premiums stop growing at age 61.5 after 30 years of service or at age 63 with fewer years of service. Thus, the marginal value of working longer diminishes after those benchmarks are reached.
4. Llanos 2009.

Additional state-level research exploring geographic aspects of the administrator pipeline might also prove beneficial. For example, do schools in a given region attract primarily new administrators who grew up in the region? Under what circumstances do administrators migrate to other regions for jobs? Which preparation programs are the major suppliers to various regions in California? Such information would help state policymakers as they consider interventions for addressing differential needs for new administrators across the state. In addition, research to answer such questions would add to the knowledge base on school staff labor markets.

Finally, given the uncertainty about how the current economic and budget environment will affect the labor market for school-site administrators, periodic reexamination of the trends reported in this report—and of other aspects of the labor market as those data become available through CalTIDES—could assist in future planning efforts. Such information could also expand the knowledge base on how school labor markets respond under such conditions.

APPENDIX A
DATA AND ANALYSIS

This appendix provides additional information about the data sources and analyses used in this study.

Data sources

Student enrollment growth data. The California Department of Finance (2008) annually publishes historical and projected county-level student enrollment data. The dataset includes historical enrollment for 1974/75–2007/08 and projected enrollment for 2008/09–2017/18. A cohort survival projection technique is used for the student enrollment projections, drawing on historical trends, migration trends, demographic data for each county, and survey results from selected school districts. Birth data are used to predict entering cohorts of kindergarteners and grade 1 students.

As a first step in calculating the number of administrators needed to meet enrollment growth demand, five-year (2003/04–2007/08) county-level student–administrator ratios were calculated. First, California Department of Finance (2008) annual data were used to calculate total student enrollment over the five-year period. Next, a dataset on the number of administrators in each county in each year, obtained independently from the California Department of Education, was used to calculate the total number of administrators over the same five-year period. The five-year student–administrator ratio was derived by dividing the five-year student enrollment total by the five-year administrator total. A one-year student–administrator ratio was also calculated by dividing student enrollment in 2007/08 by the number of administrators in 2007/08.

Both the one-year and five-year ratios are reported in table A1. The five-year ratios were used in the analysis because they are inherently more stable. As an average over multiple years, the five-year ratio is less likely to represent anomalous variation that might occur in any one year.

Administrator retirement data. The California State Teachers' Retirement System (CalSTRS), which serves most certificated school staff in California, maintains a historical database that includes data on the retirement patterns of its members. Most full-time certificated staff employed by school districts, county offices of education, and regional occupational centers (including teachers, pupil-services staff, preschool teachers, adult education staff, and district-level administrators, as well as school-site administrators, among others) are required to participate in the CalSTRS defined-benefit program (California Education Code section 22501).[8] Charter school teachers whose basis of employment is 50 percent or more are required to participate if the school in which they are employed has opted into the system.[9] Part-time certificated staff and substitutes do not have to participate initially, but CalSTRS is their default retirement plan, and they must participate after accumulating a certain number of work hours in a given school district (California Education Code sections 22501–22504).

For this study, 14 years (1994/95–2007/08) of historical data were obtained from CalSTRS. For all 58 California counties the data include the number of members, retiring members, and new members by age category. New members are those who are new to the CalSTRS system (for instance, a new member may be a new administrator that transferred to California from another state). The age categories are less than 25, 25–30, 31–35, 36–40, 41–45, individual ages from 46 through 70 (that is, 46, 47, 48, and so on, through 70), and older than 70. For instance, the dataset would provide the total number of members, retiring members, and new members who were age 60 in a given county for each of the 14 years of historical data.

Because the CalSTRS dataset does not distinguish among types of staff, it was merged with the California Department of Education Professional Assignment Information Form (PAIF) dataset, which provides counts by county and age of school-site administrators for

TABLE A1

One-year and five-year student–administrator ratios in California, by county

County	One year ratio (2007/08)	Five year ratio (2003/04 2007/08)	County	One year ratio (2007/08)	Five year ratio (2003/04 2007/08)
Alameda	356.7	393.3	Orange	496.4	510.1
Alpine	127.0	171.8	Placer	398.2	414.2
Amador	289.3	314.6	Plumas	220.1	207.7
Butte	349.8	342.6	Riverside	517.4	537.6
Calaveras	250.0	262.4	Sacramento	391.9	405.0
Colusa	266.7	255.3	San Benito	317.7	361.8
Contra Costa	393.9	419.3	San Bernardino	494.0	517.6
Del Norte	266.0	331.0	San Diego	436.2	457.2
El Dorado	369.5	377.7	San Francisco	302.2	331.8
Fresno	467.6	489.1	San Joaquin	391.1	417.7
Glenn	228.2	229.4	San Luis Obispo	381.4	387.8
Humboldt	246.8	253.9	San Mateo	421.7	396.1
Imperial	417.5	396.5	Santa Barbara	391.9	411.6
Inyo	225.5	260.4	Santa Clara	438.2	431.7
Kern	468.0	495.6	Santa Cruz	312.5	339.9
Kings	362.5	354.1	Shasta	287.3	307.6
Lake	288.4	295.0	Sierra	165.7	179.1
Lassen	270.2	308.4	Siskiyou	202.4	177.6
Los Angeles	475.2	488.6	Solano	437.6	422.0
Madera	326.2	372.6	Sonoma	357.7	363.6
Marin	312.4	320.4	Stanislaus	436.6	455.8
Mariposa	210.3	212.7	Sutter	316.1	351.0
Mendocino	272.3	265.8	Tehama	290.9	298.6
Merced	363.4	385.1	Trinity	171.4	139.8
Modoc	274.9	244.8	Tulare	386.7	391.2
Mono	241.3	249.4	Tuolumne	287.0	309.0
Monterey	377.2	393.3	Ventura	447.8	452.3
Napa	427.8	393.0	Yolo	351.3	369.6
Nevada	360.8	337.3	Yuba	253.7	286.1

Source: Authors' analysis based on data from California Department of Finance (2008) and by special request from the California Department of Education's 2003/04–2007/08 Personnel Assignment Information Form dataset.

2003/04–2007/08. For this study, "school-site administrators" were defined as those assigned one of the following codes on the 2007/08 PAIF: superintendent/principal (code 0300, used by 2.2 percent of the administrators identified for this study); principal (code 0301, used by 57.4 percent); associate administrator, assistant administrator, or vice-principal (code 0302, used by 40 percent); or full-time teaching principal or superintendent (code 6003, used by 0.4 percent).[10] This dataset, which is not publicly available on the California Department of Education web site, was obtained through special request.

The PAIF data were used to adjust the CalSTRS data to reflect only school-site administrators, rather than all members.[11] For example, if the PAIF data showed two administrators at a given

age within a given county and the CalSTRS data showed 10 members at the same age, the age counts in the CalSTRS active members, retired members, and new members data were reduced by 80 percent. The key assumptions in making this adjustment are that the CalSTRS members and school-site administrators of the same age retire at the same rate and enter the workforce at the same rate (see next section for a lengthier discussion of this assumption).

A second point about the CalSTRS dataset is that it is unable to differentiate between full-time and part-time members. As a result, the dataset counts unique employees rather than full-time equivalent workers. Thus, some of the members counted in the dataset may be less than full time. However, the PAIF data make it possible to examine full-time equivalent administrators. Approximately 92 percent of the school-site administrators in 2007/08 worked full-time as principals or vice-principals. Since the CalSTRS dataset does not differentiate between full-time and part-time members, the results should be interpreted to reflect the number or percentage of additional administrators needed over the next decade, not the number or percentage of additional full-time equivalent administrators needed over the next decade.

Analysis

Administrator retirement projection formula. Variation in retirement rates by age within each county was examined to determine the best approach for deriving a historical retirement rate (r_a) to apply to future counts of administrators. Options included using the county-level retirement rates for each age category for 2007/08, a 5-year average, and a 12-year average (table A2). The average retirement rate over the past five years (2003/04–2007/08) within each age level and county was chosen because it provided a large enough window to account for time trends without relying on data that may have become obsolete, as might be the case when using a 12-year average.[12]

The following formulas were used to project administrator retirements in each county:

$$r_a = \sum_{t=2003/04}^{2007/08} R_{a,t} \Big/ \sum_{t=2003/04}^{2007/08} N_{a,t}\,, \quad a = 30, 31, \ldots, 70, 71 \text{ and over} \tag{1}$$

$$\hat{N}_{a,t} = [(\hat{N}_{a-1,t-1} - \hat{N}_{a-1,t-1}(r_{a-1}))] * \text{Adjustment\_rate}_{a-1} + F_{a,t}\,, \quad a = 30, 31, \ldots, 70, 71 \text{ and over}, \quad t = 2008/09, \ldots, 2017/18 \tag{2}$$

$$Adjustment\_rate_a = \sum_{t=2004/05}^{2007/08} N_{a,t} \Big/ \sum_{t=2004/05}^{2007/08} E_{a,t}\,, \quad a = 30, 31, \ldots, 70, 71 \text{ and over} \tag{3}$$

$$E_{a,t} = N_{a-1,t-1} - N_{a-1,t-1}(r_{a-1}) + F_{a,t}\,, \quad a = 30, 31, \ldots, 70, 71 \text{ and over}, \quad t = 2004/05, \ldots, 2007/08 \tag{4}$$

where r_a is the retirement rate for administrators of age a, $R_{a,t}$ is the number of retirements of administrators age a in year t, $N_{a,t}$ is the actual number of administrators of age a in year t, $\hat{N}_{a,t}$ is the projected number of administrators of age a in year t, F_a is the number of new administrators of age a, $Adjustment\_rate_a$ is the proportion of administrators of age a observed from one year to the next, and $E_{a,t}$ is the expected number of administrators age a to be observed in year t.[13]

To calculate the number of administrators of a given age in a projected year, the number of administrators in the previous year at the given age minus one is calculated first. The number of administrators who retired the previous year is then subtracted from this number, and the result is corrected by the adjustment rate, which is calculated for each age group for each county (see following section). Finally, the new administrators for that year and age group are added to the total. New administrators are those who are new to the CalSTRS system. Administrators returning from a hiatus would not be included in F_a; they are instead accounted for in the adjustment rate, as described below. To begin, the actual counts of

TABLE A2

1-, 5-, and 12-year retirement rates for school-site administrators of all ages as of 2007/08, by county (percent)

County	1-year rate	5 year average rate	12 year average rate	County	1-year rate	5 year average rate	12 year average rate
Alameda	3.2	3.1	2.6	Orange	2.7	2.5	2.3
Alpine	5.7	2.5	1.7	Placer	2.6	2.0	1.8
Amador	5.6	3.0	2.4	Plumas	4.4	4.2	2.9
Butte	3.3	2.8	2.3	Riverside	2.0	1.7	1.5
Calaveras	4.8	3.9	2.9	Sacramento	3.3	2.7	2.3
Colusa	0.7	2.0	1.8	San Benito	1.6	2.2	1.8
Contra Costa	3.1	2.9	2.5	San Bernardino	2.3	2.0	1.7
Del Norte	3.9	3.4	2.6	San Diego	2.7	2.4	2.1
El Dorado	3.4	2.9	2.2	San Francisco	2.7	2.9	2.9
Fresno	2.8	2.2	1.8	San Joaquin	2.7	2.5	2.1
Glenn	6.0	2.8	2.6	San Luis Obispo	3.8	2.7	2.1
Humboldt	4.2	3.4	2.8	San Mateo	2.5	2.8	2.7
Imperial	2.1	2.2	1.9	Santa Barbara	3.7	2.7	2.4
Inyo	3.4	3.9	3.1	Santa Clara	3.2	3.2	3.0
Kern	2.2	2.2	2.0	Santa Cruz	3.5	3.1	2.5
Kings	2.6	2.5	2.1	Shasta	2.8	3.1	2.6
Lake	3.5	3.2	2.4	Sierra	2.0	4.4	3.3
Lassen	4.4	3.3	2.4	Siskiyou	5.8	5.6	3.7
Los Angeles	2.4	2.4	2.1	Solano	2.9	3.2	2.3
Madera	2.9	2.8	2.2	Sonoma	3.6	3.5	2.7
Marin	2.6	2.8	2.9	Stanislaus	2.9	2.5	2.0
Mariposa	5.0	3.9	3.0	Sutter	2.5	2.9	2.3
Mendocino	5.5	4.5	3.3	Tehama	2.7	3.3	2.7
Merced	1.9	2.1	1.9	Trinity	3.7	5.4	3.9
Modoc	3.7	3.0	2.8	Tulare	2.4	2.7	2.1
Mono	3.5	4.3	2.7	Tuolumne	3.5	4.3	3.3
Monterey	3.1	3.5	2.5	Ventura	2.6	2.6	2.2
Napa	2.1	2.4	2.5	Yolo	3.8	2.8	2.2
Nevada	4.9	3.9	2.6	Yuba	2.2	3.2	2.8

Source: Authors' analysis based on data obtained by special request from the California State Teachers' Retirement System for 1994/95–2007/08 and the California Department of Education's Personnel Assignment Information Form dataset for 2003/04–2007/08.

school-site administrators for each age in 2007/08 are taken from the PAIF dataset. Projections from the actual counts of 2007/08 are then made for 2008/09 through 2017/18.

To project the number of new administrators of age a (F_a), the total number of new administrators of a given age and county are summed for the period 2003/04–2007/08 and then divided by total student enrollment over the same five years. This figure represents the five-year average of new administrators of a given age and county per student enrolled. This average is then multiplied by the projected student enrollment for a given future year to yield the expected number of new administrators of a given age in the given future year. The assumption is that new members will enter the system in the future based on the same

proportion of total student enrollment as they have in the past.

The adjustment rate. Administrators cannot be tracked over time in the data, which precludes incorporating factors such as preretirement attrition in the retirement projections. Thus, an adjustment rate has to be included in the projection formula. Suppose that 100 50-year-old administrators are observed in time *t*. If none of those administrators retires and no new 51-year-old administrators enter the following year, one would expect to see 100 51-year-old administrators in time *t*+1. But this may not occur for reasons that cannot be directly observed in the data (discussed below), such as attrition, administrators returning after taking time off, and other factors. The adjustment rate accounts for this data limitation. Historical data are used to calculate the adjustment rate for a given age within a given county as the average proportion of actual administrators observed in the county divided by the expected number of administrators for 2004/05–2007/08.[14] As described in equation 4, the number of administrators expected of a given age in a given historical year *t* is based on the number of administrators in the previous year *t*–1, the number of administrators who retired in the previous year *t*–1, and the number of new administrators who entered in year *t*.

The adjustment rate accounts for a number of factors, including nonretirement attrition, administrators who return to the field after an absence of at least one year, teachers or other certificated staff already within the CalSTRS system who transition into administrator positions, and differences in the proportion of administrators who retire and the proportion of CalSTRS members who retire. Each factor is explained below.

With regard to nonretirement attrition, administrators who leave the workforce other than for retirement would not be observed in the following year, although they would have been expected to be observed since the data are unable to identify that they had left. The adjustment rate accounts for historical levels of attrition within a given age and county. Analogously, the data are unable to identify administrators who reenter the profession after a break in service. The adjustment rate accounts for historical averages of individuals reentering the profession for a given age and county.

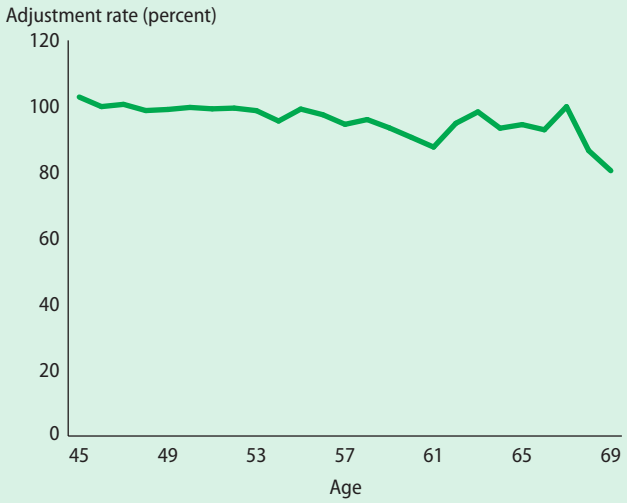
With regard to teachers transitioning into administrator positions, California teachers and other certificated staff are already included in the CalSTRS system. Therefore, when they transition into an administrator position from a teaching position, the dataset does not identify them as "new administrators" (only administrators new to the CalSTRS system are counted as new). The adjustment rate will account for administrators who transferred from teaching or other certificated positions.

The adjustment rate also accounts for differences that can arise when the CalSTRS retirement counts are converted to administrator retirement counts, based on the assumption that administrators retire at the same rate as CalSTRS members. Suppose, based on a ratio of CalSTRS members to administrators of 2 to 1, that the CalSTRS member retirement counts for 60-year-olds are reduced by 50 percent to arrive at an administrator retirement count. Now assume that 60-year-old administrators in this county actually retire at a lower rate than 60-year-old CalSTRS members (for instance, the actual administrator retirement rate may be only 40 percent, although this cannot be observed from the data, which do not distinguish between administrators and other CalSTRS members). Since 50 percent of administrators are assumed to have retired, but in reality only 40 percent did, the expected number of administrators in the following year will differ from the actual number of administrators. The adjustment rate corrects for this problem, since it adjusts the expected number of 61-year-old administrators in the following year. Figure A1 presents the adjustment rates for administrators ages 45–69.

Small counties adjustment. California's 58 counties vary considerably in size, ranging from fewer than 200 students in Alpine County to approximately

FIGURE A1

Adjustment rates for California school-site administrators ages 45–69



Note: The adjustment rate is the ratio of the actual number of administrators to the expected number of administrators. The expected number of administrators in a given year is based on the number of administrators in the previous year, the number of administrators who retired in the previous year, and the number of new administrators who entered in that year.

Source: Authors' analysis based on data obtained by special request from California State Teachers' Retirement System for 1994/95–2007/08 and California Department of Education's Personnel Assignment Information Form dataset for 2003/04–2007/08.

1.6 million students in Los Angeles County in 2007/08. Likewise, the number of administrators ranges from 1 in Alpine County to more than 3,400 in Los Angeles County. Without an adequate number of administrators of each age within a county, it is challenging to derive reliable historical age-specific retirement rates. For instance, in Alpine County, with just one administrator in 2007/08, many ages are not represented at all over the five-year period for which the retirement rate was calculated. To handle this issue, the average age-specific five-year state retirement rate was used for each of the age-specific retirement rates in all counties defined as small (see below).

Two possible thresholds were explored for determining what constitutes a small county: the total number of retirements over the next 10 years (using the state average retirement rate for small counties) was calculated for each county using a 100-administrator threshold and then a 30-administrator threshold based on administrator counts as of 2007/08. A statistical test using a Spearman rank correlation coefficient, run to test whether the county rankings from the two thresholds are independent of one another, rejected their independence at the 1 percent level, implying that the two thresholds produce similar county rankings. At the statewide level, the difference between the two calculations is less than 3.5 percent. The results reported in this report use the 100-administrator threshold, which is likely to be less susceptible to random fluctuations in retirement rates due to small numbers of administrators.

Calculations of the adjustment rate were handled in the same fashion. Since the adjustment rate is county- and age-specific, the problem of low numbers of administrators for some ages would arise again in small counties. In the 34 counties with 100 or fewer administrators in 2007/08, the age-specific statewide adjustment rate was used for each age.[15]

Key assumptions of the projections. Several assumptions were made in projecting student enrollment– and administrator retirement–driven demand based on current school conditions and on the historical behavior of administrators. If these assumptions are incorrect, the projections could under- or overstate actual need related to these two factors, although it is difficult to predict the overall direction of the biases that may be embedded in the assumptions.

A sensitivity analysis was conducted to examine the implications should retirement rates over the next 10 years prove to be higher or lower than the calculated five-year retirement rate. Two additional retirement projections were run, increasing and decreasing the age- and county-specific retirement rates by 20 percent. For instance, if the five-year retirement rate for 60-year-olds in Los Angeles County was calculated as 15 percent in the original analysis, the retirement rate was raised to 18 percent and lowered to 12 percent and the number of administrators expected to retire

over the next 10 years for each county was recalculated using these two rates and compared to the original calculation. For the 20 percent higher retirement rates, the overall number of administrators retiring for each county rose an average of 21.8 percent (it varied by county from 20.2 percent to 23.5 percent). None of the 58 counties changed rankings with the 20 percent higher retirement rate. For the 20 percent lower retirement rate, the overall number of administrators retiring for each county fell 21.1 percent (the range was between 20.1 percent and 22.1 percent). Only four counties changed rankings and only by one position.

Administrator demand based on student enrollment growth. Counties are assumed to maintain their 2007/08 student–administrator ratios. To calculate the number of administrators needed to meet student enrollment growth, county-level student–administrator ratios were applied to the State of California Department of Finance's (2008) projected changes in student enrollment through 2017/18. It remains unclear whether current economic conditions will appreciably alter student–administrator ratios 10 years into the future.

Administrator demand based on retirement. CalSTRS members and school administrators of the same age within a given county are assumed to retire at the same rate. Because the CalSTRS data do not distinguish between administrators and other members of the retirement system, administrator age data from the California Department of Education PAIF dataset were used to adjust the number of CalSTRS retirees in the five years of data from CalSTRS for the projections formula. If administrators of a given age retire at a lower rate than do all CalSTRS members of the same age, actual administrator retirements in the future would be lower than projected retirements. If administrators of a given age retire at a higher rate, actual administrator retirements in the future would be higher than projected retirements.

A similar assumption is that CalSTRS members and administrators of the same age within a given county enter the workforce at the same rate. This assumption is necessary because the CalSTRS dataset does not identify positions when new members enter the system. Substituting the new member rate for the new administrator assumes that CalSTRS members and administrators enter the system at the same rate. However, because the number of new CalSTRS members in the relevant age range (48 or older) is low, this assumption is not likely to materially affect the projections.

All factors not directly controlled for in the analyses remain constant. Several aspects of the retirement projections are based on the historical behavior of administrators in California counties during 2003/04–2007/08. These factors include estimates of future retirement rates, number of administrators who remain in the profession from one year to the next, number of administrators who reenter the workforce after a break, and number of new administrators entering a given county. While the model accounts for the age of administrators and the county in which they are employed, it does not account for the potential effect of changes in other conditions that might affect administrator retirement, such as salaries, retirement or health benefits for active and retired administrators, school-level working conditions, school budgets, or broader economic conditions. As noted in box 4, the current broader economic conditions and budgetary environment will have an uncertain effect on the projections.

Limitations of the analyses

This study uses longitudinal analysis to examine two labor market factors that vary at the county level: administrator retirements and changes in student enrollment. However, because of state data limitations, the study does not examine other labor market factors and conditions that might combine with changes in retirements and student enrollment to influence labor markets for school-site administrators. Specifically, the analysis does not account for the supply of new administrators, preretirement administrator attrition, or changes in student–administrator ratios, compensation, or working conditions.

APPENDIX B
SUPPLEMENTARY DATA TABLES

TABLE B1

Estimated percentage change from 2007/08 in the number of school-site administrators needed based on projected administrator retirements for 2008/09–2017/18, by county and quartile

Rank	County	Percentage change	Quartile	Rank	County	Percentage change	Quartile
1	Santa Cruz	71.7	4	30	Shasta	31.6	2
2	Alpine	62.8	4	31	Trinity	31.0	2
3	Santa Barbara	48.7	4	32	Tulare	30.8	2
4	Tuolumne	45.4	4	33	Napa	30.6	2
5	Sonoma	44.4	4	34	Alameda	30.4	2
6	Mariposa	41.7	4	35	Calaveras	30.3	2
7	Monterey	40.9	4	36	San Francisco	29.9	2
8	Lake	40.0	4	37	Orange	29.4	2
9	Sierra	38.8	4	38	Los Angeles	29.1	2
10	Colusa	38.5	4	39	San Mateo	28.9	2
11	Mendocino	38.0	4	40	Solano	28.9	2
12	El Dorado	37.3	4	41	Sacramento	28.2	2
13	Lassen	36.9	4	42	Plumas	27.8	2
14	Humboldt	36.5	4	43	Modoc	27.3	2
15	Mono	36.0	3	44	Glenn	27.3	1
16	Siskiyou	35.8	3	45	Stanislaus	26.6	1
17	San Benito	35.6	3	46	Sutter	26.5	1
18	Amador	34.3	3	47	Nevada	26.2	1
19	Placer	34.2	3	48	Kern	25.7	1
20	San Joaquin	34.2	3	49	Ventura	25.6	1
21	Santa Clara	34.1	3	50	Imperial	25.6	1
22	Contra Costa	33.3	3	51	Riverside	25.5	1
23	San Diego	33.1	3	52	Madera	24.8	1
24	Butte	33.1	3	53	Yuba	24.7	1
25	Marin	32.7	3	54	San Bernardino	22.6	1
26	Yolo	32.6	3	55	Fresno	21.8	1
27	Tehama	32.5	3	56	Del Norte	21.1	1
28	Inyo	32.1	3	57	Kings	20.9	1
29	San Luis Obispo	31.8	3	58	Merced	18.4	1

Source: Authors' analysis based on data obtained by request from the California State Teachers' Retirement System for 2003/04–2007/08 and the California Department of Education Personnel Assignment Information Form dataset.

TABLE B2

Estimated change from 2007/08 in the number of school-site administrators needed based on projected administrator retirements for 2008/09–2017/18, by county and quartile

Rank	County	Total requirements	Quartile	Rank	County	Total requirements	Quartile
1	Los Angeles	1,009	4	30	Humboldt	28	2
2	San Diego	376	4	31	Yolo	27	2
3	Orange	298	4	32	Madera	22	2
4	Riverside	207	4	33	Imperial	22	2
5	Santa Clara	202	4	34	Mendocino	19	2
6	San Bernardino	195	4	35	Sutter	16	2
7	Alameda	181	4	36	Kings	16	2
8	Sacramento	171	4	37	Napa	14	2
9	Contra Costa	141	4	38	Yuba	14	2
10	San Joaquin	119	4	39	Lake	14	2
11	Kern	96	4	40	San Benito	13	2
12	Fresno	90	4	41	Tehama	12	2
13	Sonoma	88	4	42	Tuolumne	11	2
14	Santa Cruz	87	4	43	Siskiyou	11	2
15	Santa Barbara	82	3	44	Nevada	10	1
16	Ventura	81	3	45	Calaveras	8	1
17	Tulare	76	3	46	Glenn	7	1
18	Monterey	76	3	47	Lassen	7	1
19	Stanislaus	65	3	48	Colusa	7	1
20	San Mateo	61	3	49	Amador	5	1
21	Placer	56	3	50	Mariposa	5	1
22	San Francisco	56	3	51	Inyo	4	1
23	Solano	45	3	52	Del Norte	4	1
24	Shasta	31	3	53	Trinity	3	1
25	Butte	31	3	54	Plumas	3	1
26	Marin	30	3	55	Mono	3	1
27	El Dorado	30	3	56	Modoc	2	1
28	San Luis Obispo	29	3	57	Sierra	1	1
29	Merced	29	3	58	Alpine	1	1

Source: Authors' analysis based on data obtained by request from the California State Teachers' Retirement System for 2003/04–2007/08 and the California Department of Education Personnel Assignment Information Form dataset.

TABLE B3

Estimated percentage change from 2007/08 in the number of school-site administrators needed based on projected student enrollment for 2008/09–2017/18, by county and quartile

Rank	County	Percentage change	Quartile	Rank	County	Percentage change	Quartile
1	Riverside	41.4	4	30	Lake	6.1	2
2	Placer	31.9	4	31	Monterey	5.6	2
3	Sutter	29.4	4	32	Contra Costa	5.4	2
4	Kings	26.9	4	33	Butte	5.3	2
5	Kern	25.8	4	34	Marin	5.0	2
6	Tulare	19.3	4	35	Mendocino	1.9	2
7	Mono	18.7	4	36	Sonoma	1.7	2
8	Modoc	17.6	4	37	Santa Barbara	1.2	2
9	Yuba	17.6	4	38	Alpine	1.2	2
10	El Dorado	17.3	4	39	San Diego	0.8	2
11	Merced	17.2	4	40	Ventura	0.7	2
12	Imperial	17.0	4	41	San Francisco	0.2	2
13	Colusa	15.7	4	42	Santa Clara	0.0[a]	2
14	Madera	14.6	4	43	Santa Cruz	–0.2	2
15	Stanislaus	13.2	3	44	San Mateo	–0.9	1
16	Napa	12.7	3	45	Amador	–1.6	1
17	Fresno	12.2	3	46	Humboldt	–1.6	1
18	San Joaquin	11.7	3	47	Solano	–2.1	1
19	Del Norte	11.3	3	48	Inyo	–2.2	1
20	Siskiyou	10.9	3	49	Tuolumne	–3.7	1
21	Glenn	10.8	3	50	Alameda	–4.2	1
22	San Bernardino	10.6	3	51	Mariposa	–4.6	1
23	Sacramento	10.0	3	52	San Benito	–6.4	1
24	Calaveras	10.0	3	53	Orange	–6.7	1
25	Sierra	9.7	3	54	Plumas	–9.5	1
26	Tehama	9.7	3	55	Lassen	–11.0	1
27	Yolo	7.1	3	56	Trinity	–12.2	1
28	San Luis Obispo	6.7	3	57	Los Angeles	–13.1	1
29	Shasta	6.6	3	58	Nevada	–16.8	1

a. –0.02 before rounding.

Source: Authors' analysis based on data obtained by request from the California State Teachers' Retirement System for 2003/04–2007/08 and California Department of Education Personnel Assignment Information Form dataset.

TABLE B4

Estimated change from 2007/08 in the number of school-site administrators needed based on projected student enrollment for 2008/09–2017/18, by county and quartile

Rank	County	Number of administrators	Quartile	Rank	County	Number of administrators	Quartile
1	Riverside	337	4	30	Calaveras	3	2
2	Kern	96	4	31	Colusa	3	2
3	San Bernardino	91	4	32	Ventura	2	2
4	Sacramento	61	4	33	Lake	2	2
5	Placer	53	4	34	Santa Barbara	2	2
6	Fresno	50	4	35	Del Norte	2	2
7	Tulare	47	4	36	Mono	1	2
8	San Joaquin	41	4	37	Modoc	1	2
9	Stanislaus	32	4	38	Mendocino	1	2
10	Merced	27	4	39	San Francisco	0	2
11	Contra Costa	23	4	40	Sierra	0	2
12	Kings	21	4	41	Alpine	0	2
13	Sutter	18	4	42	Santa Clara	0	2
14	Imperial	15	4	43	Amador	0	2
15	El Dorado	14	3	44	Inyo	0	1
16	Madera	13	3	45	Santa Cruz	0	1
17	Monterey	10	3	46	Mariposa	–1	1
18	Yuba	10	3	47	Tuolumne	–1	1
19	San Diego	9	3	48	Plumas	–1	1
20	Shasta	7	3	49	Humboldt	–1	1
21	San Luis Obispo	6	3	50	Trinity	–1	1
22	Napa	6	3	51	San Mateo	–2	1
23	Yolo	6	3	52	Lassen	–2	1
24	Butte	5	3	53	San Benito	–2	1
25	Marin	5	3	54	Solano	–3	1
26	Tehama	4	3	55	Nevada	–7	1
27	Siskiyou	3	3	56	Alameda	–25	1
28	Sonoma	3	3	57	Orange	–68	1
29	Glenn	3	3	58	Los Angeles	–453	1

Source: Authors' analysis based on data obtained by request from the California State Teachers' Retirement System for 2003/04–2007/08 and California Department of Education Personnel Assignment Information Form dataset.

TABLE B5

Estimated percentage change from 2007/08 in the number of school-site administrators needed based on projected administrator retirements and student enrollment for 2008/09–2017/18, by county and quartile

Rank	County	Percentage change	Quartile	Rank	County	Percentage change	Quartile
1	Santa Cruz	71.5	4	30	Contra Costa	38.6	2
2	Riverside	66.9	4	31	San Luis Obispo	38.6	2
3	Placer	66.1	4	32	Butte	38.4	2
4	Alpine	64.0	4	33	Shasta	38.2	2
5	Sutter	55.9	4	34	Sacramento	38.2	2
6	Mono	54.7	4	35	Glenn	38.1	2
7	El Dorado	54.6	4	36	Marin	37.7	2
8	Colusa	54.2	4	37	Mariposa	37.0	2
9	Kern	51.5	4	38	Merced	35.5	2
10	Tulare	50.1	4	39	Humboldt	34.9	2
11	Santa Barbara	49.9	4	40	Santa Clara	34.1	2
12	Sierra	48.5	4	41	Fresno	34.0	2
13	Kings	47.8	4	42	San Diego	33.9	2
14	Siskiyou	46.7	4	43	San Bernardino	33.2	2
15	Monterey	46.5	3	44	Amador	32.7	1
16	Lake	46.2	3	45	Del Norte	32.4	1
17	Sonoma	46.1	3	46	San Francisco	30.1	1
18	San Joaquin	45.8	3	47	Inyo	29.9	1
19	Modoc	44.9	3	48	San Benito	29.2	1
20	Napa	43.3	3	49	San Mateo	27.9	1
21	Imperial	42.6	3	50	Solano	26.8	1
22	Yuba	42.3	3	51	Ventura	26.3	1
23	Tehama	42.2	3	52	Alameda	26.2	1
24	Tuolumne	41.7	3	53	Lassen	25.9	1
25	Calaveras	40.2	3	54	Orange	22.7	1
26	Mendocino	39.8	3	55	Trinity	18.8	1
27	Stanislaus	39.8	3	56	Plumas	18.3	1
28	Yolo	39.6	3	57	Los Angeles	16.1	1
29	Madera	39.5	3	58	Nevada	9.4	1

Source: Authors' analysis based on data obtained by request from California State Teachers' Retirement System for 2003/04–2007/08 and California Department of Education Personnel Assignment Information Form dataset.

TABLE B6

Estimated change from 2007/08 in the number of school-site administrators needed based on projected administrator retirements and student enrollment for 2008/09–2017/18, by county and quartile

Rank	County	Number of administrators	Quartile	Rank	County	Number of administrators	Quartile
1	Los Angeles	556	4	30	Madera	36	2
2	Riverside	545	4	31	San Luis Obispo	35	2
3	San Diego	385	4	32	Marin	35	2
4	San Bernardino	286	4	33	Sutter	35	2
5	Sacramento	232	4	34	Yolo	33	2
6	Orange	230	4	35	Humboldt	27	2
7	Santa Clara	202	4	36	Yuba	24	2
8	Kern	192	4	37	Napa	20	2
9	Contra Costa	163	4	38	Mendocino	20	2
10	San Joaquin	160	4	39	Tehama	16	2
11	Alameda	156	4	40	Lake	16	2
12	Fresno	140	4	41	Siskiyou	14	2
13	Tulare	123	4	42	Calaveras	11	2
14	Placer	109	4	43	San Benito	11	2
15	Stanislaus	97	3	44	Tuolumne	10	1
16	Sonoma	91	3	45	Glenn	10	1
17	Santa Cruz	87	3	46	Colusa	9	1
18	Monterey	86	3	47	Del Norte	6	1
19	Santa Barbara	84	3	48	Amador	5	1
20	Ventura	83	3	49	Lassen	5	1
21	San Mateo	59	3	50	Mono	4	1
22	San Francisco	56	3	51	Mariposa	4	1
23	Merced	56	3	52	Inyo	4	1
24	El Dorado	44	3	53	Nevada	4	1
25	Solano	42	3	54	Modoc	4	1
26	Shasta	38	3	55	Plumas	2	1
27	Kings	37	3	56	Trinity	2	1
28	Imperial	37	3	57	Sierra	1	1
29	Butte	36	3	58	Alpine	1	1

Source: Authors' analysis based on data obtained by request from California State Teachers' Retirement System for 2003/04–2007/08 and California Department of Education Personnel Assignment Information Form dataset.

TABLE B7

Student enrollment for selected years, by county

County	1997/98	2007/08	2017/18	Percentage change 1997/98 2007/08	Percentage change 2007/08 2017/18
Los Angeles	1,547,175	1,646,133	1,425,045	6.4	–13.4
Orange	452,323	501,910	467,285	11.0	–6.9
San Diego	453,995	495,514	499,606	9.1	0.8
San Bernardino	349,730	426,779	474,104	22.0	11.1
Riverside	281,202	421,136	602,448	49.8	43.1
Santa Clara	247,933	258,997	258,940	4.5	0.0
Sacramento	203,150	237,885	262,525	17.1	10.4
Alameda	207,778	212,921	203,042	2.5	–4.6
Fresno	173,369	192,645	217,137	11.1	12.7
Kern	137,630	174,085	221,684	26.5	27.3
Contra Costa	146,189	166,613	176,115	14.0	5.7
Ventura	130,314	141,055	142,112	8.2	0.7
San Joaquin	109,522	136,090	153,046	24.3	12.5
Stanislaus	90,265	106,972	121,690	18.5	13.8
Tulare	83,023	95,127	113,682	14.6	19.5
San Mateo	92,087	88,974	88,185	–3.4	–0.9
Sonoma	70,246	70,824	72,033	0.8	1.7
Monterey	67,274	69,791	73,869	3.7	5.8
Solano	68,875	68,267	66,911	–0.9	–2.0
Santa Barbara	62,874	66,223	67,056	5.3	1.3
Placer	48,772	65,708	87,514	34.7	33.2
Merced	48,247	57,051	67,420	18.2	18.2
San Francisco	61,912	56,204	56,344	–9.2	0.2
Santa Cruz	39,421	38,131	38,032	–3.3	–0.3
Imperial	32,068	36,325	42,187	13.3	16.1
San Luis Obispo	35,888	35,092	37,496	–2.2	6.9
Butte	34,658	32,531	34,232	–6.1	5.2
El Dorado	28,499	29,563	34,781	3.7	17.7
Yolo	26,397	29,507	31,701	11.8	7.4
Madera	23,633	29,356	34,260	24.2	16.7
Marin	28,000	29,050	30,534	3.8	5.1
Shasta	30,291	28,438	30,459	–6.1	7.1
Kings	24,385	28,277	35,699	16.0	26.2
Napa	18,732	20,108	22,462	7.3	11.7
Sutter	15,560	19,597	25,997	25.9	32.7
Humboldt	21,456	18,755	18,441	–12.6	–1.7
Yuba	12,838	14,462	17,325	12.6	19.8
Nevada	13,330	14,070	11,857	5.6	–15.7
Mendocino	15,811	13,613	13,863	–13.9	1.8

TABLE B7 (CONTINUED)

Student enrollment for selected years, by county

County	1997/98	2007/08	2017/18	Percentage change 1997/98 2007/08	Percentage change 2007/08 2017/18
San Benito	10,337	11,437	10,604	10.6	–7.3
Tehama	10,936	11,054	12,151	1.1	9.9
Lake	10,023	9,804	10,418	–2.2	6.3
Tuolumne	8,220	7,174	6,888	–12.7	–4.0
Calaveras	6,856	6,751	7,457	–1.5	10.5
Siskiyou	8,268	6,275	6,877	–24.1	9.6
Glenn	6,132	5,934	6,577	–3.2	10.8
Lassen	5,504	5,133	4,488	–6.7	–12.6
Amador	4,945	4,629	4,549	–6.4	–1.7
Colusa	4,273	4,534	5,215	6.1	15.0
Del Norte	5,110	4,522	5,156	–11.5	14.0
Inyo	3,493	2,932	2,857	–16.1	–2.6
Plumas	3,607	2,641	2,405	–26.8	–8.9
Mariposa	2,763	2,313	2,205	–16.3	–4.7
Modoc	2,241	2,199	2,543	–1.9	15.6
Mono	1,947	1,930	2,303	–0.9	19.3
Trinity	2,386	1,885	1,697	–21.0	–10.0
Sierra	1,615	497	549	–69.2	10.5
Alpine	138	127	129	–8.0	1.6

Source: Authors' analysis based on data from California Department of Finance (2008).

TABLE B8

Counts of school-site administrators, by county

County	2007/08	County	2007/08
Los Angeles	3,464	Imperial	87
San Diego	1,136	Yolo	84
Orange	1,011	El Dorado	80
San Bernardino	864	Kings	78
Riverside	814	Humboldt	76
Sacramento	607	Sutter	62
Alameda	597	Yuba	57
Santa Clara	591	Mendocino	50
Contra Costa	423	Napa	47
Fresno	412	Nevada	39
Kern	372	Tehama	38
San Joaquin	348	San Benito	36
Ventura	315	Lake	34
Tulare	246	Siskiyou	31
Stanislaus	245	Calaveras	27
San Mateo	211	Glenn	26
Sonoma	198	Tuolumne	25
San Francisco	186	Lassen	19
Monterey	185	Colusa	17
Santa Barbara	169	Del Norte	17
Placer	165	Amador	16
Merced	157	Inyo	13
Solano	156	Plumas	12
Santa Cruz	122	Mariposa	11
Shasta	99	Trinity	11
Butte	93	Modoc	8
Marin	93	Mono	8
San Luis Obispo	92	Sierra	3
Madera	90	Alpine	1

Note: For the purposes of this study, "school-site administrators" were defined as those assigned one of the following four codes on the 2007 California Department of Education Personnel Assignment Information Form: Superintendent/Principal (code 0300, used by 2.2 percent of the administrators identified for this study); Principal (code 0301, used by 57.4 percent); Associate administrator, assistant administrator, or vice principal (general) (code 0302, used by 40 percent); or Full-time teaching principal or superintendent (code 6003, used by 0.4 percent).

Source: Authors' analysis based on data from the California Department of Education (2009).

NOTES

1. This 2001 Public Agenda Survey had a 27 percent response rate (1,762 out of 6,500 mailed).

2. An extensive economics literature describes the many ways that compensation and working conditions can influence labor supply. For example, the theory of compensating differentials generally rests on the notion that wages and working conditions set the relevant price of labor in a particular job market and that individuals tend to consider both the monetary and the nonmonetary benefits and costs associated with different jobs (Rosen 1986; Gates et al. 2003). And although this theory predicts higher wages for jobs with poorer working conditions, such factors as unionization and collective bargaining (which are common in public education) can constrain the competitiveness of a labor market (Daniel and Sofer 1998). So, although the theory of compensating differentials—which in this case might involve local salary differentials between teachers and administrators—may offer some insights into the labor market for principals, that was not the focus of this report.

3. An earlier EdSource (2001) report, "Help Wanted: Top Administrators to Lead California Schools," described the changing nature of school administrative responsibilities and examined patterns in the number of applicants for administrative positions.

4. The correlation between 2007/08 enrollment and the percentage of administrators estimated to retire by 2017/18 is –0.16.

5. The correlation between the retirement- and enrollment-driven projections is –0.29.

6. When the other counties in the state (those not in the Central Valley or Inland Empire) are grouped by region (as in map 1), the average estimated need ranges from 21 percent in the South Coast to 45 percent in the Central Coast.

7. Incomes and education attainment levels are not uniform across Riverside County, however. For instance, southwestern Riverside has the lowest poverty rate in the Inland Empire (8 percent) and has among the highest average per capita income in the county, at $20,925 (Johnson, Reed, and Hayes 2008). The southwestern part of the county is also projected to experience large gains in adults graduating from college in the coming years. According to Johnson, Reed, and Hayes (2008), by 2015 some 27 percent of adults ages 25–64 in southwestern Riverside will have a college degree. The northwestern part of the county, which includes the city of Riverside, has a lower per capita income ($17,423) and a higher poverty rate (14 percent), and only 20.1 percent of adults ages 25–64 are projected to have a college degree by 2015. By that year, northwestern Riverside is expected to have a surplus of poorly educated workers and a deficit of high school graduates (Johnson, Reed, and Hayes 2008).

8. "All certificated, charter school, and community college employees of public schools (K–14), whose basis of employment is 50 percent or more" are required to participate in the program (California State Teachers' Retirement System 2007b).

9. J. Dickerson, personal communication with author, July 18, 2007; E. Derman, personal communication with author, February 4, 2008.

10. Discussions with several people with extensive knowledge of state leadership and administration issues, including officials at the California Department of Education, confirmed that these four codes were the appropriate ones to use in identifying school-site administrators.

11. Making this adjustment to the CalSTRS data also makes the analysis representative of all school-site administrators in California. While CalSTRS includes most certificated

employees, some school-site administrators may not be included; for example, individuals whose basis of employment is less than 50 percent and who have not been on the job for a specified period of time are not required to participate in the program. Adjusting the CalSTRS data with the PAIF data corrects for these missing data since the PAIF data include all school-site administrators. As explained later in the appendix, the assumption made by using the CalSTRS retirement and new entry rate is that administrators that are not included in the CalSTRS program retire/enter at the same rate as CalSTRS members.

12. At the state level the three retirement rates were as follows: 2.68 percent for the 1-year rate, 2.53 percent for the 5-year rate, and 2.18 percent for the 12-year rate. The total projected number of administrators retiring over the next 10 years was 5,176 using a 1-year average rate, 4,349 using a 5-year rate, and 4,338 using a 12-year rate.

13. Note that these formulas are identical to those used to calculate teacher retirements in White and Fong (2008), with the exception that the "adjustment rate" in this report was referred to as the "stay rate" in White and Fong. However, the adjustment rate and stay rate were calculated in the same way. The terminology was changed because the adjustment rate accounts for an additional factor that the stay rate did not: teachers who transition to school-site administrator roles are included in the adjustment rate.

14. While the adjustment rate used in the analysis was the average adjustment rate for 2004/05–2007/08, alternative adjustment rates could have been used. For example, a two-year average adjustment rate (for 2006/07 and 2007/08) could have been used instead of a four-year rate. Sensitivity analysis showed that the difference in the two projections in the number of administrators retiring over the 10-year period in California was less than 2.5 percent.

15. It is possible that administrators in small counties behave differently than administrators across the state as a whole. Thus, a sensitivity analysis was also conducted to check whether the results were significantly altered when a small-county, age-specific retirement and adjustment rate was used for all small counties (as opposed to using the statewide retirement and adjustment rates for the small counties). Age-specific retirement and adjustment rates were then calculated and applied to counties that had 100 or fewer administrators in 2007/08 (considered small), while county-specific and age-specific retirement and adjustment rates were used for counties with more than 100 administrators. The sensitivity analysis did not detect a significant difference from the overall findings. Across the state, 57 more administrators were expected to retire over the next decade using the small counties' retirement and adjustment rates (as compared with the original results), representing approximately 1.3 percent of total retirements. Moreover, a Spearman rank correlation coefficient calculated to test whether the two rankings of counties (one for the original analysis and one for the sensitivity analysis) are independent of one another in number of retirements rejected independence, implying that the two methods produce similar county rankings.

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