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Income and Poverty in the COVID-19 Pandemic

ABSTRACT   This paper addresses the economic impact of the COVID-19 pandemic by providing timely and accurate information on the impact of the current pandemic on income and poverty to inform the targeting of resources to those most affected and assess the success of current efforts. We construct new measures of the income distribution and poverty with a lag of only a few weeks using high-frequency data from the Basic Monthly Current Population Survey (CPS), which collects income information for a large, representative sample of US families. Because the family income data for this project are rarely used, we validate this timely measure of income by comparing historical estimates that rely on these data to estimates from data on income and consumption that have been used much more broadly. Our results indicate that at the start of the pandemic, government policy effectively countered its effects on incomes, leading poverty to fall and low percentiles of income to rise across a range of demographic groups and geographies. Simulations that rely on the detailed CPS data and that closely match total government payments made show that the entire decline in poverty that we find can be accounted for by the rise in government assistance, including unemployment insurance benefits and the Economic Impact Payments. Our simulations further indicate that of those losing employment the vast majority received unemployment insurance,

though this was less true early on in the pandemic, and receipt was uneven across the states, with some states not reaching a large share of their out of work residents. Updated results during the pandemic for a subset of the tables in this article can be found at povertymeasurement.org.

T he start of the COVID-19 pandemic in the United States quickly resulted in an unprecedented decline in economic activity with employment and earnings plummeting. At the same time, the federal government responded with tax rebates in the form of Economic Impact Payments (EIPs), small business loans, and an unprecedented expansion of unemployment insurance as part of the Coronavirus Aid, Relief, and Economic Security (CARES) Act and related stimulus legislation that, all told, committed more than $3 trillion to countering the effects of the COVID-19 pandemic. Whether this response has been adequate to offset the losses and what net effect it may have on income and poverty remain unclear. To ensure that the government can track the income changes of the American population overall and by demographic group to target and calibrate its fiscal response most effectively requires timely information on income and poverty. Unfortunately, official estimates of income and poverty for 2020 will not be available until September 2021. These official statistics will be of little use to federal, state, and local policymakers who need to decide quickly how to allocate scarce resources to minimize COVID-19's impact on vulnerable populations. Thus, this crisis calls for timely and accurate information on the impact of the current pandemic (as well as future shocks) on the economic well-being of individuals and families.

To address the gap in critical, real-time information we construct new measures of the income distribution and income-based poverty with a lag of only a few weeks using high-frequency data for a large, representative sample of US families and individuals. We rely upon the Basic Monthly Current Population Survey (Monthly CPS), which includes a greatly underused global question about annual family income. A clear advantage of using the Monthly CPS to estimate changes in income and poverty is that the quick release of these data allows us to understand the immediate impact of macroeconomic conditions and government policies. For example, given data release dates, analyses of income from the Monthly CPS would have revealed the negative impact of the Great Recession a full fourteen months before official estimates indicated an increase in poverty. Our approach generates immediately useful income and poverty estimates for the overall population, as well as how these rates vary by demographic

groups and geography. We also validate this new and timely measure of family income by comparing estimates that rely on these data to estimates from data on income that have been used much more broadly and that have a long historical track record. Our validations will help other researchers understand the advantages and limitations of using more timely income data to understand changes in economic well-being.

Our initial evidence indicates that at the start of the pandemic, government policy effectively countered its effects on incomes, leading poverty to fall and low percentiles of income to rise across a range of demographic groups and geographies. Our evidence suggests that income poverty fell shortly after the start of the COVID-19 pandemic in the United States. In particular, the poverty rate, calculated each month by comparing family incomes for the past twelve months to the official poverty thresholds, fell by 1.5 percentage points from 10.9 percent in the months leading up to the pandemic (January and February) to 9.4 percent in the three most recent months (April, May, and June). This decline in poverty occurred despite that fact that employment rates fell by 14 percent in April (online appendix figure 1)—the largest one-month decline on record. The declines in poverty are evident for most demographic groups, although we find some evidence that poverty declines most noticeably for those who report their race as neither white nor Black and those who have a high school education or less.

Our simulations using the detailed and nationally representative CPS data indicate that government programs, including the regular unemployment insurance (UI) program, the expanded UI programs, and the EIPs, can account for more than the entire decline in poverty, which would have risen by over 2.5 percentage points in the absence of these programs. These programs also helped boost incomes for those further up the income distribution, but to a lesser extent. Evidence based on actual dollars spent on these programs indicates that most eligible families received the EIP, and that the expanded coverage of unemployment insurance reached the vast majority of those desiring to work who were unable to do so. However, the states were slow to reach many without work and some states were still unable to reach a large share of their population even three months after the initial employment decline.

This study generates some of the first evidence on how the COVID-19 pandemic is affecting the economic well-being of individuals and families in the United States, and which groups are affected most. Economists have long examined the impact of large macroeconomic shocks, such as recessions (Grusky, Western, and Wimer 2011) or pandemics (Almond 2006; Almond and Mazumder 2005). However, due to the limited availability of

data making it difficult to study major shocks as they evolve, past research has necessarily mostly happened long after the events occurred. Our study provides a template for the future understanding of large economic shocks as they happen. This paper also addresses important survey methodology questions, such as whether the patterns of annual income from a monthly survey align with the patterns for income from annual surveys that are the source for official statistics, and how responses to a single, global question about income compare to estimates of total income from questions about many income sources. Understanding the validity of survey-measured income is critically important given the prominent role it plays in economic research.

I. Discerning the Impact of COVID-19

The impact of the pandemic on the labor market was swift and severe. Employment rates (online appendix figure 1) dropped sharply, by more than 8 percentage points (14 percent), in April, the largest one-month decline on record. At the same time earnings fell by more than 10 percent (online appendix figure 2). Although both earnings and employment bounced back somewhat in May and June, they remain well below the levels at the start of 2020.

The two most direct ways that federal policies worked to offset this sudden decline in earnings were through EIP and the expansion of UI benefits. The EIP provided $1,200 to individuals with income less than $75,000 and to single parents (heads of household) with income below $112,500, and they provided $2,400 to married couples with income less than $150,000. Recipients were also eligible to receive an additional $500 for each qualifying child. For those with income above these thresholds, the payments were reduced by 5 percent of the income that exceeded the threshold.

EIPs started the second week of April, with the early checks going to those with the lowest adjusted gross income. As shown in online appendix figure 3, the Internal Revenue Service had sent EIPs to nearly 90 million individuals by April 17, and to an additional 63 million individuals over the next five weeks. As of June 3, 159 million payments had been processed.[1]

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1. IRS, "159 Million Economic Impact Payments Processed" (press release), www.irs.gov/newsroom/159-million-economic-impact-payments-processed-low-income-people-and-others-who-arent-required-to-file-tax-returns-can-quickly-register-for-payment-with-irs-non-filers-tool.

Additional relief was made available to those who lost their job through expanded UI benefits. The CARES Act, which was passed in late March, created the Pandemic Unemployment Compensation (PUC) program, which provided an additional $600 per week to claimants on top of the usual benefit. These PUC payments expired at the end of July 2020. The CARES Act also extended eligibility for benefits to groups not covered by the traditional UI program, such as the self-employed, part-time workers, and those who did not have a long enough work history to qualify for the traditional program (Pandemic Unemployment Assistance, PUA), and it extended by thirteen weeks the duration of UI benefits for a regular claim (Pandemic Emergency Unemployment Compensation, PEUC).

An unprecedented number of individuals have filed for these benefits during the pandemic. As shown in online appendix figure 4, initial claims shot up starting in mid-March. For the week ending April 4, 6.2 million initial claims were filed. Between the weeks ending March 21 and June 20, more than 50 million initial claims were filed. According to the Bureau of the Fiscal Service of the US Treasury, UI payments never exceeded $3 billion in a single month from February 2019 through February 2020.[2] In March 2020, these payments jumped to $4.2 billion, and then to $48.4 billion in April, $93.7 billion in May, and $115.7 billion in June.

Together these policies have the potential to significantly boost family incomes and lift many families, at least temporarily, out of poverty. Consider a family of four with two adults and two children whose family income comes entirely from the earnings of the head of the household. If the head's earnings do not change after the start of the pandemic and the family receives the maximum EIP in April, then this family would be lifted out of poverty (i.e., their income for the past twelve months would exceed the poverty threshold for a family of this size and composition) in April as long as their income exclusive of EIP was within 90 percent of the poverty line. Moreover, the onetime EIP would be sufficient to keep such a family's income over the past twelve months above the poverty line for an entire year, through March 2021. Alternatively, if, in addition to the EIP, the head of such a family lost his or her job in April 2020 and collected UI benefits as well as the additional $600 per week through July 2020, then such a family would have income above the poverty line in

2. US Treasury, Daily Treasury Statement, https://datalab.usaspending.gov/dts/?start=20050609&end=20200617&frequency=mtd&category=Unemployment%20Insurance%20Benefits. accessed July 23, 2020.

April and for the following nine months as long as their pre-COVID-19 earnings (and therefore income) were within 80 percent of the poverty line.[3]

II. Earlier Work on Timely Measures of Income and Poverty

While there is an extensive literature that examines income and poverty measurement and trends, summarized in Ruggles (1990), Citro and Michael (1995), Meyer and Sullivan (2012), and Burkhauser and others (2019), none of these studies have addressed the long delay in the availability of nationally representative income data, and very few have used the data from the Monthly Current Population Survey (Monthly CPS). Bergmann and Coder (2010) use the Monthly CPS to construct a poverty measure based on earnings and imputed UI benefits for the period from 2005 to 2009. A few researchers have used the Monthly CPS to generate timely estimates of income and compare these estimates to the CPS Annual Social and Economic Supplement (ASEC). However, this work has focused on median income (Green and Coder 2020) and provided only very limited validation of its measures. Thus, there is surprisingly little precedent for our timely, validated measure of income and poverty.

III. Data and Methods

We rely on income to measure poverty in this situation, despite two of us having argued for more than fifteen years that, for historical (as opposed to timely) research, consumption should be preferred. However, we have never argued that consumption should be exclusively used. Income and consumption data are complements and there are situations where each is likely to be more informative than the other. Given that detailed, comprehensive and representative consumption data are not available in a timely fashion, the income data are an important source.[4] Furthermore, the short-run aspects of this pandemic, in which consumption is likely to move independently of short-run changes in income, make income of interest in its own right. Examining short-term changes in income during the pandemic allows us to examine whether the concomitant decline in consumption is due to a shortfall in current income or another explanation, such as a

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3. This calculation assumes that the head collects UI benefits equal to half of pre-separation earnings.

4. If the Bureau of Labor Statistics follows the same schedule as in recent years, nationally representative data on consumption for 2020 from the Consumer Expenditure Survey would not be released until September 2021.

limited opportunity to consume certain goods and services or uncertainty over future income streams.

Our new measures of the income distribution and income-based poverty rely on data from the Monthly CPS, which collects information on labor market outcomes and demographic characteristics from a representative sample of about 40,000 to 50,000 households.[5] Interviews are conducted during the calendar week containing the nineteenth of the month. The survey provides the timeliest nationally representative data available for family income. The Monthly CPS has been collecting information about income for nearly forty years. Thus, we can observe the cyclical patterns of income and its association with other variables long before the onset of the COVID-19 pandemic, which is helpful for understanding the validity of the income data, as it allows us to compare income and other observable characteristics from these data to those from many other historical data series. To capture changes in income before and after the start of the pandemic, we will focus on data from the January 2020 survey through the June 2020 survey, although for some analyses we also report more historical estimates.

III.A. Analysis Sample

Our analyses focus on a subset of individuals from the Monthly CPS because we do not observe family income for all individuals for several reasons. In online appendix table 1, we report the number of households and individuals that are in the survey for each month of 2020 and how these numbers change as we restrict the sample. First, housing units selected to be in the CPS are typically only asked this question in the first and fifth interview months that they are in the survey (housing units are in the CPS sample for eight months over a sixteen-month period—four months on, eight months off, and four months on).[6] Second, the total income question is asked only in reference to the family income of the householder's family, so we do not observe this income information for individuals in the household who are outside the householder's family (i.e., unrelated individuals and unrelated subfamilies), which accounts for about 5 percent of individuals in the first or fifth interview month. Finally, during our sample

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5. We obtained the Monthly CPS data through IPUMS-CPS (Flood and others 2020).

6. CPS households that do not provide an answer to this income question in their first or fifth month are asked this question in subsequent months. Thus, about 3 percent of households in these other months are asked and respond to the family income question. Otherwise, in the public use files, the value of family income in these other months is just carried over from the response in either the first or fifth month.

period, between 23 and 28 percent of individuals in the first or fifth months of the survey do not have a response to the family income question. Although the Census Bureau provides imputed values of income for those who do not respond, we do not include these observations in our analysis. As a result of these restrictions, we observe family income from respondents in their first or fifth month in the survey for a monthly sample ranging from 8,999 households and 20,822 individuals in February 2020 to 6,149 households and 14,383 individuals in April 2020.

An important issue to consider for analyses of income before and after the start of the pandemic is that concerns about COVID-19 may have affected survey responses. Due to health concerns, the Census Bureau shifted the survey collection method for the Monthly CPS from in-person to phone interview for some households in March 2020 and for nearly all households in April 2020. Households in their first and fifth interview month are most affected by this change because interviews in these two months are usually conducted in-person, whereas interviews in other months are normally conducted via phone. For example, in January 2020, 66 percent of the households in their first or fifth month were interviewed in person.

In online appendix table 2, we examine how the change in the survey method affects the survey nonresponse rate as well as the composition of the sample across interview months between February and June 2020. The first row shows that the nonresponse rates in the April, May, and June 2020 surveys were substantially higher than that in February 2020 for all interview months. However, this rise was most noticeable for households in their first month, and to some extent for those in their fifth month. That the rise in survey nonresponse rates is more noticeable for those in their first or fifth month than for those in other months suggests that the shift from in-person to telephone interviews may have had an impact on response rates. We also see a rise in item nonresponse for the family income question, although this rise is much less pronounced than the rise in survey nonresponse.

These patterns might be problematic if survey or item nonresponse is not random. To consider whether there might be selection into nonresponse, we examine the observable characteristics of the sample across interview months before and after the onset of the pandemic, restricting the sample to individuals who are included in the householders' families with non-imputed family income. Most of the characteristics that we report in online appendix table 2 are similar pre- and post-onset of COVID-19 regardless of interview month. However, there is some evidence that

individuals in the first interview month in April, May, and June 2020 are slightly more educated and less likely to be in a single parent family than those in the first interview month pre-COVID-19. These small differences suggest that changes in survey response rates may have resulted in a slightly more advantaged sample of first month responders in the most recent survey months though further analysis suggests the differences are not substantive.[7]

To be cautious, we address concerns about possible changes in sample representativeness in two ways. First, for our main analyses we re-weight the samples from March through June so that observable characteristics—family type, age of head, and education of head—for these months match those in January and February, as explained in online appendix I. As an additional robustness check, we also report results for a sample that includes only individuals in their fifth month interview, as the change in nonresponse rates and demographic characteristics across recent months is smaller for this group.

III.B. Family Income in the Monthly CPS

Our primary analyses rely on a global question in the Monthly CPS about total cash income for the householder's family for the previous twelve months. Specifically, the question asks the respondent to report:

> total combined income during the past 12 months . . . of all members [of the family]. This includes money from jobs, net income from business, farm or rent, pensions, dividends, interest, social security payments and any other money income received . . . by members of [the family] who are 15 years of age or older.[8]

This global family income question from the Monthly CPS aligns closely with the definition of total cash income from the CPS ASEC, which is used for official poverty and income statistics, although family income from the

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7. For our main sample (first and fifth month respondents), we reject the joint hypothesis that the demographic characteristics in online appendix table 2 (not including income and employment) are the same for those in April, May, and June as compared to those in January and February (p-value < .01). However, when we regress unemployment on these characteristics for a sample of those in the other interview months, and use the estimates from this model to predict unemployment for our main sample across survey months, the mean predicted values are virtually the same throughout our sample period, differing by less than 0.024 percentage points (0.96 percent). They are also virtually the same as the mean predicted values for the other interview months that did not move from in-person to telephone interviews, suggesting that the change in interview mode did not affect sample composition substantively.

8. "Basic CPS Items Booklet: Labor Force Items," https://www2.census.gov/programs-surveys/cps/techdocs/questionnaires/Labor%20Force.pdf.

CPS ASEC is calculated as the sum of responses to questions about many different components of income. Because interviews take place in the third week of the month, we assume that the respondent includes income from the interview month in their response to the question. Making this distinction is important for determining when we should expect to see this measure of family income reflect the effects of the pandemic. For example, respondents to the April CPS arguably included negative income shocks that occurred or government payments that were received during the first few weeks of April. During these weeks, UI claims grew sharply and the first wave of EIPs were distributed.

It is also unclear whether the responses to this question give equal weight to each of the previous twelve months, or whether greater weight is given to income in more recent months. If there is telescoping, that is, more accurate recall of more recent income, then the most recent responses to the income question in the Monthly CPS are more likely to capture the effects of the pandemic. Investigating whether there is evidence of telescoping in the Monthly CPS family income data is an important area for future research.

Rather than reporting a specific amount for total income, respondents in the Monthly CPS choose among sixteen categorical income ranges. For the bottom part of the income distribution, the income ranges are fairly small. Below $15,000 there are five categories, and from $15,000 to $40,000 the intervals are $5,000 wide. To calculate our estimates of poverty and various percentiles of the income distribution, we convert this categorical response into a continuous measure by randomly selecting values of family income from families in the CPS ASEC from the same survey year who have incomes that fall in that same income range and who have some similar demographic characteristics. In online appendix I we provide the details for this imputation procedure, as well as comparisons of family income in the Monthly CPS to family income in the CPS ASEC (see section V for additional analyses of the validity of the income measure from the Monthly CPS).

III.C. Measures of Income Poverty and the Income Distribution

Our estimates of poverty compare our measure of family income for the twelve months immediately preceding the interview from the Monthly CPS to the official poverty threshold for each family, which varies by family size and composition. We use the official poverty thresholds for the year that aligns with the most recent month of the reference period in the Monthly CPS. For example, since the most recent month of the reference period for

respondents to the April 2020 CPS falls in 2020, we use the "official" 2020 poverty thresholds to calculate poverty for these respondents.[9]

There are many limitations of the official measure that numerous studies have noted, such as its adjusting thresholds over time using a price index that overstates inflation; its omission of taxes, tax credits, and in-kind benefits such as food stamps and housing subsidies; and its peculiar equivalence scale (Citro and Michael 1995; Meyer and Sullivan 2012; Burkhauser and others 2019). These limitations are less relevant for the short-term changes in poverty that are the focus of this study as long as the errors do not change quickly over time. For example, although price index bias significantly affects estimates of changes in poverty over several decades (Meyer and Sullivan 2012), such bias is negligible for changes in poverty within a year. While we do not incorporate noncash programs into our analyses because the Monthly CPS does not include data on receipt of such benefits, these programs may play an important role in replacing lost earnings during the pandemic. See Bitler, Hoynes, and Schanzenbach (2020) for more discussion of the importance of these programs.

Because the sudden disruption in economic activity affected families at all income levels, and many families were eligible to receive government relief benefits, we also investigate how other points in the distribution of income, beyond those near the poverty line, change during the pandemic. In particular, we look at changes in family income for the 10th, 25th, 50th, and 75th percentiles. For these analyses, we adjust the income measures for family size and composition using the Citro and Michael (1995) recommended equivalence scale and account for inflation using the personal consumption expenditures chain-type price index (PCEPI).

IV. Changes in Poverty and the Income Distribution during the COVID-19 Pandemic

In figure 1 we report the poverty rate as well as a three-month moving average of this rate, for the period from January 2019 to June 2020. Then, in table 1, we focus in on the estimates for each month between January and June of 2020, as well as the change in poverty between the pre- and post-onset of COVID-19 periods defined as January–February 2020 and April–June 2020, respectively.

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9. To obtain "official" thresholds for 2020, we adjust the 2019 thresholds for inflation using the CPI-U, which is the price index the Census Bureau uses to adjust the official thresholds for inflation on an annual basis.

Figure 1. Poverty Rates from the Monthly CPS, 2019–2020
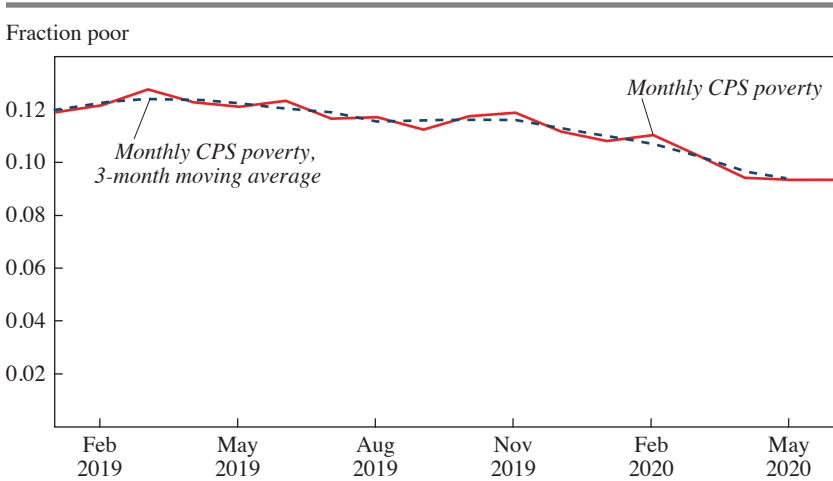
Fraction poor

Source: Monthly CPS.
Note: The sample includes individuals who are included in the householders' families and those in their first or fifth month in the survey. Individuals who have imputed income in the Monthly CPS are excluded. The three-month moving average is calculated as the unweighted average of poverty rates in month $t-1, t$, and $t+1$. The statistics are weighted using fixed demographic weights since March 2020.

The results in figure 1 indicate that poverty was falling fairly steadily in the period leading up to the pandemic. Between November 2019 and February 2020, poverty fell by 0.9 percentage points. This decline then accelerates once the pandemic hits. Between the pre and post periods poverty fell by 1.5 percentage points (or about 14 percent), and this difference is statistically significant.[10] The estimates for each month in table 1 suggest that poverty fell in March, which could be interpreted as surprising given that the CARES Act was passed after the CPS interviews for this month. However, this decline was a continuation of a pronounced downward trend, and unemployment had barely started to rise by that point. Furthermore, we caution against making too much of one-month changes given the imprecision of these estimates.

To determine whether the labor market shock and the government response affected certain demographic groups differently, we explore the heterogeneity of poverty rates across groups defined by age (0–17, 18–64,

10. We find similar results to those discussed in this section when we restrict the sample to only responders in their fifth interview month, but do not re-weight recent months to hold demographic characteristics fixed (online appendix tables 5 and 7).

Table 1. Poverty Rates, Monthly CPS, 2020

| Month	January	February	March	April	May	June	Change since start of pandemic
Full sample	10.8%	11.0%	10.2%	9.4%	9.3%	9.3%	−1.5%
	(0.5)	(0.5)	(0.5)	(0.6)	(0.6)	(0.6)	(0.5)
Number of individuals	20,020	20,822	16,733	14,383	14,236	14,391	
Age							
Age 0–17	15.3%	15.3%	16.3%	14.4%	13.2%	13.1%	−1.7%
	(1.0)	(1.0)	(1.2)	(1.4)	(1.4)	(1.3)	(1.0)
Age 18–64	9.8%	9.9%	8.5%	8.0%	8.4%	8.4%	−1.6%
	(0.4)	(0.4)	(0.5)	(0.6)	(0.6)	(0.5)	(0.4)
Age 65+	7.7%	8.7%	7.6%	7.1%	6.6%	7.1%	−1.3%
	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.7)	(0.6)
Race							
White	9.4%	9.2%	8.7%	7.8%	8.3%	7.9%	−1.3%
	(0.5)	(0.5)	(0.6)	(0.6)	(0.6)	(0.6)	(0.5)
Black	18.2%	20.8%	21.3%	18.7%	16.1%	18.2%	−1.9%
	(1.6)	(1.7)	(2.1)	(2.5)	(2.2)	(2.2)	(1.8)
Other	12.4%	12.1%	9.0%	9.5%	9.1%	8.6%	−3.2%
	(1.5)	(1.6)	(1.4)	(1.9)	(2.2)	(1.7)	(1.6)
Gender							
Male	10.3%	10.1%	8.7%	8.7%	8.5%	8.8%	−1.5%
	(0.5)	(0.5)	(0.5)	(0.7)	(0.6)	(0.7)	(0.5)
Female	11.3%	11.9%	11.7%	10.1%	10.1%	9.9%	−1.6%
	(0.5)	(0.5)	(0.6)	(0.7)	(0.7)	(0.7)	(0.6)
Head Education							
H.S. degree or below	20.9%	20.3%	20.5%	19.5%	18.1%	17.0%	−2.4%
	(1.1)	(1.1)	(1.3)	(1.6)	(1.4)	(1.3)	(1.1)
Some college or above	6.0%	6.4%	5.3%	4.7%	5.3%	5.9%	−0.9%
	(0.4)	(0.4)	(0.4)	(0.5)	(0.6)	(0.6)	(0.4)

Source: Monthly CPS.

Note: The sample includes individuals who are included in the householders' families and who are in their first or fifth month in the survey. Individuals with imputed income are excluded from the sample. Change since the start of the pandemic is calculated as the difference between the poverty estimate from the pooled sample for the April, May, and June CPS surveys and the poverty estimate from the pooled sample for the January and February CPS surveys: (Apr + May + Jun) − (Jan + Feb). The statistics are weighted using fixed demographic weights since March 2020. Standard errors are clustered at the household level.

and 65+), race (white, Black, and other), gender, and the educational attainment of the head of the household (high school degree or below and some college or above). Poverty fell for all three groups, with declines of 1.7 percentage points (11.1 percent) for individuals age 0–17, 1.6 percentage points (16.1 percent) for individuals age 18–64, and 1.3 percentage points (17.1 percent) for individuals age 65 and older. The declines in poverty are statistically significant for the two older groups, but they are not significantly different from each other. We also see declines in poverty for all racial and gender groups and all groups defined by the educational attainment of the head. Those in the other race group (neither white nor Black) experienced the largest drop in poverty—a decline of 3.2 percentage points or 25.6 percent—followed by those with low-educated heads who experienced a decline of 2.4 percentage points or 11.3 percent.[11] Both of these changes are statistically significant. However, we cannot reject the hypothesis that the declines in poverty are the same for all race or all education groups.

We also considered how changes in poverty differed depending on how hard states were hit early on from the pandemic or by differences in states' policy responses. For example, we looked at the patterns separately for states with high and low COVID-19 death rates, states that implemented stay-at-home orders early versus late, states that announced a state of emergency early versus late, and states with high versus low recipiency rates for unemployment insurance. The recipiency rate, the percentage of unemployed workers who receive UI benefits, is a standard measure of the generosity of state UI programs (Wandner 2018). The details for how we split these samples are in online appendix I. The results for these subgroups are reported in online appendix table 6. We find evidence that poverty rates declined for all these groups. The decline is most noticeable for the states that issued initial stay-at-home orders later. Poverty rates for those in this group declined by 2.3 percentage points. And although this decline is statistically significant, we cannot reject the hypothesis that this decline is the same as that for those in states that issued these orders earlier. In fact, none of the differences across these groups are statistically significant.

Looking beyond poverty estimates, we also consider how the COVID-19 pandemic affected different points in the distribution of income. In figure 2

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11. The other race group includes American Indian, Alaska Native, Native Hawaiian or other Pacific Islander (16 percent based on the May 2020 survey), Asian (58 percent), and two or more races reported (26 percent).

Figure 2. Percentiles of Family Income from the Monthly CPS, 2019–2020
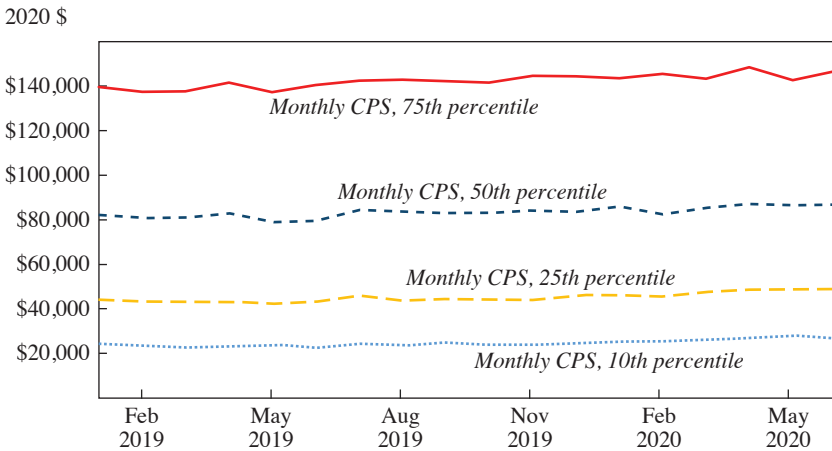
2020 $

Source: Monthly CPS.

Note: The sample includes individuals who are included in the householders' families and those in their first or fifth month in the survey. Individuals who have imputed income in the Monthly CPS are excluded. The family income is equivalence-scale adjusted and equivalized to a family with two adults and two children. The income is adjusted over time using the personal consumption expenditures chain-type price index and is expressed in May 2020 dollars. The statistics are weighted using fixed demographic weights since March 2020.

we report estimates of the 10th, 25th, 50th, and 75th percentiles of family income (equivalized to a family with two adults and two children) for the period from January 2019 to June 2020. Then, in table 2, we report estimates of the 25th percentile for each month between January and June of 2020, as well as changes in the 25th percentile between the pre- and post-onset of COVID-19 periods. Results analogous to those in table 2, but for the 50th and 75th percentiles, are reported in online appendix tables 8 and 9.

The results in figure 2 show that income for each of the percentiles we report remains flat for the period from January 2019 through February 2020. Then, incomes start to rise after that. The 25th percentile of family income increased from about $46,000 in January and February to about $49,000 in April, May, and June, a statistically significant increase of about $3,000, or 6.4 percent (table 2).[12] This increase seems reasonable given the government benefits low income families were potentially eligible for,

12. The January number is about 1.75 times the federal poverty line for a family of four.

Table 2. Twenty-Fifth Percentile, Monthly CPS, 2020

Month	January	February	March	April	May	June	Change since start of pandemic
Full sample	$46,246	$45,546	$47,763	$48,796	$48,821	$48,977	$2,965
	(820)	(814)	(885)	(1,054)	(1,281)	(1,311)	(906)
Number of individuals	20,020	20,822	16,733	14,383	14,236	14,391	
Age							
Age 0–17	$38,577	$37,417	$35,598	$39,311	$40,996	$41,163	$2,669
	(1,319)	(1,146)	(1,741)	(2,100)	(1,319)	(2,317)	(1,302)
Age 18–64	$49,928	$49,691	$53,605	$54,844	$54,274	$54,165	$4,689
	(1,249)	(905)	(1,262)	(1,264)	(1,359)	(1,557)	(1,072)
Age 65+	$47,398	$46,477	$49,074	$48,437	$50,499	$48,391	$2,045
	(988)	(956)	(1,070)	(1,436)	(1,564)	(1,220)	(1,101)
Race							
White	$50,216	$49,050	$51,934	$52,927	$52,754	$53,162	$3,184
	(1,118)	(934)	(1,220)	(1,289)	(1,200)	(1,606)	(1,161)
Black	$31,051	$30,280	$29,289	$35,359	$34,836	$32,864	$3,460
	(1,560)	(1,432)	(1,815)	(3,471)	(2,059)	(1,976)	(1,751)
Other	$44,044	$43,970	$48,199	$52,727	$45,574	$49,314	$5,344
	(3,150)	(2,294)	(1,812)	(4,231)	(4,107)	(4,584)	(3,305)
Gender							
Male	$47,469	$47,976	$50,707	$51,886	$50,969	$50,451	$3,258
	(867)	(874)	(1,173)	(1,370)	(1,272)	(1,527)	(1,028)
Female	$45,378	$43,588	$45,391	$47,221	$46,705	$47,367	$2,600
	(783)	(796)	(1,082)	(909)	(1,145)	(1,299)	(785)
Head Education							
H.S. degree or below	$29,323	$30,082	$29,713	$30,186	$33,144	$31,896	$2,160
	(799)	(920)	(895)	(1,469)	(1,359)	(1,365)	(1,093)
Some college or above	$62,750	$61,390	$64,412	$66,108	$64,360	$64,033	$2,850
	(1,628)	(1,309)	(1,713)	(1,660)	(1,877)	(1,425)	(1,320)

Source: Monthly CPS.

Note: The sample includes individuals who are included in the householders' families and who are in their first or fifth month in the survey. Individuals with imputed income are excluded from the sample. The family income is equivalence-scale adjusted and equivalized to a family with two adults and two children. The income is adjusted over time using the personal consumption expenditures chain-type price index and is expressed in May 2020 dollars. Change since the start of the pandemic is calculated as the difference between the poverty estimate from the pooled sample for the April, May, and June CPS surveys and the poverty estimate from the pooled sample for the January and February CPS surveys: (Apr + May + Jun) − (Jan + Feb). The statistics are weighted using fixed demographic weights since March 2020. The standard errors are bootstrapped and clustered at the household level.

including a \$3,400 EIP (for a married couple with two children) and UI benefits that included a \$600 per week top off.

We also see a rise in income at higher percentiles, although the extent of the rise is smaller as we move up the distribution. Median income (online appendix table 8) rose by about \$2,500 (2.8 percent) during this period and this rise is statistically significant. At the 75th percentile (figure 2 and online appendix table 9), incomes rose more modestly, by about \$1,300 (0.9 percent), and this rise is not statistically significant. A rise in income at the 75th percentile would not be too surprising given that those with incomes at this level would potentially still be eligible for the expanded government benefits. The equivalized income values for the 75th percentile are about \$145,000 for a married couple with two children and about \$65,000 for an individual. These values are below the income thresholds for receiving the full amount of the EIP.

As with our results for poverty, we find consistent evidence that income rose between the pre- and post-onset of COVID-19 periods for all of the subgroups that we consider (table 2 and online appendix table 10), and in nearly all cases the rise is statistically significant, although the estimates of these changes across groups are not significantly different from each other.

IV.A. *The Effect of Government Policy Changes in Income*

That we find poverty declined and income rose in the first few months after the start of the pandemic, despite the fact that earnings fell sharply, suggests that the government policy response to the pandemic had a substantial effect on income. We can estimate the direct impact of payments to individuals by calculating the differences in poverty and other income statistics relying on measures of family income that alternatively include and exclude the government benefits. Since we directly observed income including the benefits, we only need to calculate a second, counterfactual income measure that subtracts those benefits. Although we do not directly observe receipt of the EIP and the expanded UI benefits, we have sufficient information in the Monthly CPS to calculate the potential benefits that each family could receive—annual income, family size and structure, and unemployment status and duration.

In particular, for our sample from the April, May, and June CPS we impute benefits for the three main government programs that directly transferred cash income to individuals and families—the EIP, the Pandemic Unemployment Compensation (PUC) program, and the Pandemic Unemployment Assistance (PUA) program—as well as for regular UI, as these payments also expanded significantly after the start of the pandemic.

Our approach will also account for benefits from the Pandemic Emergency Unemployment Compensation (PEUC) program that extended by thirteen weeks the duration of UI benefits, although this program affected a small number of claimants during our sample period.

Imputing EIP is straightforward as nearly all income eligible individuals and families received such payments. We calculate the appropriate benefit amount based on family income, size, and composition. On aggregate our imputation method accurately captures total EIP paid out, but we cap our imputed benefits to match these aggregates. See online appendix II for a detailed description of our procedure.

Because the expanded UI programs reach well beyond the traditional unemployed, we need to allocate UI benefits to a broad set of individuals who are not currently working. In fact, if we only allocated benefits to those who were unemployed, total benefits would fall far short of the total dollars paid out. Thus, we impute regular UI benefits for a subset of individuals who report being unemployed (not working and looking for work) except those who were previously self-employed. For PUA, we impute benefits for a subset of individuals who were unemployed but were previously self-employed, as well as those who report being absent from work due to health reasons, family responsibilities, child care problems, and other reasons, and those who want a job but did not look for work over the past four weeks because: (1) they believed no work was available in their area of expertise, (2) they could not find a job, (3) of family responsibilities, (4) they could not arrange child care, or (5) of other reasons. While a large fraction of these groups is likely to be eligible for some form of unemployment insurance, there are some individuals who are eligible for UI whom we will miss. For example, we do not observe complete employment histories, so we will miss those who received UI benefits in the twelve months prior to the interview but had already become reemployed by the time of the interview. To ensure that we allocate the appropriate amount of UI benefits paid, we cap the number of individuals (selected at random) to which we impute benefits so that the total dollars of benefits we impute matches administrative totals.[13] Because the likelihood that individuals receive UI conditional on being monetarily eligible differs considerably across states, we allow the cap to vary across states based on state UI

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13. US Treasury, Daily Treasury Statement, https://datalab.usaspending.gov/dts/?start= 20050609&end=20200617&frequency=mtd&category=Unemployment%20Insurance%20 Benefits. accessed July 23, 2020.

recipiency rates as explained in online appendix II. See online appendix II for more details on our procedure.

Using these imputed benefits, we calculate changes in the share of individuals with family incomes below the poverty line and multiples of the poverty line using income with and without these benefits. In the first row of table 3 we report our main poverty estimates from table 1. These estimates are based on reported total annual family income, and therefore, in theory, include EIP and both the expanded and regular UI benefits. We then calculate poverty, subtracting from income these government benefits for our April, May, and June CPS samples. In the last column we report the change in poverty between January 2020 and June 2020 for each measure of poverty. When all of these government policies are excluded, we find that poverty rises by 2.7 percentage points between January and June, and this rise is statistically significant. In other words, not only do the government programs account for the entire decline in poverty that we observe, but in their absence, poverty would have risen sharply.

To determine the relative contribution of these programs in reducing poverty we exclude each of them separately. These calculations indicate that while both UI and the EIP played an important role in staving off a rise in poverty, the EIP played a somewhat larger role. When we exclude these payments, the poverty rate for June is 1.1 percentage points higher than January. If, instead, we exclude all UI programs but keep the EIP, then the rise in poverty is 0.8 percentage points. If we exclude only the expanded UI benefits (PUC and PUA), then poverty between January and June increases slightly by 0.1 percentage points, but the poverty rate in June in this counterfactual scenario is still much higher (1.6 percentage points) than the actual estimate for June.

In the remaining panels of table 3 we consider the effects of these policies on higher points in the income distribution: 200 percent, 300 percent, and 500 percent of the poverty line. As we move up the income distribution, the effect of the policies decreases in percentage terms, which is expected given the targeted nature of these programs and that the fixed value of these payments is a smaller fraction of family income. The estimates in the top panel suggest that the effect of all programs was to reduce poverty by 30.6 percent (from 13.5 percent to 9.3 percent). These combined programs reduced the fraction of families with income below 200 percent of the poverty line by 13.6 percent. Both the EIP and UI contributed to reducing the fraction below 200 percent of the poverty line. Further up the income distribution, government programs increased income, but the effects were smaller. The effect of all programs was to reduce the fraction

Table 3. Poverty Rates with and without COVID-19-Related Government Payments, Monthly CPS, 2020

Month	January	February	March	April	May	June	June–January
Panel A. Income less than 100% FPL							
Actual poverty	10.8%	11.0%	10.2%	9.4%	9.3%	9.3%	−1.5%
	(0.5)	(0.5)	(0.5)	(0.6)	(0.6)	(0.6)	(0.8)
w/o EIP and all UI programs				11.1%	11.6%	13.5%	2.7%
				(0.7)	(0.7)	(0.7)	(0.8)
w/o EIP and PUC/PUA				11.0%	11.4%	13.3%	2.5%
				(0.7)	(0.7)	(0.7)	(0.8)
w/o EIP				10.8%	10.7%	11.9%	1.1%
				(0.7)	(0.7)	(0.7)	(0.8)
w/o all UI programs				9.6%	9.9%	11.6%	0.8%
				(0.6)	(0.6)	(0.7)	(0.8)
w/o PUC/PUA				9.6%	9.8%	10.9%	0.1%
				(0.6)	(0.6)	(0.6)	(0.8)
Panel B. Income less than 200% FPL							
Actual poverty	29.1%	29.3%	27.8%	27.4%	27.4%	26.9%	−2.1%
	(0.7)	(0.7)	(0.8)	(0.9)	(0.9)	(0.9)	(1.1)
w/o EIP and all UI programs				29.0%	30.4%	31.2%	2.1%
				(0.9)	(0.9)	(0.9)	(1.1)
w/o EIP and PUC/PUA				28.9%	30.2%	30.6%	1.5%
				(0.9)	(0.9)	(0.9)	(1.1)
w/o EIP				28.9%	29.3%	29.4%	0.3%
				(0.9)	(0.9)	(0.9)	(1.1)
w/o all UI programs				27.6%	28.4%	28.5%	−0.6%
				(0.9)	(0.9)	(0.9)	(1.1)
w/o PUC/PUA				27.5%	28.1%	28.3%	−0.8%
				(0.9)	(0.9)	(0.9)	(1.1)
Panel C. Income less than 300% FPL							
Actual poverty	45.0%	46.7%	45.0%	43.8%	44.5%	45.1%	0.1%
	(0.7)	(0.7)	(0.8)	(0.9)	(0.9)	(0.9)	(1.2)
w/o EIP and all UI programs				45.0%	47.6%	48.0%	3.0%
				(0.9)	(0.9)	(0.9)	(1.2)
w/o EIP and PUC/PUA				45.0%	47.3%	47.7%	2.7%
				(0.9)	(0.9)	(0.9)	(1.2)
w/o EIP				44.9%	46.6%	46.6%	1.6%
				(0.9)	(0.9)	(0.9)	(1.2)
w/o all UI programs				44.0%	45.4%	46.4%	1.4%
				(0.9)	(0.9)	(0.9)	(1.2)
w/o PUC/PUA				44.0%	45.1%	46.1%	1.1%
				(0.9)	(0.9)	(0.9)	(1.2)

Table 3. Poverty Rates with and without COVID-19-Related Government Payments, Monthly CPS, 2020 (*Continued*)

Month	January	February	March	April	May	June	June–January
Panel D. Income less than 500% FPL							
Actual poverty	69.9%	69.5%	69.3%	68.3%	69.6%	69.7%	−0.2%
	(0.6)	(0.6)	(0.7)	(0.8)	(0.8)	(0.8)	(1.0)
w/o EIP and all UI programs				69.1%	71.5%	71.0%	1.1%
				(0.8)	(0.8)	(0.8)	(1.0)
w/o EIP and PUC/PUA				69.1%	71.5%	70.9%	1.0%
				(0.8)	(0.8)	(0.8)	(1.0)
w/o EIP				69.0%	71.0%	70.6%	0.7%
				(0.8)	(0.8)	(0.8)	(1.0)
w/o all UI programs				68.4%	70.1%	70.2%	0.3%
				(0.8)	(0.8)	(0.8)	(1.0)
w/o PUC/PUA				68.4%	70.0%	70.1%	0.2%
				(0.8)	(0.8)	(0.8)	(1.0)

Source: Monthly CPS.

Notes: The sample includes individuals who are included in the householders' families and who are in their first or fifth month in the survey. Individuals with imputed income are excluded from the sample. The statistics are weighted using fixed demographic weights since March 2020. FPL = federal poverty line. Standard errors are clustered at the household level. See online appendix II for the details on the imputation of EIPs and UI payments.

below 300 percent of the poverty line by 6.2 percent, and the fraction below 500 percent of the poverty line by 1.8 percent.

Our simulations also allow us to provide evidence on other important questions related to how the government response to the pandemic affected individuals and families. In particular, we can examine the extent to which eligible families received benefits and explore which demographic groups were more or less likely to actually receive benefits. Although we do not observe actual receipt of these benefits in our data, we have good information on the total amount of benefits that were given out each month, and we have reasonably good information on who is likely to be eligible from the CPS.

Given the broad eligibility for EIP that was based mainly on income, imputing such benefits is straightforward. Although there was some concern about barriers for certain groups of individuals in receiving these benefits, our simulations suggest that by the third week of June, most eligible individuals and families received such payments. If we allocate payments to all eligible families in the June CPS, the weighted sum of these benefits is $276 billion, which is only about 3 percent more than

Table 4. Imputed Cumulative Stimulus and UI Payments (Billion $) and Receipt Rates

Month	Program	*Simulated eligible amount ($)*	*Payments from administrative data ($)*	*Simulated receipt amount ($)*	*Dollar receipt rate (%)*	*Person receipt rate (%)*
April	EIP	274	160	162	59	59
	PUA	47		2	5	5
	Regular UI	26		10	37	37
	PUC	90		20	22	23
	Total UI	164	32.4	31.7	19	23
May	EIP	279	259	260	93	93
	PUA	54		21	39	38
	Regular UI	41		27	68	65
	PUC	142		74	52	52
	Total UI	237	122	122	52	52
June	EIP	278	267[a]	278	100	100
	PUA	48		40	82	81
	Regular UI	49		43	87	86
	PUC	164		138	84	84
	Total UI	261	224	220	84	84

Sources: Monthly CPS; IRS; and US Treasury.

Notes: The simulated eligible amount is the weighted total cumulative dollars of benefits that we would impute if all eligible persons received benefits. Payments from administrative data reflect the total cumulative dollars paid out based on data from the IRS or US Treasury (2020). Simulated receipt amount reflects the total imputed benefits capped to match the administrative data totals (except for the EIP in June). The person receipt rate is calculated as the fraction of those designated as eligible that were allocated imputed benefits for that program.

a. This amount is through June 3, 2020.

the actual amount of payments through June 3, 2020 ($267 billion) as reported by the IRS.[14]

For UI, our caps on total benefits imputed are binding in each month, indicating that we have more individuals who are designated as eligible for regular UI or PUA than we impute to receive these benefits, with the gap much more pronounced in the early months. For example, in May, 38 percent of those eligible for PUA were allocated an imputed benefit, while 65 percent of those eligible for regular UI received benefits (table 4). By June, these receipt rates were much higher—81 percent for PUA and 86 percent for regular UI—indicating that the majority of those who lost employment received benefits by this point. We should emphasize that

Table 5. Imputed UI Receipt Rates by Recipiency Rate Tercile and Month

Month	UI Type	Recipiency rate tercile	Receipt rate (%)
April	PUA	1	6
		2	4
		3	5
	Regular UI	1	29
		2	38
		3	43
May	PUA	1	23
		2	40
		3	50
	Regular UI	1	46
		2	65
		3	81
June	PUA	1	54
		2	91
		3	95
	Regular UI	1	62
		2	95
		3	99

Sources: Monthly CPS; US Department of Labor.

Note: Terciles of state recipiency rate are determined using regular UI recipiency rates by state for the first quarter of 2020.

many of those that we consider eligible likely are not truly eligible due to having quit, being new entrants, or not satisfying the PUA requirements. Thus, the true receipt rate may be higher than these allocation percentages. To double check our assessment of the reach of UI in the pandemic, we compared published counts of UI claims to estimates of those out of work. This analysis corroborates the main takeaways from our simulations (see online appendix II and online appendix table 15). There was a slow initial response of state UI programs in the pandemic, but by June the vast majority of those out of work were reached by the expanded UI system.

We further break down these receipt rates, separating states into groups defined by terciles of the state-level recipiency rate from the first quarter of 2020 (table 5). The recipiency rate is commonly taken as an indicator of how welcoming the state is to UI claims—those with low rates are thought of as discouraging claims and being more aggressive in disqualifying applicants. These results show that receipt rates differed considerably across these groups. For example, in May, for those in the bottom tercile of recipiency rates, 23 percent of those eligible for PUA were allocated imputed benefits, while 50 percent of those in the top tercile were allocated benefits. For regular UI, these rates were 46 percent for the bottom

tercile and 81 percent for the top tercile. In June, the receipt rates rose for PUA to 54 percent for the bottom tercile and 95 percent for the top tercile, while the corresponding receipt rates for regular UI were 62 percent and 99 percent.

Clearly there are large differences in receipt rates between states that are traditionally unwelcoming to UI claims with a low recipiency rate and those with a high recipiency rate. These differences in state recipiency rates have implications for how well the UI system reaches certain demographic groups. For example, because the low recipiency rate states have a higher share of the population that is Black (17 percent in the lowest tercile compared to 12 percent in the highest tercile), Black Americans have been treated less well by the UI system than white Americans.

V. Comparisons of Family Income Data from the Monthly CPS to Other Sources

Because the Monthly CPS family income data have been rarely used to measure income or poverty, we benchmark them and examine their accuracy by comparing them to alternative sources of data on income. We consider how these different sources of income align both in levels and in trends. We are also interested in assessing whether monthly updates to an annual measure of income or poverty, which we can do with the Monthly CPS data, anticipate changes that are later revealed by survey data that are only available annually, such as the CPS ASEC. We are further interested in whether within-year variation in family income from the Monthly CPS aligns with data from other sources. These comparisons will provide information that will allow researchers to identify the strengths and weaknesses of these vital, but rarely used, public-use data and aid their use and interpretation.

The most direct comparison for the Monthly CPS is the Annual Social and Economic Supplement (ASEC) to the CPS, as this survey is administered as a supplement to a subset of the Monthly CPS samples from February, March, and April. The CPS ASEC is the source of official income statistics in the United States. The questions in both surveys are designed to capture a similar concept of income: pretax money income. One important distinction between these measures is that the Monthly CPS measure relies on a single, global question about income over the past twelve months from all sources and all individuals in the householder's family, while CPS ASEC income is derived from information on more than twenty-five different income sources in the household for the previous calendar year

Figure 3. Poverty Rates from the Monthly CPS and the Annual Social and Economic Supplement of the CPS, 2005–2020

Fraction poor
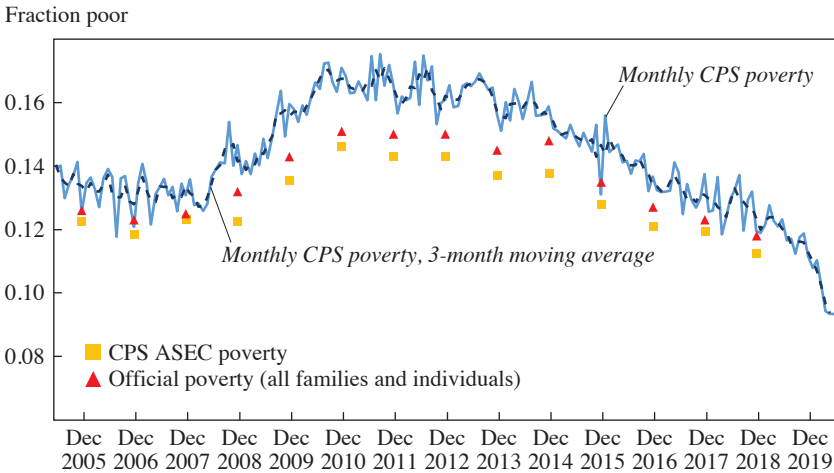
Sources: Monthly CPS; Annual Social and Economic Supplement of the CPS.
Notes: The Monthly CPS and CPS ASEC samples include individuals who are included in the householders' families. The Monthly CPS sample is restricted to individuals with non-imputed income who are in their first or fifth month in the survey. The three-month moving average is calculated as the unweighted average of poverty rates in month $t-1$, t, and $t+1$. The statistics are weighted using fixed demographic weights since March 2020.

for all individuals age fifteen and above. Thus, comparisons of income in the Monthly CPS to income in the CPS ASEC can shed light on the extent to which global questions about income can capture income from many different sources.

To assess the comparability of patterns across these different sources, in figure 3 we report income poverty using both the Monthly CPS and the CPS ASEC for the period from 2005 through 2020. For the CPS ASEC estimates, we restrict the sample to individuals in householder families only, because this is the sample for which we observe income in the Monthly CPS. For comparison, we also report the official US poverty rate, which is derived from the CPS ASEC data. The only difference between these two measures from the CPS ASEC is that the official measure also includes individuals who are outside the householder's family. Because our sample from the Monthly CPS is much smaller than that from the CPS ASEC, and is therefore noisier, we also report a three-month moving average of the Monthly CPS poverty rate. For all measures, the x-axis indicates the most recent month of the income reference period. Thus, we plot

the estimates from the CPS ASEC in December of each year because the reference period is the calendar year, but for the Monthly CPS we plot the estimates in the interview month.

The results in figure 3 indicate that individuals in householder families have lower poverty than other individuals—the official poverty rate is about 1 percentage point higher than the measure from the CPS ASEC that excludes individuals outside the householder's family. The poverty estimates from the Monthly CPS are higher than the comparable measures from the CPS ASEC, typically by 1 to 2 percentage points. This difference in levels suggests that the more detailed income questions that are asked in the CPS ASEC capture more income than the single, global questions about family income. For changes over time, however, the patterns are quite similar across these two series. For example, between December 2007 and December 2010, annual CPS ASEC poverty rose by 19 percent, while annual Monthly CPS poverty (three-month moving average) rose by 25 percent. Between December 2014 and December 2018, CPS ASEC poverty fell by 18 percent while Monthly CPS poverty fell by 21 percent. In fact, the annual poverty rates estimated from these two sources—comparing CPS ASEC estimates of poverty to those from the December CPS—are highly correlated. Between 2005 and 2018, the correlation between these two measures of poverty is 0.91.

Figure 3 also shows the advantage of using the Monthly CPS to provide timely estimates. The first evidence of the negative impact of the Great Recession on official poverty did not come until September of 2009, when official poverty estimates (and the CPS ASEC data) were released for calendar year 2008. With the Monthly CPS, however, we see annual poverty rising as soon as June of 2008—an estimate that could have been calculated in July of 2008, a full fourteen months before the official estimates became available. The timely Monthly CPS data mean that we can already see how poverty was changing in the months leading up to and shortly after the start of the COVID-19 pandemic, and we will continue to get an early look at how economic well-being changes as macroeconomic circumstances evolve over the coming months.

In figure 4, we report the trends for various percentiles of real family income for both the Monthly CPS and the CPS ASEC for the period from 2005 through 2020. Again, we see that CPS ASEC income exceeds Monthly CPS income, but for each of the percentiles we report, the changes over time are quite similar for the two data sources.

Another way to consider the accuracy of the Monthly CPS income measure compared to the CPS ASEC income measure is to examine the

Figure 4. Percentiles of Family Income from the Monthly CPS and the Annual Social and Economic Supplement of the CPS, 2005–2020
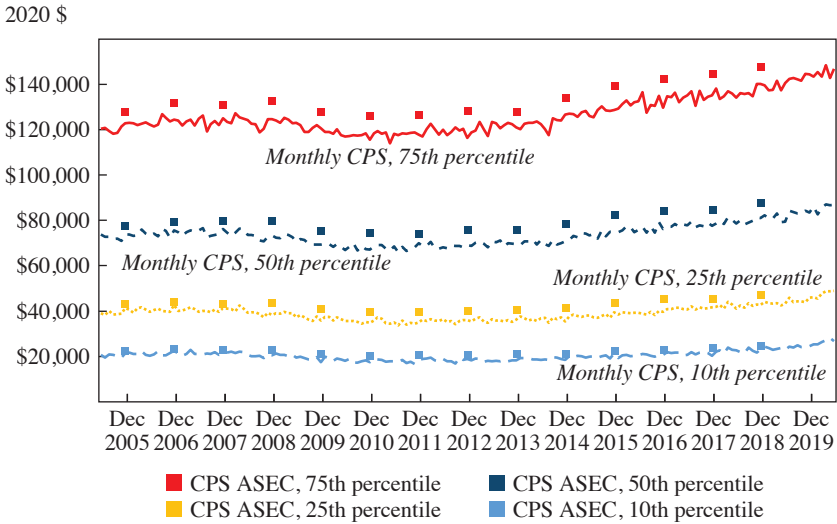

Sources: Monthly CPS; Annual Social and Economic Supplement of the CPS.

Notes: The Monthly CPS and CPS ASEC samples include individuals who are included in the householders' families. The Monthly CPS sample is restricted to individuals with non-imputed income who are in their first or fifth month in the survey. The family income is equivalence-scale adjusted and equivalized to a family with two adults and two children. The income is adjusted over time using the personal consumption expenditures chain-type price index and is expressed in May 2020 dollars. The statistics are weighted using fixed demographic weights since March 2020.

dispersion of each measure. It is common to model a variable that is measured with error as the sum of a true component plus an error component that is uncorrelated with the true component. In such a case, greater dispersion means more error. The standard deviation, variance, and coefficient of variation of the income measures from the two sources can be found in the online appendix table 12. This table indicates that the standard deviation of the Monthly CPS measure is about 9 percent lower than the ASEC measure, while the coefficient of variation is about 2 percent higher, suggesting that there is little difference in the amount of measurement error in the two income sources.

We also compare income in the Monthly CPS to income in the Consumer Expenditure Survey (CE). The CE is a nationally representative survey that is the most comprehensive survey of consumption data in the United States. It is a rotating panel survey that interviews about 7,000 families each quarter. While the focus of the survey is spending data, it also collects

Figure 5. Poverty Rates from the Monthly CPS and the Consumer Expenditure Surveys, 2014–2018
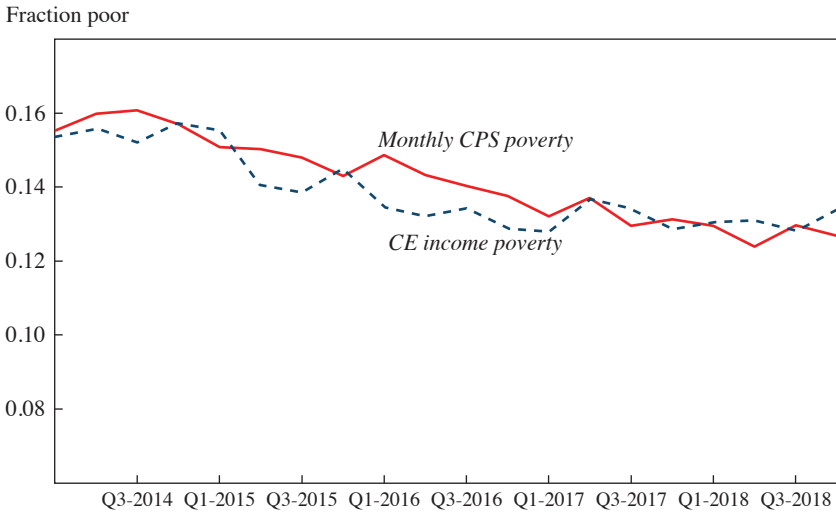
Fraction poor

information on family income. The nice feature of this comparison is that the CE interviews families throughout the year with the reference period for the income questions being the previous twelve months, which aligns with the reference period for the Monthly CPS income question. For the period from the first quarter of 2014 through the end of 2018, we report in figure 5 estimates of annual income poverty on a quarterly basis using the CE data alongside the estimates from the Monthly CPS, aggregated up to the quarter. As shown in figure 5, the long-term trends in poverty from the Monthly CPS line up very closely with those from the CE. Between the first quarter of 2014 and the last quarter of 2018, poverty fell by 18 percent using data from the Monthly CPS and by 13 percent using data from the CE. The annual poverty rates estimated from these two sources are highly correlated. During this period, the correlation between these two measures of poverty is 0.84. These patterns suggest that changes in family income that are captured in the Monthly CPS are consistent with other, commonly used, nationally representative data sources.

VI. Relation to Other Information on Income and Well-Being during the Pandemic

In recent months, a flood of near real-time data has shed light on aspects of the changes in economic well-being of the population during the very early stages of the pandemic. At least two patterns are notable about this research. First, the other sources of evidence, from surveys as well as administrative sources, are largely consistent with, or can be reconciled with, the evidence in this paper. Second, while these other sources provide important information about how the economic circumstances of individuals and families have changed during the pandemic, the evidence we present from the Monthly CPS has important advantages.

Consistent with our results, the Bureau of Economic Analysis (BEA) Personal Income and Outlays data (currently available through June 2020 and shown in online appendix figure 5) indicate that real disposable personal income fell by 2 percent in March but rebounded to rise by 13 percent in April, calculated as the change from the previous month in both cases. Although it fell in May, personal income remains well above its level in March. The BEA also reported that real personal consumption expenditures fell by 13 percent in April, followed by modest increases in May and June. Cox and others (2020) and Chetty and others (2020) also find a decline in April in spending as recorded in bank accounts or aggregated credit records, respectively, though they both find an uptick in May. Cox and others (2020) also find that savings increased early in the pandemic especially for those with low previous income. They conclude that the initial decline in consumption they observe is not due to a decline in income from labor market shocks. Other evidence suggests credit card debt, personal loans, and even borrowing from pawn shops declined (Dalton and Andriotis 2020). The rise in income and savings can be reconciled with the initial decline in consumption because the opportunities for spending were limited by stay-at-home orders and travel bans, as well as personal choices to avoid contracting or spreading the virus, and uncertainty about future income streams and other factors. Thus, the income rise that we find is consistent with other evidence.

While aggregated national accounts or financial records yield useful information on aggregate changes in consumption, they do not provide disaggregated estimates of economic well-being by demographic group, which is important for understanding which groups are hurt the most by the pandemic. Distributional statistics such as income percentiles or

poverty rates that are needed to assess who is affected by the pandemic also cannot be obtained from these data. Household financial records have the potential to provide disaggregated and distributional detail, but are not representative of the entire population, importantly missing a substantial segment of the population without bank accounts.

There are important and timely new survey sources that provide invaluable information on other domains, but they have little or no information on income. These surveys include the Census Bureau's Household Pulse Survey, the Federal Reserve Bank's SHED, and the Data Foundation's COVID Impact survey (see online appendix table 13 for details on these surveys). These surveys do not collect data on current income. The most recent wave of the SHED does ask about changes in income from the previous month. However, the interviews from this wave occurred in early April, prior to the distribution of most of the government benefits that we consider. The COVID Impact survey (Bauer 2020) finds an increase in food insecurity when compared to a different earlier survey while the Census Bureau's Household Pulse Survey (US Census Bureau 2020) finds high rates of inability to pay rent, for example. These sources, as well as evidence on food bank usage, suggest increased hardship after the pandemic. We should emphasize that the profound disruptions from the pandemic such as the closures of schools, stores, churches, and other facilities, the uncertainty about future income streams, concerns about the health of family and friends, and other disruptions could lead to increases in hardship. An uptick in deprivation could be real, though there are reasons to be less certain of the magnitude of any change over time given the different source of the pre- and post-pandemic information. In terms of policy, the important fact gained from this paper is that the increase in deprivation is not due to the overall income loss, but rather due to other disruptions of the pandemic, including possibly the unevenness of the income flows. Furthermore, given the evidence that small changes in wording or question order can have large impacts on survey results, having data from a survey that has been fielded in the same form for decades allows us to be more certain about any implications from our evidence than we could when using a new survey without historical benchmarks.

VII. Discussion and Conclusions

Despite a dramatic slowdown in the labor market, our results indicate that poverty fell, and percentiles of income rose in the early months of the pandemic, using the only available source of representative and timely

income data for the US population. We further show that in the absence of the stimulus payments and expanded unemployment insurance, poverty would have risen sharply. Although expanded government programs helped stave off a rise in poverty, many of these benefits were onetime or are temporary, so future estimates of income will depend on how the availability of these benefits changes going forward.

While we show that reported annual income increased at all percentiles, this improvement in the overall distribution of income is still consistent with a share of families experiencing substantial income drops. Given the observed data, a substantial short-run fall for a small number of families would have to be combined with small increases for a much larger number.

These changes are based on an annual measure of income. The annual reference period will average out potentially large swings in income from month-to-month because much of the government relief was onetime or temporary. Ideally, we would also examine high-quality nationally representative income data for shorter time periods, but these data do not exist. Short-run decreases in income for those without savings or another buffer can lead to substantial increases in hardship.

Our simulations also provide evidence on the extent to which eligible families received government benefits. Comparisons to aggregate payments indicate that most eligible families received EIPs by June. For UI, many of those who were eligible did not receive benefits in the early months of the pandemic. By June, however, a large majority of those eligible had received benefits. These receipt rates, however, differed noticeably across states, which has important implications for which demographic groups were more or less likely to actually receive benefits. For example, because the low recipiency rate states have a higher share of the population that is Black, Black Americans that were eligible for UI were less likely to receive. Examining further the differences in the coverage of UI across demographic groups is an interesting topic for future research.

A number of potential biases in our results are worth noting. We suspect there is some tendency, it is unclear how strong, to emphasize recent income patterns in reporting on the past year. Such a bias would mean that our estimates more closely approximate changes in income over a shorter horizon than the nominal one-year reference period. We also suspect that the shift in income from earnings, a well-reported source of income, to unemployment insurance, a poorly reported source, means that we may have understated any improvements or overstated any declines in income. In recent years, about 90 percent of earnings has been reported in the CPS, as opposed to only about 60 percent of unemployment insurance

(Meyer, Mok, and Sullivan 2015). We should also note that our timely estimates of poverty are less precise that the official poverty estimates because they are only available for a subset of respondents and are based on a single, global income question.

This study has important implications for both policy and future research. A better, more timely understanding of income and poverty will help federal, state, and local policymakers allocate scarce resources to minimize the impact of COVID-19 (and future pandemics or other economic shocks) on vulnerable populations. In addition, by assessing the validity of these new measures using several sources of income, this study lays the foundation for future work on timely poverty measurement and allows others to understand the strengths and weaknesses of these vital, but rarely used, public-use data.

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