

California's Need for Skilled Workers

Sarah Bohn

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SUMMARY

If recent trends continue, California is likely to face a shortage of workers with some college education but less than a bachelor's degree by 2025. State and federal policymakers have increased their focus on boosting educational opportunities for this segment of the workforce. This report examines labor market outcomes among workers with some college training to shed light on the types of jobs that hold the most promise for future workers and the state economy.

CALIFORNIA FACES A GAP IN SKILLED WORKERS

By 2025, California is likely to face a shortage of workers with some postsecondary education but less than a bachelor's degree. In fact, the future gap among "some college" educated workers may be as high as 1.5 million—even larger than the projected one-million-worker shortage of college graduates.¹ This portends missed opportunities for the state economy and also for California's workers. To close the gap, the state needs information with which to better target its support for training, and students and workers need information for evaluating educational choices. Focusing on wages and in-demand occupations, this analysis looks at the type of jobs and skills that hold the most promise for "some college" workers.

"Some college" workers is a label necessitated by survey data used in this analysis and includes associate degree holders, those with one- or two-year technical certificates, and anyone who attended college but did not receive a credential.² Though private colleges—particularly for-profits—play a role in providing training,³ these workers with some college training primarily attend California's community colleges. An entry point to postsecondary education for more than two million Californians,⁴ the community college system is a potential gateway to the jobs of the future.

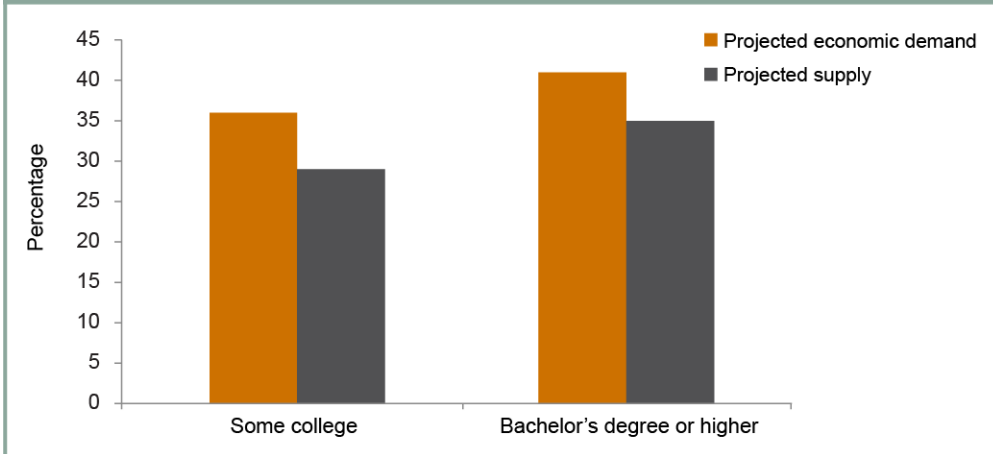
The projected shortage of educated workers with some college stems from a mismatch between the share of the workforce projected to have some college education by 2025 (29%) and the share of jobs that will require workers with those skills (36%, Figure 1). This mismatch is driven by major educational and economic trends. On the education side, workers entering the labor market are less likely to have completed postsecondary education than retiring workers.⁵ This trend, in turn, is related to the increasing share of Latinos in the workforce, a group with traditionally lower rates of college enrollment. While schooling has increased among Latinos in California—especially at the "some college" level—educational attainment is not projected to accelerate enough to meet future employer skill needs. Adult education—postsecondary training later in life—could mitigate the skills gap, but not enough adults currently seek retraining to have a discernible impact.

Lower educational attainment levels among the workforce is problematic because economic forecasts point to the increasing demand for skill by the state's employers. Training beyond high school has become increasingly valuable in the labor market,⁶ and forecasts of the composition of industries and jobs indicate that this trend is likely to continue over the next decade.

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FIGURE 1. BY 2025, CALIFORNIA MAY FACE A SHORTAGE OF WORKERS WITH COLLEGE TRAINING



SOURCE: Based on projections in D. Reed, *California's Future Workforce: Will There Be Enough College Graduates?* (PPIC, 2008), and H. Johnson and R. Sengupta, *Closing the Gap: Meeting California's Need for College Graduates* (PPIC, 2009).

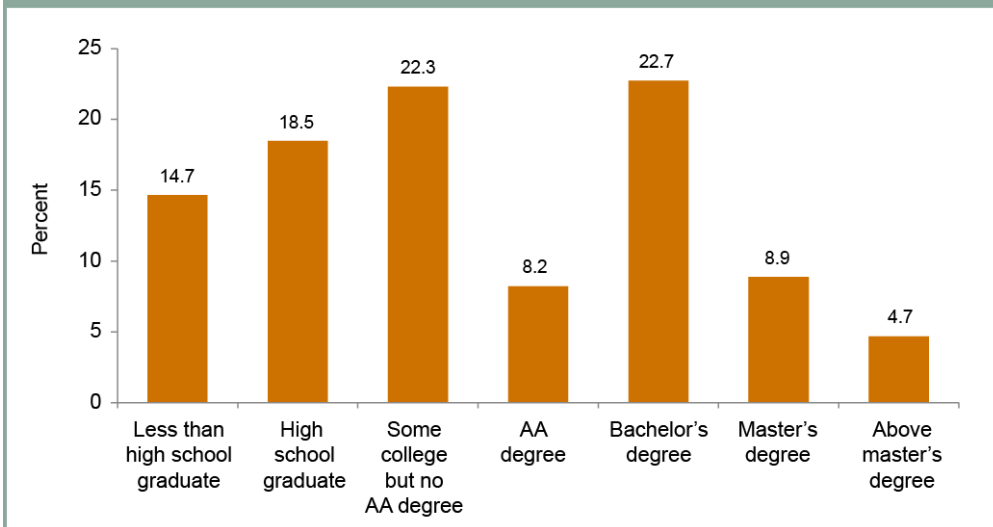
NOTE: Underlying methodology developed in D. Neumark, "California's Economic Future and Infrastructure Challenges," and H. Johnson, "California's Population in 2025," both in *California 2025: Taking on the Future*, ed. E. Hanak and M. Baldassare (PPIC, 2005).

Projections of workforce skills shortages are best used as a window onto how the state's future is likely to look, rather than a prescriptive set of facts.⁷ Markets work by adjusting to shortages or excesses, and the labor "input" is no exception: wages typically rise for workers whose skills are in high demand and fall (or stagnate) for the rest and thus create an incentive for workers to train for in-demand jobs. A workforce that cannot meet or attain sufficient training for in-demand jobs is thus unable to take advantage of economic opportunities. Moreover, the skills of the state's workforce will have an impact on California's national and international competitiveness: the failure to meet workforce needs could limit or alter the state's economic growth.

POSTSECONDARY SCHOOLING AFFORDS OPPORTUNITIES FOR WORKERS

The majority of California's workers have some education beyond high school (Figure 2). About one-third of California's workers have some college experience but less than a bachelor's degree; most of these workers also do not have associate degrees.

FIGURE 2. ONE-THIRD OF CALIFORNIANS HAVE SOME COLLEGE TRAINING



SOURCE: Author's calculations from American Community Survey, 2010–2012 pooled file.

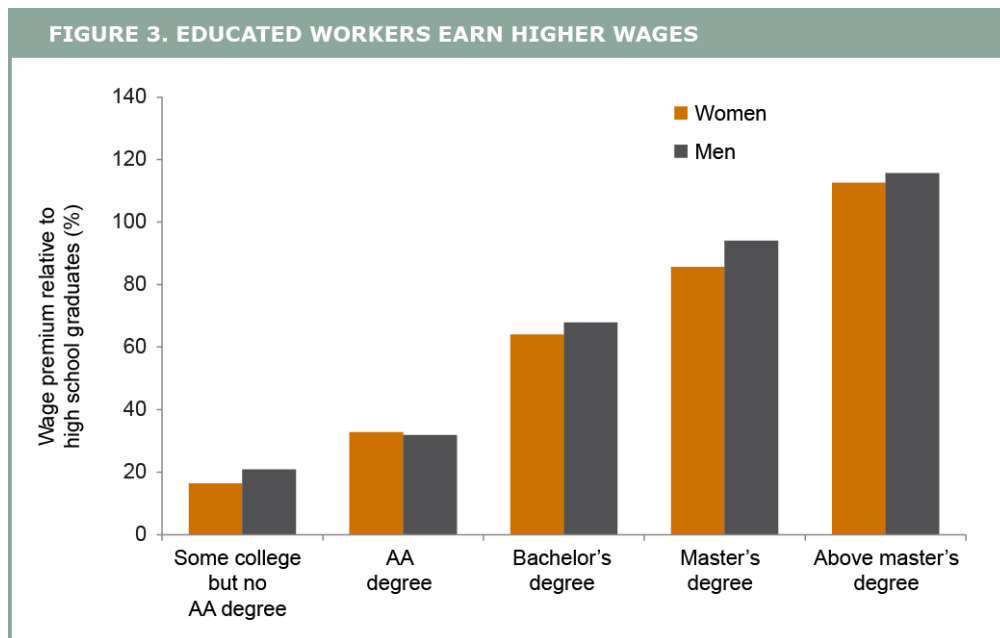
NOTES: Includes workers age 25 and above. In the text, "some college" refers to both "some college but no associate degree" and "associate degree." Survey information does not allow a more detailed breakdown of credentials earned in the "some college but no associate degree" category.

In general, a higher level of education means more job opportunities. In particular, the unemployment rate is strongly correlated with educational attainment: unemployment is lower at higher educational levels. Among workers with some college training, 10 percent are unemployed—this rate is more than 2 points lower than the unemployment rate for high school dropouts and about 3 points higher than the rate for bachelor’s degree holders. But there is variation among “some college” workers as well: workers with associate degrees have lower unemployment (8.5%) than those with other technical certificates or no certification at all (10.6%).⁸

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The latest data also suggest that California workers with some college earn about 20 to 30 percent more than otherwise similar workers with only a high school education (Figure 3). And for those with associate degrees, this wage premium is at the high end of that spectrum—about 32 percent.⁹ For comparison purposes, the returns to bachelor’s degrees are even higher, on the order of wages 60 percent higher than those of high school graduates.

Given these high returns, especially for college graduates, one might conclude that more education is always better. However, it is worth noting that there is substantial variation in wages within educational categories—indeed, some college graduates earn less than workers with markedly lower levels of education. Also, the significant variation in educational costs—both financial and non-financial—makes more education a less-than-optimal goal for some students. In general, more training is preferable to less, but there is no “one size fits all” recommendation. Even training short of a bachelor’s degree can have positive labor market returns for California workers.¹⁰



SOURCE: Author’s calculations from American Community Survey, 2010–2012.

NOTE: Chart shows wage premium relative to high school graduates from an OLS regression model of the natural log of hourly earnings. See note 9 for further details.

Of course, an individual’s current labor market standing reflects a variety of factors—not just individual skills and educational credentials, but also the health of the state’s—and the region’s—industries and economy. On that front, the job opportunities for workers with some college training have improved since the beginning of the Great Recession but are still not back to pre-recession levels.¹¹

OPPORTUNITIES FOR WORKERS WITH SOME COLLEGE TRAINING

A third of California’s workforce—and an increasing share of young, Latino Californians—have training beyond high school short of a bachelor’s degree. But the demand for workers with similar training is likely to exceed the supply over the next decade.

California’s Employment Development Department (EDD) estimates that by 2020, employment in the state will have grown by 16 percent, which amounts to about 2.6 million new jobs.¹²

More than half of these new jobs will be in four industries that already constitute a third of the state’s jobs: health care and social assistance; accommodation and food services; professional, scientific, and technical services; and retail trade. Overall, most industries will grow, some faster than others; some manufacturing sectors will shrink.

To better understand future educational needs—and the labor market opportunities for a large share of Californians—we need to look more closely at specific occupations. Table 1 shows that over the next decade, the share of new jobs requiring some college will equal the share requiring a bachelor’s degree (both are estimated to be 32%). Roughly two-thirds of the share of new jobs for “some college” workers will require less than an associate degree. These estimates may actually understate the educational requirements of future jobs: they are based on the educational credentials of current workers, but educational attainment has been rising in most occupations over recent decades.¹³

Occupation	New jobs, 2010–2020		Future educational requirements (estimated)			
	Total	Percent	BA/BS degree	Some college, no AA degree	AA degree	Total some college
High growth	1,792,500	69%	29%	22%	8%	30%
Low growth	791,800	31%	38%	27%	9%	36%
Total	2,584,300	100%	32%	23%	9%	32%

SOURCES: California Employment Development Department Occupational Projections, 2010–2020 and American Community Survey 2010–2012. Data pertain to new job postings (not replacement postings) in occupations for which projections are available at the 6-digit code level.

NOTES: Educational requirements are estimates based on the educational attainment of current workers in occupations, rather than minimum skill requirements determined by EDD. See note 13 for further explanation. Current worker education measured in 2010–2012 ACS for employed persons age 25 and above. EDD and ACS data are linked by occupational code. Matches created between occupational codes at the most detailed level possible in both sources. High-growth occupations are defined as those projected to constitute a larger share of overall employment in 2020 than in 2010.

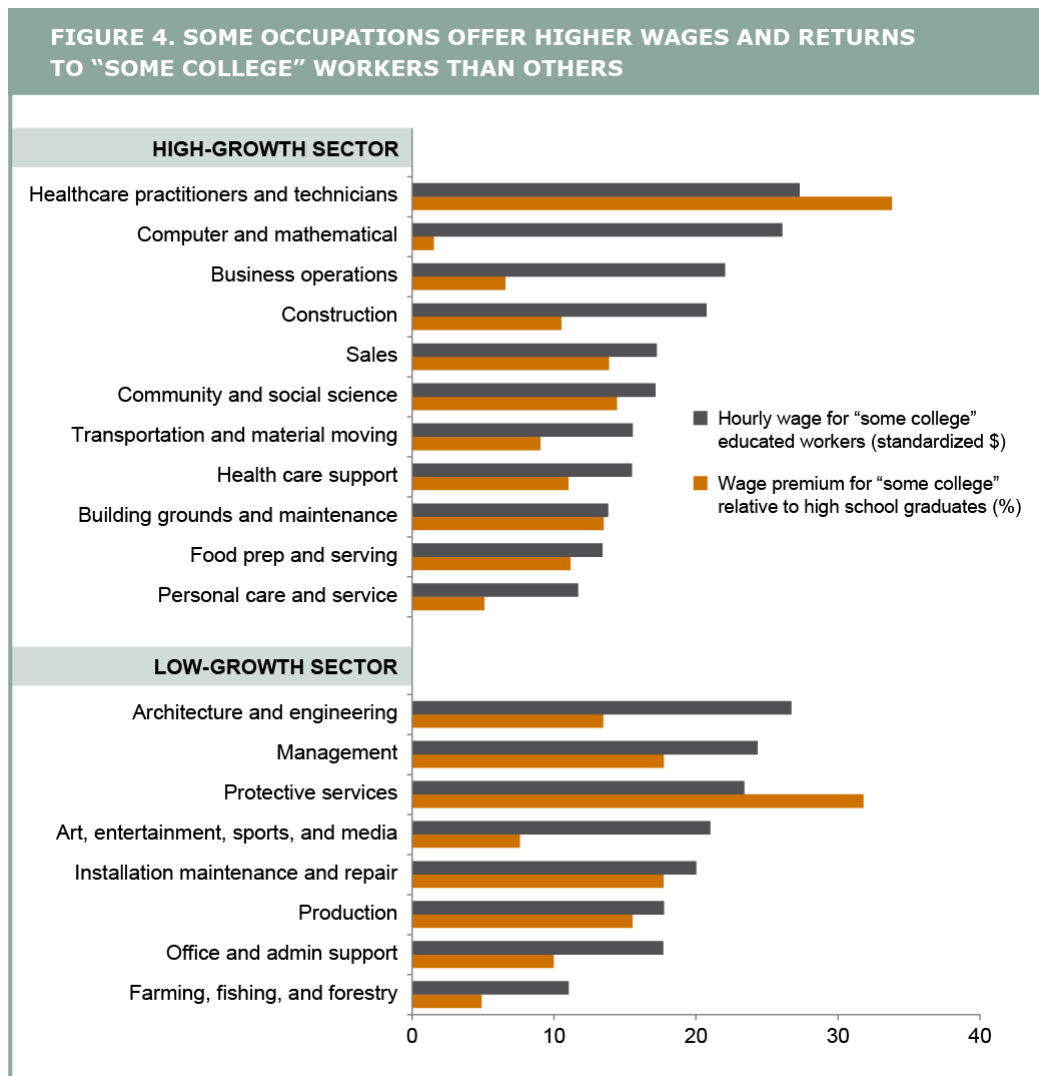
Nearly 70 percent of new jobs over the next decade will be in high-growth occupations (defined as constituting a larger share of overall employment in 2020 than in 2010). An estimated 30 percent of new jobs in high-growth industries will require some college, and nearly the same share will require at least a bachelor’s degree. While low-growth sectors (by definition) will create fewer new jobs, three-quarters of the jobs that do emerge in those sectors will require training beyond high school. It is clear that education beyond high school will play a pivotal role in preparing workers for the jobs of the future.

Not all occupations that require some college training—and not all jobs in fast growing fields—offer high wages. Similarly, it pays to seek training beyond high school for some occupations but not others. In order to help students and policymakers make strategic decisions about training, it is important to assess the intricacies of job opportunities and earnings potential for

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“some college” workers. In this brief, we have chosen to focus on how the return to postsecondary training varies across occupations; however, such returns likely vary across California’s regions as well. Though the data utilized here preclude such an analysis, a regional-occupational lens on wage and job opportunities could inform strategic decisions at a local level and are thus worthy of future research.

Figure 4 shows two measures of opportunities and rewards in both high- and low-growth sectors for “some college” workers from 2010 to 2012. For each broad occupational group, the top bar shows the standardized hourly wage¹⁴—an indicator of current earnings potential—and the bottom bar shows the wage premium for workers with some college relative to high school graduates¹⁵—an indicator of the labor market return for training. Occupational groups are listed from highest hourly wages to lowest.¹⁶



SOURCE: Calculations from American Community Survey 2010–2012.

NOTES: Three-year pooled survey data is used to obtain sample size sufficient within education and occupational category.

All estimates shown are statistically significant with sufficient sample size. See notes 9 and 14 for explanation of the two measures shown here.

It is evident that opportunities vary substantially across occupations in both high- and low-growth sectors. Workers with some college training in the fast-growing health care practitioner and technician sector earn, on average, about \$27 per hour—about 34 percent more than they would earn with only a high school diploma. The personal care and services and food preparation and serving sectors are also fast growing, but they offer much lower wages (\$11.70 and \$13.40 per hour, respectively) and smaller returns for workers with some college. To improve its chances of achieving the joint goal of meeting workforce needs and providing

opportunities for workers, the state needs to target educational opportunities in high-growth fields that afford both good wages and returns for schooling.

These opportunities are not limited to high-growth fields. For example, jobs in protective services are not expected to grow significantly, but these jobs do pay relatively high wages—and provide a particularly high return to education—to workers with some college training. Some high-wage and high-return occupations that are projected to grow slowly will nonetheless afford job opportunities due to the need to replace retiring workers.

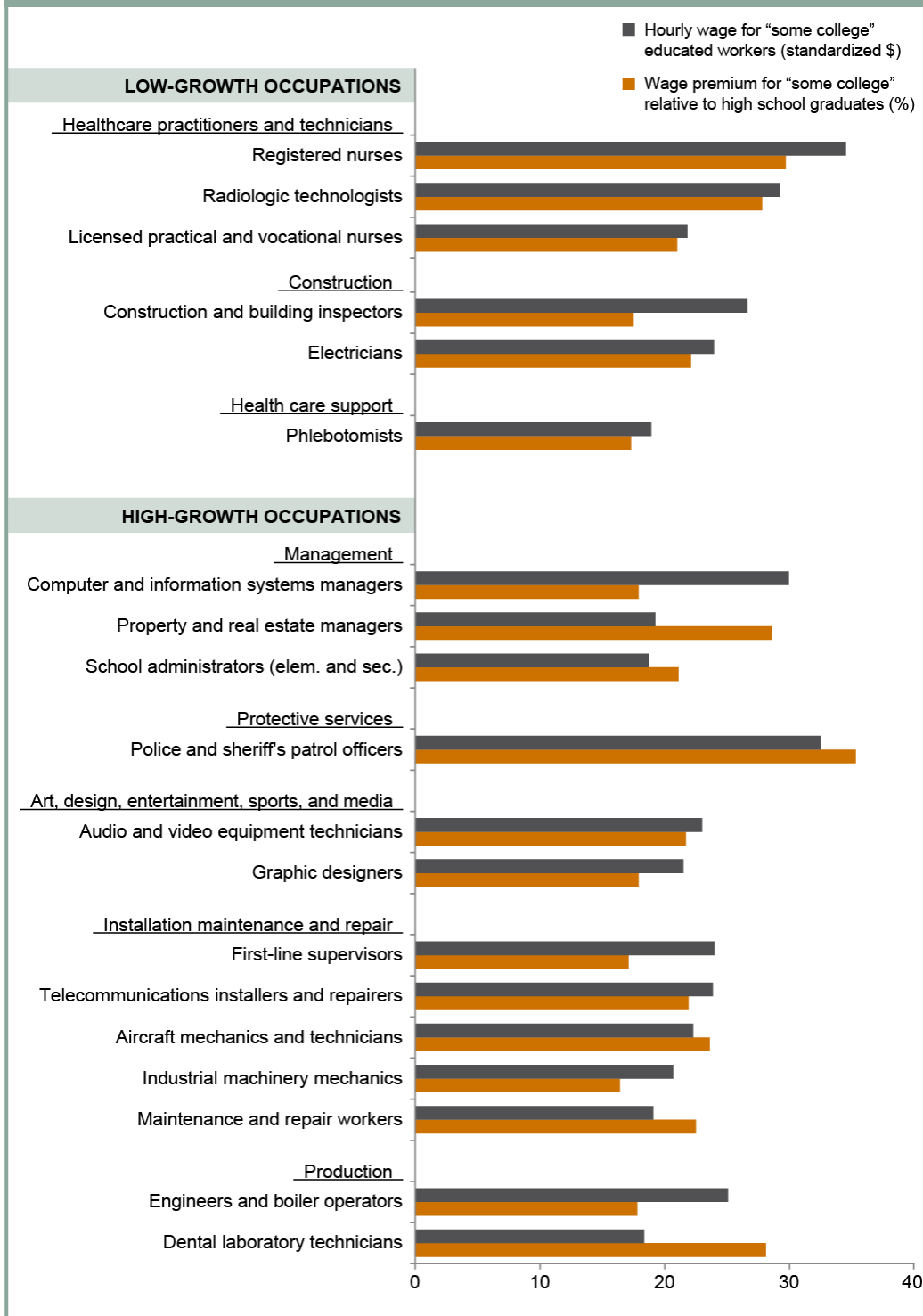
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The high returns for some college training in both protective service and health care practitioners and technician sectors reflect credentials that are required for entry. Protective services occupations such as firefighting and law enforcement require certifications and/or academy training. In the health care practitioners and technicians sector, entry-level registered nurses and dental hygienists are required to have an associate degree or community college certificate. A PPIC report released this fall analyzes the growing need for “some college” workers in these fields in further detail. In other occupational groups, the value of particular credentials is less obviously tied to wage premiums measured here. In general, research has found evidence of larger returns to associate degrees and long-term

certificates compared to short-term credentials.¹⁷ But returns for standard credentials vary significantly across programs of study. In fact, recent research finds that the program of study and particular coursework may be more important (in terms of labor market outcomes) than the credential itself.¹⁸

In which jobs does some college pay off? Figure 5A shows specific occupations where workers with some college earned both higher-than-average wages and saw larger-than-average returns to their education. Figure 5B shows the large number of occupations where the opposite is true. Of the 170 major occupations that are identifiable in this data, 20 are on the “high wages and high returns” list. Only a handful are in the high growth health care and construction sectors, which include registered nurses, radiologic technicians, and electricians. More are in large but slow-growing occupations such as policing, graphic design, and various mechanic and repair jobs.

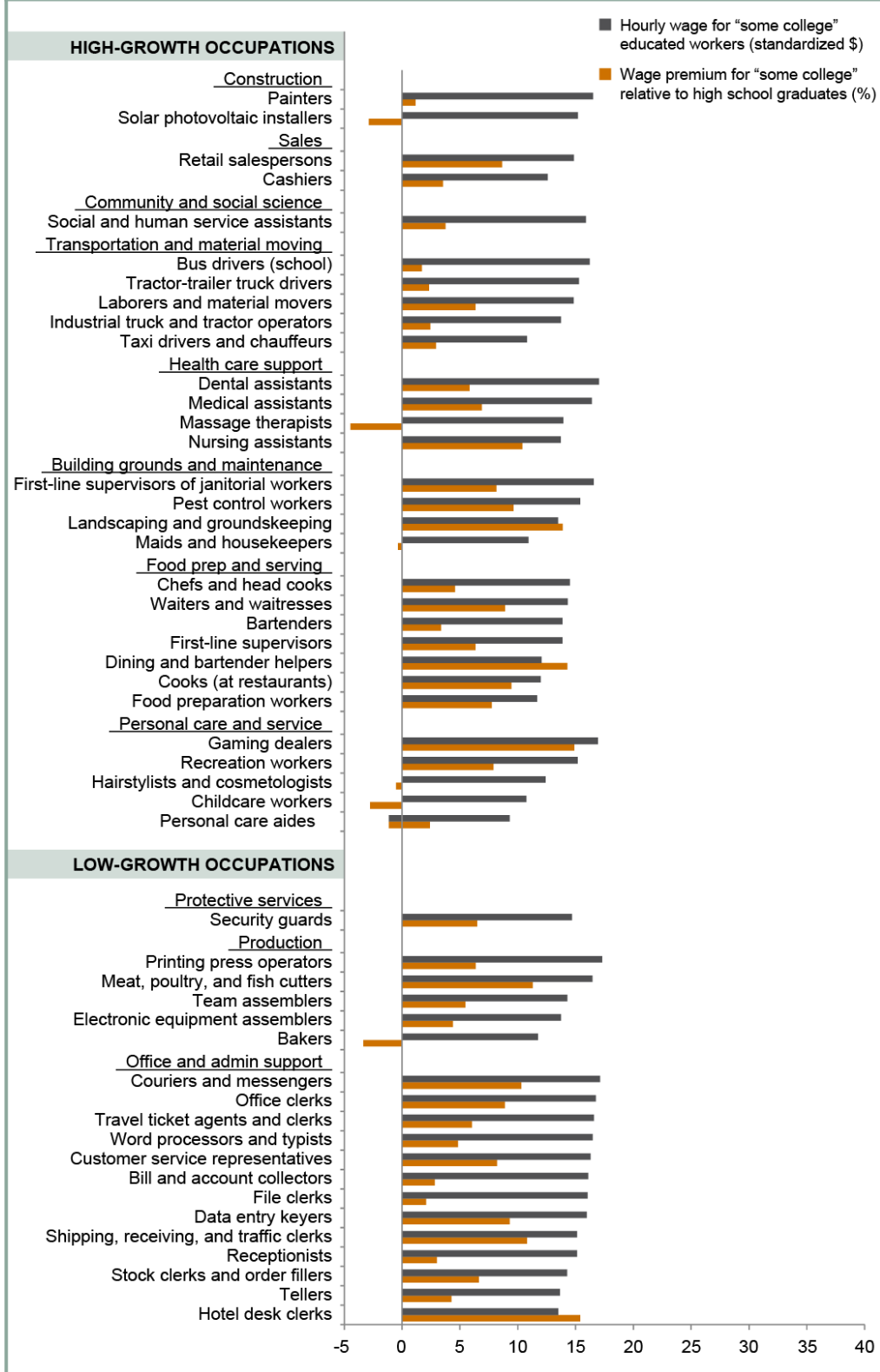
FIGURE 5A. MOST JOBS THAT OFFER "SOME COLLEGE" WORKERS HIGHER-THAN-AVERAGE WAGES AND RETURNS TO SCHOOLING ARE IN LOW-GROWTH OCCUPATIONS



SOURCE: Calculations from American Community Survey 2010–2012.

NOTES: Three-year pooled survey data is used to obtain sample size sufficient within education and occupational category. All estimates are statistically significant with sufficient sample sizes (at least 100 "some college" workers and 50 high school graduates). See notes 9 and 14 for explanation of the two measures shown here.

FIGURE 5B. MANY OCCUPATIONS OFFER LOWER-THAN-AVERAGE WAGES AND RETURNS FOR SOME COLLEGE TRAINING



SOURCE: Calculations from American Community Survey 2010–2012.

NOTES: Three-year pooled survey data is used to obtain sample size sufficient within education and occupational category. All estimates are statistically significant with sufficient sample sizes (at least 100 "some college" workers and 50 high school graduates). See notes 9 and 14 for explanation of the two measures shown here.

Quite a number of high-growth occupations offer relatively low wages and low returns to “some college” workers. For example, many high school graduates and Californians with some college training work as personal care aides, but these jobs pay poorly and do not provide any earnings advantage for education beyond high school. Nursing, medical, and dental assistants with some college training earn lower-than-average wages—but training gives nursing assistants a slightly bigger advantage. Similar examples abound across both high- and low-growth sectors for workers with some college training.

It is important to remember that not all workers end up in jobs for which they trained, and that both labor market conditions and individual choices help determine the payoff to postsecondary schooling. However, the state’s higher education system can have a positive impact on the future job opportunities of Californians by ensuring access to higher education.

TAKING ON THE CHALLENGE OF MEETING FUTURE WORKFORCE NEEDS

Strategic decisionmaking by both students choosing to invest in schooling and policymakers concerned about future workforce needs relies on a good understanding of workforce needs and labor market returns for postsecondary training. The data assessed in this brief point toward labor market sectors that offer the greatest opportunities to workers with some college training. While these data cannot be explicitly linked to specific educational programs, the value of postsecondary training is clear. It is also clear that not all occupations and educational investments are wage winners for some college workers.

Many public and private organizations focus on aligning workforce opportunities with training programs. Public groups like the Workforce Investment Boards and the California Community College Division of Workforce and Economic Development, private organizations supporting Linked Learning programs, and legislators focusing on career pathway initiatives¹⁹ make steps to connect students, training, and employer job needs. These efforts often align workforce needs, training programs, and students at a very detailed level—for example, matching educational program offerings to the needs of key employers in regional economies. The data here present a broader picture, looking statewide at long-term workforce skills and opportunities. And as the data here show, not all high-growth fields afford substantial returns to workers with postsecondary training. Students and policymakers alike need access to this kind of information. The California Community College Chancellor’s Office has taken a step in the right direction with the “Salary Surfer,” an online application that provides information on potential earnings associated with a range of programs and credentials.

To meet workforce needs, the state may need to expand access to in-demand career training programs. But doing so via public institutions is not without challenges. The system of financing community colleges indirectly disadvantages colleges from expanding access to expensive programs, since it is based on a per-student formula, and in-demand technical courses tend to be more costly to offer.²⁰ In addition, substantial year-to-year fluctuations in community college budgets are common, since funding is tied to the state General Fund and tax revenues. During the recent recession, courses were cut substantially and access was especially constrained, despite college efforts to protect key academic and technical training missions.²¹ Ensuring access to education goes hand in hand with closing gaps in college going among minority and disadvantaged socioeconomic groups within the state.²²

Another key challenge is to improve both the odds of completion and the time it takes to obtain a credential at California’s community colleges. Successful outcomes are jeopardized when students have trouble enrolling in high-demand courses and identifying efficient pathways through the system. The Student Success Task Force acknowledged these and other hurdles, and recommended ways for policymakers to address them. A number of the task force’s recommendations have been or will soon be implemented; it will be important to measure and learn from their impact on student success.²³ For example, requirements that students complete success-related services such as assessment, orientation, and educational planning—as well as the incentive to do so in the form of higher priority in course enrollment—will take full effect by fall 2014.

Policymakers are increasingly attuned to the need to create a workforce skilled enough to meet the demands of the economy.²⁴ For decades, our economy has increasingly been demanding—and rewarding—higher skills, and the Great Recession brought this trend into stark relief. Workers with less education experienced the greatest decline in job opportunities and have seen the slowest recovery.²⁵ Recovery has been slower in

some regions of the state than others, in part due to the educational mix of job opportunities and available workers.²⁶ However, it is clear that future jobs in California will require most Californians to have training beyond high school. Improving access to postsecondary training and creating conditions that allow students to complete their education should be foundational goals for California's public higher education system. Targeting investment toward in-demand sectors and those with demonstrated labor market advantages for workers holds the most promise for economic returns to both the state and students.

NOTES

The author thanks Lande Ajose, Mina Dadgar, Hans Johnson, and Lynette Ubois for providing very helpful feedback on earlier drafts of this report, Mary Severance for editorial support, and Shannon McConville for technical assistance in early stages of this research. Words cannot express my appreciation for a dear colleague, Maggie Weston, who provided support, insight, and guidance throughout this project until her passing in July. Any errors are my own.

1. Based on working age (25–64) population estimate of 21.5 million in 2025 from the California Department of Finance.
2. This analysis uses self-reported information on the American Community Survey (ACS), major Census Bureau survey of the population. While disaggregating “some college” workers according to credential or degree would be informative, data sources that allow for that do not contain the rich demographic and economic information that is provided in the ACS.
3. In 2010, 14 percent of first-time freshmen attended for-profit colleges. H. Johnson et al., *Student Debt and the Value of a College Degree* (PPIC, 2013). But for-profits' higher student costs (and debt loads), lower completion rates, and questionable job placement rates raise concerns about allowing this sector to fill excess demand for education. For more on these concerns, see David Deming, Claudia Goldin, and Lawrence Katz, “For-Profit Colleges.” *Future of Children* 23 (1): 137–63.
4. As of 2012–2013, California Community Colleges Chancellor's Office DataMart system, accessed April 27, 2014.
5. Author's calculations from American Community Survey for 2010–2012 suggest that 72 percent of 60-to-64-year-old workers had some college or a bachelor's degree (31% and 41%, respectively); 68 percent of 25-to-29-year-olds did (34% for each some college and bachelor's degree). For more details on demographic trends shaping the future workforce, see Johnson, “California's Population in 2025,” in *California 2025: Taking on the Future*, ed. E. Hanak and M. Baldassare (PPIC, 2005).
6. Between 1970 and 2006, for example, the share of California workers with a bachelor's degree more than doubled (from 9% to 22%) and the premium in wages they earned doubled as well (about 40% to 80% more than similar high school graduates). These wage estimates are based on regression-adjusted estimates of wages in Decennial Census and American Community Survey data. See Reed, *California's Future Workforce*.
7. Projected shortages could shrink or widen with unforeseeable changes in the economy or workforce. For example, changes in the population such as immigration or migration to or from other states, improvements in college going or completion, or delayed retirement of current workers could alter the future educational distribution of the state's population. Similarly, technological changes, political decisions, shifts in the global marketplace or trade restrictions, and other economic factors affect projections of workforce skills shortages. See Johnson and Sengupta, *Closing the Gap*, for details on how changes in higher education policy could close the gap in college-graduates. See H. Johnson and D. Reed, “Can California Import Enough College Graduates to Meet Workforce Needs?” *California Counts* 8 (PPIC, 2007) for details on how migration could close the gap.
8. Unemployment calculations pertain to 2010–2012 averages among those in the labor force who are age 25 or above and are based on the American Community Survey pooled file. More detailed and recent data are available at the national level. These data suggest that the type of associate degree matters. The BLS reports a slightly higher unemployment rate nationwide for workers with “academic” associate degrees than for those with “occupational” associate degrees (David Leonhardt, “The Jobless Rate for Community College Graduates Is Also Low,” *The Upshot* (blog), nytimes.com, May 29, 2014).
9. Wage premium estimates are derived from standard models of hourly wages as a function of educational attainment, experience, race/ethnicity, and immigrant status. In particular, we estimate an OLS regression model of the natural log of hourly earnings on dummy variables for educational attainment (as available in the ACS). The model controls for a quadratic in years of experience, citizenship status, and 5 race/ethnic categories. Models are estimated separately for men and women. The estimates do not account for unobservable factors that may increase an individual's wage and educational attainment simultaneously (ability or “drive,” for example) and thus should not be interpreted causally. However, a wealth of research that does estimate causal returns to education concludes that the returns are large, and that OLS model estimates are only about 10 percent higher than those from causal models. See D. Card, “The Causal Effect of Education on Earnings,” in *Handbook of Labor Economics*, vol. 3, ed. O. Ashenfelter and D. Card (Elsevier, 1999), pp. 1801–63. A number of studies estimate the earnings returns to associate degrees, certificates, and community college credits with various methodologies that account for ability bias. As of yet, none of these studies focuses on California. However, most studies find increasing wage returns to some college education in accordance with the length of schooling and certification levels. Evidence from Washington state suggests that short-term certificates generally afford no (or even negative) wage returns (M. Dadgar and M. J. Weiss, “Labor Market Returns to Sub-Baccalaureate Credentials: How Much Does a Community College Degree or Certificate Pay?” *Community College*

Research Center Working Paper No. 45 [Columbia University Teachers College, 2012]). Research has estimated a return of 5 to 8 percent for one year of schooling (T. J. Kane and C. E. Rouse, "Labor Market Returns to Two-Year and Four-Year Schools," *American Economic Review* 85 (3): 600–614), 2 to 14 percent returns for long-term certificates (Dadgar and Weiss, "Labor Market Returns"), and 13 to 22 percent return for associate degrees (C. R. Belfield and T. Bailey, "The Benefits of Attending Community College: A Review of the Evidence," *Community College Review* 39 (1): 46–68).

10. Wage returns grow as educational attainment rises for all race/ethnic groups as well. However, returns are highest for Asian and non-Hispanic white workers in California and lowest for Black and Hispanic workers (whether they are compared to high school graduates of the same racial group or to all high school graduates). Wage returns among "some college," associate degree, and bachelor's degree holders are highest for whites. Among those with master's degrees and above, returns are highest for Asian workers.
11. For example, single-year estimates of unemployment rates for workers with some college training reveal a decline in unemployment in 2011 and 2012 from the peak in 2010 based on Current Population Survey data. However, rates are still double what they were in the early 2000s.
12. These and other, similar projections undergird PPIC estimates of workforce skills shortages, when they are combined with other educational and demographic projections.
13. See Reed, *California's Future Workforce*, for more detail on "upskilling." An alternative to using the educational attainment of current workers is to use the minimum education required by occupations, as estimated by the EDD and Bureau of Labor Statistics. This would lead to underestimates of the skill demanded by employers. Workers today—and in recent history—have education levels far above minimum requirements. Because researchers observe wage returns for more education even within occupations, higher than minimum education signals demand for skill among employers rather than an excess supply of educated workers. If the future workforce is insufficiently skilled, employers may default to lower skill requirements. For this reason, it is more realistic to estimate required levels of education using actual skill levels.
14. Hourly wages for workers with some college training are estimated by occupational group and are regression-adjusted to account for demographic differences across occupations. Specifically, the regression model uses a natural log of hourly wages as the dependent variable and controls for a cubic in years of experience, citizenship status, gender, and five race/ethnic categories. Average wages by occupation are calculated for a person with 15 years of experience and the average of all other independent variables. None of the wage models underlying this chart account for unobservable factors that may simultaneously increase an individual's wage and educational attainment (ability or "drive," for example); see note 9 for more information on interpreting these wage results.
15. See note 9 for explanation of wage premium models and interpretation. In this application, models are estimated separately for each occupational group. Only groups with at least 200 sampled individuals in both the high school graduate and "some college" educational categories are shown. Also, only statistically significant premiums are shown. We have omitted six occupational groups with limited sample sizes or where there is no distinguishable difference between the some college group and other educational levels (at standard statistical significance levels): educational training and library; extraction; financial specialists; military; life/physical/social science; and legal.
16. These estimates differ from published economy-wide averages because they account for many characteristics that affect wages—including age, experience, gender, and race—and use standardized values to enhance comparability.
17. Dadgar and Weiss offer a rich analysis of earnings across types of credentials and degree programs in Washington and find the largest returns for associate degrees and long-term certificates (at least one-year) and no returns for short-term (less than one year) certificates. These causal estimates of the return for credentials from Washington's community colleges find that men and women who hold short-term certificates earn less in wages, whereas long-term certificates yield 2 to 14 percent higher wages (for men and women, respectively) and associate degrees yield 4 to 8 percent (men and women respectively). Because these estimates pertain to wage gains compared to workers with some college training but no credential, they are lower than those presented in Figure 4. It is worth noting that the estimates are much higher for students in nursing fields—with returns for a credential up to 20 to 30 percent higher than returns for some college training but no credential. See Dadgar and Weiss, "Labor Market Returns."
18. P. R. Bahr, "The Labor Market Return in Earnings to Community College Credits and Credentials in California" (Center for the Study of Higher and Postsecondary Education, University of Michigan, 2014).
19. See California Assembly Bill 86 of 2013 for the Career Pathways Trust, and White House Executive Action on job training as part of the Trade Adjustment Assistance and Community College and Career Training grant program.
20. See three reports released by the Institute for Higher Education Leadership and Policy at California State University, Sacramento: N. Shulock, J. Lewis, and C. Tan, "Workforce Investments: State Strategies to Preserve Higher-Cost Career Education Programs in Community and Technical Colleges" (2013); N. Shulock and C. Moore, "Invest in Success: How Finance Policy Can Increase Student Success at California's Community Colleges" (2007); and N. Shulock, C. Moore, and J. Offenstein, "The Road Less Traveled: Realizing the Potential of Career Technical Education in the California Community Colleges" (2011).
21. S. Bohn, H. Johnson, and B. Reyes, *The Impact of Budget Cuts on California's Community Colleges* (PPIC, 2013). Participation rates fell to two-decade lows during the Great Recession. California Competes also analyzes participation at the regional level and concludes that "participation is often low where it should be high." Data available at http://californiacompetes.org/news_and_events/cccmmap/.
22. California Competes, "The Road Ahead: Higher Education, California's Promise, and Our Future Economy" (2012).
23. Student Success Task Force, *Advancing Student Success in California Community Colleges: The Recommendations of the California Community Colleges Student Success Task Force* (2012).

24. See, for example, Committee for Economic Development, “Boosting California’s Postsecondary Education Performance: A Policy Statement and Call to Action” (2013); and Little Hoover Commission, *A New Plan for a New Economy: Reimagining Higher Education* (2013), as well as recent bills like SB 850 suggesting that community colleges provide bachelor’s degrees in some fields on a pilot basis.
25. S. Bohn and E. Schiff, *The Great Recession and Distribution of Income in California* (PPIC, 2011); and S. Bohn, “Economy,” in *California’s Future* (PPIC, 2014).
26. See, for example, J. Rothwell, “Education, Job Openings, and Unemployment in Metropolitan America” (Brookings Institute, 2012).

ABOUT THE AUTHOR

Sarah Bohn is a research fellow at the PPIC. A labor economist, her work focuses on how policy impacts individual and family economic well-being, with particular attention to low-income and vulnerable populations. She has published research on poverty, income inequality, the future of California’s economy, California’s community colleges, and the labor market impact of immigration policy. Her research has been supported in part by grants from the Ford Foundation, Russell Sage Foundation, Walter S. Johnson Foundation and James Irvine Foundation. Sarah holds a Ph.D. in economics from the University of Maryland, College Park.

OTHER PUBLICATIONS

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Public Policy Institute of California

500 Washington Street, Suite 600
San Francisco, CA 94111
T 415 291 4400 F 415 291 4401

PPIC Sacramento Center

Senator Office Building
1121 L Street, Suite 801
Sacramento, CA 95814
T 916 440 1120 F 916 440 1121

www.ppic.org

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