California's Safety Net in Recession and Recovery

Technical Appendices

CONTENTS

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Appendix A. Data and Methodology

The two overarching goals of our empirical analysis are, first, to establish whether the broad takeaways from the national literature hold true for California and, second, to assess systematic differences in safety net responsiveness for groups defined by presence and age of children in the family, immigration status, and race/ethnicity. This appendix provides an overview of our data and methodology and Appendix B discusses the findings.

Data

We use California Poverty Measure (CPM) data for 2011-2018 to estimate descriptive regression models. For details of the construction of the CPM, see Bohn, et al. 2017. The CPM is built on the American Community Survey (ACS) accessed via IPUMS USA (Ruggles, et al. 2020). The ACS is a Census household survey that provides family composition and demographic characteristics. The ACS does not report immigration status, but the CPM imputes this (Bohn, et al. 2017).

Key analysis populations

The population focus is families with at least one member between the ages of 18 and 64, since we would expect recessions to affect families made up of individuals all age 65 or older in a relatively attenuated way. We also limit the analysis population to families with at least one adult who does not self-report a disability.[1] We impose this restriction because disabled adults may have access to Supplemental Security Income (SSI/SSP) or Social Security Disability Insurance (SSDI) instead of CalWORKs. We also drop families with only immigrant members who are imputed – according to the CPM algorithm – to be all undocumented immigrants. We make this exclusion because undocumented adults are generally ineligible for full-scope safety net programs.

Of the 3,557,270 total ACS observations in the combined CPM datasets for 2011-2018, we drop 288,799 observations comprising families that contain only members ages 65 and older, 5,822 observations comprising those with only members 17 and younger, and 39,167 observations comprising those with all adults reporting a disability. Finally, we drop 47,551 observation comprising families in which all members are imputed to be undocumented immigrants. Weighted, these exclusions amount to a combined 11.2 percent to 12.0 percent of the sample over each of the analysis years.

Regression models consider associations between the unemployment rate and program outcomes for all families in the analysis population. We also separately consider associations for families by presence and age of children, by immigration status, and by race/ethnicity. Families are defined based on the CPM unit, which includes foster, adoptive, and biological children and cohabiting and married adults.

Immigration status and presence and age of the youngest child are based on the composition of the unit. To group families by presence of children, we define them as having a youngest child age five or younger, a youngest child ages 6-17, or no children. Immigration status is defined as all citizen or permanent resident and is in contrast to families with one or more undocumented immigrants along with one or more citizens or permanent residents.

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[1] The disability questions asked in the ACS are having a: cognitive difficulty, ambulatory difficulty, independent living difficulty, self-care difficulty, vision difficulty, and/or hearing difficulty.

To group families by race/ethnicity, we use the characteristics of the oldest family member. Because we focus on the population under age 65, we additionally do not consider members over age 65. In the case of tied ages, we select the person with the lower person number in the household. We combine reported race/ethnicities into 6 groups: Latino of any race, white, Black, South or East Asian, Southeast Asian, and all other. The grouping South or East Asian includes those reporting Asian Indian, Bangladeshi, Bhutanese, Chinese, Japanese, Korean, Mongolian, Nepalese, Pakistani, Sri Lankan, or Taiwanese descent. Southeast Asian includes those reporting Burmese, Cambodian, Filipino, Hmong, Indonesian, Laotian, Malaysian, Okinawan, Thai, or Vietnamese descent. All other includes those reporting American Indian and/or Alaska Native, all other Asian, Asian not specified, two or more Asian races, Fijian, Guamanian/Chamorro, Native Hawaiian, Pacific Islander, Samoan, Tahitian, Tongan, one or more Micronesian races, multi-race, or other race descent.

As shown in Table A1, poverty—calculated before adding resources from social safety net programs—varies widely across these groups. Those in families with young children, those in mixed immigration status families, and Latino families experienced particularly high cash poverty in 2011. Poverty drops between 2011 and 2018 were largest for those in families with young children, for Latino families, and for other race families. They were smallest for those in mixed immigration status families. Nonetheless, cash poverty in 2018 remained relatively high for both those in families with young children and those in Latino families. Cash poverty also remained elevated for those in Black families.

TABLE A1.

Focal demographic groups

	Number of people in families (2018)	% of population (2018)	2011 market income poverty %	2018 market income poverty %
A. Presence of children				
No resident child(ren)	14.9	43	27	22
Youngest child 6-17	10.6	31	29	23
Youngest child 0-5	9.2	27	37	27
B. Immigration status				
All citizen or permanent resident	30.2	87	30	22
Mixed immigration status	4.4	13	40	37
C. Race/ethnicity				
Latino	14.2	41	41	30
White	12.3	35	22	18
South Asian American or East Asian American	3.0	9	20	16
Black	1.9	5	41	33
Southeast Asian American	2.1	6	24	19
All other	1.2	3	32	23

SOURCES: Author calculations from the 2011-2018 CPM and the 2009-2018 ACS (Ruggles, et al 2020).

NOTES: Population estimates and poverty are for individuals, but groupings are family level. Only analysis populations are included. Population estimates are in millions. See text for details. "Market income poverty" indicates the ratio of before tax earnings and self-employment income to the CPM poverty threshold.

Safety net programs

We examine associations between the economy and the safety net as a whole as measured in the CPM. This includes cash assistance, nutrition assistance, tax credits, and federally subsidized housing. We also estimate associations between the economy and specific programs: CalWORKs, California's TANF program, CalFresh, California's SNAP program, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), free and reduced price breakfast and lunch, and the federal EITC. Table A2 briefly describes these programs.

Overview of social safety net programs

State name	Federal name	Brief description	Additional aims
CalFresh	Supplemental Nutrition Assistance Program (SNAP)	Monthly amount to purchase groceries or seeds for planting	Prevent malnutrition and hunger
Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)	WIC	Monthly amount to purchase specified foods (e.g., formula, milk, cereal, fruits and vegetables)	Improve nutrition and health
Free and reduced price school meals	National School Lunch Program and School Breakfast Program	Meals provided to low-income K-12 students while school is in session	Improve nutrition and educational outcomes
Federal Earned Income Tax Credit (EITC)	EITC	Annual refundable cash amount claimed on tax returns	Incentivize work
CalWORKs	Temporary Assistance for Needy Families (TANF)	Monthly cash amount for families with dependent children	Provide work supports to promote self-sufficiency

Outcome variables include both per capita dollar amounts from each program or combination of programs and share of the population with any assistance from the program or programs. In keeping with the CPM approach, we consider families to share resources. This implies that the numerator for the second outcome variable (participation) is all members of CPM units with the resource, regardless of whether all unit members are formal recipients of the benefit.

As discussed in the net section we include amounts from the federal EITC only. To capture cash assistance for adults without dependents, we include self-reported General Assistance (GA), although the scale of CalWORKs is over $3 billion, while the annual amount of GA benefits totals under $400 million. We combine the programs of necessity because the ACS does not ask separately about these two different program. Primarily because the scale of GA is so much smaller than for CalWORKs, in the main report we do not interpret the estimates for childless adults.

Measures of the macroeconomy

As is typical in the national literature, we measure the state of the economy with the county-level unemployment rate obtained from the Bureau of Labor Statistics' LAUS data series. The main estimates presented in the report come from models that include both the contemporaneous unemployment rate and two annual lags of that rate.

Methodology

We employ a standard, time series of cross sections approach that differences out constant county differences and flexibly captures statewide trends. The approach is entirely parallel to that taken in the national literature (e.g., Bitler, Hoynes, and Iselin 2020; Bitler Hoynes and Kuka, 2017). The CPM data are available for 2011-2018, which does not span the Great Recession years. However, the data do span the near-peak of California's unemployment rate (Figure A1). The highest unemployment rate in the wake of the Great Recession was 12.3% (March 2010); unemployment rates in 2011 ranged between 12.1 percent (January) and 11.2 (December). In other words, we do capture wide variation in the California unemployment rate. At the same time, we rely on the years of recovery from the Great Recession and make the underlying assumption that the response of safety net programs is symmetrical—although in the opposite direction—when the unemployment rate is rising as when it is falling.

FIGURE A1.
Trends in the unemployment rate in California
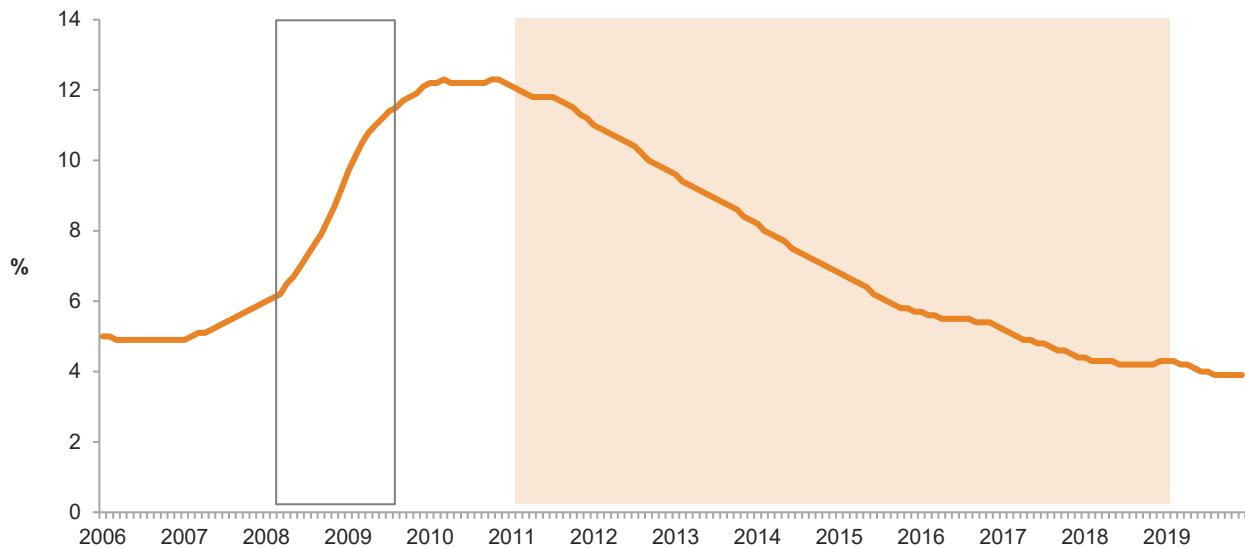
SOURCE: Bureau of Labor Statistics.

NOTES: Box demarcates official period of the Great Recession (December 2007 – June 2009). Shaded area indicates the period that the CPM data covers.

We also check the results of the EITC and CalFresh against a set of regressions that use the Supplemental Poverty Measure (SPM) data in the ACS for the years 2009-2018 (Fox, Glassman, and Pacas 2020).[2] Unlike the CPM, the SPM does not adjust for substantial survey underreporting of safety net program receipt, which is a potentially important drawback to using the SPM-ACS data if trends in underreporting are changing over time. Figure A2 shows trends in CalFresh and EITC dollar amounts for California. In Figure A2, the left-hand axis shows county average per capita dollar amounts computed from the SPM and the CPM (solid lines) while the right-hand axis shows the ratio of SPM to CPM estimates for CalFresh and EITC (dotted lines). The figure demonstrates the substantial survey underreporting of both programs. However, there does not appear to be a trend in overall underreporting. In other words, the dotted lines are essentially flat.

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[2] The SPM-ACS does not separately report any cash assistance, including CalWORKs; we also cannot construct a comparable estimate of the safety net as a whole in these data.

Levels and trends in program amounts, SPM vs. CPM
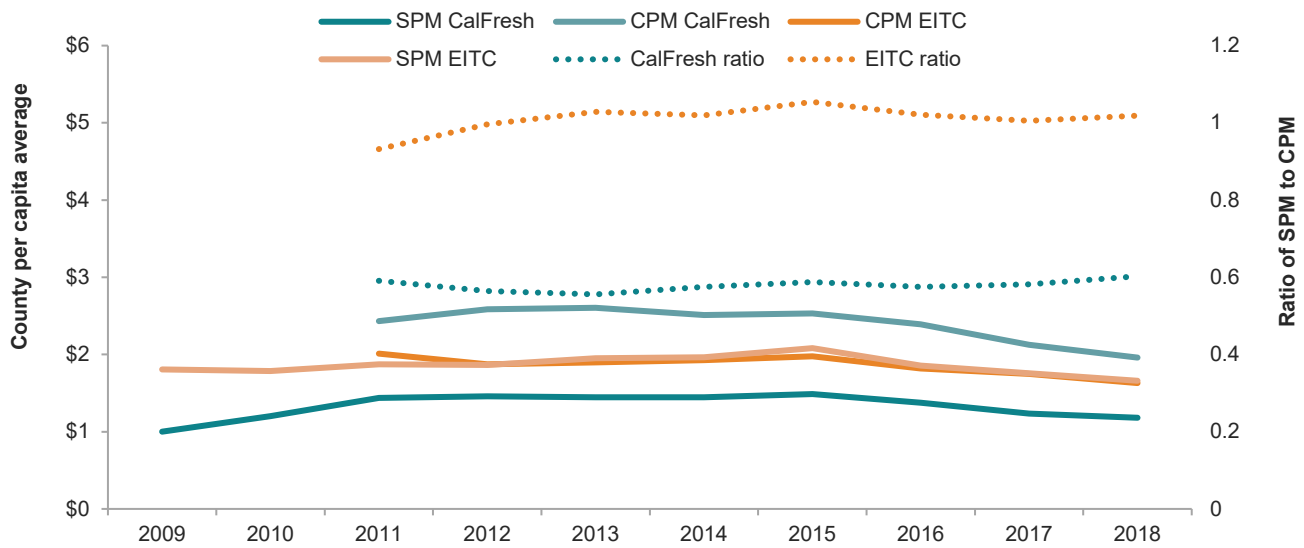
SOURCES: Author calculations from the 2011-2018 CPM and the 2009-2018 SPM in the ACS.
NOTES: Solid lines show per capita dollar amounts and dotted lines show the ratio of the SPM to the CPM.

In the regressions, the unit of observation is the county-year or the county-group-year. In the ACS, 34 counties are separately identifiable and the remaining 24 counties are combined into seven groups. We consider both participation and dollar amount of assistance. Thus we have two types of outcomes: per capita dollar amount within the county from a social safety net program or group of social safety net programs and share of county population with any program receipt. To obtain these outcome variables we collapse the individual-level ACS to weighted dollar amounts and population counts and divide by county population. In the case of subgroup models, we divide by the estimated number of people in each subgroup. Dollar amounts are inflation-adjusted using the CPI-U-RS.

While an important topic, the research design does not permit assessing county or other local-area differences in the responsiveness of social safety net programs. There are also challenges in employing this methodology for fairly small groups in the population. While a focus of this report is subgroup differences, we do tend to find imprecisely estimated effects for small groups in the population. These small groups include mixed immigration status families, Black, South and East Asian American, Southeast Asian American, and other race families.

We also face a key limitation to assessing California's recessionary experience with refundable tax credits. While the federal EITC is a longstanding credit, the CalEITC is a relatively new program in California. It was first available to tax filers in 2015. Substantial expansions have made this program a $1.2 billion dollar commitment provided to 3.9 million tax filers in 2020 (reflecting 2019 earnings). Thus its role as a countercyclical tool has thus become very relevant in the current crisis. However, the recency of the program implies we cannot learn how it responded during the last recession. Therefore, we explore empirically whether the federal EITC grew in California during the last downturn.

To account for imprecision in the survey-based estimates of program use, we drop observations based on less than 100 survey respondents, and weight the regressions by the under 65 population in the county-year or county-group-year.

The key independent variable of interest is the contemporaneous unemployment rate or the sum of the contemporaneous and lagged unemployment rate coefficients. Control variables include indicators for county, year, and where applicable, group. We also include the mean number of adults and children to account for any systematic differences in family size across California counties. Given the small number of county-year observations, in the discussion below we do flag estimates significant at the 10 percent level or better. However, we mainly interpret estimates that are significant at the 5 percent level or better.

Appendix B. Detailed Findings

National literature on the responsiveness of the social safety net

A national literature has examined whether U.S. social safety net programs are countercyclical – meaning they expand during economic downturns. The programs typically examined include the EITC, SNAP, and TANF.[3] Empirical approaches to examining this question typically use a state panel fixed effects approach that differences out constant state differences and national trends, focusing in on the association of within-state changes in the unemployment rate with changes in number of people assisted and amount of benefits provided.

Using such a methodology, Bitler and Hoynes (2015) conclude that SNAP is a countercyclical program, although the scale of the response is much smaller than for unemployment insurance. TANF is not a countercyclical program—although its predecessor program, Aid to Families with Dependent Children (AFDC) was. Finally, the EITC is on net also not countercyclical.

Bitler, Hoynes, and Kuka (2016) disaggregate the findings for the EITC by filer type, finding that the EITC is not a countercyclical program for single filers with dependent children—a main target group for the credits. Married filers do see a small countercyclical effect of the program.

Taking a particular look at children, Bitler, Hoynes, and Kuka (2017) find that safety net programs as a whole mitigate fluctuations in child poverty during recessions. Nonetheless, poverty is more cyclical for children living with Black or Latino household heads, with single parents, and with immigrant household heads.

Both Bitler, Hoynes, and Iselin (2020) and Moffitt and Ziliak (2020) examine these lessons from the perspective of the 2020 COVID-19 pandemic, concluding that the increase in SNAP was about the same as during the 2007-2009 Great Recession, while neither the EITC nor TANF have expanded appreciably. Bitler, Hoynes, and Iselin (2020) also find that the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) plays a countercyclical role.

The recent responsiveness of the social safety net in California

Do these findings hold for California? There are several reasons to think that California's experience could be different. On the one hand, California has long had relatively low participation in its SNAP program (known as CalFresh). While take-up has been increasing since roughly 2010, the state still ranks in the bottom quartile of all states (Cunnygham 2020). While low take-up in itself does not imply that SNAP fails to respond during recessions, it could be an indication that California's program is relatively less able to bring in new participants

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[3] Multiple sources provide more in-depth descriptions of these programs. One recent set of sources is Haskins and Weidinger (2019), Hoynes (2019), and Schanzenbach (2019).

who are uninformed about the program or who are eligible for small benefit amounts—both of which might hold for larger numbers of applicants during recessions. On the other hand, California also has long had a relatively large TANF caseload (known as CalWORKs) and maintains policies that preserves children's eligibility if parents are non-compliant with program work requirements or reach time limits.

In addition, the literature on differential effects experienced by those of differing race/ethnicities, immigration status, and family make-ups is relatively thin. California is demographically diverse, so deepening the literature on how social safety net programs serve different types of families is quite relevant for policy in California.

All families with a member under age 65

Focusing first on Table B1, Panel A, which shows estimates from models where the outcome variable is per capita dollar amounts, we find in models that include only the contemporaneous unemployment rate a marginally significant countercyclical response of the safety net as a whole ($13 per capita) and no significant change for the federal EITC. In contrast CalWORKs and CalFresh both provide evidence of positive, statistically significant increases increase with a worsening county unemployment rates. In particular, a one percentage point increase in the unemployment rate is associated with a $12 per capita increase in per capita CalFresh benefits and a $4 per capita increase in CalWORKs.[4] WIC also increased by $1 per capita, while the estimate for school meals is insignificant. Adding lags increases the size of the estimated effects. To arrive at this interpretation we sum the three coefficients on the contemporaneous and lagged unemployment rates, which can be interpreted as the long-run effect of a sustained increase in the unemployment rate. The response of the safety net as a whole in these models is an estimated $33 per capita—and it is significant at conventional levels. The estimates for the EITC and school meals continue to be insignificant. CalFresh, CalWORKs, and WIC all continue to be significant and are about a third to two-thirds larger in magnitude in the lagged models.

These estimates imply that more benefits were flowing to people as the economy turned down, but does not speak to whether the number of people assisted was increasing. Panel B of Table B1 shows models where the outcome variable is the share of the population participating in the programs. The contemporaneous unemployment rate models show no significant increase in participation for the safety net as a whole, or for the EITC and CalFresh. CalWORKs increases by a significant 0.4 percentage points for every one percentage point increase in the unemployment rate, WIC increases by 1.2 percentage points, and school meals increases by 1.7 percentage points—but is significant only at the 10 percent level. Adding lags once again increases the size of the estimates, and both CalFresh and school meals participation are significant at the 5 percent level or better. Estimates range between 0.5 and 2.5 percentage points, with estimated associations for WIC and school meals substantially larger than for CalWORKs and CalFresh.

Table C2 provides the results of a sensitivity check. Because in the main regressions we drop county observations based on fewer than 100 survey observations, in Table C2 we show estimates for all families that rely only on the observations used in the immigration status models—and find qualitatively very similar effects

Also checking the robustness of these associations against a longer time period using the SPM data, we find a significant, but substantively smaller $3 increase in per capita mounts from CalFresh (Table C3). Including two annual lags in the model shows an annual $8 per capita increase in CalFresh benefits. With lags, there is an estimated 0.6 percentage point increase in the share of the population participating in CalFresh—very close to estimates from models using the shorter time series. As for the CPM data, there is no statistically significant net effect of the EITC using the longer SPM time series.

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[4] Because of the difference-in-differences approach and because our data do not include 2009, the CalFresh increase is not driven by the ARRA expansion to the maximum SNAP benefit.

Families with children

In contrast to all families, those in families with youngest child age 0-5 see a $34 annual, per capita increase in the safety net associated with a one percentage point hike in the contemporaneous unemployment rate (Table B2). This estimate increases to $60 per capita if lags of the unemployment rate are included in the model. This overall increase is driven by increases in both CalFresh ($21-$28 per capita) and CalWORKs ($9-$11 per capita). We also find evidence of an increase in the share of families participating in CalWORKs (1-1.2 percentage points), along with a significant increase in per capita participation for CalFresh in the lagged model (1.2 percentage points). WIC also grows for families with young children by substantively important $5-$6 per capita and 3 percentage point increase in participation for every one percentage point increase in the unemployment rate. The EITC is also significant at the 5 percent level in the lagged model only ($6 per capita).

For those in families with youngest child age 6-17, associations are generally similar, although smaller in magnitude. For example, a one percentage point increase in the unemployment rate is associated with a $40 per capita increase in the safety net as a whole in lagged models, an $18 per capita increase CalFresh, and a $5 increase in CalWORKs. These estimates are roughly one half to two-thirds the size of the estimates for families with young children. A clear exception is school meals, which in lagged models shows an estimated $8 per capita increase and a 3 percentage point participation boost associated with a rising unemployment rate. For this group we do see an anomalous, 0.9 – 1. 0 percentage point increase in WIC participation associated with a one percentage point increase in the unemployment rate. These estimates are roughly a third the size of similar estimates for families with young children—and they could be due to mismatches between membership in WIC units and CPM family units.

Families with no resident children

Among families containing non-elderly adults and no resident children, we find no evidence that the safety net provides a countercyclical response, and some evidence that it is in fact procyclical for this group. In particular, Table B2 shows a significant, negative association between the unemployment rate and amounts from the EITC ($5-$6 per capita), although the estimate is marginally significant in the model that includes lags. Other estimates are also negative, although typically they are insignificant or only marginally significant. We also find some evidence that cash assistance – GA in the case of those without children – shrank. Coefficients are negative, and one coefficient (estimating the change in participation in cash assistance using the contemporaneous unemployment rate) is significant at conventional levels.

Mixed status immigrant families

For mixed immigration status families, we do not find consistent evidence that the safety net responds as a whole (Table B3). In the model that includes only the contemporaneous unemployment rate, both the dollar amount and the participation share estimates are negative, although at best marginally significant. Adding lags changes the sign and reduces the magnitude of the estimated change in dollar amount—and it remains insignificant. Estimates for mixed status immigrants in the EITC, CalWORKs and school meals models are not significant. CalFresh does provide some mixed evidence of a positive response for those in mixed status families. The coefficient on the change in dollar amount is positive and significant in the lagged model, although not in the contemporaneous model. We also find an anomalous decline in the share participating in CalFresh associated with the contemporaneous unemployment rate, but no significant change in the lagged model. The relative absence of positive changes could be due in part to the change in federal administration in 2016, resulting in a sharply more hostile climate towards immigrants (Capps, Fix, and Batalova 2020).

However, WIC—which does not require proof of citizenship or immigration status as a component of eligibility—is a countercyclical program for mixed immigration status families. The program grew by $2-3 per capita and by 1.4-1.9 percentage points for every one percentage point increase in the unemployment rate. Perhaps surprisingly, we do not find significant increases in dollar amounts received for school meal programs, which similarly is universally available to all low-income students. We do find an increase in the share of mixed immigration status families served by free or reduced price school meals (2.8 percentage point increase).

In contrast, among families made up only of citizens or permanent residents, we find statistically significant, positive associations between the unemployment rate and dollar amounts from the EITC ($7-$12 per capita and 0.8-1.3 percentage points) and CalFresh ($10-$15 per capita). We find no evidence of an increase in CalWORKs among these individuals, and only mixed evidence of increases in WIC and school meals. This is not too surprising since the largest share of residents lives in families without children who are not eligible for these programs.

Race/ethnicity

Looking across race/ethnic groups and across contemporaneous and lagged models, associations with a one percentage point increase in the unemployment rate are positive for CalFresh and in some cases for CalWORKs, but are not distinguishable from zero for the EITC (Table B4). For CalFresh, dollar amounts are largest for Black families ($23-$33 per capita), and smaller for Latino families ($13-$20). All other race families also saw increases of $14-$19. White and Asian families saw increases of $12-$15 per capita in lagged models. In the case of CalWORKs, we find positive and significant associations for Black ($16-$21 per capita), with mixed evidence of increases for Latino and all other race families.

Key takeaways

As is the case nationally, the EITC is on net largely neither countercyclical nor procyclical. For adults under 65 without dependents we find evidence that it is a procyclical program. For families with children and for families made up only of citizens or permanent residents do we do find empirical evidence that the EITC is a counter cyclical program.

We find evidence that CalFresh is a broadly countercyclical program. Effects are substantively largest for families with children ages 0-5. Again, adults not living with dependents did not see an increase in CalFresh when the economy deteriorated.

In distinction to the national picture, CalWORKs is a countercyclical program—showing both increased dollar amounts and increased participation, particularly for families with young children.

Finally, while WIC and school meals are not typically seen as an important countercyclical tool for state policymakers, both programs do appear to expand during recessionary times. Not surprisingly, effects are mainly significant for families with younger children (in the case of WIC) and older children (in the case of school meals). It is also notable that WIC is also a countercyclical program for mixed immigration status families.

Variation of safety net programs with the economy: all families

	Any safety net	EITC	CalFresh	CalWORKs	WIC	School meals
A. Dollar amounts (per capita)						
Model 1: Contemporaneous unemployment rate						
Contemporaneous unemp. rate	13.4*	-1.02	11.9***	3.63***	1.47***	2.06
	(7.09)	(1.51)	(2.65)	(1.26)	(0.42)	(2.84)
N	320	320	320	320	320	320
R-squared	0.980	0.957	0.986	0.975	0.976	0.884
Model 2: Contemporaneous and lagged unemployment rates						
Contemporaneous unemp. rate	20.6	-1.54	10.5***	1.07	1.17**	2.03
	(14.0)	(3.40)	(2.45)	(1.88)	(0.49)	(3.74)
unemp. rate (1 year lag)	-27.8*	-1.71	-2.12	3.12	0.36	-2.52
	(14.5)	(5.26)	(2.80)	(1.97)	(0.67)	(2.08)
unemp. rate (2 year lag)	40.6***	5.30	8.87***	0.54	0.075	5.66***
	(9.95)	(3.41)	(2.46)	(2.16)	(0.63)	(1.73)
Sum of coefficients	*33.4***	*2.05*	*17.2***	*4.73***	*1.61***	*5.16*
	(10.3)	*(2.50)*	*(2.76)*	*(1.64)*	*(0.54)*	*(3.40)*
N	320	320	320	320	320	320
R-squared	0.981	0.958	0.987	0.975	0.976	0.891
B. Participation (per capita)						
Model 1: Contemporaneous unemployment rate						
Contemporaneous unemp. rate	0.0031	-0.020	0.19	0.43***	1.24***	1.71*
	(0.27)	(0.23)	(0.23)	(0.12)	(0.32)	(0.90)
N	320	320	320	320	320	320
R-squared	0.986	0.963	0.985	0.979	0.976	0.895
Model 2: Contemporaneous and lagged unemployment rates						
Contemporaneous unemp. rate	0.53	0.12	0.44**	0.30	1.40***	1.57
	(0.42)	(0.57)	(0.21)	(0.18)	(0.27)	(1.08)
unemp. rate (1 year lag)	-1.20**	-0.45	-0.68**	0.051	-0.39	-0.47
	(0.52)	(0.88)	(0.27)	(0.30)	(0.46)	(0.57)
unemp. rate (2 year lag)	1.10***	0.61	0.78***	0.25	0.41	1.43**
	(0.39)	(0.41)	(0.26)	(0.22)	(0.36)	(0.55)
Sum of coefficients	*0.44*	*0.27*	*0.54**	*0.60***	*1.42***	*2.53**
	(0.34)	*(0.32)*	*(0.25)*	*(0.11)*	*(0.36)*	*(1.09)*
N	320	320	320	320	320	320
R-squared	0.986	0.964	0.985	0.980	0.976	0.899

SOURCES: Author calculations from the 2011-2018 CPM, the 2011-2018 ACS (Ruggles, et al 2020), and the Bureau of Labor Statistics Local Area Unemployment Statistics.

NOTES: *** p<0.01, ** p<0.05, * p<0.10. Data are aggregated to county/grouped county – year cells. See text for sample selection. Dependent variables are total dollar amounts divided by number of participants and share in the county with a positive amount from the safety net program indicated. CPM units are assumed to share resources, so participation includes those who benefit from the resource regardless of whether they are the eligible recipient. All regressions also include year and county dummy variables and mean number of children and adults in the family. Standard errors reported in parentheses and are clustered on county.

TABLE B2
Variation of safety net programs with the economy: by presence of children

	Any safety net		EITC		CalFresh		CalWORKs		WIC		School meals	
	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation
Model 1: Contemporaneous unemployment rate												
Youngest 0-5	34.1***	0.40	1.19	0.097	21.3***	0.63*	8.89***	0.99***	5.00***	2.61***	1.72	1.70**
	(9.17)	(0.27)	(1.82)	(0.25)	(3.89)	(0.31)	(1.71)	(0.14)	(0.68)	(0.35)	(2.61)	(0.82)
Youngest 6-17	18.5*	0.21	0.77	0.19	13.9***	0.28	3.51	0.34**	-0.25	0.91***	3.36	2.15**
	(9.39)	(0.27)	(1.70)	(0.23)	(3.60)	(0.31)	(2.41)	(0.16)	(0.51)	(0.27)	(2.60)	(0.83)
No children	-6.42	-0.62*	-5.84***	-0.48*	1.71	-0.45	-2.43*	-0.28***	-0.34	0.094	2.02	1.10
	(9.07)	(0.34)	(1.68)	(0.24)	(3.28)	(0.31)	(1.43)	(0.087)	(0.56)	(0.29)	(2.89)	(0.90)
N	960	960	960	960	960	960	960	960	960	960	960	960
R-squared	0.940	0.970	0.932	0.934	0.952	0.959	0.876	0.913	0.964	0.971	0.902	0.930
Model 2: Contemporaneous and lagged unemp rate (sum of coefficients)												
Youngest 0-5	59.6***	0.96**	5.52**	0.51	28.1***	1.17***	10.9***	1.22***	5.58***	3.07***	5.40*	2.68
	(12.7)	(0.38)	(2.72)	(0.33)	(4.02)	(0.36)	(2.37)	(0.18)	(1.17)	(0.48)	(3.14)	(0.99)
Youngest 6-17	39.5***	0.80**	5.30*	0.59*	17.6***	0.57	5.19**	0.56***	-0.31	0.96***	7.51**	3.21***
	(12.1)	(0.35)	(2.86)	(0.31)	(4.05)	(0.36)	(2.58)	(0.17)	(0.77)	(0.31)	(3.09)	(0.94)
No resident children	7.46	-0.15	-5.00*	-0.30	4.25	-0.34	-4.25	-0.33*	-0.25	0.31	3.43	1.49
	(13.2)	(0.45)	(2.80)	(0.34)	(4.38)	(0.40)	(2.63)	(0.18)	(0.80)	(0.37)	(3.26)	(1.03)
N	960	960	960	960	960	960	960	960	960	960	960	960
R-squared	0.943	0.971	0.936	0.935	0.956	0.962	0.887	0.922	0.966	0.974	0.916	0.936

SOURCES: Author calculations from the 2011-2018 CPM, the 2011-2018 ACS (Ruggles, et al 2020), and the Bureau of Labor Statistics Local Area Unemployment Statistics.

NOTES: *** p<0.01, ** p<0.05, * p<0.10. Data are aggregated to county/grouped county-subgroup – year cells. See text for sample selection. All reported coefficients are interactions between membership in the subgroup and the unemployment rate. Dependent variables are total dollar amounts divided by number of participants in the subgroup and share in the county-subgroup with a positive amount from the safety net program indicated. CPM units are assumed to share resources, so participation includes those who benefit from the resource regardless of whether they are the eligible recipient. All regressions also include year and county dummy variables, mean number of children and adults in the family, and indicator variables for membership in the subgroup. Standard errors are clustered on county.

TABLE B3

Variation of safety net programs with the economy: by immigration status

	Any safety net		EITC		CalFresh		CalWORKs		WIC		School meals	
	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-	Per capita amount	Per capita partici-	Per capita amount	Per capita partici-	Per capita amount	Per capita partici-	Per capita amount	Per capita partici-
Model 1: Contemporaneous unemployment rate												
All citizen or perm. resident	17.7*	0.040	7.26***	0.81***	10.4**	-0.49	-0.94	-0.19	1.65**	0.65*	2.95	2.06
	(8.90)	(0.42)	(2.12)	(0.28)	(4.01)	(0.45)	(2.20)	(0.29)	(0.72)	(0.37)	(3.65)	(1.26)
Mixed immigration status	-17.5*	-0.28	-0.42	0.055	1.06	-1.48***	-4.12	-0.21	3.19***	1.87***	-0.31	1.60
	(9.14)	(0.35)	(1.79)	(0.27)	(3.69)	(0.43)	(2.49)	(0.28)	(0.88)	(0.47)	(3.57)	(1.22)
N	551	551	551	551	551	551	551	551	551	551	551	551
R-squared	0.880	0.971	0.858	0.835	0.864	0.899	0.837	0.854	0.917	0.941	0.895	0.917
Model 2: Contemporaneous and lagged unemp. rate (sum of coefficients)												
All citizen or perm. resident	32.7**	0.58	11.8***	1.28***	15.4***	-0.27	-0.77	-0.047	1.58	0.73	6.03	2.99**
	(12.9)	(0.53)	(2.62)	(0.36)	(4.79)	(0.46)	(3.07)	(0.32)	(1.03)	(0.46)	(4.41)	(1.46)
Mixed immigration status	3.46	0.25	3.03	0.48	11.1***	-0.47	-0.86	0.29	2.42*	1.46***	4.30	2.89*
	(14.2)	(0.49)	(3.14)	(0.44)	(4.11)	(0.41)	(3.10)	(0.33)	(1.26)	(0.55)	(4.49)	(1.47)
N	551	551	551	551	551	551	551	551	551	551	551	551
R-squared	0.892	0.972	0.860	0.837	0.897	0.926	0.855	0.879	0.921	0.947	0.904	0.923

SOURCES: Author calculations from the 2011-2018 CPM, the 2011-2018 ACS (Ruggles, et al 2020), and the Bureau of Labor Statistics Local Area Unemployment Statistics.

NOTES: *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Data are aggregated to county/grouped county-subgroup – year cells. See text for sample selection. All reported coefficients are interactions between membership in the subgroup and the unemployment rate. Dependent variables are total dollar amounts divided by number of participants in the subgroup and share in the county-subgroup with a positive amount from the safety net program indicated. CPM units are assumed to share resources, so participation includes those who benefit from the resource regardless of whether they are the eligible recipient. All regressions also include year and county dummy variables, mean number of children and adults in the family, and indicator variables for membership in the subgroup. Standard errors are clustered on county.

TABLE B4
Variation of safety net programs with the economy: by race/ethnicity

	Any safety net		EITC		CalFresh		CalWORKs		WIC		School meals	
	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation
Model 1: Contemporaneous unemployment rate												
White	11.8	-0.16	-0.59	-0.047	8.47*	-0.058	3.34*	0.18	-0.13	0.26	3.04	1.44
	(10.9)	(0.27)	(3.10)	(0.29)	(4.21)	(0.34)	(1.95)	(0.16)	(0.54)	(0.31)	(3.01)	(1.01)
Latino	18.8	0.012	3.86	0.35	13.1***	0.13	5.78**	0.51***	2.31***	1.82***	1.85	1.55
	(11.6)	(0.31)	(3.36)	(0.30)	(3.72)	(0.33)	(2.21)	(0.17)	(0.48)	(0.28)	(2.94)	(0.96)
Black	66.9***	0.055	-1.75	-0.30	23.2***	0.69	15.9***	1.04***	1.42***	1.07***	3.05	1.56
	(22.0)	(0.40)	(3.68)	(0.41)	(5.47)	(0.44)	(3.31)	(0.23)	(0.48)	(0.27)	(2.88)	(0.97)
South and East Asian	10.5	-0.13	-0.96	-0.032	5.67	-0.11	2.93	0.079	-0.26	0.35	3.37	1.46
	(12.8)	(0.32)	(3.11)	(0.32)	(3.54)	(0.34)	(2.57)	(0.21)	(0.58)	(0.31)	(2.92)	(0.92)
Southeast Asian	16.3	-0.44	-0.67	-0.25	8.85**	-0.012	4.06	0.34	-0.18	0.64	2.45	1.42
	(14.3)	(0.32)	(4.30)	(0.37)	(4.20)	(0.31)	(2.83)	(0.24)	(0.61)	(0.41)	(3.08)	(1.07)
All other	38.4***	0.25	1.79	0.21	14.3***	0.15	8.02**	0.61**	1.12*	1.20***	3.37	1.70*
	(12.0)	(0.34)	(3.22)	(0.34)	(3.57)	(0.39)	(3.78)	(0.30)	(0.56)	(0.34)	(2.90)	(0.96)
N	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258
R-squared	0.881	0.914	0.819	0.832	0.882	0.876	0.819	0.829	0.873	0.902	0.815	0.856

	Any safety net		EITC		CalFresh		CalWORKs		WIC		School meals	
	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation	Per capita amount	Per capita partici-pation
Model 2: Sum of contemporaneous and lagged unemployment rate coefficients												
White	22.6	0.100	0.031	0.017	13.4**	0.18	1.38	0.012	0.095	0.67**	4.91	1.99
	(15.7)	(0.47)	(4.49)	(0.43)	(5.29)	(0.36)	(3.17)	(0.22)	(0.59)	(0.32)	(3.77)	(1.22)
Latino	32.7**	0.17	5.24	0.54	19.7***	0.49	5.51	0.47***	1.92***	1.79***	5.11	2.35*
	(14.8)	(0.46)	(4.53)	(0.41)	(4.81)	(0.34)	(3.50)	(0.23)	(0.55)	(0.30)	(3.75)	(1.18)
Black	90.7***	0.63	-0.33	-0.28	33.0***	1.35**	20.8***	1.39***	2.08***	1.51***	5.68	2.21*
	(32.9)	(0.62)	(4.65)	(0.52)	(6.83)	(0.60)	(5.48)	(0.39)	(0.59)	(0.25)	(3.58)	(1.21)
South and East Asian	24.0	0.61	1.08	0.22	12.4**	0.40	2.08	0.10	0.45	0.91	6.02	2.32
	(16.8)	(0.46)	(4.68)	(0.44)	(5.46)	(0.37)	(3.81)	(0.27)	(0.57)	(0.29)	(3.70)	(1.18)
Southeast Asian	28.3	-0.23	1.54	-0.13	15.3**	0.32	4.18	0.38	-0.0097	1.02**	4.77	2.08
	(22.4)	(0.49)	(6.13)	(0.62)	(6.71)	(0.43)	(3.55)	(0.29)	(0.74)	(0.44)	(3.95)	(1.35)
All other	49.2***	0.42	1.24	0.19	18.7***	0.28	6.03	0.42	1.12*	1.49***	5.20	2.26*
	(15.3)	(0.53)	(4.06)	(0.47)	(4.19)	(0.31)	(5.07)	(0.35)	(0.66)	(0.35)	(3.61)	(1.17)
N	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258	1,258
R-squared	0.882	0.917	0.821	0.834	0.887	0.880	0.826	0.836	0.878	0.908	0.824	0.860

SOURCES: Author calculations from the 2011-2018 CPM, the 2011-2018 ACS (Ruggles, et al 2020), and the Bureau of Labor Statistics Local Area Unemployment Statistics.

NOTES: *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Data are aggregated to county/grouped county-subgroup – year cells. See text for sample selection. All reported coefficients are interactions between membership in the subgroup and the unemployment rate. Dependent variables are total dollar amounts divided by number of participants in the subgroup and share in the county-subgroup with a positive amount from the safety net program indicated. CPM units are assumed to share resources, so participation includes those who benefit from the resource regardless of whether they are the eligible recipient. All regressions also include year and county dummy variables, mean number of children and adults in the family, and indicator variables for membership in the subgroup. Standard errors are clustered on county.

Appendix C. Supplementary Tables

Relationship of cash poverty and share with any market income to changes in county unemployment rates

	Market income poverty rate	Share with any income from earnings or self-employment
A. All families	1.05***	-0.43***
	(0.34)	(0.16)
N	320	320
R-squared	0.941	0.882
B. By presence of children		
Youngest child 0-5	1.70***	-0.50***
	(0.35)	(0.16)
Youngest child 6-17	1.20***	-0.39**
	(0.32)	(0.15)
No children	1.01***	-0.51**
	(0.39)	(0.16)
N	960	960
R-squared	0.809	0.860
C. By immigration status		
All citizens or permanent residents	0.73	-0.35*
	(0.53)	(0.18)
Mixed immigration status	0.53	-0.13
	(0.49)	(0.18)
N	569	569
R-squared	0.904	0.735

	Market income poverty rate	Share with any income from earnings or self-employment
D. By race/ethnicity		
White	0.84*	-0.51**
	(0.47)	(0.21)
Latino	0.97**	-0.32
	(0.46)	(0.20)
Black	1.57**	-1.32***
	(0.76)	(0.29)
South and East Asian	0.65	-0.22
	(0.56)	(0.16)
Southeast Asian	0.50	-0.35*
	(0.66)	(0.21)
All other	1.03**	-0.64***
	(0.46)	(0.17)
N	1,270	1,270
R-squared	0.763	0.698

SOURCES: Author calculations from the 2011-2018 CPM, the 2011-2018 ACS (Ruggles, et al 2020), and the Bureau of Labor Statistics Local Area Unemployment Statistics.

NOTES: *** p<0.01, ** p<0.05, * p<0.10. Data are aggregated to county/grouped county-subgroup – year cells. See text for sample selection. Sum of coefficients on the contemporaneous and two annual lags of the unemployment rate shown. "Market income poverty" indicates the ratio of before tax earnings and self-employment income to the CPM poverty threshold. Sum of coefficients on the contemporaneous and two annual lags of the unemployment rate shown. For subgroup panels B-D, reported coefficients are interactions between membership in the subgroup and the unemployment rate. All regressions also include year and county dummy variables, mean number of children and adults in the family, and, for panels B-D, indicator variables for membership in the subgroup. Standard errors are clustered on county.

TABLE C2
Restricted observations – all families

	Any safety net	EITC	CalFresh	CalWORKs	WIC	School meals
Dollar amounts (per capita)						
Model 1: Contemporaneous unemployment rate						
	19.3***	-0.75	13.2***	3.85**	1.53***	2.47
	(6.92)	(1.60)	(2.95)	(1.44)	(0.45)	(3.14)
N	231	231	231	231	231	231
R-squared	0.982	0.965	0.989	0.981	0.981	0.881
Model 2: Sum of contemporaneous and lagged unemployment rate coefficients						
	44.4***	2.63	19.7***	5.27***	1.51**	5.96
	(10.1)	(2.76)	(2.91)	(1.83)	(0.57)	(3.84)
N	231	231	231	231	231	231
R-squared	0.985	0.966	0.990	0.982	0.981	0.889
A. Participation (per capita)						
Model 1: Contemporaneous unemployment rate						
	0.11	0.075	0.29	0.44***	1.34***	1.83*
	(0.28)	(0.24)	(0.24)	(0.13)	(0.35)	(1.00)
N	231	231	231	231	231	231
R-squared	0.988	0.969	0.988	0.985	0.980	0.892
Model 2: Sum of contemporaneous and lagged unemployment rate coefficients						
	0.60	0.42	0.69**	0.61***	1.46***	2.75**
	(0.38)	(0.35)	(0.28)	(0.13)	(0.39)	(1.23)
N	231	231	231	231	231	231
R-squared	0.989	0.969	0.989	0.986	0.981	0.897

SOURCES: Author calculations from the 2011-2018 CPM, the 2011-2018 ACS (Ruggles, et al 2020), and the Bureau of Labor Statistics Local Area Unemployment Statistics.

NOTES: *** p<0.01, ** p<0.05, * p<0.10. Data are aggregated to county/grouped county – year cells. See text for sample selection. Sum of coefficients on the contemporaneous and two annual lags of the unemployment rate shown. All regressions include year and county dummy variables and mean number of children and adults in the family. Standard errors are clustered on county.

TABLE C3

SPM in the ACS, EITC and CalFresh – all families

	EITC		CalFresh	
	Per capita amount	**Share with any resource**	**Per capita amount**	**Share with any resource**
Model 1: Contemporaneous unemployment rate				
	1.34	-0.23	2.84**	0.13
	(1.47)	(0.22)	(1.39)	(0.18)
N	400	400	400	400
R-squared	0.952	0.966	0.949	0.958
Model 2: Sum of contemporaneous and lagged unemployment rate coefficients				
	-0.098	0.030	7.63***	0.62***
	(2.03)	(0.24)	(1.76)	(0.22)
N	400	400	400	400
R-squared	0.952	0.966	0.946	0.958

SOURCES: Author calculations from the 2009-2018 ACS (Ruggles, et al 2020) and the Bureau of Labor Statistics Local Area Unemployment Statistics.

NOTES: *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Data are aggregated to county/grouped county – year cells. See text for sample selection. All regressions include year and county dummy variables and mean number of children and adults in the family. Standard errors are clustered on county.

Appendix D. Background Literature on the Design of the US Social Safety Net

Using various forecasting methods, a national literature has found that poverty did not rise in the early months of the pandemic (Giannerelli, Wheaton, and Acs 2020; Han, Meyer, and Sullivan 2020; Parolin, Curran, and Wimer 2020). This temporary success story relies principally on unprecedented federal emergency actions taken swiftly in the unemployment insurance (UI) program through the CARES act. For example, Ganong, Noel, and Vavra (2020) find that the $600 supplement to UI raised incomes beyond pre-pandemic levels for two-thirds of recipients. Likewise, Cox, et al (2020) find that liquid assets for lower-income households increased relative to higher income households, and they posit that this was due to the spring Economic Impact Payments and to both higher UI payments and to the expansion of eligibility to the self-employed.[5]

This apparent success story in fact masks several important weaknesses in the design of the social safety net in the United States. A number of commentators have drawn on the empirical literature and the design of programs to assess how the design of the U.S. social safety net could be strengthened during recessions (Boushey, Nunn, and Shambaugh 2019; Bitler, Hoynes, and Schanzenbach 2020; Moffitt and Ziliak 2019; Moffitt and Ziliak 2020). The literature makes four key points.

First, even in previous recessions UI has been the most responsive program—providing a recessionary response that is approximately three to four times the response that SNAP has provided (Bitler, Hoynes, and Iselin 2020).[6] Further, among those with relatively low incomes and who are eligible, or near-eligible, for UI, job losers who receive UI see higher wage replacement than those who do not (Leung and O'Leary 2019).

However, UI is less available for those who experience the most severe consequences of recessions. Prior to the 2020 recession, in the aggregate, the program replaced less earnings for those below the federal poverty line as compared to those above the poverty line prior to job loss, and in has been in this sense regressive (East and Simon 2020). The emergency measures taken in the federal CARES act mitigated several of the key limitations, but without fundamentally revamping UI, which has seen few reforms since the 1980s (von Wachter 2019).[7]

Second, the means-tested safety net is largely work-focused. Unlike UI, which is intended to replace income after job loss, CalWORKs and EITC include work requirements, raising questions about their effectiveness during recessions when work opportunities become less available. The work focus differs depending on the program. In CalWORKs, participating in work activities is a condition of eligibility for many parents. Only those with earned income can receive the EITC.[8] In CalFresh, many participants between the ages of 18 and 59 must register for work. However, the stringent work requirement this group can face does depend on work availability.

Third, few programs have built-in triggers. Instead, federal or state action via legislation or executive order is required to expand programs when the economy worsens. These expansions have typically taken the form of grant increases, supporting state administrative costs with a higher federal cost-share, or—in the 2020 crisis—temporarily reducing the amount and frequency of paperwork need to qualify or maintain eligibility for benefits.

However, the lack of triggers results in delays in program expansions—most typically in UI, tax rebates, and SNAP—when the economy worsens. It also leads to confusion, as states or the federal government need to stand

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[5] Despite this apparent success story, evidence of increased hardship and of delays in processing UI applications suggest that, in reality, poverty may have increased.

[6] This is notwithstanding the conclusion that the design of the current program is too restrictive to be optimal for workers (von Wachter 2019).

[7] A comprehensive review of the UI program is beyond the scope of this report. See von Wachter (2019) for a review and recommendations for reform.

[8] Dynan (2019) recommends that certain programs reduce disincentives to work (e.g., SSI and SSDI) and increase incentives for childless adults eligible for the EITC. However, these recommendations are not intended to raise additional barriers to program entry, particularly during economic downturns.

up new programs quickly and as all potential recipients must learn about steps they must take to receive assistance. It can also result in fraud as officials make efforts to rapidly get relief out to those who need it. The form the relief takes must also make its way through the political process, which can result in inconsistencies in responses. For example, during the Great Recession the American Recovery and Reinvestment Act of 2009 (ARRA) increased the maximum CalFresh benefit. In April 2020, Congress authorized emergency payments that increased CalFresh benefits to the maximum for those who qualified for a lower benefit, and required states to seek approval to extend these emergency payments (Center on Budget and Policy Priorities 2020). It is unclear why the response differed in spring 2020 as compared to spring 2009.

Finally, there are important gaps in who is covered by social safety net programs. Moffitt and Ziliak (2020) note that, due to narrow targeting, a focus on those with employment or history of employment, and/or capped nature of certain programs like housing and child care subsidies, substantial shares of those who are low income but who are not disabled lack assistance from the social safety net.

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