Income Inequality and Economic Opportunity in California

Technical Appendices

CONTENTS

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Appendix A. Data and Methods

We rely on detailed survey data from the U.S. Census and Bureau of Labor Statistics to examine income trends and labor market opportunity. We rely on the PPIC Statewide Survey to understand Californians' views on the economic situation and on policy preferences. The core data on long term income trends we analyze comes from the Current Population Survey (CPS) from 1980-2020 and the American Community Survey (ACS) from 2005-2019. The ACS is fielded on a rolling basis and asks respondents' income in the previous twelve months. As is usual practice, we treat responses to the 2020 CPS as referring to 2019, while responses to the 2019 ACS refer to 2019.

PPIC Statewide Survey

The PPIC Statewide Survey was inaugurated in 1998 to provide a way for Californians to express their views on important public policy issues. The survey provides timely, relevant, nonpartisan information on Californians' political, social, and economic opinions. It seeks to inform and improve state policymaking, raise awareness, and encourage discussion of policy issues. PPIC has interviewed more than 350,000 Californians in over 170 surveys focused on general topics, specific areas (such as K–12 education and the environment), and regional issues.

All PPIC Statewide Surveys include interviews with at least 1,700 California adults. In each survey report, we provide the unweighted sample sizes for the overall sample, registered voters, likely voters, and other special groups we might be examining. (See the methodology section of individual survey reports for more information about sample sizes.) By comparison, many national polls interview 1,000 adults or fewer. PPIC's large sample sizes allow us to capture the regional, racial/ethnic, demographic, and political diversity of the state's adult population. For example, we are able to examine separate findings among as many as five regions: the Central Valley, San Francisco Bay Area, Los Angeles County, Orange/San Diego Counties, and the Inland Empire. We can also examine separate findings among Latinos and non-Hispanic whites, and among non-Hispanic Asian Americans and African Americans in most cases; among US-born and foreign-born adults (both naturalized citizens and noncitizens); among different age, education, income, and homeownership groups; and according to political affiliation (Democrats, Republicans, and independents). The large sample size also lets us analyze results among parents of children 18 and younger and parents of children attending public schools. (To conduct separate analysis of a subgroup, we require an unweighted sample size of approximately 100 or more.) Our large overall sample sizes allow us to bring additional perspective to local, state, and federal policymakers who need a clear understanding of public perceptions and attitudes, including robust information about the experiences and opinions of different political, regional, racial/ethnic, and other demographic groups. Additional details about our methodology can be found at www.ppic.org/wp-content/uploads/SurveyMethodology.pdf and are available upon request through surveys@ppic.org.

Census PULSE Survey

The new experimental Household Pulse Survey (HPS) is designed to quickly collect data on families that have been impacted by COVID-19. First-phase weekly data collection began on April 23 and ended on July 21, 2020. Second-phase data collection began on August 19 and ended on October 26, 2020. In this report we use PULSE data from the second collection wave, covering the weeks from August 19 to October 12. The HPS asks individuals about their experiences regarding employment status, spending patterns, food and housing insecurity, physical and mental health, access to health care and educational disruption. We compare these responses across households with different demographic characteristics, excluding households with missing or non-reported demographic background data.

It is designed to produce estimates at three levels—15 largest Metropolitan Statistical Areas (MSAs), state, and national. The final HPS weights were created by adjusting the household-level base weights to account for nonresponse, adults per household, and coverage. Additional adjustment is done to control the sample estimates to two sets of independent population controls: educational attainment estimates from the 2018 1-year American Community Survey estimates by age and sex, and the July 1, 2020 Hispanic origin/race by age and sex estimates from the Census Bureau's Population Estimates Program (PEP). All estimates we produce are weighted and standard errors are calculated using replicate weights provided by the Census Bureau.

Current Population Survey

Annual Social and Economic Supplement

We use the Annual Social and Economic Supplement (ASEC) of the CPS, which is administered by the U.S. Census Bureau and the Bureau of Labor Statistics (BLS). The CPS is a representative sample of the noninstitutionalized civilian population. The CPS-ASEC is fielded between February and April of each year and results are released toward the end of each calendar year. The ASEC asks respondents about their labor market status, demographic identifiers, and income in the previous calendar year, among other things. We access the CPS via the Integrated Public Use Microdata series CPS data (IPUMS-CPS) published by the Minnesota Population Center at the University of Minnesota (Flood et al. 2020).

We use the CPS to examine annual income from 1980-2019. Since the CPS is designed to be cross-sectional, rather than longitudinal, we are unable to follow individuals or families over time.[1] For this reason, we can only make inferences based on representative populations or cohorts across the cross-sections of the CPS. The CPS is designed to be representative of state-level populations but does not permit robust analysis within more narrowly defined regions or subgroups. The advantage of the CPS for our purposes is that its long time series allows us to track income and labor market activity over a longer period of time.

The CPS-ASEC redesigned questions on income and health insurance between the 2014 and 2015 surveys (pertaining to income for the previous calendar years 2013 and 2014, respectively) and updated its processing for missing data starting in the 2018 survey. Both of these changes affect estimates of the income distribution.[2] As a result of these two changes, results from 2014 forward are not strictly comparable to previous years. Fortunately there are data products that allow us to construct a consistent series over the full time period of our study. We use (1) the CPS split sample in 2014 to adjust for the changes implemented in 2015 and (2) a 2018 bridge file to adjust for the changes in 2017 income implemented in 2018. This process is described below.

Finally, Census Bureau researchers find that nationwide, nonresponse to the 2020 survey was differentially higher for low-income households, which resulted in upwardly biased income estimates across the distribution, but particularly at the low end.[3] In short, incomes likely did increase between 2018 and 2019 across the board, but not by the magnitude suggested by 2020 CPS data. We make no adjustments for the upward bias, but recommend that the large increases in income between 2018 and 2019 be interpreted with caution.

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[1] A smaller subsample of the CPS is surveyed multiple times over the course of 16 months, but the small sample size does not permit analysis of the entire income distribution in enough detail for our purposes.

[2] Rothbaum, Jonathan. 2019. Processing Changes in the CPS ASEC. US Census Bureau, SEHSD Working Paper Number 2019-18. Semega, Jessica and Edward Welniak. 2013. Evaluating the 2013 CPS ASEC Income Redesign Content Test Proceedings of the 2013 Federal Committee on Statistical Methodology (FCSM) Research Conference. Trudi Renwick, 2015, A Comparison of Official Poverty Estimates in the Redesigned Current Population Survey Annual Social and Economic Supplement; Expert Meeting on Income, Poverty, and Health Insurance.

[3] Rothbaum, Jonathan, and Adam Bee. 2020. Coronavirus Infects Surveys Too: Nonresponse Bias During the Pandemic in the CPS ASEC. US Census Bureau, SEHSD Working Paper Number 2020-10.

Basic Monthly Survey

A smaller component of the Current Population Survey is also fielded monthly, with a focus on labor market outcomes which feeds into official statistics released by the Bureau of Labor Statistics. This is a much smaller survey, approximately 9,000-10,000 Californians per month. However, it is useful for understanding changes in the labor market in close to real time. The Basic Monthly CPS ask respondents many similar questions as the ASEC, pertaining to employment, unemployment, and demographic background.

We rely on the Basic Monthly CPS to create quarterly and monthly indicators of unemployment, underemployment, and labor force participation. We prefer a quarterly analysis for most subgroup analysis in order to reduce the variability of our estimates. We use Basic Monthly data to understand how labor market opportunity has shifted in 2020. This allows us to examine how outcomes vary across demographic groups, which is otherwise not available in official monthly labor market indicators.

Though the Basic Monthly CPS asks some workers about their current wages and salary, this subsample (the "outgoing rotation group") is too small in California to permit robust analysis. However, the Basic Monthly survey does ask about family income over the past year. Public microdata provides answers to this question in bins (less than $30,000, $30-50,000, etc). So, while we do not aim to report how income is changing in 2020 as a result of the recession, we are able unpack how current labor market challenges affect individuals based on their income group as of 2019.

American Community Survey

The ACS is a large-scale population survey administered by the U.S. Census Bureau that represents roughly a 1 percent sample of U.S. residents. The California sample is over 350,000 observations annually (excluding those living in group quarters). The ACS provides detailed economic and demographic information on individuals and households. Though slightly less detailed than the CPS-ASEC and produced with a longer lag, the ACS is useful for understanding income differences across California regions and demographic groups. The ACS is available from 2005-2019. Like the CPS-ASEC, the ACS is a cross-sectional survey representing snapshots of the California population at various points in time. As with the CPS, we access harmonized ACS data published by the Minnesota Population Center at the University of Minnesota (Ruggles et al. 2020).

The ACS asks about current employment status and about income over the past year. The survey is fielded throughout the calendar year, so annual income estimates are essentially an average of income over a two year period.

Standardization of income and resource measures

To compare income over time and across families, it is necessary to make a number of adjustments. We summarize these adjustments here.

Units of analysis

Our analysis of income centers on the family rather than the individual. This allows us to take account of virtually all Californians rather than only those who are employed. Individuals share resources within families or relationships of their choosing, and these relationships are captured to a reasonable extent in the survey data on which our analysis is based. We assume that individuals share resources with family members they reside with. Our unit of analysis can range from single adult units to multigenerational families. For some analyses we examine characteristics of the head of the family, defined as the oldest member with the lowest roster number. For

some analyses we examine characteristics of all members of the family, such as the highest level of education of any family member, or whether the family includes children.

Normalization for family size and other adjustments

Families vary substantially in size and composition. This means their incomes are likely to vary as well. For example, because California families are on average larger than families in the rest of the country (2.96 persons compared to 2.63[4]), not adjusting for family size can understate income differences. This is especially true for median-income families and below, where the size differences between families in California and elsewhere are largest. To facilitate the analysis, we adjust family income to be comparable across various sizes. We normalize family income to be representative of a common family size: two adults and two children. Our adjustment factor uses federal poverty thresholds, which provide equivalent standard of living for families of different sizes. Specifically, we apply a factor equal to the ratio of the threshold for a family of four to the threshold for a given family size. The dollar value for normalized family income used throughout the study represents the total family income for a family of four with two children. Normalizing family incomes does not change the trajectory of inequality as measured by the 90/10 ratio over time, and from 1980 to 2019, the non-normalized ratio was on average 95% the size of the ratio based on normalized dollar values.

Inflation adjustment

We adjust our data for inflation, using the CPI-U Research Series. We adjust all dollar amounts to 2019, which is the latest year available. In addition, ACS responses are adjusted globally using a Census-provided variable that roughly translates the responses from the rolling reference period of the survey into calendar year amounts.

Handling top-coded income values

Extremely high income values are recoded by the Census Bureau in the CPS and ACS to preserve the privacy of respondents in the public use micro data we rely upon. In the ACS, incomes higher than the 99.5th percentile are top-coded with the average value of incomes above that threshold for California. In the 2019 ACS, the top-coded value for individual wages was $545,000. This prevents us from analyzing the very highest levels of the income distribution. Top-coding in the CPS is more restrictive, permitting no detailed analysis beyond the 95th percentile.

Adjustments for comparability of survey data over time

Because changes to CPS ASEC income questions and survey processing had the effect of increasing incomes at some levels after 2013 and 2017, we present over-time analysis of CPS ASEC data after adjusting income percentiles in years preceding these changes by the ratio of new estimates to old at each percentile.[5] For 2013 incomes, we use the ratio of the 3/8 sample (the new questions) to the 5/8 sample (the old questions). For 2017 incomes, we compare the 2018 bridge file to the released 2018 CPS ASEC. For 2013 incomes in particular, the small size of California's 3/8 sample results in large variation in the ratio between new and old percentiles across the income distribution. We therefore use ratios drawn from the national sample to adjust California incomes. Figure A1 below shows the results of these adjustments.
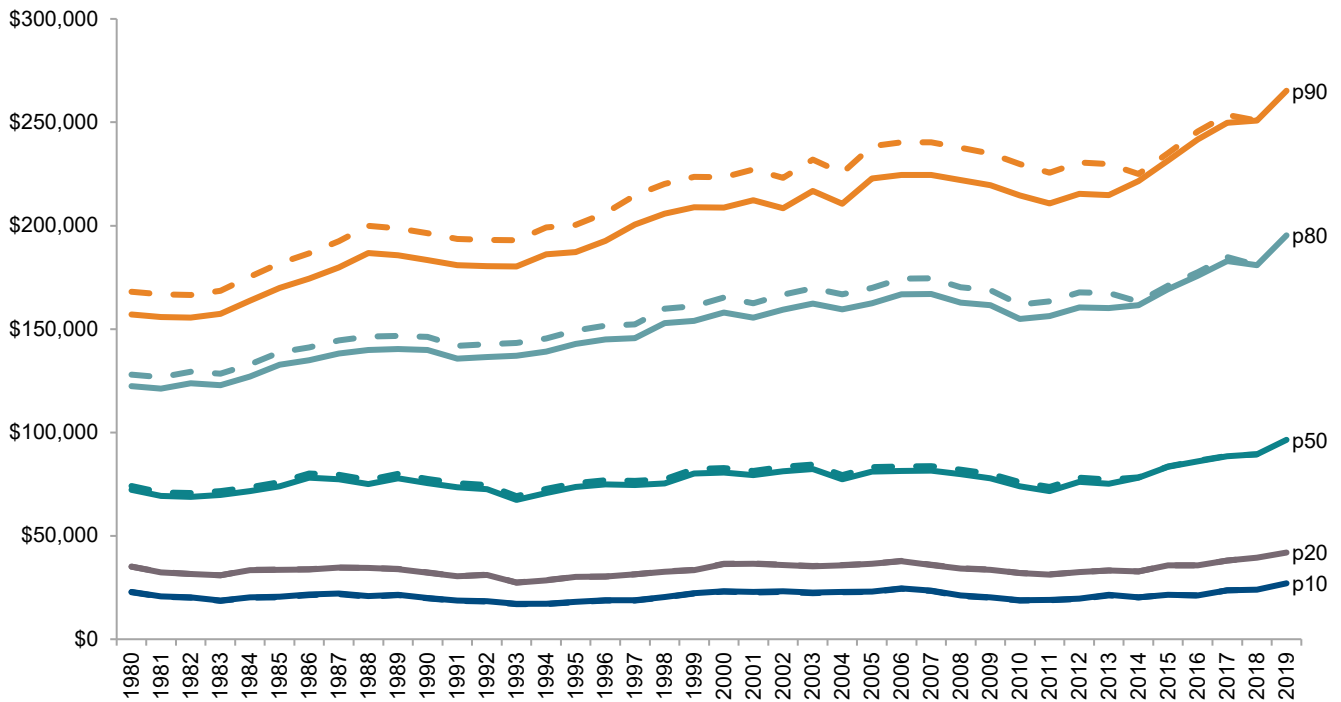
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[4] Census Bureau Quick Facts 2014-2018.

[5] Following the approach of Mishel and Kroeger (Economic Policy Institute, 2015).

Changes over time in income deciles based on CPS ASEC data, including adjustments for survey changes

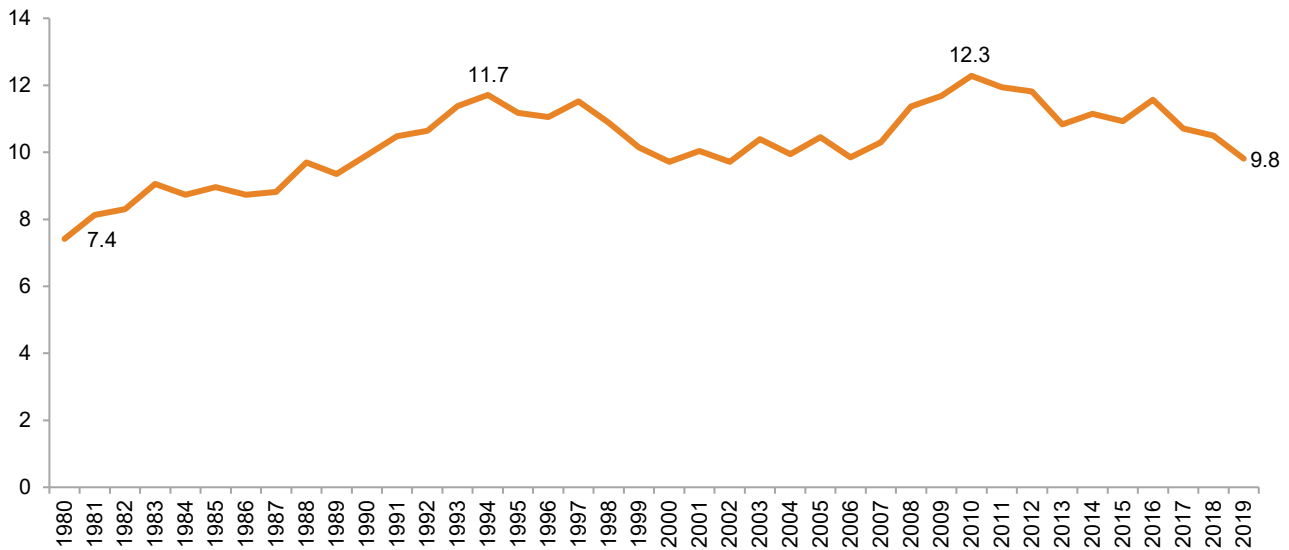SOURCE: Authors' analysis of CPS ASEC data, 1981–2020.

NOTE: Dotted lines indicate percentiles adjusted by ratio of new to old methods; solid lines show unadjusted data. Chart shows trends in family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs. Dollar values are adjusted to pertain to a family of four in 2019 dollars.

Approaches to Calculating Inequality

Researchers use a number of metrics to measure income inequality. Our goal is to assess the income distribution widely speaking, and not just a single metric of inequality. Thus, we prefer to describe the distribution of income using percentiles and income deciles. This lends itself naturally to using income ratios as our primary measure of income inequality. We examine ratios of income at a number of points in the distribution, but most often report the 90/10 ratio, which has the additional benefit of being straightforward to interpret: the 90/10 ratio is simply the 90th percentile income divided by the 10th percentile income. Other common inequality measures such as the Gini coefficient are much less intuitive. Figure A2 below shows the trajectory of this ratio in California since 1980.

Ratio of top incomes to bottom incomes – the 90/10 ratio – in California since 1980

SOURCE: Authors' analysis of CPS ASEC data.

NOTES: Chart shows inequality based on family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs. Dollar values are adjusted to pertain to a family of four. Trends adjusted in years prior to 2017 for recent changes to income questions and processing in the CPS ASEC. Census Bureau research finds 2020 CPS ASEC data overestimate income increases for percentiles across the board between 2018 and 2019, due to lowered response rates among low income people.

Finally, we note in text that we measure inequality throughout based on total family income, a definition that aligns across our data sources, but differs from some of our previous publications that exclude income from cash assistance (CalWORKs), SSI/SSP, and UI (see Bohn and Thorman 2020 and Bohn and Danielson 2016). Figure A3 below shows income growth across the distribution when we use this more restrictive definition of income; we find that low and middle incomes had experienced similar levels of growth over the last 40 years, by of 2019. And while we found that 90th percentile incomes grew 58%, using a less restrictive definition, this definition finds an increase of 81% since 1980.

Low and middle incomes have seen similar net changes since 1980, using a more restrictive definition of income
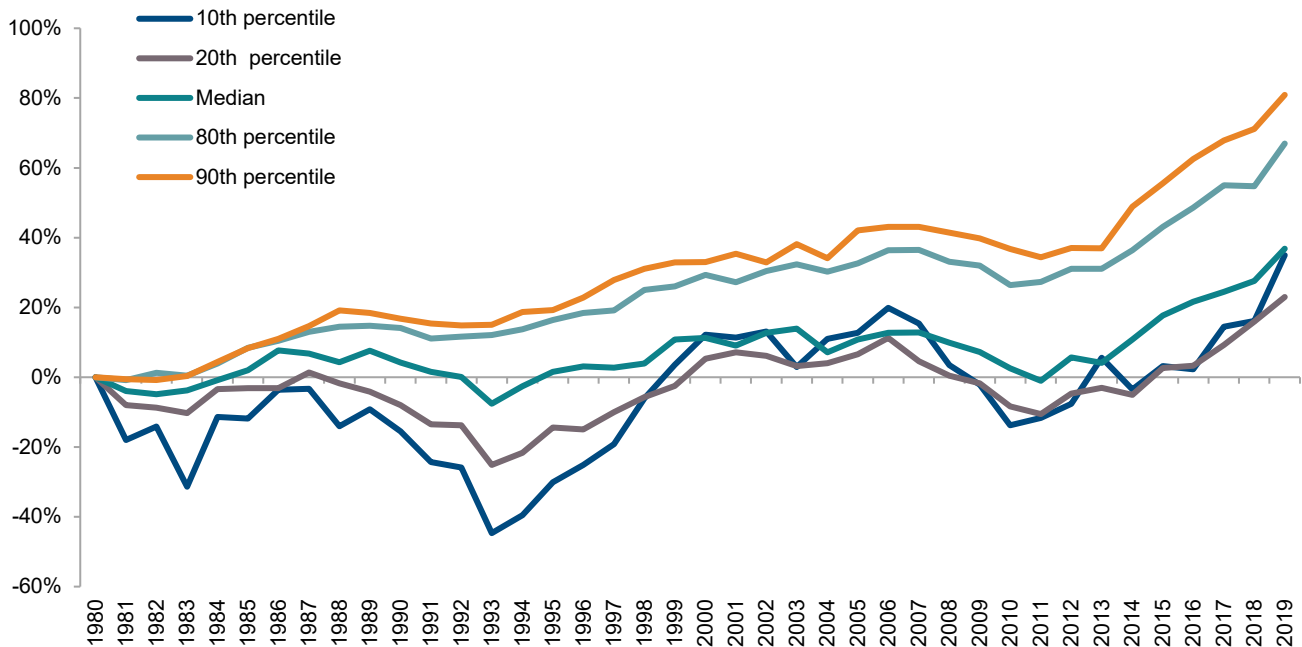
SOURCE: Authors' analysis of CPS ASEC data for California.

NOTES: Chart shows changes in family pre-tax income, *excluding* income from TANF (cash assistance) and SSI (Supplemental Security Income), and resources from other safety net programs. Dollar values are adjusted to pertain to a family of four in 2019 dollars. Trends adjusted in years prior to 2017 for recent changes to income questions and processing in the CPS ASEC. Census Bureau research finds 2020 CPS ASEC data overestimate income increases for percentiles across the board between 2018 and 2019, due to lowered response rates among low income people.

Regional Analysis

In examining recoveries from the Great Recession, we use ACS data to divide California counties into 9 regions. The Northern includes Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, and Trinity counties. The Sacramento area includes El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties. The Bay Area includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma counties. The Central Valley and Sierra region includes Alpine, Amador, Calaveras, Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Mono, San Joaquin, Stanislaus, Tulare, and Tuolumne counties. The Central Coast region includes Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura counties. The Inland Empire includes Imperial, Riverside, and San Bernardino counties. Los Angeles, Orange, and San Diego Counties are each presented as individual regions.

In the main body of the report, Table 2 shows the time to recovery (defined as a return to the highest value in 2007-2009) for incomes across the distribution by region, based on the point estimate of each income percentile. Table A1 shows how incorporating the error around these point estimates affects the calculation. To do this, we take a simple, conservative approach using the 95 percent confidence intervals calculated from replicate weights in the ACS (which account for sampling error). Because our point estimates are not means but percentiles of the distribution, we cannot use standard formulas for calculating the statistical significance of a difference in means. So instead, we examine the shortest and longest time to recovery possible given overlap in the 95 percent confidence intervals around the point estimates in each year. In the first panel of Table A1, we show the shortest possible time each income percentile could have taken to return to its pre-recession high—that is, the number of years after the start of the recession for the confidence interval to again overlap at all with its pre-recession range.

In the second panel, we show the longest possible time to recovery, which we estimate as the number of years until the confidence interval completely exceeded its pre-recession range.

These two panels show that our main estimates (Table 2) are relatively certain with sampling error taken into account, but certainty varies across regions. Not surprisingly, smaller regions like the Far north, Central Valley, and Central Coast have a bit more uncertainty around the estimates. In some of the larger regions like Los Angeles and the Bay Area, our main estimates could vary by just 1-2 years. Based on the range of estimates shown here, we find that while most incomes were within range of their pre-recession levels by 2019, in very few parts of the state had incomes across the distribution made substantial enough improvements to, with a high degree of statistical confidence, be certainly above pre-recession levels. And while looking at point estimates shows that low incomes recovered more slowly than middle incomes, the wider bounds set by incorporating the confidence intervals show that in the Bay Area, Central Valley and Sierra region, and Central Coast, the actual difference in recovery times was between top and other incomes, not between middle and bottom.

TABLE A1

Regional years to recovery from the Great Recession varies depending on level of confidence

Region	Shortest possible recovery			Longest possible recovery		
	10th percentile	Median	90th percentile	10th percentile	Median	90th percentile
Far north	8	5	n/a	has yet to	13	12
Sacramento	11	8	6	has yet to	12	12
Bay Area	8	8	4	10	12	7
Central Valley and Sierra	10	10	7	has yet to	12	has yet to
Central Coast	8	8	4	has yet to	has yet to	12
Inland Empire	11	10	8	has yet to	has yet to	has yet to
Los Angeles County	9	6	7	12	9	9
Orange County	7	8	7	has yet to	12	12
San Diego County	8	7	6	has yet to	12	10

SOURCES: Authors' analysis of Census Bureau American Community Survey data accessed via IPUMS-USA (2005-2019).
NOTES: N/A denotes cases where a region experienced no statistically significant decline in income during the recession.

Table A2 explores another dimension of the regional impacts of the Great Recession: the depth of income declines. In the Bay Area, for example, the 8-10 year recovery for 10th percentile incomes consisted of at its worst an 18 percent drop in incomes from pre-recession levels, of about $5,600 (in 2019 dollars). In the Sacramento area, where 10th percentile incomes had not recovered from the recession by 2019, low incomes dropped by 29 percent, or about $7,900. Table A3 provides normalized dollar amounts, by region, for the 10th, 50th, and 90th percentiles of family income.

TABLE A2
The depths of income declines during the Great Recession varied across the state

| Region	Percent change, peak to trough			Dollar change, peak to trough		
	10th percentile	Median	90th percentile	10th percentile	Median	90th percentile
Northern	24%	9%	7%	$5,300	$6,500	$12,800
Sacramento	29%	16%	8%	$7,900	$15,100	$18,800
Bay Area	18%	16%	7%	$5,600	$15,100	$20,900
Central Valley and Sierra	28%	18%	9%	$5,500	$11,900	$16,500
Central Coast	24%	13%	7%	$6,500	$12,100	$18,500
Inland Empire	33%	19%	12%	$8,100	$14,600	$24,000
Los Angeles County	19%	11%	8%	$4,200	$8,200	$17,600
Orange County	21%	14%	11%	$6,000	$14,200	$31,600
San Diego County	28%	13%	9%	$7,400	$12,200	$23,100

SOURCES: Authors' analysis of Census Bureau American Community Survey data accessed via IPUMS-USA (2005-2019).

NOTES: "Peak to trough" refers to the difference between income at its highest point pre-recession (2007-9) and its lowest point during recession and recovery (2007-2019). Income percentiles based on family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs. Dollar values are adjusted to pertain to a family of four in 2019 dollars.

TABLE A3
Regional family income levels

| Region	Family income, normalized, 2005			Family income, normalized, 2019		
	10th percentile	Median	90th percentile	10th percentile	Median	90th percentile
Northern	$21,000	$72,000	$184,000	$22,000	$77,000	$213,000
Sacramento	$24,000	$90,000	$223,000	$26,000	$101,000	$261,000
Bay Area	$28,000	$113,000	$307,000	$36,000	$141,000	$414,000
Central Valley and Sierra	$18,000	$63,000	$182,000	$20,000	$69,000	$188,000
Central Coast	$24,000	$89,000	$238,000	$29,000	$96,000	$278,000
Inland Empire	$22,000	$74,000	$187,000	$24,000	$79,000	$201,000
Los Angeles County	$20,000	$70,000	$219,000	$24,000	$84,000	$253,000
Orange County	$29,000	$98,000	$270,000	$30,000	$112,000	$305,000
San Diego County	$26,000	$91,000	$244,000	$29,000	$101,000	$284,000

SOURCES: Authors' analysis of Census Bureau American Community Survey data accessed via IPUMS-USA (2005-2019).

NOTES: Income percentiles based on family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs. Dollar values are adjusted to pertain to a family of four in 2019 dollars.

FIGURE A4
Regional representation in California's population, compared with representation in top and bottom income brackets
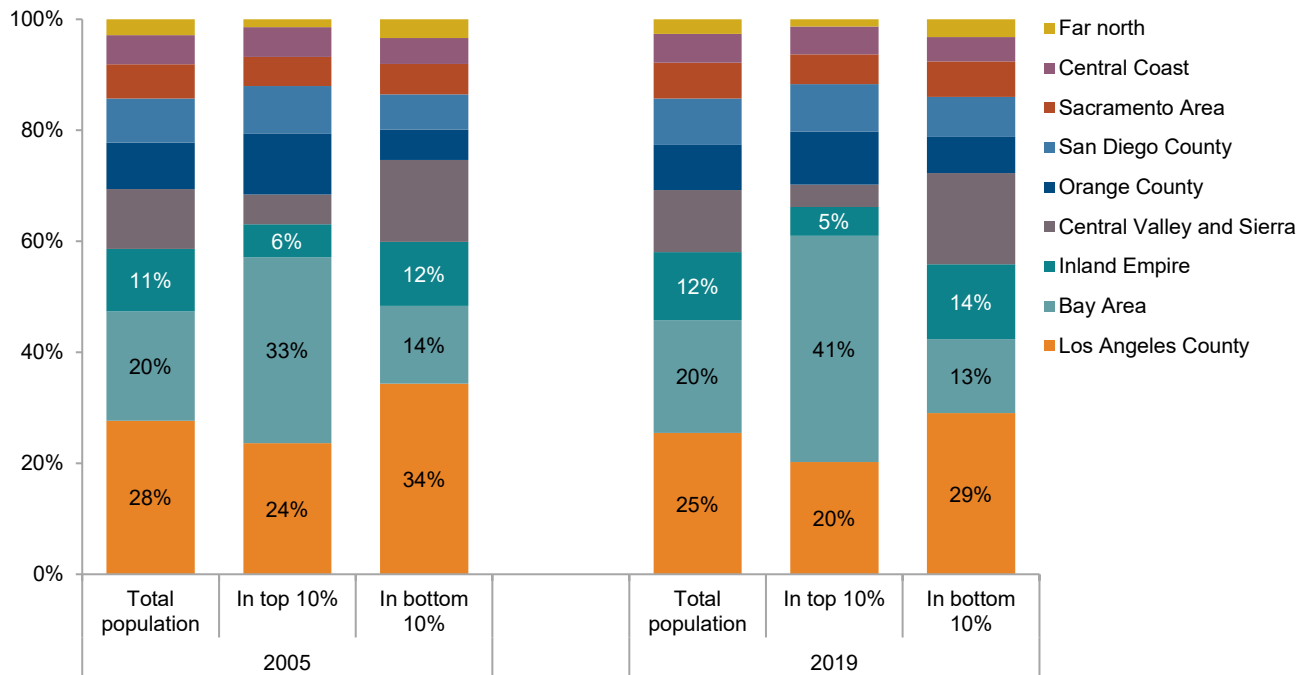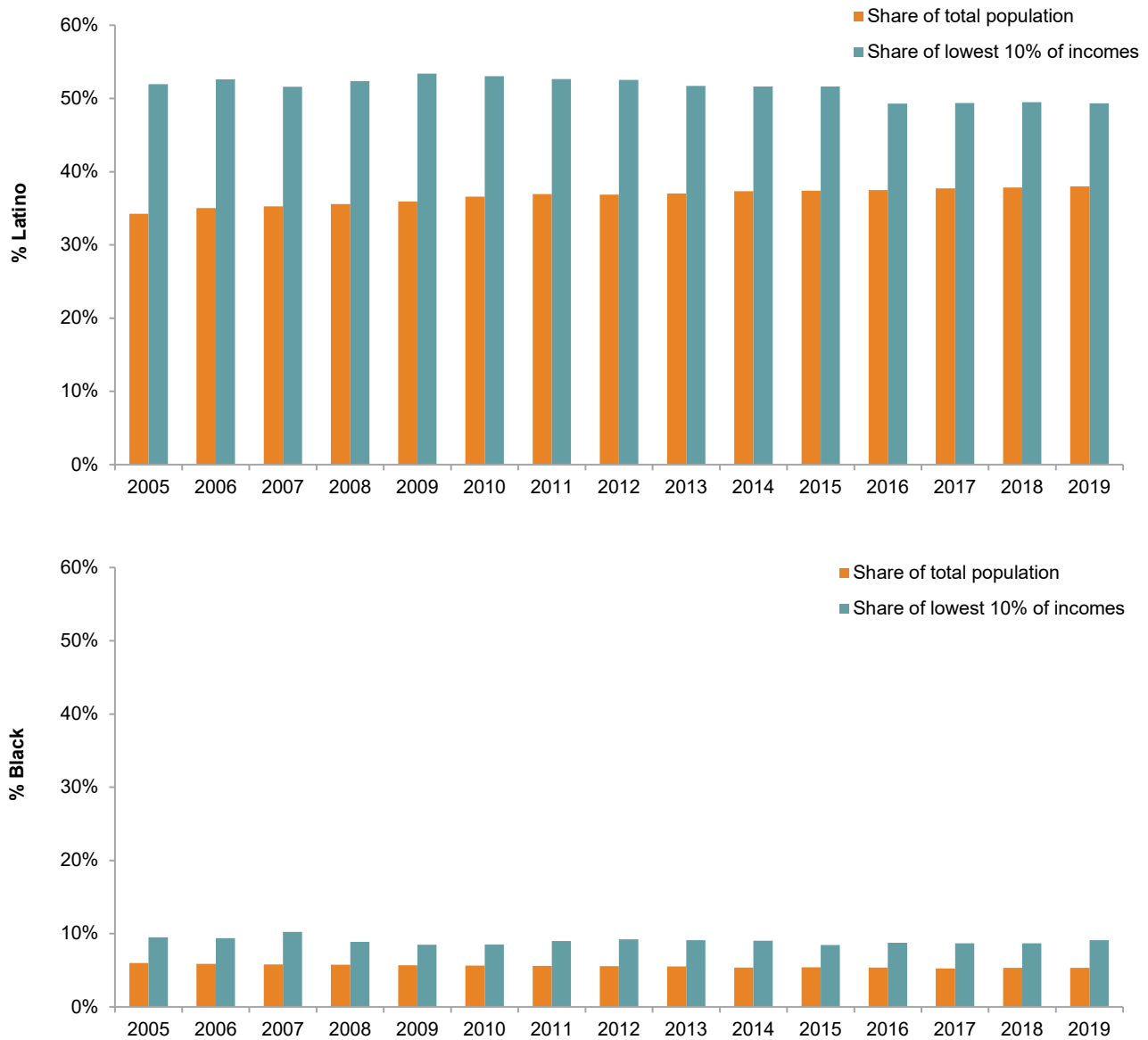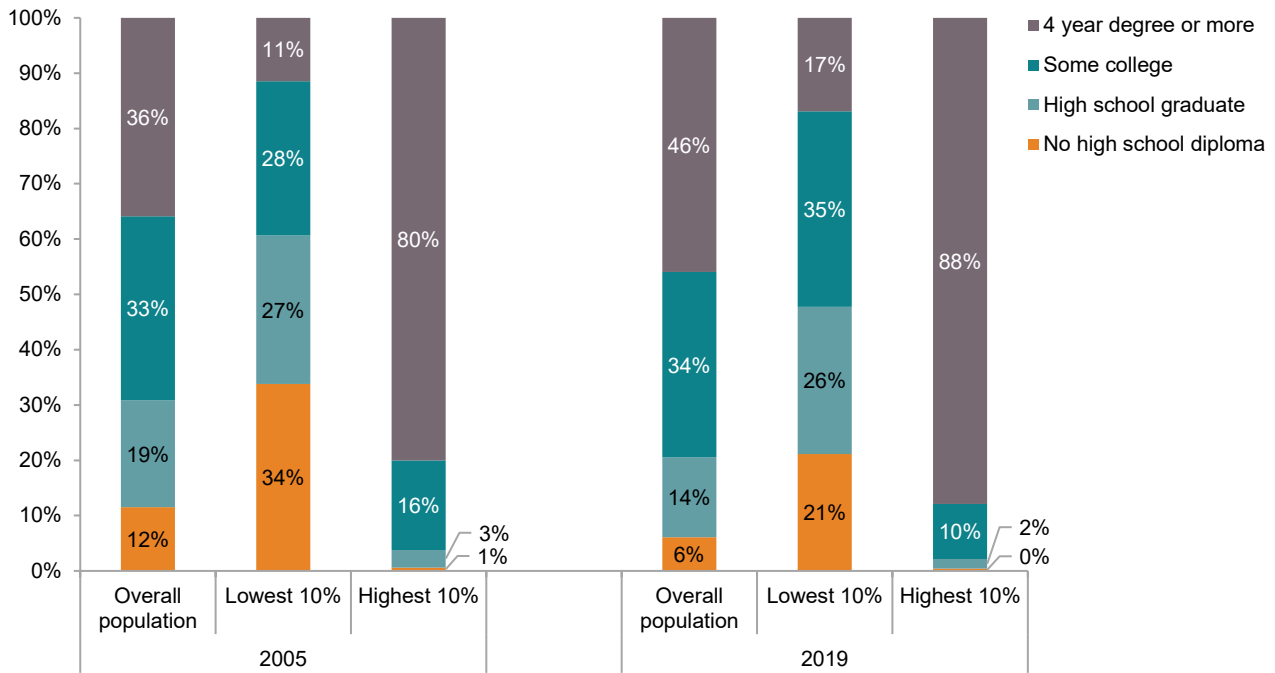

SOURCE: Authors' analysis of Census Bureau American Community Survey data accessed via IPUMS-USA.

NOTE: Income percentiles based on family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs.

FIGURE A5
Shifts in regional representation in top and bottom income brackets since 2005 have not tracked directly with geographic shifts in the population

SOURCE: Authors' analysis of Census Bureau American Community Survey data accessed via IPUMS-USA (2005, 2019).

NOTE: Chart shows percentage point change in regional share of income brackets between 2005 and 2019. Income percentiles based on family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs.

Regional over- and under-representation in California's top and bottom income brackets, 2019
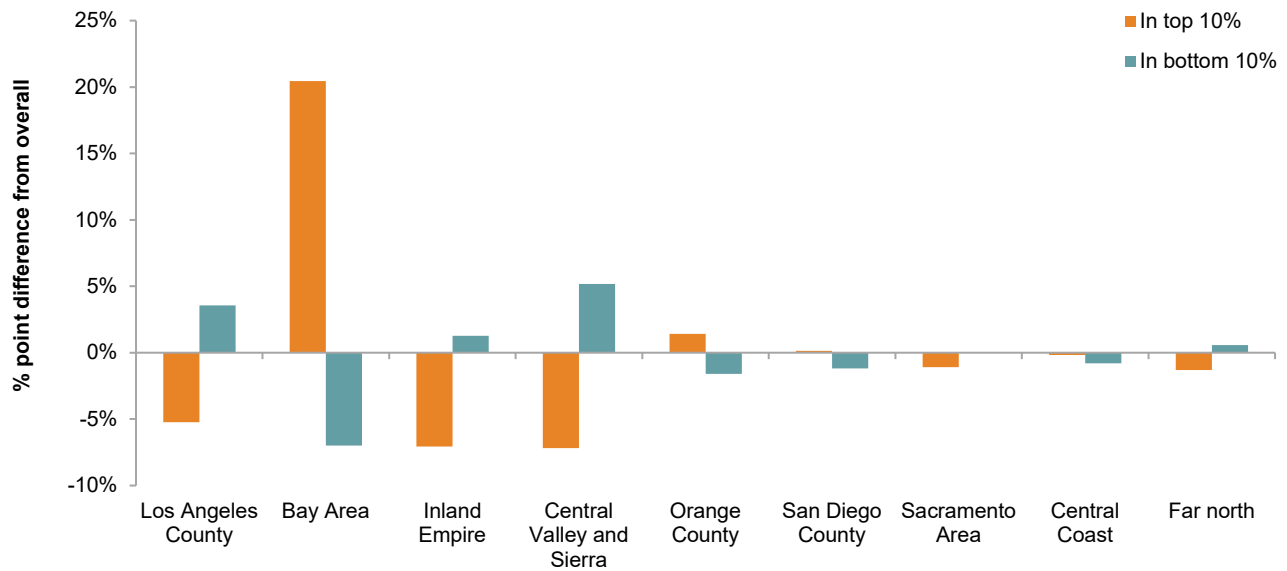
SOURCE: Authors' analysis of Census Bureau American Community Survey data accessed via IPUMS-USA (2019).

NOTE: Chart shows percentage point difference between region's share of statewide income bracket and total state population. Income percentiles based on family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs.

FIGURE A7

Median incomes over time, by region
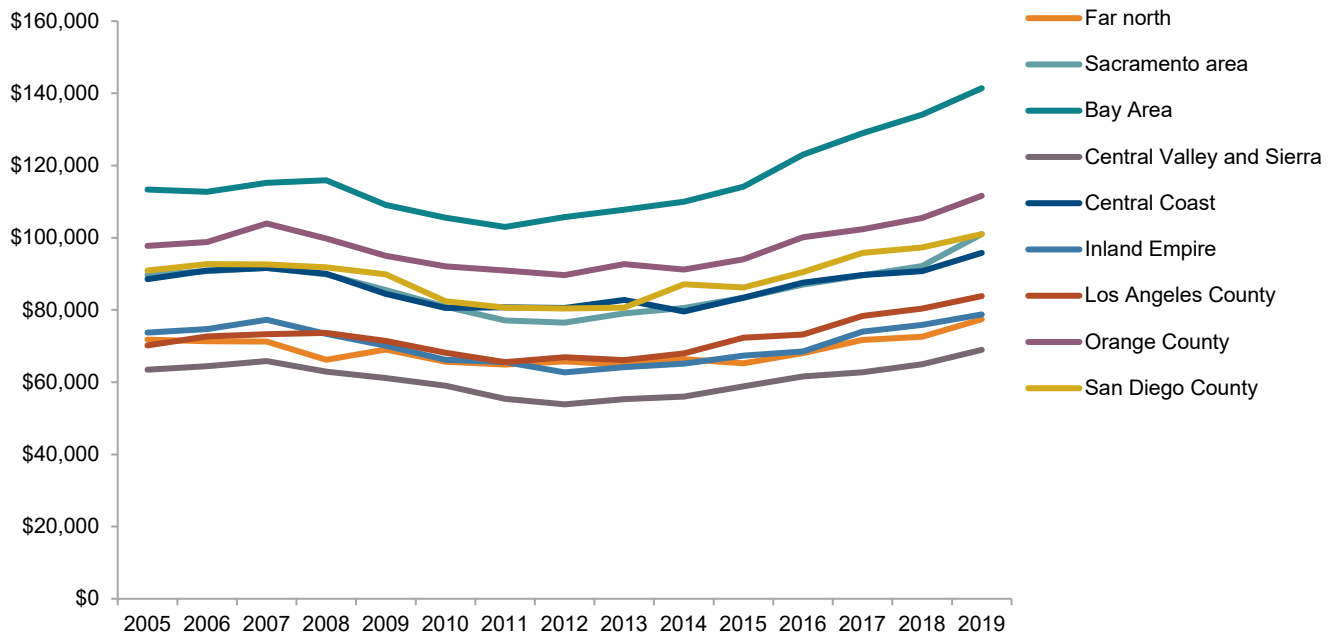
SOURCE: Authors' analysis of Census Bureau American Community Survey data accessed via IPUMS-USA.

NOTE: Income percentiles based on family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs. Dollar values are adjusted to pertain to a family of four in 2019 dollars.

African American and Latino Californians remain overrepresented in families with the lowest earnings, statewide

SOURCE: Authors' analysis of Census Bureau American Community Survey data accessed via IPUMS-USA.

NOTE: Income percentiles based on family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs.

Californians in families with limited education continue to be overrepresented at low incomes, despite improvements

SOURCE: Authors' analysis of Census Bureau American Community Survey data accessed via IPUMS-USA.

NOTE: Chart shows Californians based on highest level of education in family unit. Income percentiles based on family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs.

FIGURE A10

Additional detail on recessionary declines in income
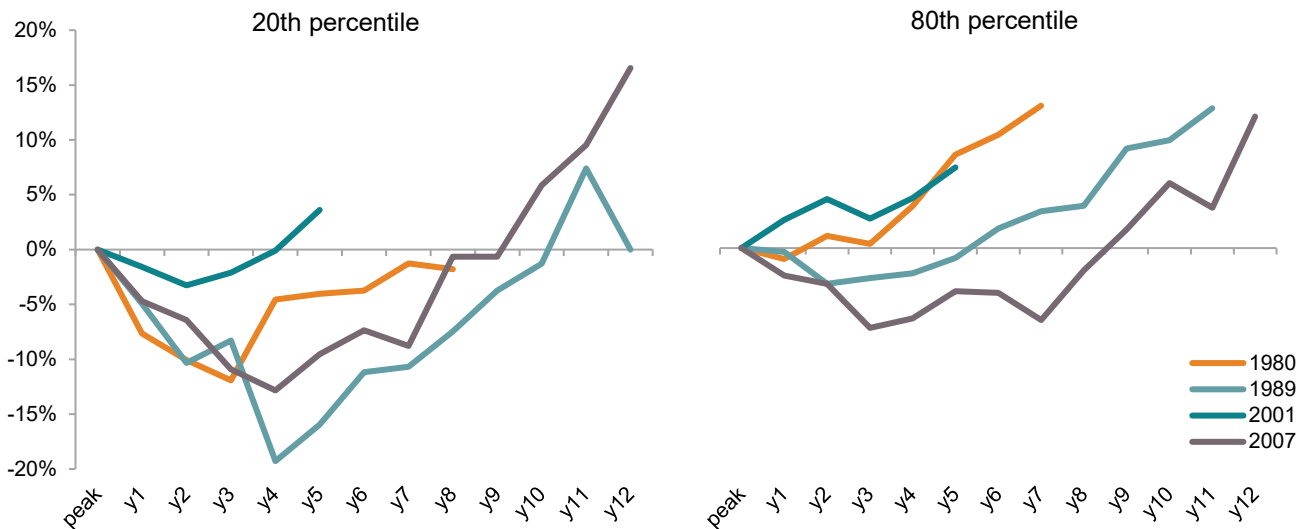
SOURCE: Authors' analysis of CPS ASEC data.

NOTES: Chart shows changes in family income relative to the year noted in the legend. Income is family total pre-tax income, which includes income from TANF (cash assistance) and SSI (Supplemental Security Income), but excludes resources from other safety net programs. Dollar values are adjusted to pertain to a family of four. Trends adjusted in years prior to 2017 for recent changes to income questions and processing in the CPS ASEC (see Appendix). Census Bureau research finds 2020 CPS ASEC data overestimate income increases for percentiles across the board between 2018 and 2019, due to lowered response rates among low income people.

Appendix B. Supplementary Analysis

FIGURE B1

Employment changes in California since February 2020
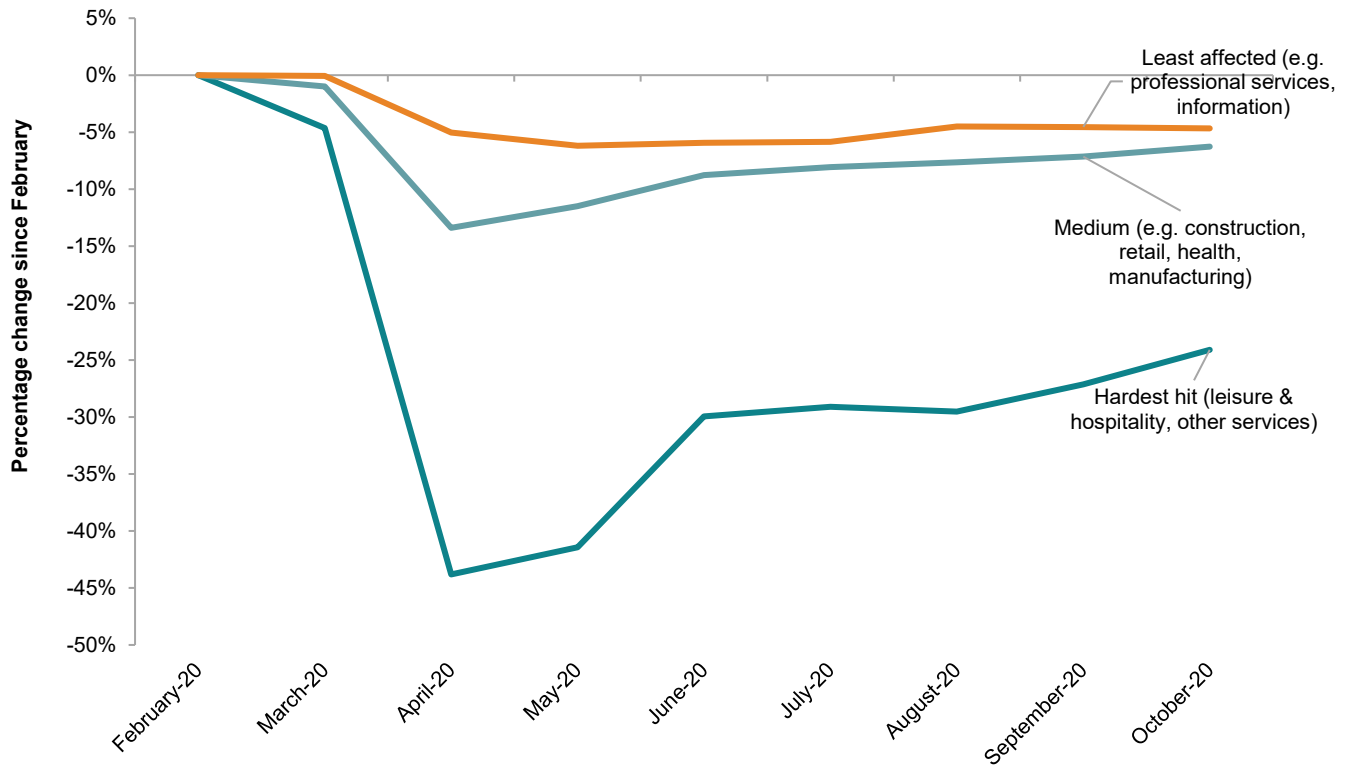
NOTE: Hardest hit sectors had declines greater than 25% between February and April: accommodation and food services, other services, and arts & entertainment. Medium had 10-25% declines and includes administrative services, construction, retail trade, health and others. Least affected had declines less than 10% and includes professional services, information, and government, among others.

FIGURE B2
Unemployment, underemployment, and marginally attached workers by family income
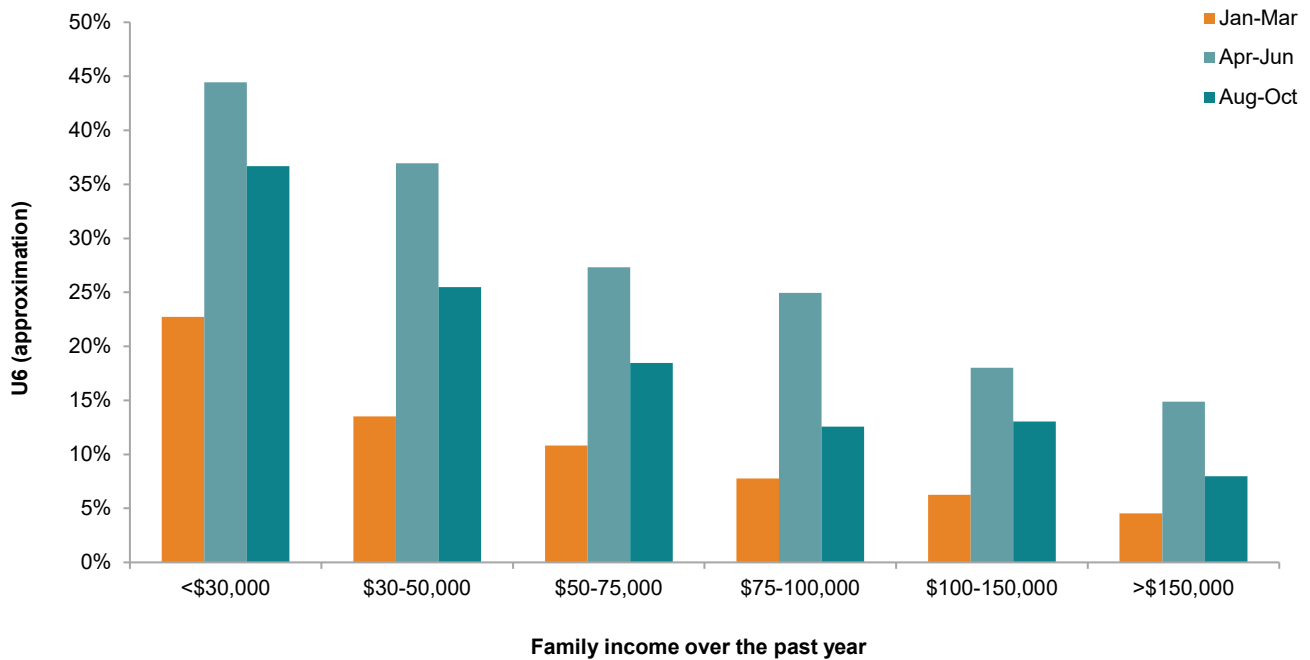
SOURCE: Basic Monthly CPS, California sample for January-October 2020.

NOTE: Average rate over three month periods is shown in chart due to limited sample size. The "U6" rate estimates the share of those in the labor force who are unemployed, underemployed (working part time when would prefer full time), and marginally attached (not looking for work despite being available). Income levels refer to family income over the prior 12 months and includes all income from jobs, business, pensions, dividends, social security, and any other sources. Sample size and standard error for these estimates is provided in Table B1.

TABLE B1
Detailed estimates for unemployment and underemployment by family income category

Family Income	Estimate		Sample Size		Standard error	
	Unemployment	U6	Unemployment	U6	Unemployment	U6
Jan-Mar 2020						
<$30,000	12.2%	22.7%	1690	1730	0.0083	0.0103
$30-50,000	6.7%	13.5%	2092	2119	0.0056	0.0076
$50-75,000	5.3%	10.8%	2480	2499	0.0047	0.0064
$75-100,000	3.5%	7.8%	2163	2172	0.0043	0.0063
$100-150,000	3.0%	6.2%	2758	2762	0.0034	0.0049
>$150,000	2.8%	4.5%	3808	3815	0.0028	0.0035
Apr-June 2020						
<$30,000	30.3%	44.4%	1053	1103	0.0149	0.0156
$30-50,000	24.1%	37.0%	1541	1576	0.0114	0.0126
$50-75,000	16.6%	27.3%	2055	2100	0.0087	0.0101
$75-100,000	15.1%	25.0%	1804	1832	0.0088	0.0105
$100-150,000	10.8%	18.0%	2270	2296	0.0068	0.0083
>$150,000	9.4%	14.9%	3216	3240	0.0053	0.0065
Aug-Oct 2020						
<$30,000	25.8%	36.7%	1372	1420	0.0123	0.0132

$30-50,000	14.3%	25.5%	1838	1874	0.0084	0.0105
$50-75,000	11.2%	18.5%	2134	2156	0.0070	0.0086
$75-100,000	7.4%	12.6%	1911	1926	0.0063	0.0079
$100-150,000	8.1%	13.1%	2363	2388	0.0059	0.0072
>$150,000	5.1%	8.0%	3458	3480	0.0039	0.0048

SOURCES: Basic Monthly CPS, California sample.

NOTES: Average rate over three month periods is shown in chart due to limited sample size. The "U6" rate estimates the share of those in the labor force who are unemployed, underemployed (working part time when would prefer full time), and marginally attached (not looking for work despite being available). Income levels refer to family income over the prior 12 months and includes all income from jobs, business, pensions, dividends, social security, and any other sources. Standard errors account only for variation in the sample, not for sampling variation.

TABLE B2
Unemployment by family income level during the Great Recession

Family income	October-December 2007 (pre-recesion)	October-December 2008	October-December 2009	October-December 2010 (depth of the recession)	Change from 2007-2010
<$30,000	12.7%	19.2%	23.5%	22.6%	9.9%
$30-50,000	6.2%	8.4%	15.4%	13.0%	6.8%
$50-75,000	5.1%	7.8%	10.3%	10.2%	5.1%
$75-100,000	4.5%	6.6%	7.6%	6.6%	2.1%
$100-150,000	2.0%	3.5%	5.5%	6.8%	4.8%
>$150,000	1.4%	2.7%	4.3%	3.2%	1.7%

SOURCES: Basic Monthly CPS, California sample.

NOTES: Average rate over three month periods is shown in chart due to limited sample size. Income levels refer to family income over the prior 12 months and includes all income from jobs, business, pensions, dividends, social security, and any other sources.

TABLE B3
Unemployment and underemployment rate estimates by educational attainment

|	Estimate		Sample Size		Standard Error	
	Unemployment	U6	Unemployment	U6	Unemployment	U6
Jan-Mar 2020						
No high school diploma	11.3%	19.3%	1726	1744	0.0079	0.0098
High school grad	5.9%	12.2%	3300	3329	0.0042	0.0059
Some college	4.4%	9.6%	3964	4002	0.0035	0.0049
4-year degree or more	2.9%	5.5%	6001	6022	0.0022	0.0030
Apr-June 2020						
No high school diploma	22.0%	35.7%	1171	1200	0.0125	0.0143
High school grad	18.1%	28.7%	2465	2515	0.0082	0.0094
Some college	18.5%	28.4%	3086	3159	0.0074	0.0084
4-year degree or more	11.1%	18.1%	5217	5273	0.0045	0.0055

Aug-Oct 2020						
No high school diploma	12.3%	22.5%	1281	1306	0.0094	0.0119
High school grad	13.7%	21.9%	2847	2892	0.0066	0.0079
Some college	13.2%	19.7%	3368	3417	0.0062	0.0072
4-year degree or more	6.7%	11.2%	5580	5629	0.0035	0.0043

SOURCES: Basic Monthly CPS, California sample.

NOTES: Average rate over three month periods is shown in chart due to limited sample size. The "U6" rate estimates the share of those in the labor force who are unemployed, underemployed (working part time when would prefer full time), and marginally attached (not looking for work despite being available). Income levels refer to family income over the prior 12 months and includes all income from jobs, business, pensions, dividends, social security, and any other sources. Standard errors account only for variation in the sample, not for sampling variation.

FIGURE B4
Unemployment, underemployment, and marginally attached workers by race/ethnicity
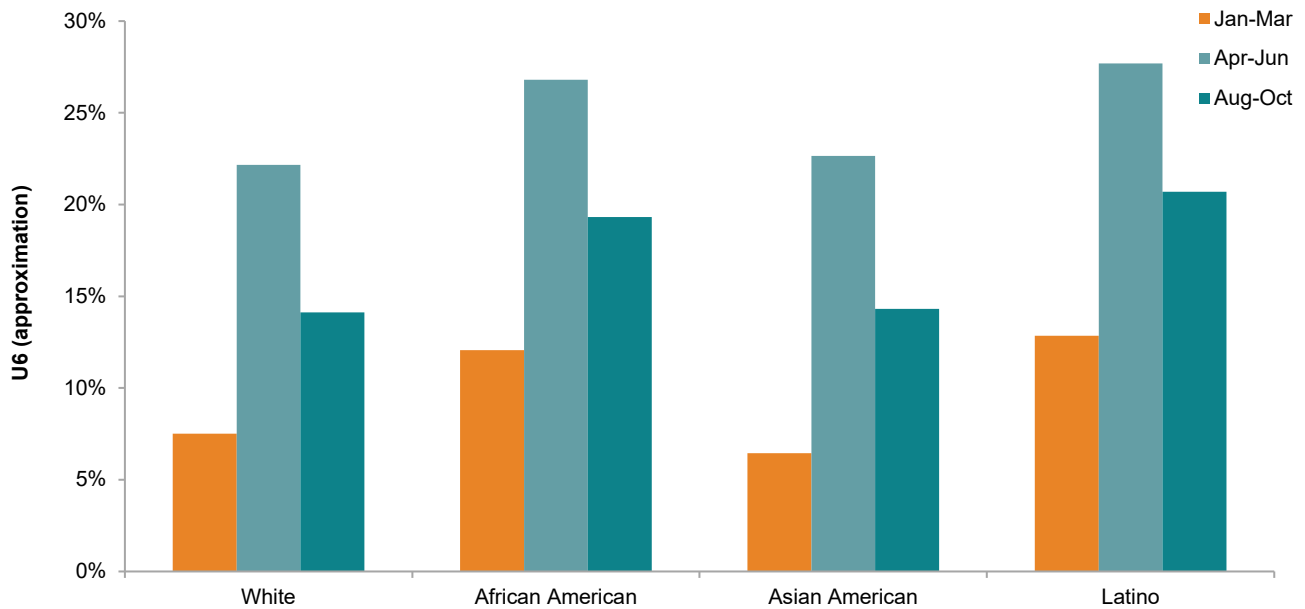
SOURCE: Basic Monthly CPS, California sample for January-October 2020.

NOTE: Average rate over three month periods is shown in chart due to limited sample size. The rate estimates the share of those in the labor force who are unemployed, underemployed (working part time when would prefer full time), and marginally attached (not looking for work despite being available). Mutually exclusive race/ethnic categories shown; other categories are not shown due to sample size. Sample size and standard error for these estimates is provided in Table B4.

Labor force participation by race/ethnicity
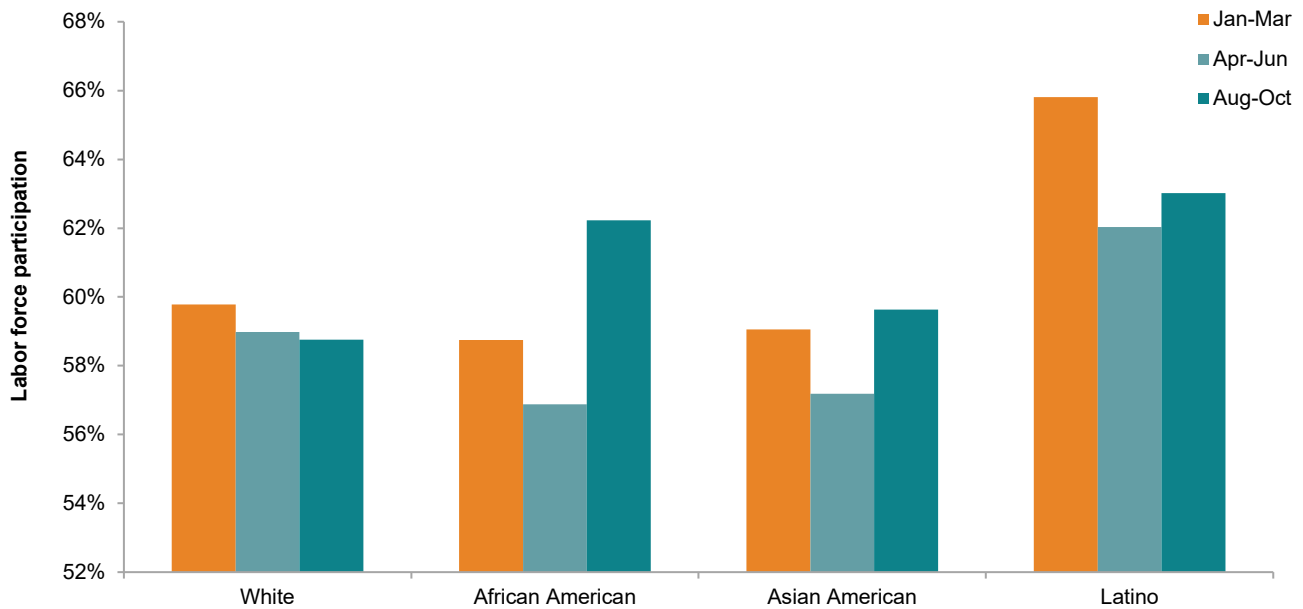
SOURCE: Basic Monthly CPS, California sample for January-October 2020.

NOTE: Average rate over three month periods is shown in chart due to limited sample size. Mutually exclusive race/ethnic categories shown; other categories are not shown due to sample size. Sample size and standard error for these estimates is provided in Table B4.

TABLE B4
Detailed estimates for unemployment and underemployment by race/ethnicity

	Estimate		Sample Size		Standard error	
	Unemployment	U6	Unemployment	U6	Unemployment	U6
Jan-Mar 2020						
White	3.7%	7.5%	6202	6242	0.0025	0.0034
African American	7.0%	12.1%	663	675	0.0105	0.0129
Asian American	3.3%	6.4%	2314	2330	0.0038	0.0052
Latino	6.3%	12.8%	5286	5322	0.0034	0.0047
Apr-June 2020						
White	13.7%	22.2%	5338	5408	0.0049	0.0058
African American	16.9%	26.8%	542	564	0.0171	0.0198
Asian American	14.9%	22.6%	1909	1947	0.0083	0.0097
Latino	17.1%	27.7%	3740	3804	0.0064	0.0075
Aug-Oct 2020						
White	8.8%	14.1%	5476	5548	0.0039	0.0048
African American	15.1%	19.3%	711	718	0.0144	0.0156
Asian American	9.9%	14.3%	2056	2079	0.0068	0.0079
Latino	12.0%	20.7%	4466	4526	0.0050	0.0062

SOURCES: Basic Monthly CPS, California sample for January-October 2020.

NOTES: Average rate over three month periods is shown in chart due to limited sample size. The "U6" rate estimates the share of those in the labor force who are unemployed, underemployed (working part time when would prefer full time), and marginally attached (not looking for work despite being available). Income levels refer to family income over the prior 12 months and includes all income from jobs, business, pensions, dividends, social security, and any other sources. Standard errors account only for variation in the sample, not for sampling variation.

TABLE B5
Unemployment, underemployment, and labor force participation by gender in 2020

	Unemployment		U6		Labor Force Participation Rate	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
Estimate						
Jan	4.8%	4.6%	8.8%	9.6%	68.7%	55.6%
Feb	4.7%	4.4%	9.0%	8.5%	69.6%	55.3%
Mar	5.7%	5.5%	11.0%	11.6%	69.3%	54.4%
Apr	14.9%	18.8%	23.4%	28.4%	66.7%	52.8%
May	14.7%	17.0%	25.2%	27.5%	66.9%	51.8%
June	13.1%	16.4%	21.8%	24.0%	68.1%	53.2%
July	11.5%	14.4%	20.0%	22.7%	67.2%	54.4%
August	11.2%	12.3%	18.1%	20.2%	66.8%	53.5%
September	10.1%	11.7%	14.5%	17.9%	67.9%	53.6%
October	8.7%	9.2%	15.4%	16.1%	68.0%	55.4%
Sample size						
Jan	2762	2394	2782	2410	4079	4366
Feb	2895	2444	2918	2458	4185	4459
Mar	2461	2035	2482	2047	3597	3790
Apr	2245	1859	2268	1894	3440	3616
May	2181	1808	2226	1842	3340	3576
June	2092	1754	2138	1779	3152	3402
July	2005	1717	2046	1738	3044	3267
August	2023	1733	2055	1756	3109	3321
September	2444	2058	2469	2090	3640	3895
October	2578	2240	2615	2259	3840	4115
Standard error						
Jan	0.0042	0.0045	0.0056	0.0062	0.0073	0.0076
Feb	0.0040	0.0042	0.0055	0.0057	0.0072	0.0075
Mar	0.0049	0.0053	0.0066	0.0073	0.0078	0.0083
Apr	0.0079	0.0096	0.0093	0.0109	0.0082	0.0085
May	0.0080	0.0092	0.0096	0.0108	0.0083	0.0086
June	0.0077	0.0093	0.0093	0.0105	0.0084	0.0088
July	0.0074	0.0087	0.0092	0.0104	0.0086	0.0089
August	0.0073	0.0082	0.0089	0.0100	0.0085	0.0089
September	0.0063	0.0073	0.0073	0.0086	0.0078	0.0081
October	0.0057	0.0063	0.0073	0.0079	0.0075	0.0078

SOURCES: Basic Monthly CPS, California sample for January-October 2020.

NOTES: Average rate over three month periods is shown in chart due to limited sample size. The "U6" rate estimates the share of those in the labor force who are unemployed, underemployed (working part time when would prefer full time), and marginally attached (not looking for work despite being available). Income levels refer to family income over the prior 12 months and includes all income from jobs, business, pensions, dividends, social security, and any other sources. Standard errors account only for variation in the sample, not for sampling variation.

TABLE B6

Unemployment rates by gender and family income

	Male			Female		
	Jan-Mar	Apr-June	Aug-Oct	Jan-Mar	Apr-June	Aug-Oct
Estimate						
<$30,000	11.7%	27.8%	22.9%	12.9%	32.9%	29.0%
$30-50,000	6.6%	23.4%	14.2%	6.8%	25.1%	14.5%
$50-75,000	6.2%	14.7%	12.0%	4.1%	19.1%	10.1%
$75-100,000	3.4%	14.5%	6.5%	3.5%	15.9%	8.4%
$100-150,000	2.8%	8.6%	7.8%	3.3%	13.4%	8.3%
>$150,000	3.2%	8.4%	4.6%	2.3%	10.6%	5.7%
Standard Error						
<$30,000	0.0114	0.0202	0.2289	0.0120	0.0218	0.0185
$30-50,000	0.0073	0.0148	0.1416	0.0088	0.0177	0.0125
$50-75,000	0.0068	0.0111	0.1200	0.0061	0.0136	0.0101
$75-100,000	0.0057	0.0118	0.0649	0.0065	0.0133	0.0095
$100-150,000	0.0045	0.0084	0.0784	0.0053	0.0111	0.0089
>$150,000	0.0043	0.0068	0.0463	0.0036	0.0084	0.0060
Sample Size						
<$30,000	858	537	711	832	516	661
$30-50,000	1150	888	1006	942	653	832
$50-75,000	1388	1121	1188	1092	934	946
$75-100,000	1188	968	997	975	836	914
$100-150,000	1496	1239	1308	1262	1031	1055
>$150,000	2038	1765	1835	1770	1451	1623

SOURCES: Basic Monthly CPS, California sample for January-October 2020.

NOTES: Average rate over three month periods is shown in chart due to limited sample size. Income levels refer to family income over the prior 12 months and includes all income from jobs, business, pensions, dividends, social security, and any other sources. Standard errors account only for variation in the sample, not for sampling variation.

TABLE B7
Unemployment rates by gender and race/ethnicity

	Male			Female		
	Jan-Mar	Apr-June	Aug-Oct	Jan-Mar	Apr-June	Aug-Oct
Estimate						
White	4.2%	12.7%	7.7%	3.2%	14.9%	10.0%
African American	7.5%	15.6%	18.4%	6.5%	18.4%	11.8%
Asian American	3.3%	12.3%	7.8%	3.2%	17.6%	12.1%
Latino	5.9%	15.6%	12.2%	6.9%	19.3%	11.7%
Standard error						
White	0.0035	0.0064	0.0051	0.0034	0.0074	0.0061
African American	0.0164	0.0236	0.0224	0.0133	0.0248	0.0176
Asian American	0.0053	0.0108	0.0084	0.0055	0.0127	0.0108
Latino	0.0044	0.0081	0.0067	0.0054	0.0103	0.0076
Sample size						
White	3407	2908	2906	2795	2430	2570
African American	298	270	341	365	272	370
Asian American	1199	972	1070	1115	937	986
Latino	2946	2148	2523	2340	1592	1943

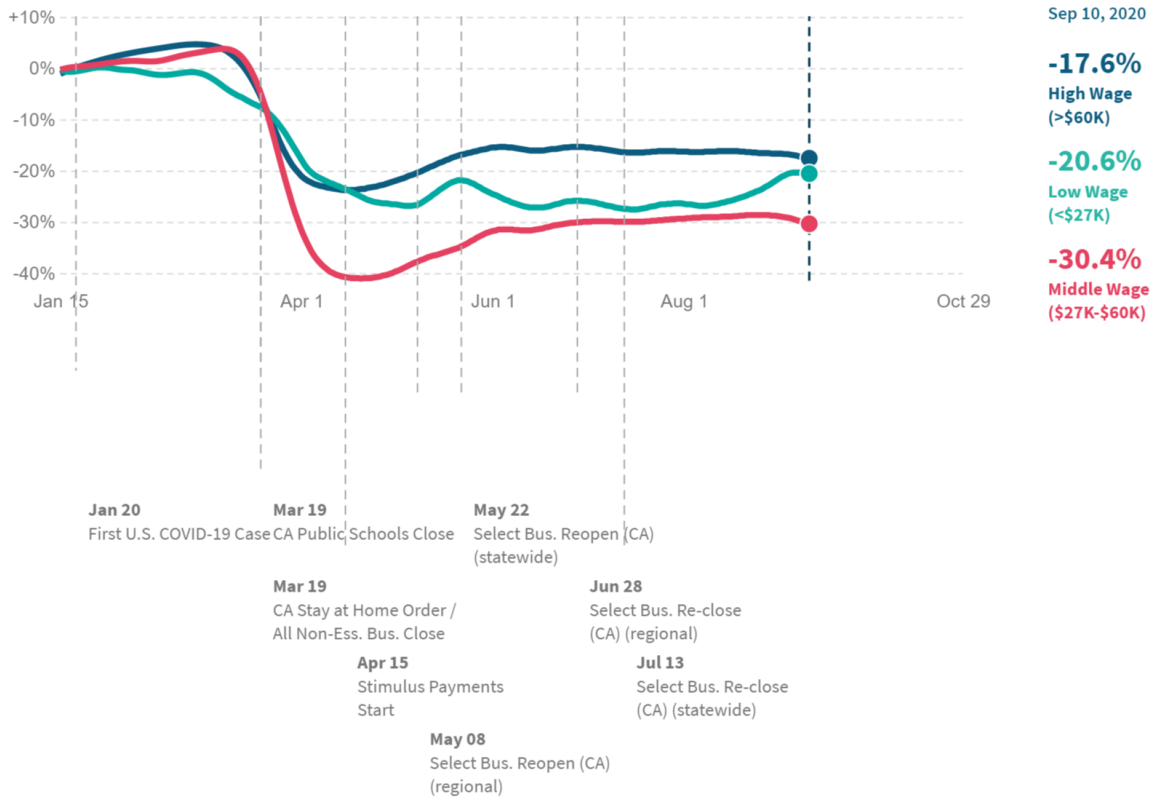SOURCES: Basic Monthly CPS, California sample for January-October 2020.

NOTES: Average rate over three month periods is shown in chart due to limited sample size. The "U6" rate estimates the share of those in the labor force who are unemployed, underemployed (working part time when would prefer full time), and marginally attached (not looking for work despite being available. Standard errors account only for variation in the sample, not for sampling variation.

Employment changes by wage distribution quartiles

Percent Change in Employment*

In **San Francisco**, as of **September 10 2020**, employment rates among workers in the top wage quartile **decreased** by **17.6%** compared to January 2020 (not seasonally adjusted).

Sep 10, 2020

-17.6%
High Wage
(>$60K)

-20.6%
Low Wage
(<$27K)

-30.4%
Middle Wage
($27K-$60K)

Jan 20
First U.S. COVID-19 Case

Mar 19
CA Public Schools Close

May 22
Select Bus. Reopen (CA)
(statewide)

Mar 19
CA Stay at Home Order /
All Non-Ess. Bus. Close

Jun 28
Select Bus. Re-close
(CA) (regional)

Apr 15
Stimulus Payments
Start

Jul 13
Select Bus. Re-close
(CA) (statewide)

May 08
Select Bus. Reopen (CA)
(regional)

*Change in employment rates (not seasonally adjusted), indexed to January 4-31, 2020. This series is based on payroll data from Paychex and Intuit, worker-level data on employment and earnings from Earnin, and timesheet data from Kronos. The dotted line in the low-wage series is a prediction of employment rates based on Kronos data.

last updated: **October 28, 2020**   *next update expected:* **November 06, 2020**

SOURCE: Opportunity Insights, https://tracktherecovery.org/, Chetty et al (2020).

NOTE: Based on payroll data from Paychex and Intuit, employment and earnings from Earnin, and timesheet data from Kronos.

Latino and African-American families are much more likely to be behind on housing payments or lack sufficient food
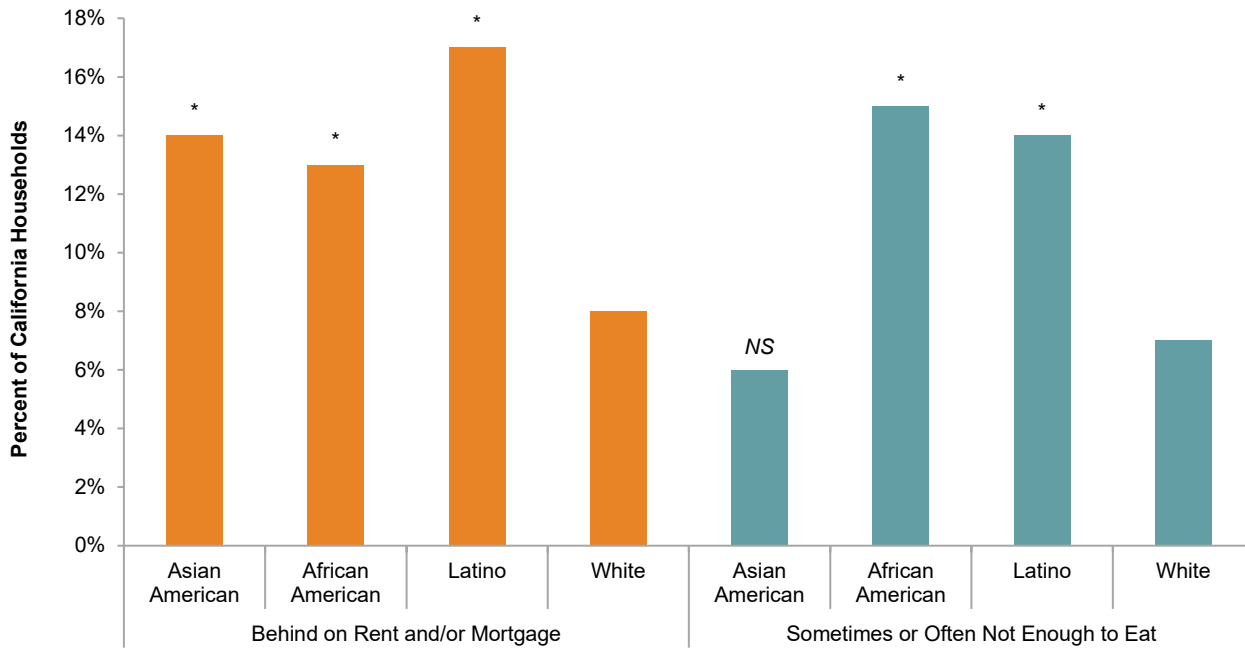
SOURCE: US Census Bureau Pulse survey, for August 19 through October 12, California sample.

NOTE: Stars denote estimates that are statistically distinguishable from the base category (white households) at or below the 5 percent level; *NS* denotes differences that are not statistically significant. Sample includes Californian households surveyed between August 19 and October 12. Race/ethnicity is based on the household member who completed the PULSE survey. Households with missing/non-reported responses are excluded from analyses.

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