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On the Frontlines:

Automation Risks for Latino Workers in California

by Misael Galdámez, MCP, Jie Zong, MPA, Gloria Magallanes, MPP, and Citlali Tejeda

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ABOUT LPPI

The UCLA Latino Policy and Politics Institute addresses the most critical domestic policy challenges facing Latinos and other communities of color through research, advocacy, mobilization, and leadership development to expand genuine opportunity for all Americans.

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EXECUTIVE SUMMARY

Automation—the use of technology to perform repetitive tasks without human intervention—is transforming the labor market at an unprecedented scale.[1] Recent innovations have widened the scope of automatable tasks beyond manufacturing to other industries. For instance, warehouse workers use digital order-picking and shipment tools;[2] aerospace workers use augmented reality to improve efficiency on the assembly line;[3] and agricultural workers use in-cab systems for efficient tractor operation.[4] The COVID-19 pandemic accelerated the pace of automating technology innovation and adaptation, as firms needed to become more efficient, lower costs, and socially distance.[5]

While technological innovation can boost productivity and quality of life, it can also deepen existing inequalities. Latino and Black workers are heavily employed in the jobs most susceptible to automation,[6] although very little research suggests the wholesale elimination of jobs. Instead, technological adaptation transforms jobs, restructuring job responsibilities and adding new tasks.[7] As jobs transform, workers are expected to work closely with technology to improve productivity and safety.[8]

However, Latino workers face significant challenges as their job responsibilities become more technical and analytical.[9] Digital literacy and skills are low among Latino workers, and many lack English proficiency, meaning they cannot access online learning opportunities for upskilling, which require English fluency.[10] Latino workers are also severely underrepresented in the tech sector and the firms developing automating software and tools. As a result, Latino workers' perspectives are not adequately represented in the new technological tools being adopted.

With the technological challenges facing Latino workers in mind, we provide a first-of-its-kind profile of California Latino workers vulnerable to routine automation. This profile provides a needs assessment of workers and identifies investment opportunity areas.

To analyze Latino workers vulnerable to automation, we adopt Frey and Osborne's 2017 projections on occupational exposure to automation. We link these estimates to the Census Bureau's 2018-22 5-year American Community Survey (ACS) public use microdata sample and match each individual's occupation to its risk score. Using this dataset, we analyze employed Latino workers in the 20 largest and most representative occupations with a high probability of being automated (according to Frey and Osborne). These "high-risk" occupations reflect the jobs highly vulnerable to automation and employing the most people, but they are not the only jobs susceptible to automation.

Based on our analysis we find that:

- In 2022, 4.5 million California workers were employed in the 20 high automation risk occupations. More than half (52%) of California's high-risk workers were Latino (2.3 million).
- More than two-thirds of high automation risk workers in the Central San Joaquin Valley and Kern County were Latino (68% for both regions), followed by 64% of Inland Empire workers.
- More than half (58%) of California Latino workers in high automation risk occupations are men.
- California Latino workers in high-risk occupations are young: 22% of Latino workers in high-risk occupations were between ages 16 and 24, six percentage points higher than all employed Latinos (16%).
- California Latino workers in high-risk jobs are likely to be noncitizens, especially Latino men. About 38% of Latino men in high-risk occupations were not citizens, compared to 30% of all employed Latino men.
- California Latino workers in high-risk occupations are less likely to have reliable internet access at home. About 21% of Latinos in these roles do not have access to high-speed internet at home, compared to 18% of employed Latinos overall.
- California Latinos in high-risk jobs earn lower wages than non-Latinos in the same occupations, especially Latina women. Latina women working in these occupations earned $15 an hour on average, $3 less than all employed Latina women and $4 less than non-Latina women in the same occupations.
- A quarter of Latino men in high automation risk occupations did not have health insurance, compared to 8% of non-Latino men in the same jobs and 19% of all employed Latino men.

Given the rapid growth of artificial intelligence (AI) and automation technology adaptation since COVID-19, strengthened labor resistance to the use of such technologies in the workplace, and increased federal investment in digital technology and workforce training,[11] policymakers have an opportunity to systematically re-think the future of workers, invest strategically in upskilling workers, and rebalance the job market toward higher-paying, stable jobs.[12]

Based on our findings, we recommend the following policy actions to bolster Latino worker power and well-being, and ensure successful occupational upward mobility and social protection:

1. Increase investment in workforce development programs, using a strong equity lens and focusing on employees in high automation risk occupations.

2. Equip Latino workers with the digital access and skills they need to succeed by leveraging the federal Digital Equity Act and renewing the Affordable Connectivity Program (ACP).

3. Ensure workers have a say in when and how technology is developed and implemented by:

    a. Centering worker empowerment in the development and adoption of automation and AI technologies.

    b. Strengthening the right to organize and collectively bargain.

4. Provide robust and timely safety nets for workers by expanding the Earned Income Tax Credit (EITC) and reforming Unemployment Insurance (UI).

"Without significant public investment, Latino workers will continue to face barriers to upward mobility and may be left behind in an increasingly automated economy."

Policymakers must focus on targeted interventions that provide Latino workers with the tools to successfully navigate technological adaptation successfully and ensure a more equitable future. These include closing the digital skill divide, expanding broadband and technology access, supporting entrepreneurship, strengthening the right to organize, and increasing social protections. Without significant public investment in these areas, Latino workers will continue to face barriers to upward mobility and may be left behind in an increasingly automated economy. Addressing these challenges now is not only an issue of economic justice but a vital step toward building a resilient and inclusive workforce for the future.

INTRODUCTION

Throughout history, technological innovation has reshaped labor markets. In the 20th century, for example, the adoption of information technologies led to a decline in middle-income jobs involving repetitive tasks and growth in high-income jobs requiring complex problem-solving and low-income roles focused on manual labor.[13]

Today, automation is transforming the labor market at an entirely different scale.[14] Recent innovations have widened the scope of automatable tasks beyond manufacturing to other industries. For instance, warehouse workers use digital order-picking and shipment tools;[15] janitorial workers monitor and maintain autonomous cleaning robots;[16] aerospace workers use augmented reality to improve efficiency on the assembly line;[17] construction workers use mobile apps to submit work-order changes; and agricultural workers use in-cab systems for efficient tractor operation.[18]

The COVID-19 pandemic accelerated the pace of automating technology innovation and adaptation, as firms needed to become more efficient, lower costs, and socially distance.[19] An estimated one-third of the labor force switched to remote work, resulting in a surge in the use of online collaborative technologies.[20] The need to minimize COVID-19 transmission risk also contributed to increased contactless services in restaurants, airports, commercial buildings, grocery stores, and hospitals.[21] These pandemic-related shifts have continued even as the world enters a post-pandemic era.[22]

While technological innovation can boost productivity and quality of life, it can also deepen existing inequalities. Latino and Black workers are heavily employed in the jobs most susceptible to automation,[23] although very little research suggests the wholesale elimination of jobs. Instead, technological adaptation transforms jobs, restructuring job responsibilities and adding new tasks.[24] As jobs transform, workers are expected to work closely with technology to improve productivity and safety.[25]

However, Latino workers face three challenges as job responsibilities become more technical and analytical.[26] First, digital literacy and skills are low among Latino workers. Research from the National Skills Coalition found that 57% of currently employed Latinos aged 16 to 64 had little to no digital skills, compared to a U.S. average of 31%.[27] Fragmented digital knowledge is also common among Latino workers, partially due to a lack of broadband internet and computer access.[28] For example, they may be comfortable using a mobile phone to text but are unfamiliar with how to use an employer's geolocation app to confirm arrival at a customer's house.

Second, for Latino workers who are English learners, the acquisition of English and digital skills can form either a vicious cycle or a virtuous cycle. The lack of such skills in one area can hinder the development of the other, while the presence of one set of skills can provide an opportunity to build new skills.[29] In the United States, close to one-third (31%) of employed Latino workers have limited English proficiency.[30] Many workers who lack English skills cannot access the online learning opportunities that are their best—and often only—option for upskilling because they require English fluency.[31]

Finally, Latino workers are severely underrepresented in the tech sector and the firms developing automating software and tools.[32] Latino workers' perspectives are not adequately represented in the new technological tools being adopted, and early analyses of algorithmic tools suggest that Latinos bear a disproportionate share of the social, professional, and economic costs of exclusion or segregation from technological developments. However, the total effect on Latino workers is yet to be seen.[33]

With the technological challenges facing Latino workers in mind, we provide a first-of-its-kind profile of California Latino workers vulnerable to routine automation—the use of technology to perform repetitive tasks without human intervention—to provide a needs assessment of workers and identify investment opportunity areas. After detailing our data sources and methods, we provide demographic, human capital, and earnings data for workers in jobs vulnerable to routine automation. We conclude with policy recommendations to support workers and build a resilient and inclusive economy.

"While technological innovation can boost productivity and quality of life, it can also deepen existing inequalities."

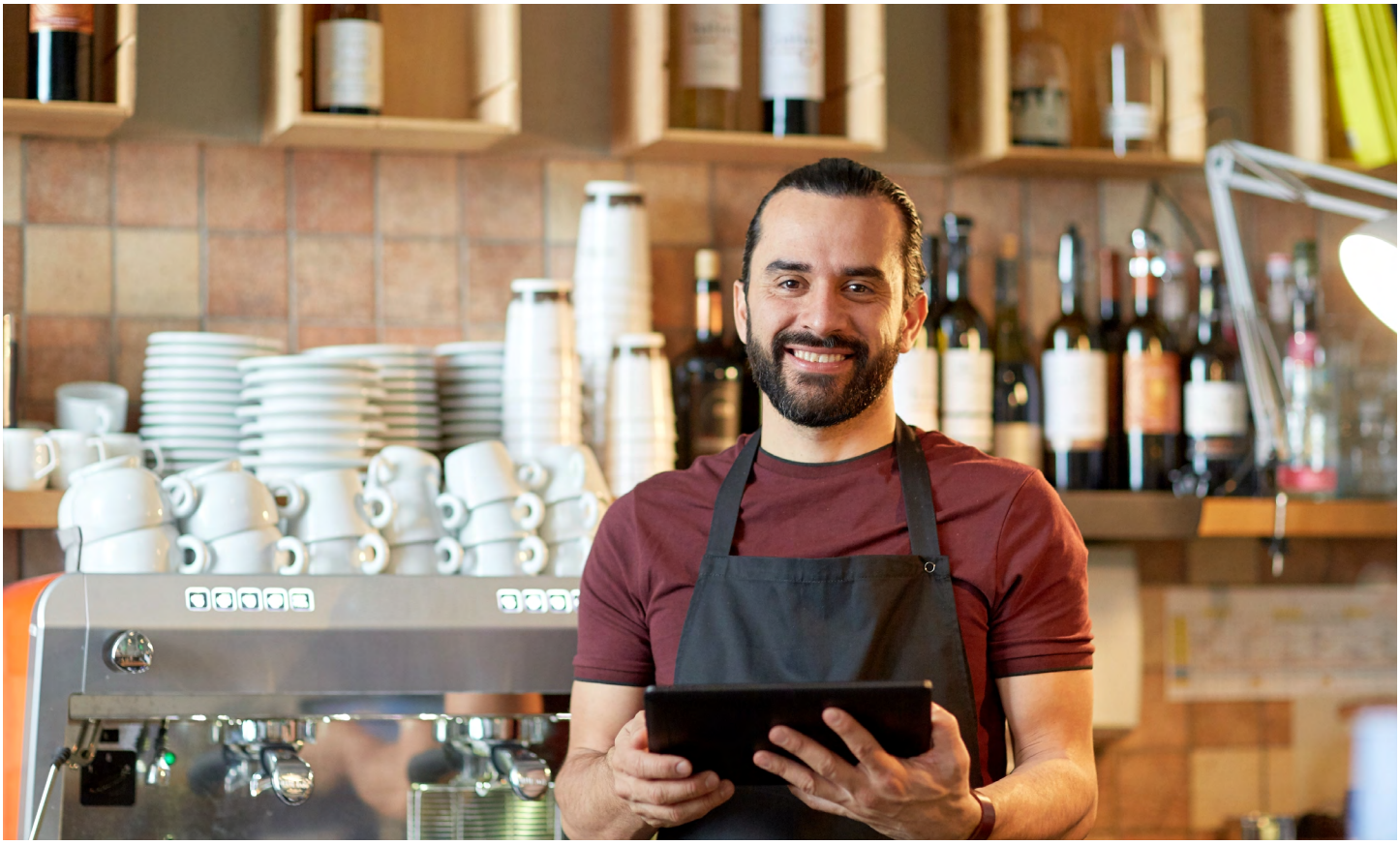
DATA AND METHODS

We adopted Frey and Osborne's 2017 projections on occupational exposure to automation to analyze Latino workers. Frey and Osborne provide a "risk score"—ranging from 0.0 to 0.99—for each occupation that estimates its likelihood of being automated. These risk scores are based on a workshop held by a panel of experts at the Oxford University Engineering Sciences Department, who looked at various occupations and answered the question "can the tasks of this job be sufficiently specified, conditional on the availability of big data, to be performed by state-of-the art computer-controlled equipment?"[34]

We then compiled a wide range of sociodemographic and economic indicators—for instance, age, sex, employment status, nativity, educational attainment, English proficiency, and wages—from the Census Bureau's 2018-22 5-year pooled American Community Survey (ACS) public use microdata sample.[35] We use the 5-year dataset for its larger sample sizes and more accurate estimates.

Third, we linked the ACS data and Frey and Osborne's dataset by matching each individual's occupation to its respective risk score. The resulting database captures information on each individual's occupation, their occupation's risk score, and socioeconomic characteristics of individual workers, including demographics, wages, human capital, and access to technology.

After limiting the dataset to non-institutionalized employed individuals ages 16 and older, we focused on the occupations with a risk score between 0.70 to 0.99—what Frey and Osborne define as "high risk"—and ranked these occupations by the number of California workers employed. We identified the 20 largest of these occupations as the most representative high automation risk occupations. Throughout this report, we describe this group of 20 jobs as "high-risk" or "high automation risk" jobs. These occupations reflect the jobs highly vulnerable to automation and employing the most people, but they are not the *only* jobs susceptible to automation.



We compare Latino workers in these high-risk roles to non-Latino workers in the same jobs, and to Latino and non-Latino workers in all occupations. We further disaggregate comparisons by sex to understand how technological transitions impact male and female workers differently. We conclude with policy recommendations to support the future of workers.

It is important to acknowledge several caveats of Frey and Osborne's methods and contextualize our report's findings. First, automation implementation has come a long way since Osborne and Frey completed their projections in 2017, and the technological landscape in the workplace is very different today. Certain medium-risk occupations like janitors (risk score of 0.66) may already be experiencing job changes due to technological adaptation (e.g., cleaning robots).[36]

Second, the methodology developed by Frey and Osborne focuses on jobs as a *whole* rather than specific tasks *within* jobs that are likely to be automated—the approach of more recent studies. Newer research concludes that workers are more likely to work alongside technology instead of being replaced wholesale.[37]

Finally, technological adaptation is a negotiated process, and occupational exposure research does not project the probability or extent of technological adoption among employers. Social and institutional factors, such as employee skills, digital infrastructure, capital constraints, and financing determine technology use by employers.[38] Other dynamics, such as lower wages in some job segments or a preference for human interaction in service roles, also shape adoption. Additionally, the political influence of certain occupations and the presence of unions can also impact if and how technology is deployed.[39]

Despite the weaknesses of Frey and Osborne's research, we chose to use these data because they are open source and have been reproduced for various contexts. Instead of predicting net employment losses, we use them to identify high automation risk occupations. We then provide a needs assessment of workers in these occupations who are likely to work alongside technology in the future, and the support they need to be successful in the future of work.

FINDINGS

AUTOMATION IS A LATINO ISSUE

In 2022, 4.5 million California workers were employed in the 20 high automation risk occupations. More than half (52%) of California high-risk workers were Latino (2.3 million; Table 1). In particular, Latino workers represented almost all (93%) of California's other agricultural workers, more than three-quarters of landscaping and groundskeeping workers (82%) and construction laborers (76%), and more than two-thirds of cooks (68%) and miscellaneous production workers (67%).

Table 1. The Top 20 Jobs Employing the Most California Workers with High Automation Risk Scores, 2022

The 20 Largest High Automation Risk Occupations

Title	Total Employment	Latino Share of Occupation	AAPI Share of Occupation	Black Share of Occupation	Native American Share of Occupation	White Share of Occupation	Automation Risk Score (Percent)
Drivers and Truck Drivers (including Sales Workers)	411,300	57%	11%	6%	0.2%	23%	78.6%
Cashiers	385,000	56%	13%	5%	0.3%	22%	97%
Retail Salespersons	374,400	43%	12%	5%	0.2%	36%	92%
Personal Care Aides	329,500	40%	21%	11%	0.3%	24%	74%
Laborers and Freight, Stock, and Material Movers	279,400	60%	9%	8%	0.3%	20%	85%
Construction Laborers	278,400	76%	3%	2%	0.3%	17%	88%
Cooks	257,200	68%	12%	3%	0.3%	14%	89.6%
Waiters and Waitresses	230,600	43%	18%	3%	0.2%	31%	94%
Secretaries and Administrative Workers (excluding Legal, Medical, And Executive Workers)	226,300	37%	13%	5%	0.3%	42%	96%
Accountants and Auditors	223,300	16%	37%	4%	0.1%	39%	94%
Other Agricultural Workers	220,100	93%	1%	0%	0.1%	5%	87%
General Office Clerks	196,300	44%	16%	7%	0.2%	29%	96%
Landscaping and Groundskeeping Workers	172,800	82%	2%	2%	0.3%	13%	95%
Bookkeeping, Accounting, and Auditing Clerks	141,800	29%	18%	3%	0.3%	46%	98%
Security Guards and Gaming Surveillance Officers	140,900	41%	9%	22%	0.4%	22%	84.1%
Receptionists and Information Clerks	132,200	51%	11%	5%	0.3%	29%	96%
Real Estate Brokers and Sales Agents	131,400	20%	15%	3%	0.1%	58%	88.3%
Miscellaneous Production Workers (including Equipment Operators and Tenders)	117,900	67%	14%	4%	0.2%	14%	86.6%
Food Preparation Workers	113,800	57%	13%	3%	0.2%	23%	87%
Fast Food And Counter Workers	97,000	47%	12%	4%	0.3%	32%	92.5%
Top 20 High-Risk Occupations	**4,459,600**	**52%**	**13%**	**5%**	**0.0%**	**26%**	

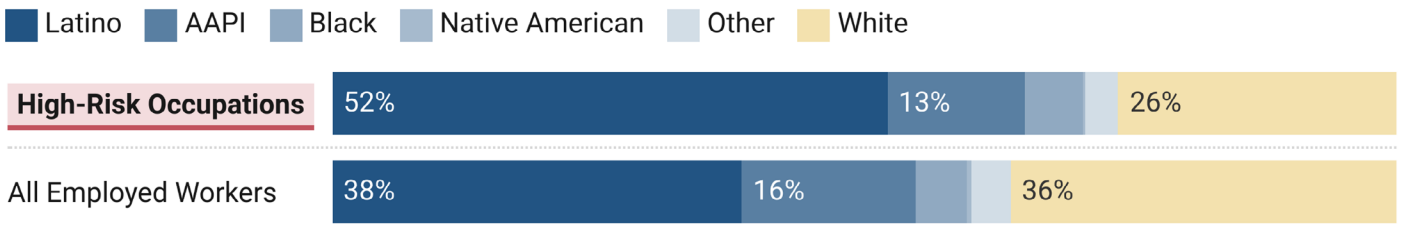
Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in the top 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis. Latinos can be of any race. All other groups reflect the non-Latino population. AAPI refers to the Asian American and Pacific Islander population.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

Relative to their share of California employment, Latino workers are the only racial or ethnic group overrepresented in high automation risk jobs. Even though Latinos only accounted for a little more than one-third of employed workers in the state (38%), they were 52% of the workers in high-risk occupations (Figure 1). In contrast, Black and Native American workers were employed in high-risk roles at the *same* rate as their share of overall workers, while AAPI and non-Latino white workers had *lower* rates of employment in high-risk occupations (13% and 26%, respectively) than their share of employed workers overall (16% and 36%, respectively).

Figure 1. Employed California Workers by Race, Ethnicity, and Automation Risk, 2022

Percent of Employed Worker Group



Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and over employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis.*

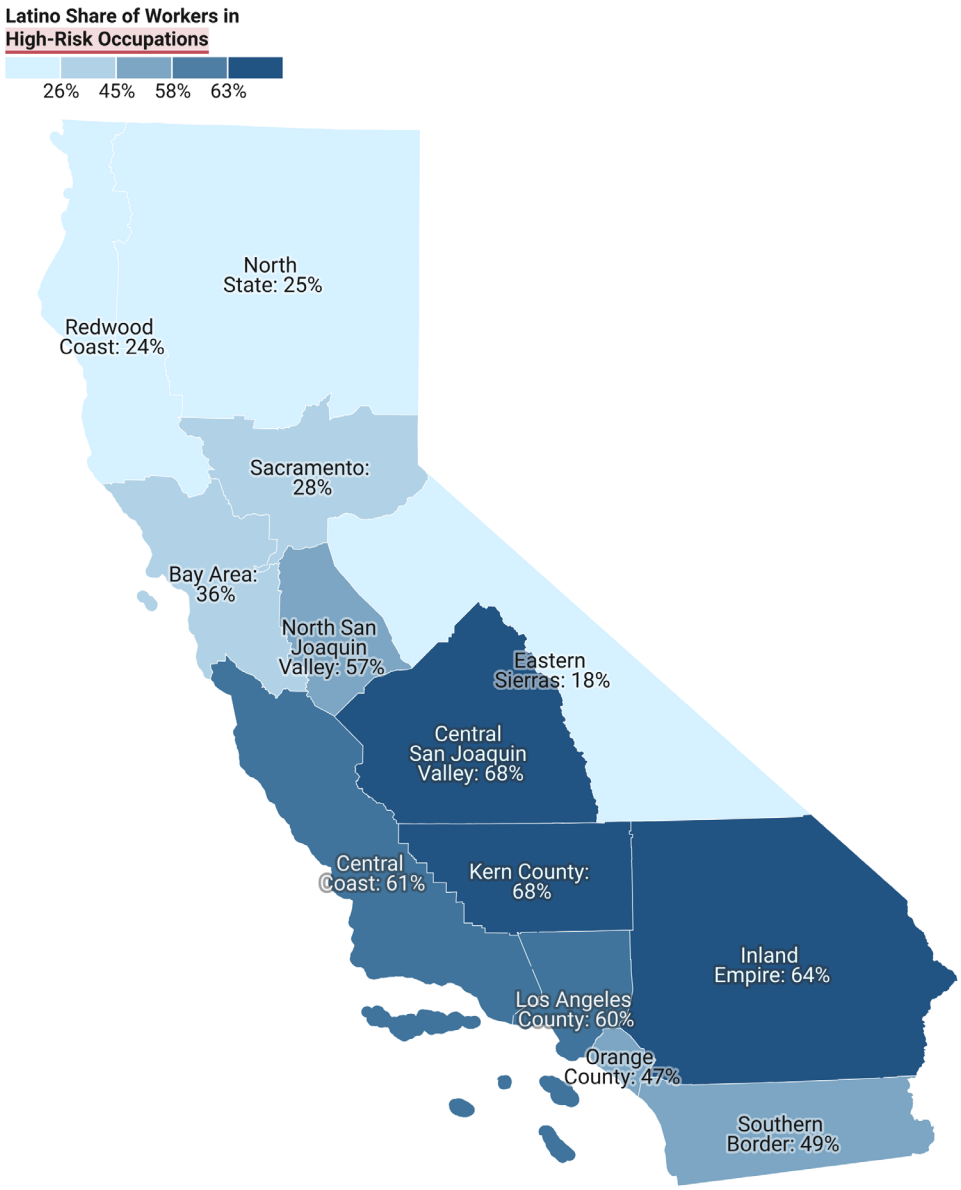
Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

GEOGRAPHIC DISTRIBUTION

Among California's 13 "Jobs First" regions, higher shares of workers in high-risk occupations in the Central Valley and Southern California are Latino.[40] More than two-thirds of high automation risk workers in the Central San Joaquin Valley and Kern County were Latino (68% for both regions; Figure 2), followed by 64% of Inland Empire workers in automation-exposed occupations. Notably, these three regions have large agricultural industries and employ high numbers of agricultural workers[41]—an occupation with a high automation risk score.

In contrast, Latino workers represented one-quarter or less of high-risk workers in less populated regions such as the Eastern Sierras (18%), the Redwood Coast (24%), and North State (25%). In these regions, sizable shares of workers are employed in industries providing core services to residents—for example, health care and social assistance, public administration, and education[42]—many of which have lower routine automation risk scores.

Figure 2. Latino Share of Workers in High Automation Risk Occupations by "California Jobs First" Economic Subregion, 2022



Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis. Subregions reflect the 13 regions identified as a part of California's "Jobs First Council."*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

"More than two-thirds of high automation risk workers in the Central San Joaquin Valley and Kern County were Latino."

Los Angeles County and the Inland Empire are home to the most Latino workers in high automation risk roles (720,000 and 359,000 workers, respectively; Table 2), followed by the Bay Area (270,000). The three regions accounted for 58% of California Latino workers in high-risk occupations. It is also important to note that Latino workers' presence in high-risk occupations in the region does not necessarily track Latino representation among employed workers. For example, 61% of Central Coast workers in high automation risk roles are Latino, 18 percentage points higher than the Latino share of employed workers in the region and the largest gap among all regions.

Table 2. Employed California Latino Workers in High Automation Risk Occupations by Race, Ethnicity, and Economic Subregion, 2022

Region	Latino Workers in High-Risk Occupations	Total Workers in High-Risk Occupations	Latino Share of Workers in High-Risk Occupations	Latino Share of All Workers	Percentage Point Difference
Los Angeles County	720,000	1,195,000	60%	48%	12%
Inland Empire	359,000	563,000	64%	54%	10%
Bay Area	270,000	748,000	36%	23%	13%
Southern Border	176,000	358,000	49%	35%	14%
Central Coast	172,000	285,000	61%	43%	18%
Orange County	161,000	343,000	47%	34%	13%
Central San Joaquin Valley	159,000	233,000	68%	56%	12%
North San Joaquin Valley	117,000	203,000	57%	47%	10%
Sacramento	82,000	287,000	28%	22%	6%
Kern County	80,000	118,000	68%	55%	13%
North State	18,000	73,000	25%	19%	6%
Redwood Coast	8,000	35,000	24%	19%	5%
Eastern Sierras	3,000	17,000	18%	15%	3%
Total	**2,326,000**	**4,460,000**	**52%**	**38%**	**14%**

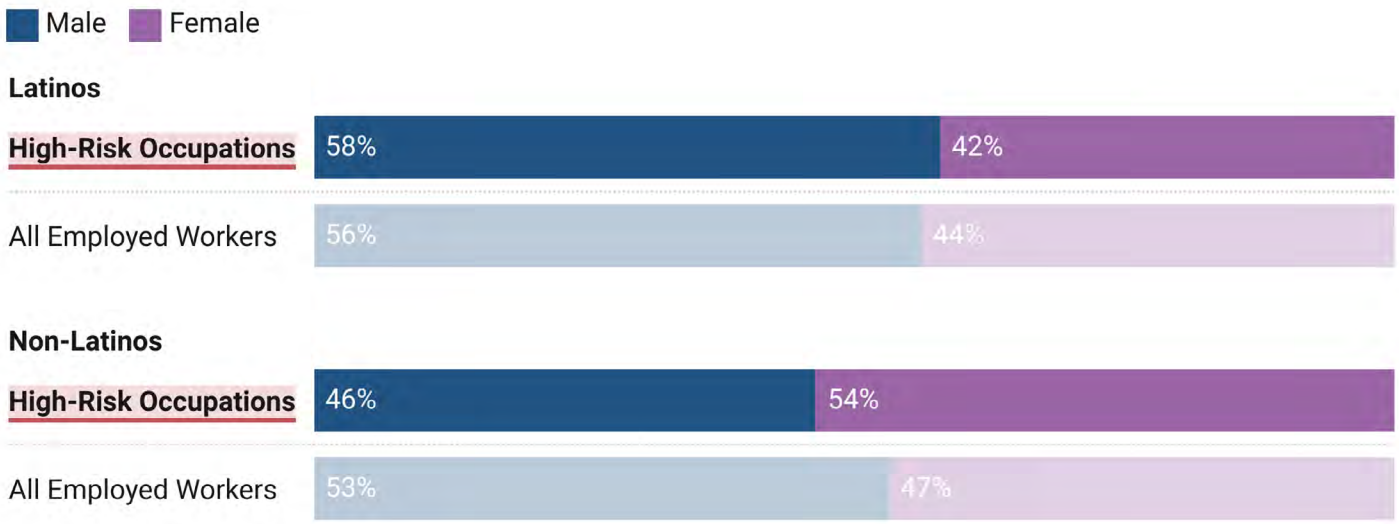
Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis. Subregions reflect the 13 regions identified as a part of California's "Jobs First Council."*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

DEMOGRAPHICS

California Latino workers in high automation risk occupations are more likely to be men (Figure 3). About 58% of Latinos in high-risk occupations were men, compared to 56% of all Latino workers. In contrast, non-Latino workers in these occupations are more likely to be women, meaning the impact of this labor market transition is not experienced uniformly by gender. About 54% of non-Latinos in the same group of jobs were women versus 47% of all employed non-Latinos.

Figure 3. Employed California Workers by Ethnicity, Sex, and Automation Risk, 2022



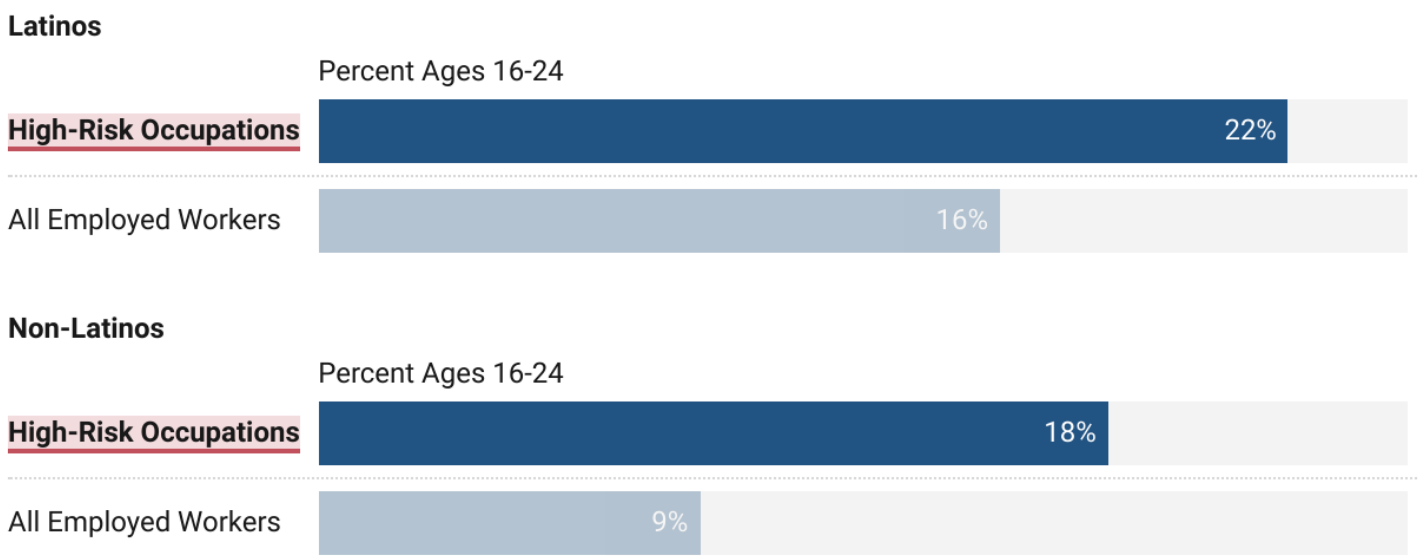
Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

In California, workers in high automation risk jobs are younger than workers overall, especially Latinos (Figure 4). Twenty-two percent of Latino workers in these occupations were between ages 16 and 24, six percentage points higher than all employed Latinos (16%). Non-Latino workers in high-risk occupations are also younger than their general population of workers (18% versus 9%)—albeit at a lower rate than Latino workers because Latinos are younger than non-Latinos in general.

The relative youth of workers in high-risk occupations signals opportunities to invest in high school and college-age youth and upskill future California workers. Given that these young workers will be in California's labor force for the next 40 years, investing in their education today will reap dividends for the next few decades, while a failure to invest will be costly.

Figure 4. Share of Employed California Workers That Are Ages 16 to 24 by Ethnicity and Automation Risk, 2022



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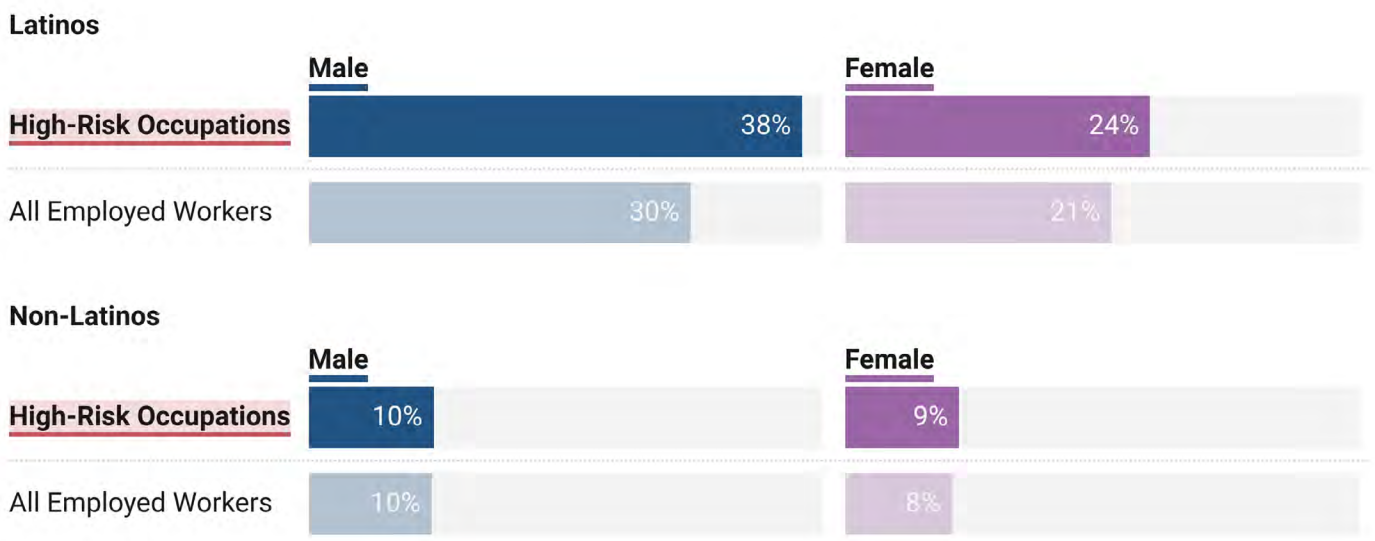
Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

California Latino workers in high automation risk occupations are more likely to be noncitizens than Latino workers overall, especially Latino men.[43] About 38% of Latino men in high-risk occupations were not citizens, compared to 30% of all employed Latino men, the largest gap between workers in high-risk occupations and workers overall (Figure 5). Roughly 24% of Latinas in high-risk occupations were noncitizens compared to 21% of Latina workers overall. Consistent with California Latinos' higher noncitizen rate (relative to the non-Latino population), the noncitizen rates for Latino workers were higher than those of non-Latino workers, regardless of sex and occupation group.

Generally speaking, only lawful permanent residents, refugees, and asylees are eligible for federally funded workforce development training.[44] The high noncitizen and undocumented shares among Latino workers indicate the precarious condition that many Latino workers may find themselves in during workforce transitions.[45] The Workforce Innovation and Opportunity Act (WIOA), the major *public* program to help laid-off, dislocated, or displaced workers re-train for new jobs, is closed off to workers without work authorization.[46] Employers, in contrast, tend to prioritize their *private* upskilling investments in white collar and bachelor degree-level workers,[47] leaving few upskilling opportunities for noncitizen Latino workers without a college education.

Figure 5. Noncitizen Share of Employed California Workers by Ethnicity, Sex, and Automation Risk, 2022



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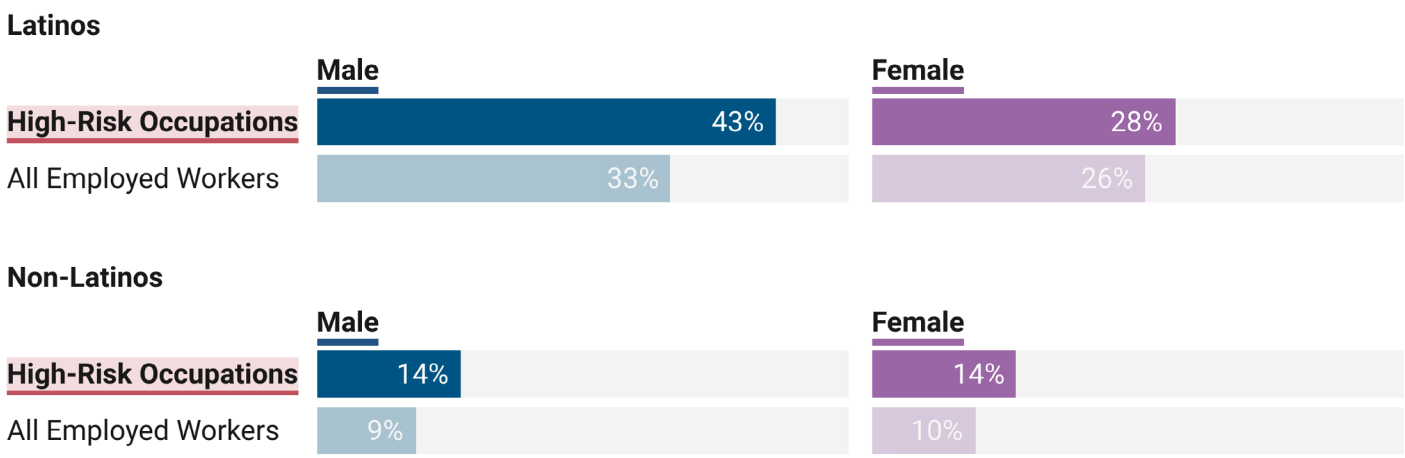
Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

HUMAN CAPITAL

California Latino workers in high automation risk jobs have high rates of Limited English Proficiency (LEP), defined as individuals who self-report as speaking English less than "very well" (Figure 6). Close to half of Latino men (43%) working in high-risk occupations were LEP, the highest rate among Latino and non-Latino groups of all sexes. Latina women with high automation risk jobs had lower rates of LEP than Latino men, albeit still much higher than the levels of non-Latino workers: 28% of Latina workers in these occupations had LEP, compared to 14% of their non-Latina peers.

Latino workers' low levels of English proficiency are a barrier to retraining, as current upskilling programs are poorly designed for workers who don't already have strong written English skills. Conversely, public programs supporting English learning through WIOA and the Higher Education Act do not feature digital learning components or well-established connections to local businesses' talent needs.[48]

Figure 6. Share of Employed California Workers with Limited English Proficiency by Ethnicity, Sex, and Automation Risk, 2022



Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis.*

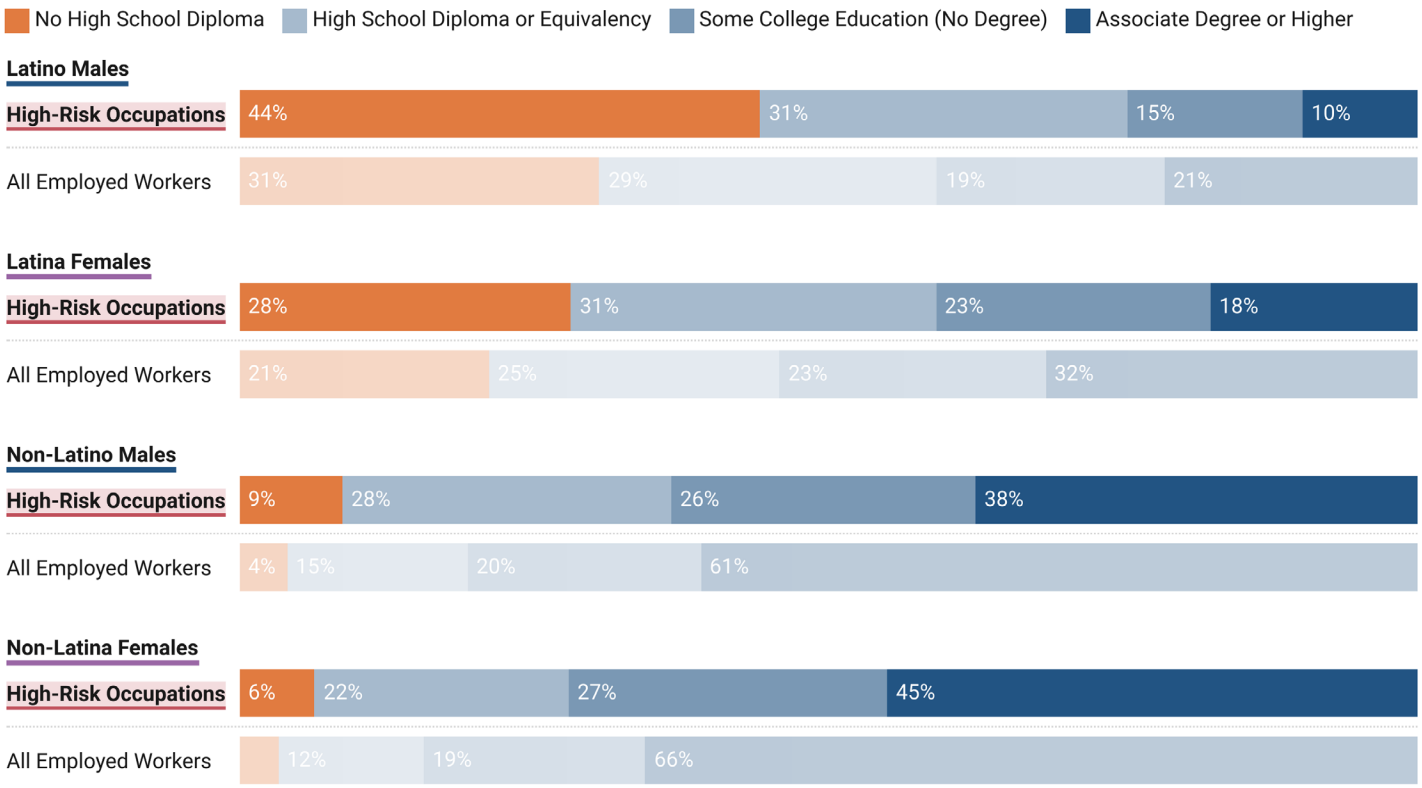
Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

California Latino workers (ages 25 and over) in high automation risk jobs are more likely to lack a high school diploma or equivalency than their non-Latino counterparts (Figure 7). Close to half (44%) of Latino men in high-risk jobs did not complete high school, a higher rate than for all employed Latino men (31%) and non-Latinos in occupations exposed to automation (9%). For women, 28% of Latinas working in the top occupations exposed to automation did not have a high school degree, compared to 21% of employed Latinas overall and 6% of non-Latinas in automation-exposed occupations.

California Latinos (ages 25 and older) in high automation risk jobs are also less likely to have completed some form of higher education than their non-Latino peers (Figure 7). Only 10% of Latino men in high-risk occupations have an associate degree or higher, less than one-third of the rate for non-Latino men in the same occupations (38%) and half the rate for all employed Latinos (21%). Associate degree attainment rates are slightly higher among women: 18% of Latina women in high-risk occupations have at least an associate degree, compared to 45% of non-Latina women in these occupations and 32% of all employed Latinas overall.

Figure 7. Employed California Workers (Ages 25 and Older) by Ethnicity, Sex, Automation Risk, and Highest Degree Completed, 2022

Percent of Group



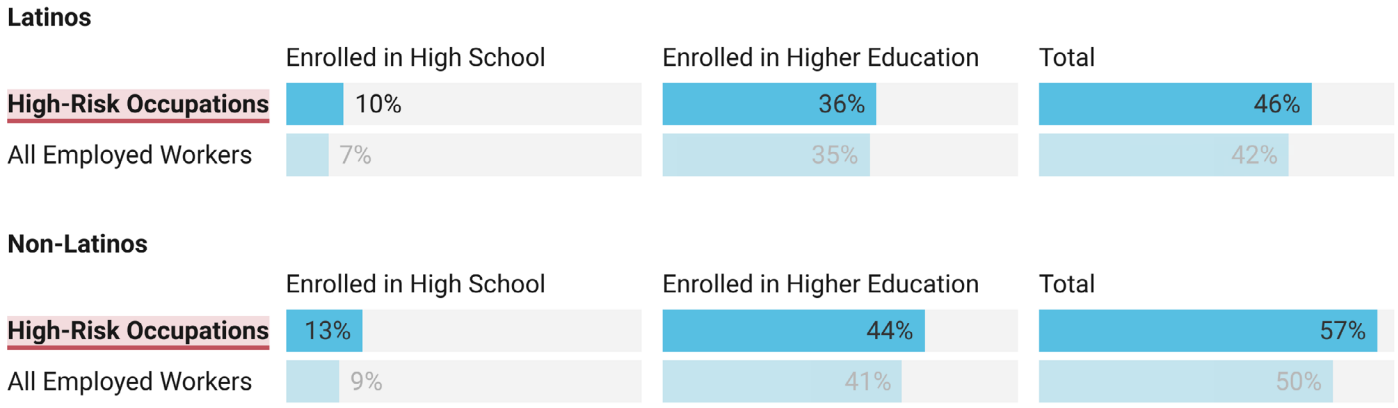
Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis. Data reflects educational attainment for the population 25 and older.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

SPOTLIGHT: YOUNG WORKERS

Among California's young workers (ages 16 to 24), Latinos in high automation risk jobs are less likely to be enrolled in school than their non-Latino peers (Figure 8).[49] Only 46% of young Latino workers in high-risk occupations were enrolled in either high school or higher education, compared to 57% of young non-Latinos in the same jobs, signaling these jobs are less likely to be a temporary arrangement for young Latino workers. Notably, young workers in high school and college often work significant numbers of hours per week, which might hamper their long-term ability to attain credentials and a future job with low automation risk.[50]

Figure 8. Enrollment Rates by Education Level for Employed California Workers Ages 16-24 by Ethnicity and Automation Risk, 2022



Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis. Data reflects the population ages 16 to 24.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

Among out-of-school young workers in high-risk occupations, Latinos have lower levels of formal education than their non-Latino peers (Figure 9). Young Latinos were more than twice as likely to lack a high school degree as their non-Latino peers in the same jobs (8% versus 3%). Additionally, they were half as likely to have completed an associate degree or more as their non-Latino peers (4% versus 9%).

Younger workers who are not affiliated with a school may face less access to upskilling opportunities, due to the fact that many are in occupations that tend to provide fewer employer-based training opportunities and additional education support.[51]

Figure 9. Highest Degree Obtained for Out-of-School California Workers Ages 16-24 by Ethnicity and Automation Risk, 2022

Percent of Group

Latinos	Not Enrolled, No High School Diploma	Not Enrolled, Has a High School Diploma	Not Enrolled, Has Some College Education (No Degree)	Not Enrolled, Associate Degree or Higher	Total
High-Risk Occupations	8%	29%	13%	4%	54%
All Employed Workers	7%	29%	14%	8%	58%

Non-Latinos	Not Enrolled, No High School Diploma	Not Enrolled, Has a High School Diploma	Not Enrolled, Has Some College Education (No Degree)	Not Enrolled, Associate Degree or Higher	Total
High-Risk Occupations	3%	20%	12%	9%	43%
All Employed Workers	2%	18%	12%	19%	50%

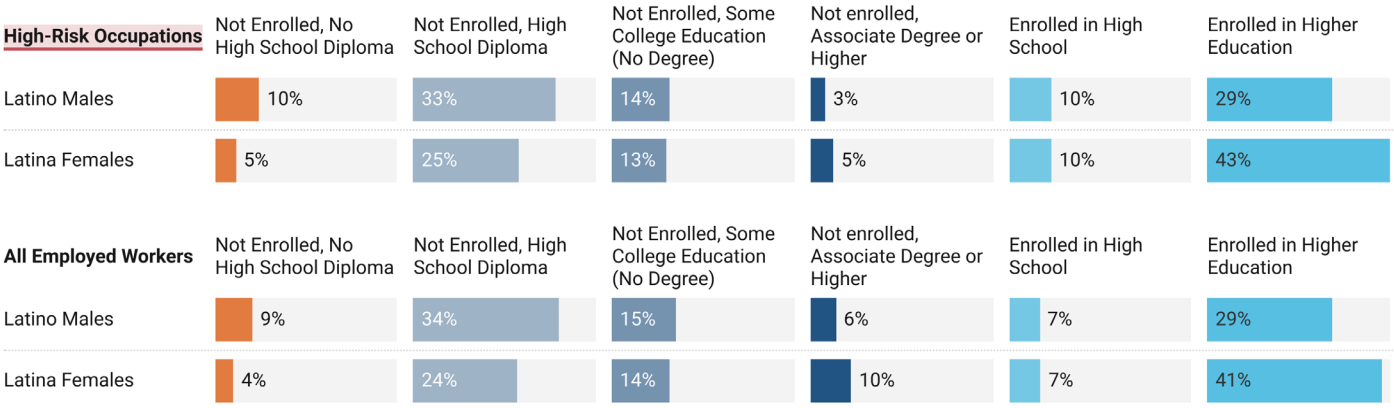
Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis. Associate degree or higher refers to the share of young adults who have completed an associate degree, a bachelor's degree, a master's degree, some other professional degree, or a doctoral degree. Data reflects the population ages 16 to 24.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

Among California's young Latino workers, Latina women are consistently enrolled in school at higher rates and have higher formal education levels than Latino men (Figure 10). About 10% of young Latino men in high automation risk jobs did not have a high school diploma and were not currently enrolled in school, twice the rate of young Latina women in the same jobs (5%). Additionally, fewer Latino men in high-risk roles were enrolled in school compared to Latina women (39% compared to 53%, respectively). Latina women in high-risk roles were 14 percentage points more likely to be enrolled in college (43% versus 29%). Although women are more likely to be enrolled in higher education than men of all races and ethnicities, the gap between Latino men and Latina women is particularly sizable.

Figure 10. School Enrollment and Educational Attainment for Employed California Latinos Ages 16-24 by Sex and Automation Risk, 2022

Percent of Group



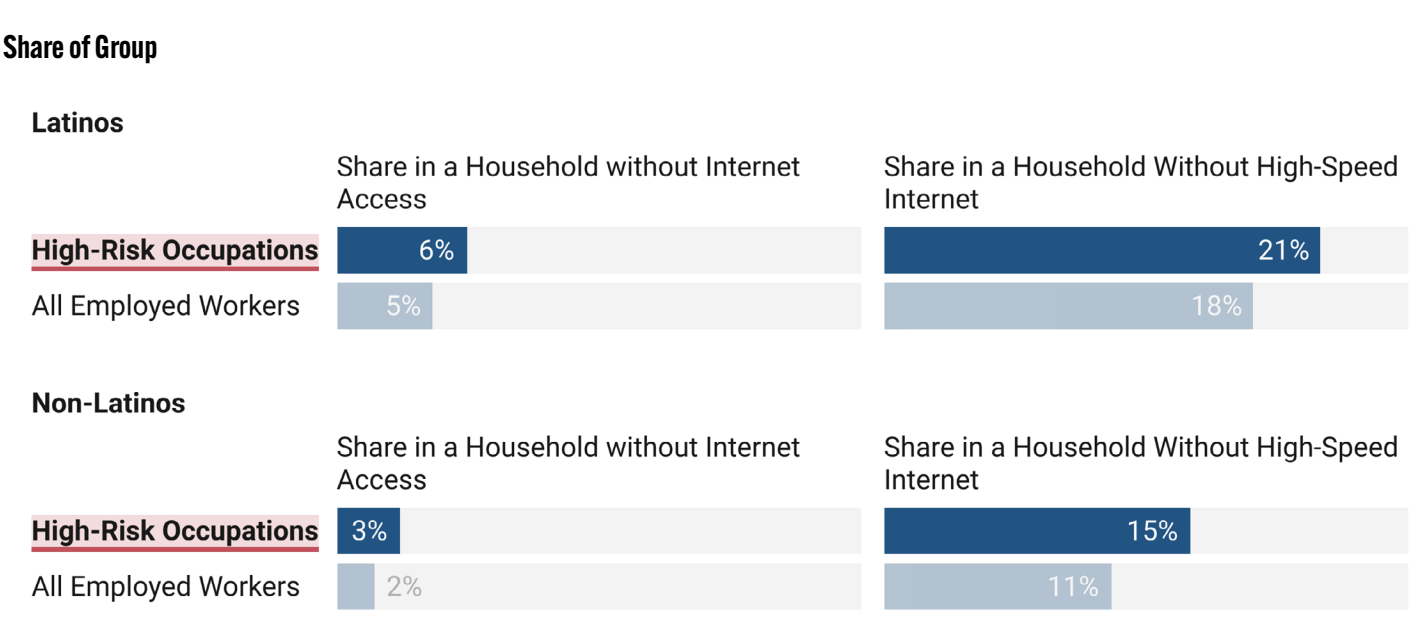
Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and over employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis. Data reflects the population ages 16 to 24.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

ACCESS TO TECHNOLOGY

California workers in high automation risk occupations are less likely to have reliable internet access at home, especially Latino workers. About 6% of Latinos in high automation risk occupations did not have household internet access, while 21% of Latinos in these roles do not have access to high-speed internet (Figure 11). These rates were slightly higher than those for Latino workers generally—5% did not have household internet access, and 18% did not have access to high-speed internet. Workers without internet access may be unable to access online training and education, search and apply for jobs, or access remote work.[52]

Figure 11. Internet Access for Employed California Workers by Ethnicity and Automation Risk, 2022

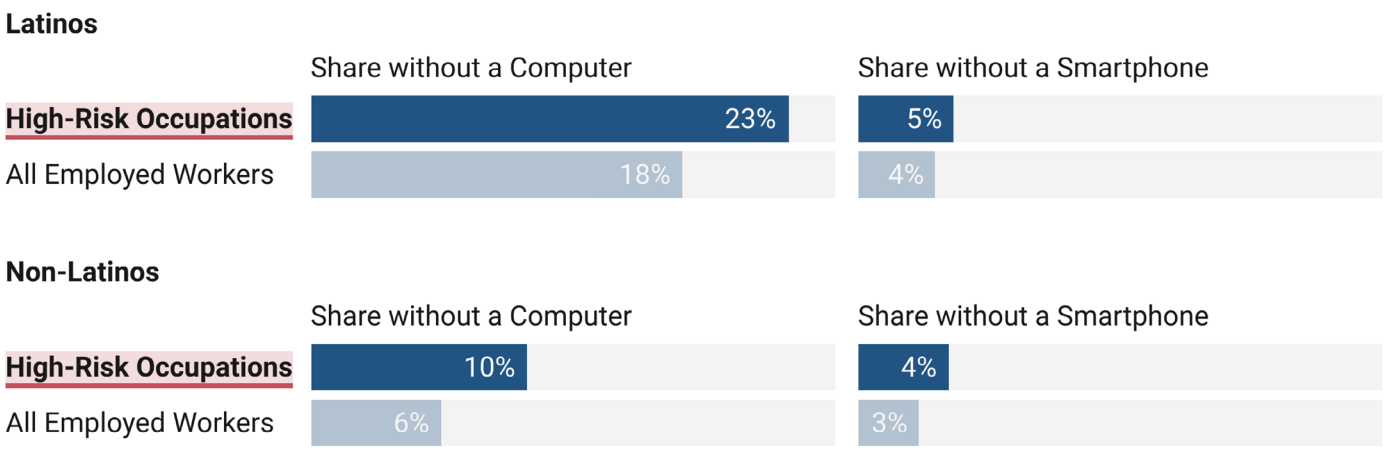


Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

California Latino workers lack household desktop or laptop computer access, especially those working in high automation risk occupations. Twenty-three percent of Latino workers in high-risk occupations did not have access to a household computer, five percentage points higher than for employed Latinos overall (18%, Figure 12). There was little difference in smartphone access across all groups. However, individuals who only have a smartphone face substantial additional barriers to pursuing vocational and educational opportunities.[53]

Figure 12. Digital Device Access for Employed California Workers by Ethnicity and Automation Risk, 2022



Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

SOCIOECONOMIC STATUS

California Latinas in high automation risk jobs are less likely to be self-employed than employed Latinas overall and their non-Latina peers (Figure 13). In 2022, only 4.7% of Latina women in high-risk occupations were entrepreneurs, compared to 8.1% of Latina women overall. Additionally, entrepreneurship rates were slightly higher among non-Latinos in high-risk roles than for Latinos in the same jobs, regardless of sex. For example, non-Latino men in high-risk occupations were two percentage points more likely to be self-employed than their male Latino peers. Similarly, non-Latina women in high-risk roles were four percentage points more likely to be entrepreneurs than their Latina peers in similar jobs.

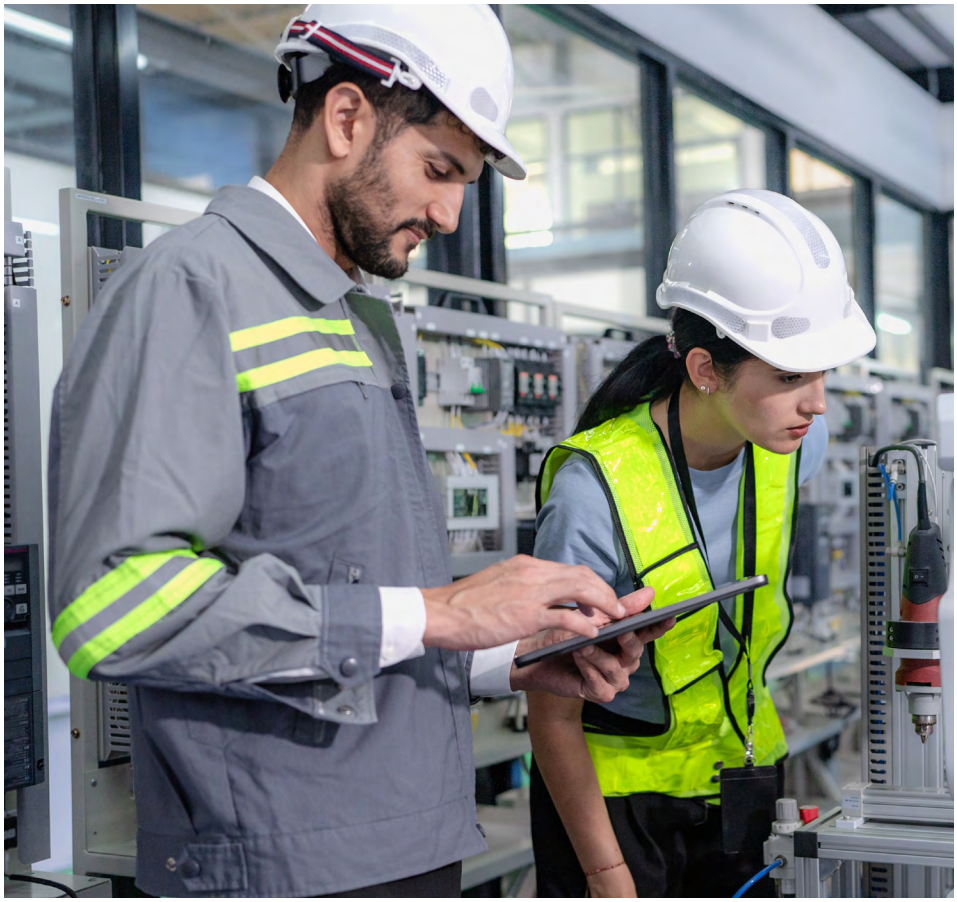
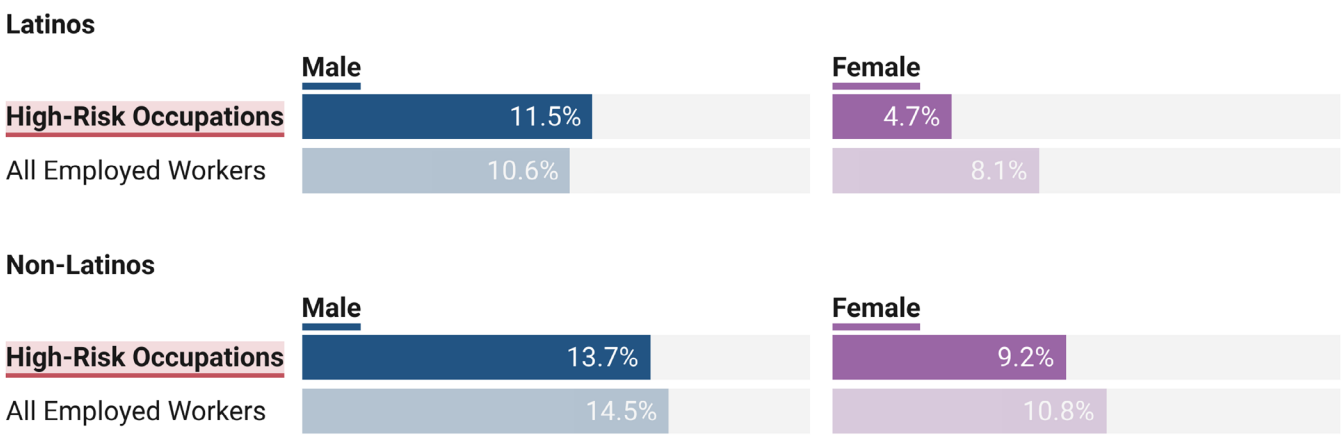


Figure 13. Self-Employment Rates among Employed California Workers by Automation Risk, Ethnicity, and Sex, 2022

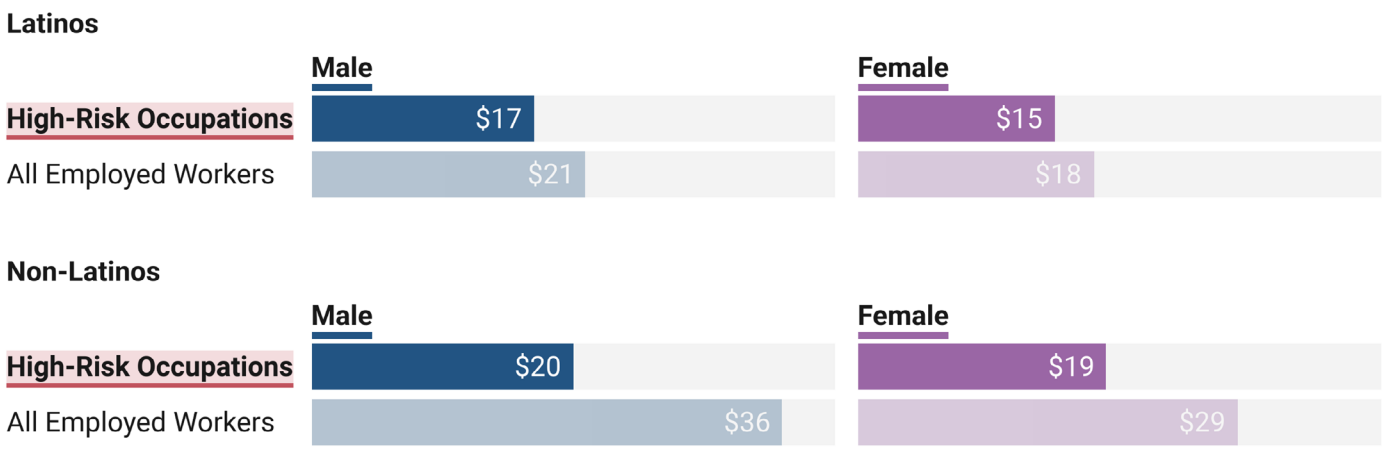


Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

California Latinos working in high automation risk jobs earn lower wages than non-Latinos in the same occupations, especially Latina women (Figure 14). Latina women working in these occupations earned $15 an hour on average, $3 less than all employed Latina women and $4 less than non-Latina women in the same occupations. Similarly, Latino men working in the top automation-exposed occupations earned $17 an hour, $4 less than all employed Latino men and $3 less than non-Latino men in the same roles. Despite these disparities, Latino men in high-risk occupations earned $2 more than Latina women in the same jobs.

Figure 14. Median Hourly Wage for Employed California Workers by Ethnicity, Sex, and Automation Risk, 2022

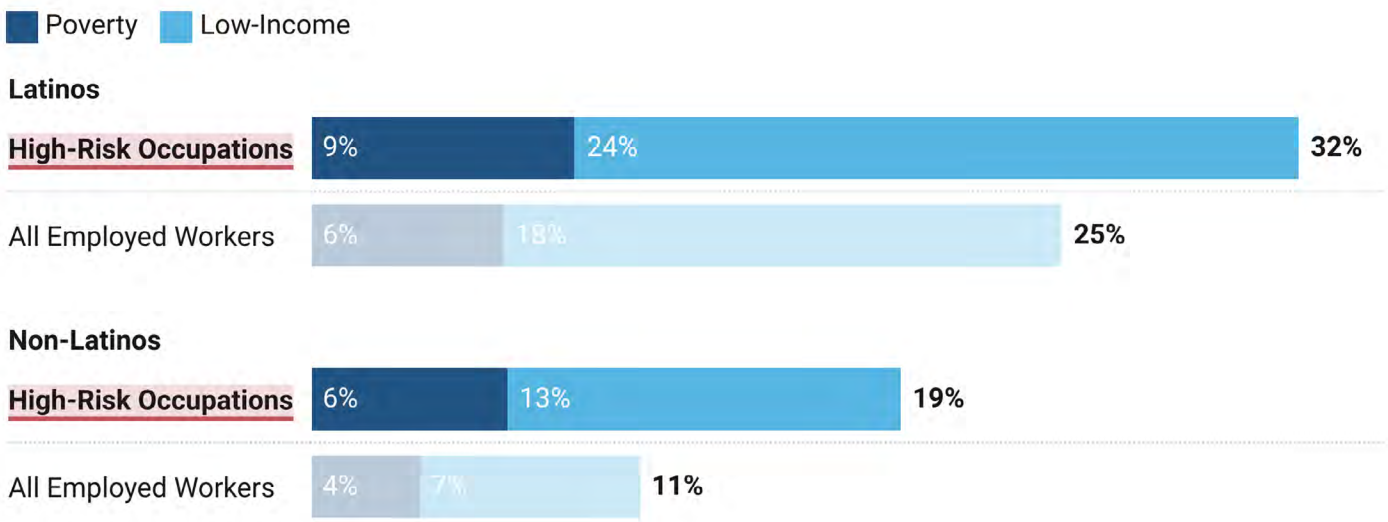


Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

California Latinos working in high automation risk jobs are more likely to experience poverty and low-income conditions than employed Latinos overall and their non-Latino peers. In 2022, 9% of Latinos in high-risk occupations experienced poverty, compared to 6% of all employed Latinos (Figure 15). Latinos working in high-risk occupations were also more likely to live in low-income conditions (24%) than all employed Latinos (18%). In comparison, only 6% of non-Latinos working in high automation risk occupations experienced poverty, and only 13% lived in low-income conditions.

Figure 15. Poverty Status for Employed California Workers by Ethnicity and Automation Risk, 2022

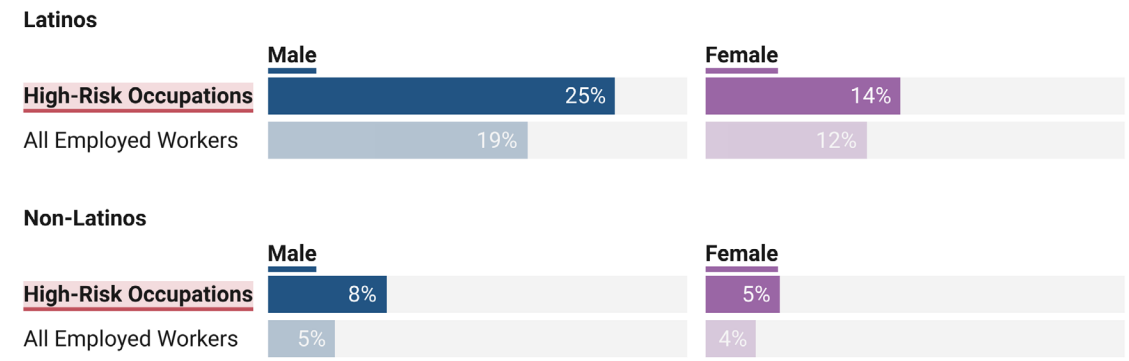


Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis. Poverty refers to individuals living at or below 100% of the federal poverty line. Low income refers to individuals living between 100-199% of the federal poverty line.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

California Latino workers in high automation risk jobs are uninsured at high rates despite being employed. One-quarter of Latino men in high automation risk occupations did not have health insurance, compared to 8% of non-Latino men in the same jobs and 19% of all employed Latino men (Figure 16). Similarly, 14% of Latina women in high-risk roles were uninsured compared to 5% of non-Latina women in the same roles and 12% of all employed Latinas.

Figure 16. Uninsured Rates for Employed California Workers by Ethnicity, Sex, and Automation Risk, 2022



Notes: *The "high-risk occupations" group reflects non-institutionalized workers ages 16 and older employed in 20 representative occupations with high exposure to computerization based on Frey and Osborne's analysis.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

POLICY RECOMMENDATIONS

Despite the potential productivity and safety benefits, automation technologies have the potential to widen existing inequalities and disproportionately affect Latino workers, who are over-represented in occupations vulnerable to routine automation. In California, these Latino workers are likely to be younger, male, and lack citizenship. Many of these workers face additional barriers, including a low command of English, low levels of formal education, and gaps in digital technology access and digital skills. They are also less likely to be self-employed or business owners than their non-Latino peers, have lower hourly wages, and are more likely to lack health insurance despite being employed.

Given the rapid growth of AI and automation technology adoption since COVID-19, strengthened labor resistance to the use of such technologies in the workplace, and increased federal investment in digital technology and workforce training,[54] policymakers have an opportunity to systematically re-think the future of workers, invest strategically in upskilling workers, and rebalance the job market toward higher-paying, stable jobs.[55]

Based on our findings, we recommend the following policy actions to bolster Latino worker power and well-being, and ensure successful occupational upward mobility and social protection:

1. Increase investment in workforce development programs, using a strong equity lens and focusing on employees in high automation risk occupations.

Currently, California's investments in workforce development are spread across nine different state agencies, depending on factors such as the population of workers being served.[56] The state works closely with industry partners to bridge employers' needs and workers' skills, for industries such as agriculture, construction, health care, and domestic work.[57] The High Road Training Partnerships (HRTP) is one demonstration project to model industry partnerships that deliver equity, sustainability, and job quality.[58] Nevertheless, workforce training programs are usually oversubscribed and the funding tends to fluctuate depending on the state budget.[59]

The most comprehensive analysis of California's workforce programs shows that between fiscal year 2014 and 2016, Latino program participation closely tracked Latinos' share of the state's workforce, except for programs for individuals with disabilities, the Incumbent Worker Training Program, and the Trade Adjustment Assistance Program.[60] However, it's worth noting that Latino workers represent 56% of all low-wage workers in the state[61] and 52% of high automation risk workers, and current programs are falling short in serving the most vulnerable populations. **Ensuring equitable program access—especially for those with the most urgent needs—is critical as California starts to implement the 2024-2027 Unified Strategic Workforce Development Plan and the Digital Equity Plan.**[62]

California policymakers should consider increasing the Employment Training Funds and Apprenticeship Training Contribution Fund to develop and expand on-the-job training and apprenticeship programs for incumbent workers. These programs could assist in upgrading workers' skills through training that leads to well-paid, long-term jobs related to automation service technicians and other relevant fields for high-risk routine automation occupations. **California policymakers should also consider increasing funding for the California Employment Training Panel (ETP) Incumbent Worker Training Program to provide funding to employers and assist them in upgrading the skills of workers in high automation risk occupations.**[63]

California policymakers should consider:

1. **Providing targeted programs and support for workers at different stages of the lifespan for an inclusive economy.**

    a. **Engaging younger workers in the California Community College to work toward professional certificates or postsecondary degrees to build skills.**

    b. **Investing in financial aid and holistic supports to help them complete once they enroll.** More than half (54%) of workers ages 16-24 in high automation risk jobs are out of school, and only 4% have an associate degree or higher.

    c. **Adopting blended program models to feature digital skills, adult literacy, and English learning together to meet the needs of older workers who are experiencing anxiety around technology and are faced with significant barriers to obtaining new skills.**[64]

2. **Expanding the investment in ETP's Social Entrepreneurs for Economic Development (SEED) grant to continue helping entrepreneurs start or maintain small businesses.** The program supports immigrants and refugees that need start-up resources, mentoring, and training to start a business or cooperative. Latino workers in high-risk occupations, especially Latina women, are less likely to be business owners than non-Latino workers in these occupations. ETP has successfully administered two rounds of SEED with $30 million in funding from the state general fund—which is now ending—and is starting a third round of $1 million. Interest and applications for both rounds of funding have significantly outstripped available funds.

3. **Reducing barriers for noncitizens to receive workforce development training, by clearly designating more funds with no immigration eligibility requirements.** Past experience shows that unless workforce providers are given clear eligibility guidance, they will default to excluding undocumented workers.[65] Noncitizens represent 38% of Latino male workers and 24% of Latina women workers in high automation risk occupations, and they are among the most likely to fall through the cracks due to eligibility restrictions of various federal funding streams.

4. **Increasing outreach to recruit nontraditional students, especially Latino male workers, to improve their formal education levels, digital skills, and general competencies for upward career mobility.** Men are participating in workforce training programs at lower rates than women,[66] and are overrepresented in high automation risk occupations. Latino males also tend to have lower levels of formal education and English proficiency.

5. **Continuing to fund Cross-Systems Analytics and Assessment for Learning and Skills Attainment (CAAL-Skills) with more disaggregated data to assess the equity and efficacy of current programs.**[67] The current metrics allow the initial understanding of the reach and impact of workforce development programs. However, further disaggregation is needed to illustrate whether training funds are getting to target populations.

"The federal Digital Equity Act provides $2.75 billion to establish three grant programs that promote digital equity and inclusion."

2. Equip Latino workers with the digital access and skills they need to succeed by leveraging the federal Digital Equity Act and renewing the Affordable Connectivity Program (ACP).

The federal Digital Equity Act provides $2.75 billion to establish three grant programs that promote digital equity and inclusion.[68] California released its Digital Equity Plan in 2024 and was awarded a $70.2 million block grant to support the implementation of the plan.[69] Additionally, the Federal Funding Accountability and Transparency Act sets a government-wide reporting procedure that requires grant recipients to meet extensive reporting and monitoring requirements, including performance progress reports, financial reporting, and annual monitoring.[70] All reporting is accessible to the public.

California policymakers and community advocates should consider:

1. **Ensuring the $70.2 million California Digital Equity Act block grant funds broadband internet, digital devices, and digital skills.**
2. **Monitoring the implementation of the plan** to help ensure a collective assessment of the program's effectiveness and to help connect Latinos and other technologically underserved populations to the internet.
3. **Improving affordability by requiring internet service providers to offer affordable home internet service to eligible households** in order to enter into a procurement contract with the state and state agencies absent an ACP renewal from Congress.

Federal policymakers should consider:

Renewing the $14.2 billion ACP. The ACP provided a discount of up to $30 per month toward internet service for eligible households and up to $75 per month for households on qualifying Tribal lands. An estimated 2.9 million households in California used the program.[71] However, funding expired in May 2024, and many rural, low-income, and other vulnerable households are losing internet connectivity. The smaller Lifeline program provides a much lower monthly discount and requires a lower household income eligibility.[72] In July 2024, 13% of ACP recipients had already canceled their home internet service, and another 12% planned to do so in the next three months.[73]

3. Ensure workers have a say in when and how technology is developed and implemented by:

a. Centering worker empowerment in the development and adoption of automation and AI technologies.

As technology rapidly transforms the workplace, government policies—including labor protections and regulations—are still in development. While there is growing awareness of the issues among policymakers, comprehensive federal policies specifically designed to safeguard workers are limited. Furthermore, policymakers tend to use the term "AI" broadly to encompass various technologies, even though the ways in which these technologies impact workers in the short- and long-term are widely different. As illustrated earlier, generative AI is estimated to affect a very different segment of the labor force in the short term compared to automation, and how generative AI would trickle down to high automation risk workers in the long term is still unclear.

The U.S. Department of Labor (DOL) recently developed principles and best practices for AI developers and employers to center the well-being of workers in the development and deployment of AI in the workplace and to value workers as the essential resources they are in a moment of technological change.[74] The U.S. DOL should incorporate an automation and AI focus into upcoming discretionary and competitive grants to further understand the impact of these technologies on workers in different sectors. At a state level, California DOL should adopt the federal best practices or develop its own set of best practices so that Big Tech employers are not left on their own in a key moment of technological transition.

b. Strengthening the right to organize and collectively bargain.

Traditionally, labor organizing and unions have provided workers with stability and a collective voice in moments of transition and uncertainty.[75] Through collective bargaining, workers can help shape the terms and conditions of their employment.[76] Research also shows that when workers are consulted in the adoption of AI technologies, their productivity is higher than if they are not consulted.[77]

Workers are already negotiating how and when technology is implemented into their job responsibilities across the nation. For example, at the Port of Los Angeles, dockworkers are currently negotiating where, when, and how port job functions are automated.[78] In Las Vegas, Culinary Union workers successfully negotiated a contract with major resorts that strengthened worker technology protections, including guaranteed advance notification before introducing new, job-impacting technologies, required training for new jobs created by technology, and the right to bargain over technology that tracks the location of employees or messaging between workers.[79]

While California boasts higher unionization rates than the national average and strong labor protections,[80] only 17% of the state's workers were union members, and only 11% of high-risk workers were covered by unions.[81] Many workers are in vulnerable positions to begin with. For example, agricultural workers—a large, Latino-majority, and high automation risk group of workers—currently lack federal collective bargaining rights[82] and face poor working conditions.[83] Furthermore, restaurant workers in California—for example, fast food counter workers, waiters and waitresses, cooks, food preparation workers, and cashiers—have some of the lowest unionization rates among high automation risk jobs (just 3% and 8%, compared to the state average of 17%).[84]

Innovative policy interventions can provide a forum for workers and organized labor groups to express their concerns and negotiate the terms of their employment. California's recently established Fast Food Council, for example, is able to set fast food restaurant standards, minimum wages, and working conditions.[85] However, the council is not governing the use of technology as one of its core priorities, despite self-checkout being implemented at restaurants across the state.[86]

"By strengthening workers' ability to organize and bargain, policymakers can empower workers to have a voice in the decisions surrounding where, when, and how automating technologies are implemented."

California policymakers should consider:

- **Establishing norms and principles for technological implementation as one of the Fast Food Council's core priorities.** Technological adaptation, especially in the Fast Food industry, should reflect worker input and mitigate potential impacts on available jobs.
- **Creating an Automation and Worker Development Council within the Department of Industrial Relations to monitor and identify industries that are being significantly disrupted post-COVID and bolster training and protections for workers in high-risk occupations who lack organizing power, including agricultural workers.**
- **Adopting a resolution in support of Protecting the Right to Organize (PRO) Act.**

Federal policymakers can further strengthen workers' ability to organize and negotiate by:

- **Adopting the PRO Act**, which would bolster the right to organize by imposing larger penalties on employers who subvert union campaigns, protecting workers' right to strike, and dismantling right-to-work laws.
- **Adopting the Public Service Freedom to Negotiate Act**, which would protect and expand the right of public sector employees at all levels of government to unionize and collectively bargain.
- **Adopting the Federal Tax Fairness for Workers Act**, which would restore the tax deductibility of union dues.

By strengthening workers' ability to organize and bargain, policymakers can empower workers to have a voice in the decisions surrounding where, when, and how automating technologies are implemented. When workers are involved in the training and consultation process, they are more productive.

4. Provide robust and timely safety nets for workers by expanding the Earned Income Tax Credit (EITC) and reforming Unemployment Insurance (UI).

Our analysis has shown that the Latino workers most vulnerable to routine automation are socioeconomically vulnerable: despite being employed, they are more likely to be uninsured, be noncitizens, live in poverty, and earn low wages. Workers affected by automation will need a robust social safety net to smoothly transition and ensure they can provide for their households and needs, especially in the absence of a personal safety net. While the below recommendations are not exhaustive, low-hanging fruit such as expanding the EITC and reforming UI could immediately bolster economic conditions for vulnerable workers.

The EITC is a fully refundable tax credit for low- and moderate-income working families with children and provides families with a fully refundable credit of up to $7,830. As a result, the EITC successfully lifts 6 million people out of poverty a year and increases labor force participation, especially among women.[87] During the pandemic, Congress tripled benefits for qualifying filers and lowered the minimum age from 25 to 19, resulting in less material hardship for young adults.[88]

"Our analysis has shown that the Latino workers most vulnerable to routine automation are socioeconomically vulnerable: despite being employed, they are more likely to be uninsured, be noncitizens, live in poverty, and earn low wages."

Federal policymakers should consider:

1. **Making pandemic-era changes to the EITC permanent, including increased benefit size for qualifying filers and lowering the minimum age from 25 to 19.**

2. **Expanding EITC eligibility by making it available to workers with individual taxpayer identification numbers (ITIN).**[89] This will bolster the economic conditions for vulnerable workers, especially young workers at risk of job displacement.

Additionally, expansive UI programs can combat automation's negative economic impacts. More generous UI programs reduce automation's negative impact on wages—especially among workers without a college degree—and offset any increases in poverty.[90] However, the COVID-19 pandemic revealed many inadequacies of the current UI system, as overwhelmed state UI programs could not distribute funds to workers fast enough, and California lost $20 billion due to fraud.[91]

Federal policymakers should consider modernizing the federal UI system by updating state IT frameworks,[92] making the claims process and websites more accessible,[93] guaranteeing universal minimum standards for benefits eligibility, duration, and levels,[94] reforming state-level financing,[95] and permanently expanding eligibility for part-time, self-employed, and other intermittent workers, as was the case during the pandemic.[96]

At a state level, California's UI system also needs an overhaul. Currently, it is underfunded and provides low benefits relative to the cost of living and peer Western states. The state's effective payroll tax rate—the tax that funds state unemployment insurance—is less than half of what it was in 1980.[97] Further, the current financing system disproportionately burdens low-wage workers and small businesses.[98]

California policymakers should consider:

1. **Broadening UI's taxable wage base and moving to a forward-financing mechanism.**[99]

2. **Extending UI coverage to all workers,** including self-employed, part-time, and noncitizen workers, as many of the Latino workers vulnerable to routine automation are not citizens.

CONCLUSION

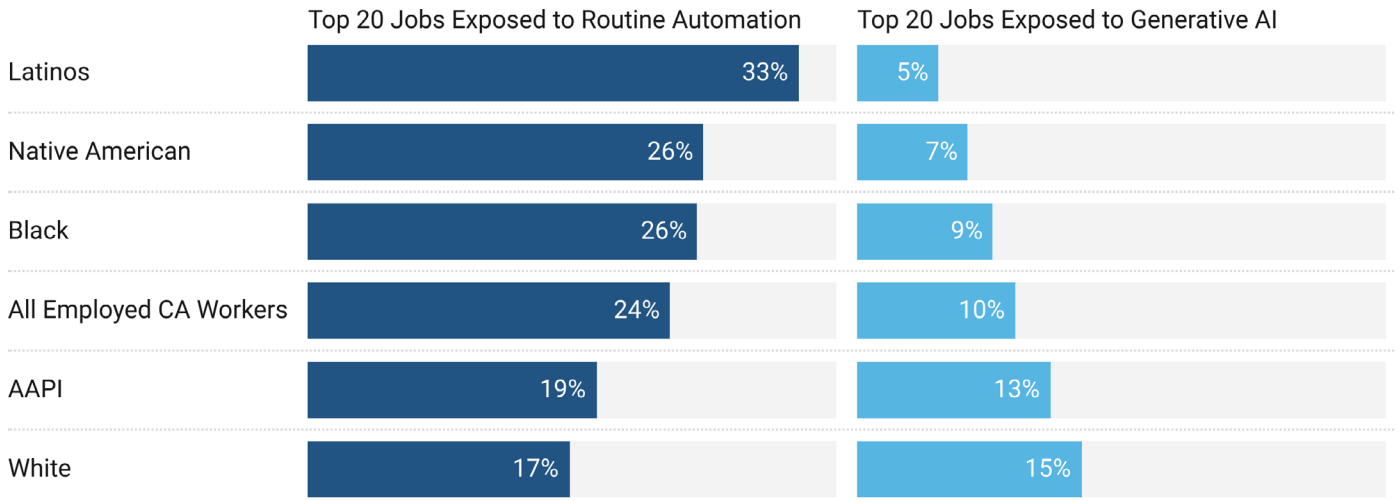
Automation and emerging technologies—such as generative AI—are transforming the workforce at an unprecedented scale. Despite the potential productivity and safety benefits, employers' adoption of automation technologies may also widen existing inequalities, disproportionately affecting Latino workers. **In California, more than half of Latinos work in occupations vulnerable to routine automation, and they face significant challenges to successful work transitions** due to a low command of English, low levels of formal education, and gaps in digital technology access and skills. These Latino workers often lack the protections of citizenship and health insurance and earn low wages.

Policymakers must focus on targeted interventions that provide Latino workers with the tools to navigate technological adaptation successfully and ensure a more equitable future. These include closing the digital skill divide, expanding broadband and technology access, supporting entrepreneurship, strengthening the right to organize, and increasing social protections. Without significant public investment in these areas, Latino workers will continue to face barriers to upward mobility and may be left behind in an increasingly automated economy. Addressing these challenges now is not only an issue of economic justice but a vital step toward building a resilient and inclusive workforce for the future.

APPENDIX

Appendix Figure 1. Employed California Workers by Race, Ethnicity, and Exposure to Automating Technologies, 2022

Share of Employed Racial and Ethnic Group



Notes: *The "Top 20 jobs exposed to routine automation" reflects the share of employed workers in the 20 most representative occupations with high exposure to computerization based on Frey and Osborne's analysis. The "Top 20 jobs exposed to generative AI" reflects the share of employed workers in the 20 most representative occupations with high exposure to generative AI based on Felten, Raj, and Seamans' analysis. Latinos can be of any race, while all other groups reflect the non-Latino population. AAPI refers to the Asian American and Pacific Islander population.*

Sources: *Frey and Osborne (2017); Felten, Raj, and Seamans (2021);100 and LPPI analysis of 2018-22 5-Year American Community Survey micro-data.*

Appendix Table 1. Top 20 Occupations by Routine Automation Risk and Number of California Workers, 2022

Title	Total Employment	Share of State Employment	Latino Employment	Latino Share of Occupation	AAPI Employment	AAPI Share of Occupation	Black Employment	Black Share of Occupation	Native American Employment	Native American Share of Occupation	White Employment	White Share of Occupation	Automation Risk Score (Percent)
Drivers and Truck Drivers (including Sales Workers)	411,300	2.2%	234,900	57.1%	43,600	10.6%	26,200	6.4%	900	0.2%	93,800	22.8%	78.6%
Cashiers	385,000	2.1%	213,700	55.5%	50,200	13%	19,700	5.1%	1,300	0.3%	85,900	22.3%	97%
Retail Salespersons	374,400	2%	159,300	42.6%	43,800	11.7%	19,000	5.1%	800	0.2%	135,800	36.3%	92%
Personal Care Aides	329,500	1.8%	133,300	40.5%	70,700	21.5%	35,100	10.7%	1,000	0.3%	79,600	24.2%	74%
Laborers and Freight, Stock, and Material Movers	279,400	1.5%	167,500	59.9%	23,900	8.5%	21,700	7.8%	700	0.3%	55,700	19.9%	85%
Construction Laborers	278,400	1.5%	210,500	75.6%	9,600	3.5%	5,300	1.9%	700	0.3%	48,200	17.3%	88%
Cooks	257,200	1.4%	175,500	68.2%	29,700	11.6%	7,800	3%	700	0.3%	37,200	14.4%	89.6%
Waiters and Waitresses	230,600	1.2%	99,100	43%	42,600	18.5%	7,300	3.1%	500	0.2%	71,200	30.9%	94%
Secretaries And Administrative Workers (excluding Legal, Medical, And Executive Workers)	226,300	1.2%	83,100	36.7%	28,700	12.7%	10,900	4.8%	700	0.3%	95,300	42.1%	96%
Accountants and Auditors	223,300	1.2%	36,300	16.3%	82,600	37%	9,400	4.2%	200	0.1%	87,100	39%	94%
Other Agricultural Workers	220,100	1.2%	204,400	92.9%	2,900	1.3%	800	0.4%	200	0.1%	10,400	4.7%	87%
General Office Clerks	196,300	1.1%	86,300	44%	31,600	16.1%	13,500	6.9%	500	0.2%	56,800	28.9%	96%
Landscaping And Groundskeeping Workers	172,800	0.9%	142,200	82.3%	3,500	2%	2,700	1.5%	400	0.3%	22,100	12.8%	95%
Bookkeeping, Accounting, and Auditing Clerks	141,800	0.8%	40,500	28.6%	25,100	17.7%	4,500	3.2%	500	0.3%	65,500	46.1%	98%
Security Guards and Gaming Surveillance Officers	140,900	0.8%	58,100	41.2%	13,200	9.4%	31,300	22.2%	600	0.4%	31,600	22.4%	84.1%
Receptionists and Information Clerks	132,200	0.7%	66,900	50.6%	15,000	11.3%	7,200	5.4%	500	0.3%	38,100	28.8%	96%
Real Estate Brokers and Sales Agents	131,400	0.7%	25,900	19.7%	19,500	14.8%	4,400	3.3%	200	0.1%	76,500	58.2%	88.3%
Miscellaneous Production Workers (including Equipment Operators and Tenders)	117,900	0.6%	78,800	66.8%	16,100	13.6%	4,400	3.8%	200	0.2%	16,400	13.9%	86.6%
Food Preparation Workers	113,800	0.6%	64,400	56.5%	15,200	13.4%	3,700	3.2%	200	0.2%	26,600	23.4%	87%
Fast Food And Counter Workers	97,000	0.5%	45,200	46.6%	11,300	11.6%	4,000	4.1%	300	0.3%	31,300	32.3%	92.5%
Total, Top 20 High-Risk Occupations	**4,459,600**	**24%**	**2,325,900**	**52.2%**	**578,800**	**13%**	**238,900**	**5.4%**	**11,100**	**0.2%**	**1,165,100**	**26.1%**	

Notes: *Titles reflect Frey and Osborne's analysis using 2010 Standard Occupation Classification (SOC) Codes.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Frey and Osborne (2017).*

Appendix Table 2. Top 20 Occupations by Generative AI Exposure and Number of California Workers, 2022

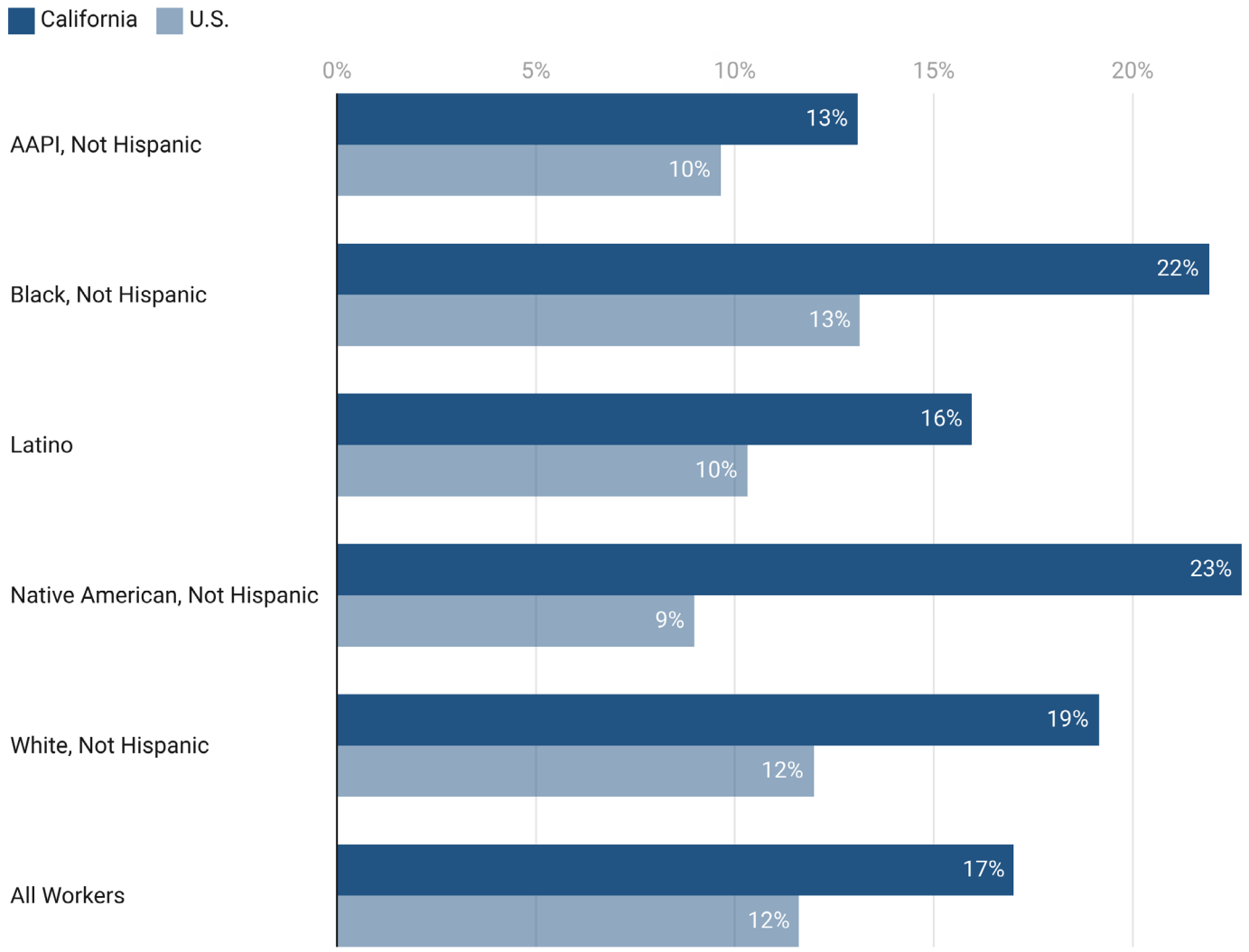
Title	Total Employment	Share of State Employment	Latino Employment	Latino Share of Occupation	AAPI Employment	AAPI Share of Occupation	Black Employment	Black Share of Occupation	Native American Employment	Native American Share of Occupation	White Employment	White Share of Occupation
Accountants and Auditors	223,000	1.2%	36,000	16.3%	83,000	37.2%	9,000	4%	250	0.1%	87,000	39%
Chief Executives and Legislators	206,000	1.1%	24,000	11.4%	33,000	16%	5,000	2.4%	620	0.3%	137,000	66.5%
Lawyers, Judges, and Arbitrators	160,000	0.9%	18,000	11.2%	21,000	13.1%	6,000	3.8%	110	0.1%	108,000	67.5%
Postsecondary Teachers	157,000	0.8%	22,000	14.1%	27,000	17.2%	7,000	4.5%	280	0.2%	93,000	59.2%
Financial Managers	152,000	0.8%	34,000	22.2%	35,000	23%	7,000	4.6%	280	0.2%	70,000	46.1%
First-Line Supervisors and Managers of Non-Retail Sales Workers	130,000	0.7%	42,000	32%	22,000	16.9%	4,000	3.1%	230	0.2%	57,000	43.8%
Employment, Recruitment, and Placement Specialists; Farm Labor Contractors; Labor Relations Specialists	117,000	0.6%	36,000	30.7%	19,000	16.2%	9,000	7.7%	120	0.1%	48,000	41%
Management Analysts	116,000	0.6%	14,000	12%	25,000	21.6%	4,000	3.4%	150	0.1%	66,000	56.9%
Education Administrators	107,000	0.6%	28,000	26.2%	12,000	11.2%	8,000	7.5%	220	0.2%	55,000	51.4%
Marketing Managers	90,000	0.5%	12,000	13.8%	17,000	18.9%	3,000	3.3%	120	0.1%	52,000	57.8%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	76,000	0.4%	18,000	23.6%	10,000	13.2%	4,000	5.3%	170	0.2%	42,000	55.3%
Insurance Sales Agents	62,000	0.3%	19,000	30.5%	10,000	16.1%	3,000	4.8%	50	0.1%	28,000	45.2%
Market Research Analysts and Marketing Specialists	59,000	0.3%	9,000	15%	13,000	22%	2,000	3.4%	10	0%	32,000	54.2%
Paralegals and Legal Assistants	52,000	0.3%	19,000	35.8%	6,000	11.5%	3,000	5.8%	170	0.3%	22,000	42.3%
Billing and Posting Clerks and Machine Operators	49,000	0.3%	21,000	43.2%	7,000	14.3%	3,000	6.1%	160	0.3%	17,000	34.7%
Personal Financial Advisors	45,000	0.2%	7,000	14.7%	9,000	20%	2,000	4.4%	30	0.1%	26,000	57.8%
Credit Counselors and Loan Officers	39,000	0.2%	11,000	29.3%	7,000	17.9%	2,000	5.1%	40	0.1%	17,000	43.6%
Financial Analysts	38,000	0.2%	5,000	13.8%	13,000	34.2%	1,000	2.6%	20	0.1%	17,000	44.7%
Mathematicians, Statisticians, and Mathematical Science Occupations	37,000	0.2%	4,000	11.3%	15,000	40.5%	1,000	2.7%	30	0.1%	15,000	40.5%
Human Resources Managers	36,000	0.2%	9,000	26.4%	5,000	13.9%	3,000	8.3%	70	0.2%	16,000	44.4%
Total, Top 20 High-Risk Occupations	**1,951,000**	**10.5%**	**388,000**	**19.9%**	**389,000**	**19.9%**	**86,000**	**4.4%**	**3,130**	**0.2%**	**1,005,000**	**51.5%**

Notes: *Titles reflect Felten, Raj, and Seamans' analysis using 2018 Standard Occupation Classification (SOC) Codes.*

Sources: *LPPI analysis using 2018-22 5-Year American Community Survey microdata and Felten, Raj, and Seamans (2021).*

Appendix Figure 2. Union Coverage Rates for Employed Workers in California and the U.S. by Race and Ethnicity, 2018-2022

Percent of Employed Worker Group Covered by Union



Sources: LPPI analysis of Current Population Survey Outgoing Rotation Group pooled monthly samples (2018-2022).

Note: Data reflect 5-year weighted averages.

Appendix Figure 3. Union Coverage Rates for All Employed Workers in California in High Automation Risk Occupations, 2018-22

Percent of Occupation Group Covered by Union

Sources: LPPI analysis of Current Population Survey Outgoing Rotation Group pooled monthly samples (2018-22).

Note: Data reflect 5-year weighted averages.

ENDNOTES

1 The rise of generative artificial intelligence (AI) further expanded the tasks computers are capable of performing to creative tasks. ChatGPT and Dall-E can create new data and objects, detect patterns, and make decisions. We do not focus the analysis on generative AI because it is still in early development, adoption rates among employers are low, and research so far shows generative AI is more likely to impact white-collar jobs employing college-educated workers, who are more likely to be white or Asian (see Appendix Figure 1). The downstream impact to working class Latino workers has not been widely observed.

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