

## Financial Profiles of Workers Most Vulnerable to Coronavirus-Related Earnings Loss in the Spring of 2020

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October 30, 2020\*

### Abstract

In spring 2020, the COVID-19 pandemic and related shutdowns had huge effects on unemployment. Using data from the Survey of Consumer Finances, we describe the financial profiles of US families whose workers were most vulnerable to coronavirus-related earnings losses in the spring of 2020, based on whether a particular worker was deemed “essential” and whether a worker’s job could be conducted remotely. We use descriptive analytic techniques to examine how families’ baseline financial situations would allow them to weather COVID-shutdown-related earnings losses. We find that families with non-teleworkable workers who were most vulnerable to layoff also had both demographic and financial profiles that are associated with greater vulnerability to income shocks: non-teleworkable families were more likely to be people of color and single wage-earners, and also to have less savings. The median non-teleworkable family, whether in non-essential or essential occupations, held only three weeks of income in savings, underscoring the importance of policy measures to blunt the financial effect of the COVID crisis.

Keywords: Savings, COVID-19, coronavirus, essential workers

JEL codes: D14, E24, G51

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The SARS-CoV-2 virus, the virus that causes COVID-19 (coronavirus disease 2019), appears to have entered and begun circulating in the United States in late 2019 or early 2020. Because of the novel nature of this virus in human populations, by the beginning of June 2020 the spread of this virus resulted in at least 1.79 million infections and 104,000 deaths in the United States, despite widespread state-level and local stay-at-home orders enacted in March and April 2020 to reduce its spread.

The stay-at-home orders had two main effects on the labor force. First, most workers who could do their jobs from home were advised or ordered to do so. Second, particular occupations and industries were designated “essential,” and workers in these categories were permitted to work outside of the home; workers who were not designated as essential yet could not telework could not, for the most part, do their jobs. While the stay-at-home orders were decreed at the sub-national level due to historical and political factors, most states largely based their lists of essential workers and industries on a memorandum produced by the Department of Homeland Security (DHS 2020) “to support state, local, tribal, territorial and industry partners in identifying the critical infrastructure sectors and the essential workers needed to maintain the services and functions Americans depend on daily and that need to be able to operate resiliently during the COVID-19 pandemic response” (p.1).

In December 2019, unemployment in the United States was 3.5 percent (BLS 2020), its lowest level since 1969, and 75 percent of households reported that they were “doing at least okay” financially (Board of Governors 2020). During the March and April 2020 shut-downs aimed at “flattening the curve” of coronavirus infections, workers who could not work from home but were not designated essential were immediately vulnerable to earnings losses, whether due to unemployment, temporary layoffs or furloughs, or losses of contract or self-employment

income. As documented by Montenovo, Jiang, Rojas, Schmutte, Simon, Weinberg, and Wing (2020), workers in occupations that cannot be performed remotely experienced greater job losses in the spring of 2020. At the same time, some workers in occupations that were deemed essential, such as restaurant staff and hospital workers, were laid off due to changes in demand as more people stayed home.

By April 2020, the first peak of US coronavirus infections and lockdowns, unemployment had increased to 14.7 percent (BLS 2020). Self-reports of households “doing at least okay” had dropped by 3 percentage points, to 72 percent. For those who had lost hours or jobs, the percent of households “doing at least okay” had dropped to just 51 percent, despite increased unemployment and other benefits available to many (Board of Governors 2020).

To combat the negative economic effects of the pandemic and shutdowns, a number of public policies were enacted at the federal level. The CARES Act (Coronavirus Aid, Relief, and Economic Security Act) was signed into law on March 27, 2020. It included payments of up to \$1,200 per individual or \$2,400 per couple, with an additional \$500 for each child under the age of 16, depending on income. The CARES Act also provided for increased unemployment compensation, on top of state benefits, through July 26, 2020, and extended unemployment assistance to many classes of workers not covered by state unemployment insurance systems through the end of 2020. However, in many cases, there were long lags between filing for unemployment relief and receiving payments, and some workers remained ineligible despite the expansions. The CARES Act also included temporary payment relief for student loans, federally-backed mortgage loans, and suspensions of foreclosures and evictions. A host of additional federal, state and local laws and relief programs were also enacted in the spring of 2020 to offer additional support to businesses and families. In assessing the effects of such policies on the

finances of U.S. households, it is useful to examine the prior financial situations of the types of households that were most likely to experience earnings losses during the spring of 2020.

In this paper, we use data from the Survey of Consumer Finances (SCF) to describe how the financial profiles of US families with workers whose jobs were most likely to be affected by the COVID-related shutdowns in the spring of 2020 compared with such profiles of US families with workers whose jobs were less likely to be affected. Specifically, we examine the demographic characteristics, asset and debt ownership, and level of savings of families by teleworkability and “essential worker” designation. As described earlier, there was substantial heterogeneity in risk of earnings loss across families in April 2020 based on teleworkability and “essential worker” designation. A family’s ability to weather such income shocks will depend on their level of emergency savings and other assets.

We find that families with workers who were most vulnerable to layoff (i.e., unlikely to be able to telework and also not designated as essential) also had financial profiles that would likely lead to cash flow difficulties coping with income shocks. For example, the median non-teleworkable family, whether in non-essential or essential occupations, held only three weeks of income in savings; in contrast, teleworkable families held about six weeks of income in savings. Non-teleworkable families were also more likely to be people of color and a single wage-earner, underscoring the potential for differential effects of the COVID-related shutdowns across population groups.

## **Data and Methods**

We use data from the SCF, a triennial survey conducted by the Board of Governors of the Federal Reserve System.<sup>1</sup> The SCF provides detailed data about a cross-section of families in the United States, and includes information about demographics, family composition, work, income, wealth, spending, and debt. We use data and weights from the 2016 SCF, the most recent one for which data were available during the writing of this paper, restricting to families with reference persons under the age of 65. It is very unlikely that the composition of the workforce changed significantly between 2016 and 2020, so we expect that comparisons of the characteristics of large groups of workers and their families are reflective of the reality prior to the start of the pandemic in early 2020.

Our goal is to compare the baseline financial profiles of families in which workers' jobs are more likely to be affected by the COVID-related shutdowns. A family that loses income because of unemployment could rely on savings to cover their expenses, so we examine asset holdings. We focus on asset types that are easily liquidated (like checking and savings accounts) and financial assets that must be converted to cash prior to spending (like stocks and bonds). We also consider debt holdings, since spending could also be financed via credit. To better understand the magnitudes, we compare families' savings levels to their monthly income as well as their monthly housing and debt expenses.

We created indicators for whether a family would face higher-than-average risk of unemployment under COVID-related economic shutdowns. In families with more than one worker, we focus on the higher-earner, as that person's employment status will have a larger effect on the family's financial well-being than a lower-earner. In particular, we define a worker as at high risk of layoff if (a) they were in an occupation that could most likely *not* be performed

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<sup>1</sup> See Bricker, et al. (2017) for more details on the SCF.

from home (“non-teleworkable”), and (b) their occupation and industry indicated that they were unlikely to be considered an “essential worker” and therefore would not be able to work out-of-the-home during the strictest phase of shutdowns in most states.

The SCF includes Census Bureau industry and occupation codes for each worker in the data, which enable us to classify each worker as having an essential or non-essential job, and a teleworkable or non-teleworkable job. We use teleworkability classifications created by Dingel and Neiman (2020) to classify jobs as not feasible to be done from home versus jobs that feasibly could be conducted from home. We then classify workers as having essential or non-essential jobs, based on their reported industry and occupation, in accordance with the DHS advisory. We begin with listings of essential industries by Tomer and Kane (2020) and augment them with our own coding of additional essential industries, based on the DHS advisory. Next, we hand-classify all occupation codes as essential or non-essential, based on the DHS advisory.

We then construct our final essential worker indicator variable for non-teleworkable workers by considering the categorizations of both industry and occupation. First, workers whose jobs are both in an essential industry and an essential occupation are classified as essential. Then, we hand-coded some workers whose occupations were essential, but located in non-essential industries, as essential, according to a close read of the DHS advisory. All other workers are classified as non-essential. More details about our classification methods are available in the data appendix.

For the analysis that follows, we compare the financial characteristics of three categories of families, classified by worker type.<sup>2</sup> These categories include families containing workers with:

- **Non-essential, non-teleworkable jobs** (henceforth non-essential): non-essential jobs that cannot be done from home (16 percent of families)
- **Essential, non-teleworkable jobs** (henceforth essential): Essential jobs that cannot be done from home (39 percent of families)
- **Teleworkable jobs**: Jobs that may be done from home (45 percent of families)

Appendix Table 1 displays a breakdown of these categorizations by broad industry and occupation groups, which validates our categorizations. For example, workers in the teleworkable category are highly-concentrated in the “Education and health services” and “Professional and business services” industries, while workers in our essential, non-teleworkable category are concentrated in the “Education and health services” and “Construction” industries. Regarding broad occupation groups, the modal occupation in the teleworkable category is “Management, business, and financial operations occupations,” while the modal occupation in the essential, non-teleworkable category is “Professional and related occupations,” of which “Healthcare practitioners and technical occupations” make up a large proportion.

Our expectation is that families in the non-essential group were at the highest risk of layoff during the mass business closures in the spring of 2020, while those in the teleworkable group were at the lowest risk. Essential worker families were likely in the middle, in terms of

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<sup>2</sup> Our financial data are at the family level, so we designate each family’s worker type based on the occupational characteristics of the respondent; if the respondent has a partner/spouse, we classify based on the occupational characteristics of the higher earner within the couple.



layoff risk, as some essential employers still laid off workers because of low demand. In Table 1, we present average unemployment rates faced by families in our sample in June 2019 and June 2020, based on broad industry and occupation unemployment rates published in the Employment Situation report (BLS, 2019; 2020), by worker type.<sup>3</sup> This analysis shows that our worker-type categorizations are related to the unemployment rates in expected ways. For example, the average unemployment rate was highest among non-essential workers, and had also increased year-over-year by more than the average unemployment rate among teleworkable workers. Essential workers experienced average unemployment levels and year-over-year increases that fell between those of the other two worker types.

[Table 1 about here]

It will be years before national data containing unemployment status and detailed wealth information about families in the spring of 2020 are available. Our classifications meaningfully describe differences in unemployment risk, and allow us to use descriptive analytic techniques to examine how families' baseline financial situations would allow them to weather COVID-shutdown-related earnings losses.

## Results

Non-teleworkable families in both essential and non-essential jobs have demographic characteristics that are correlated with less financial security. Table 2 describes the demographic characteristics of families and their workers by our three worker types. On average, workers with

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<sup>3</sup> For each family, we merge in the broad industry-level and broad occupation-level unemployment rates corresponding to the primary earner's reported industry and occupation, and then we compute the average across families within worker type, employing the SCF weights.

non-teleworkable jobs are slightly younger than those who are able to work from home. Non-teleworkable workers with non-essential jobs are the least educated, followed by those with essential jobs, with 19 percent and 22 percent respectively having college degrees. In contrast, 57 percent of those with teleworkable jobs have college degrees.

Of non-essential workers, 46 percent are non-White; in contrast, 42 percent of essential workers and only 32 percent of teleworkable workers are non-White. In particular, Black and Hispanic families are disproportionately in the non-teleworkable jobs category. Other families are more likely to be in non-essential jobs; this very diverse group aggregates Asian Americans, Indigenous families, and families with respondents reporting multiple races.<sup>4</sup>

Non-essential workers are also more likely to be single parents, and less likely to have a second earner in the home, than essential workers and those who can telework. Indeed, non-essential worker families have lower average income (both wage income and total income) than the other two groups.

[Table 2 about here]

Figure 1 displays the worker types of the spouses or partners of primary earners (on whom the family categorizations are based). Non-essential workers are more likely to not have a spouse or partner, or to have a spouse or partner who is not working, which makes their family income more vulnerable to their employment situation than that of the other family types. In contrast, teleworkable workers are more likely to be coupled with another worker, and, subject to

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<sup>4</sup> As noted in Dettling, Hsu, Jacobs, Moore, and Thompson (2017), “The other or multiple race group consists of a very racially/ethnically diverse set of families, including those identifying as Asian, American Indian, Alaska Native, Native Hawaiian, Pacific Islander, other race, and all respondents reporting more than one racial identification. Because of small sample sizes, we do not have statistical power to further disaggregate this group of families. In 2016, families reporting more than one racial identification were the largest subgroup of the other or multiple race group (about 50 percent of families), followed by Asian families (about 30 percent of families), though the composition of this group varies over time.”

being coupled with another worker, they are most likely coupled with another teleworkable worker.

[Figure 1 about here]

Non-essential and essential worker families appear to be more vulnerable, from an income standpoint, than teleworkable worker families. However, assets—particularly liquid financial assets—and access to credit could mitigate the employment risk posed by the pandemic.

Panel A of Table 3 shows that 97 percent of non-teleworkable families and 100 percent of teleworkable families hold some liquid financial assets—which we define as assets held in checking accounts, savings accounts, money market accounts, cash, and prepaid debit cards. Non-cash liquid financial assets, defined as directly-held stocks, bonds, and pooled investment funds; certificates of deposit; and savings bonds, are held at much lower rates: 16 percent for non-essential workers and 20 percent for essential workers, compared with 38 percent of teleworkable workers. Again, we find that teleworkable families are most financially secure.

Quasi-liquid retirement assets (individual retirement accounts and account-type pensions like 401(k) plans) could serve as another source of emergency cash. Early withdrawals from these accounts normally incur penalties, which were suspended by the CARES Act for up to \$100,000 in total withdrawals. However, because these funds must be liquidated before they are moved into transaction accounts, they are less readily-available for spending than financial assets held outside these accounts. Quasi-liquid retirement assets are also held at much higher rates by teleworkable families (73 percent) than by non-teleworkable families (40 percent of non-essential and 52 percent of essential worker families). Again, we see that teleworkable families

are less financially-vulnerable than essential worker families, who are less vulnerable still than non-essential worker families.

[Table 3 about here]

While about 90 percent of essential workers and teleworkable workers own cars, non-essential workers are less likely to own them, which makes them particularly vulnerable to disruptions in public transportation. Late arrivals or missed shifts due to transportation disruptions, in turn, may have made non-essential workers yet more vulnerable to job loss.

Non-essential workers are also less likely to own their residence than essential workers, who in turn are less likely to own their residence than teleworkable workers. Normally, renters who miss payments could be evicted within a few months of missing payments. Homeowners who miss mortgage payments would not lose their home until foreclosure proceedings have completed, which could last months or even more than a year after the missed payments began. The CARES Act included a temporary moratorium on some evictions and foreclosures, as well as the opportunity for forbearance for homeowners with federally-backed mortgages.<sup>5</sup> Some states also issued their own bans on evictions. However, by the end of July, the federal ban and many state bans had expired, leaving renters particularly vulnerable to losing their homes if they miss rent payments because of loss of income.

Panel B of Table 3 displays rates of holding various forms of debt, by worker type. Non-teleworkable workers generally hold both secured and non-secured forms of debt at lower rates than teleworkable workers. While debt may negatively contribute to net worth, both secured and unsecured debt can also be used to finance spending. As such, non-teleworkable workers had less

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<sup>5</sup> See <https://www.washingtonpost.com/business/2020/07/24/faq-federal-eviction-moratorium/> for more details on eviction moratoriums as of July 24, 2020.

access to liquidity that could be used to smooth across income shocks. As an example, the median teleworkable family has total credit card limits of \$14,000, while the median non-teleworkable essential worker family has a much lower limit of \$2,500, and non-essential worker families only \$1,700.

All told, we see that non-teleworkable workers, particularly those in jobs considered non-essential, have characteristics that make them more vulnerable than those with teleworkable jobs on a number of dimensions. To better understand families' abilities to weather income shocks, it is important to understand how much income is potentially being foregone, and the level of liquid assets that families may have available to them for spending, in the event of reduced income receipt. To account for the highly-skewed nature of income and assets, Table 4 reports the median values, along with the 25th and 75th percentile, within each worker type.

[Table 4 about here]

At all points of the distribution, non-essential worker families have lower incomes (whether measured as total income, or wages only) than essential workers, who, in turn, have lower incomes than teleworkable workers. For example, the median non-essential worker family has about \$41,600 in annual income, compared with \$54,600 for essential worker families, and \$83,100 for teleworkable families. At both the 25th and 75th percentiles, non-essential worker families have about half the income of teleworkable families and about 70 percent of the income of essential worker families.

In the event of income loss, families may need to rely on savings to cover their expenses. Savings in liquid cash assets, defined as checking accounts, savings accounts, money market accounts, cash, and pre-paid debit cards, are easily accessed and are unaffected by fluctuating asset prices in financial markets. Half of non-essential worker families have less than \$2,000 in

liquid cash assets (\$3,000 for essential worker families). In contrast, the median teleworkable family holds \$10,000 in liquid cash assets. Liquid non-cash assets are negligible for the vast majority of families.

Another way to think about families' ability to weather a period of income loss is to examine levels of assets and financial obligations relative to monthly income. Figure 2 displays box plots to report quantiles of assets and rent plus debt payments as a fraction of monthly income, broken down by family worker type. This examination is informative for thinking about the level of assets or debts in the context of a family's financial situation.

[Figure 2 about here]

In particular, only about half of families report being able to save (Bricker, Dettling, Henriques, Hsu, Jacobs, Moore, Pack, Sabelhaus, Thompson, and Windle, 2017), so dividing assets by a family's income in a month creates a lower-bound estimate of how long a family could meet their obligations if they lost their income, without incurring additional debt. Our analysis does not assess the potential effects of policy responses to the pandemic. Bhutta, Blair, Dettling, and Moore (2020) find that in the absence of those policy responses, nearly half of working families would be unable to cover their regular expenses under a total income loss for more than six months with just their savings and standard unemployment insurance. Meanwhile, Bitler, Hoynes, and Sanzenbach (2020) document significant distress among American households in spite of provisions in the CARES Act and other policy responses intended to buffer the financial consequences of the pandemic.

In the first panel of figure 2, we show that the median non-teleworkable non-essential worker family has less than three weeks' worth of monthly total income held in liquid cash assets, whereas the median teleworkable family has about six weeks' worth of income. In the

middle panel, we divide by wage earnings, as only wage earnings will be directly related to the type of work-related income losses we expect to see in the spring of 2020, to show that the median non-teleworkable family could use financial assets to make up for just more than three weeks of lost income, while the median teleworkable family could use financial assets to make up for just more than six weeks of lost income.

In the last panel, we divide the sum of regular rent and debt payments (including mortgages, auto loans, and minimum payments on credit cards) by total monthly income and find that the median non-essential non-teleworkable worker's family must pay more than one-fourth of their monthly total income toward rent and debt. At the median, the other family types must pay a slightly lower share for these expenses. This expenditure leaves non-essential workers a lower proportion of income for food, communications and other services, health care, and health insurance, even during times of low unemployment. If job and earnings losses are concentrated among non-essential worker families (as seems likely, given Table 1), a relatively high replacement rate for lost income due to COVID-related shutdowns is required for families to continue to meet their financial obligations and regular expenses, relative to downturns in which job losses fell more broadly on earners across the distribution.

## **Conclusion**

This paper sheds light on families' readiness to weather negative income shocks across categories of workers that faced different risks of job loss in the pandemic-related shut-downs in the spring and summer of 2020. Drawing on the DHS advisory on essential industries and occupations, Tomer and Kane (2020), and Dingel and Neiman (2020), we classify all families in our analysis sample as teleworkable, non-teleworkable and essential workers, and non-

teleworkable and non-essential workers. These classifications are designed to reflect the differential vulnerability of non-essential workers to job loss.

Demographic, income, and wealth characteristics show that non-essential workers—families most vulnerable to layoff due to COVID-related shutdowns— are least prepared to weather income losses due to shocks, followed closely by essential worker families. Non-essential worker families are also more likely to be Black or Hispanic; these populations are particularly hard-hit by COVID-19 in terms of infections and deaths. Non-essential worker families are also more likely to be single parents, and less likely to have a second earner in the home. They have lower average income and lower savings than less vulnerable groups, and a higher share of their monthly income goes toward rent and debt, leaving fewer resources for other expenditures. Essential worker families share many of these characteristics, in contrast to teleworkable families, who tend to have higher incomes, more than one source of income, and more savings, even when scaled by income.

Overall, we draw three primary conclusions. First, we show that teleworkability and essential designations are useful classifiers that illustrate the variation in risk of layoff in the spring of 2020. Second, those who were most at risk due to their job type were more likely to be financially vulnerable, in addition to belonging to groups harder-hit by COVID-19. Finally, our results underscore the differential effect of COVID-19 in the realm of family finance, in addition to documented disparities in health consequences, particularly along racial and ethnic lines. These three points suggest that supports to income (such as the unemployment insurance expansions in the CARES Act) have the potential to substantially improve the financial positions of families who simultaneously had few financial buffers and also were at elevated risk of job loss during the pandemic recession.



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Online Appendix for  
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Loss in the Spring of 2020”

## Data Description

### Classifying workers’ jobs as teleworkable or essential

We merge into the 2016 Survey of Consumer Finances (SCF) three additional datasets in order to create our final teleworkable worker and essential worker designations:

1. [Dingel and Neiman’s \(2020\) \(D&N\)](#) **classification on the feasibility of work-from-home by occupation**: [This dataset](#) consists of a list of Standard Occupational Classification (SOC) codes and a corresponding *teleworkable* variable that ranges from 0 to 1, where the authors “classify the feasibility of working at home for all occupations ... based on responses to two Occupational Information Network (O\*NET) [surveys](#) covering ‘work context’ and ‘generalized work activities’.”

To facilitate eventual linkage with the SCF, we merge to the D&N list the [2010 SOC occupation code and 2010 census occupation code crosswalk](#) provided by the Census Bureau. We address 3 situations arising from merging in this crosswalk:

- Some SOC codes are in the D&N dataset but missing in the crosswalk (437 instances). This difference occurs because the D&N list includes subcategories of the SOC categories in our crosswalk; these SOC codes are of the format xxxx.0y. We assign them the census occupation code that corresponds to the associated SOC code of xxxx.00.
- Some SOC codes have corresponding census codes in the crosswalk but are not present in the D&N list (17 instances). This discrepancy occurs because a number of “all other” occupation categories are excluded from the D&N list. We assign a *teleworkable* value to these instances by taking the average of all corresponding non-“other” codes. For example, 27-4099.00 “Media and communication equipment workers, all other” is assigned the average of SOC codes 27-4010.00 to 27-4030.00.
- Some census occupation codes are missing from the crosswalk (two instances). We add to the list the census occupation code of 6000 and assign this code a teleworkable value of 0. Census occupation code 6000 is a broad category code, but all related subcategories that are present have a *teleworkable* code of 0. We also add census code 9840 (armed forces); we give this occupation a teleworkable code of 0.

Before using the crosswalk, we collapse the D&N dataset by SOC code. Once we have a dataset of census codes and D&N’s *teleworkable* variable, we construct our final binary teleworkable occupation variable by assigning occupations with D&N *teleworkable* codes  $<0.5$  as 0 and  $\geq 0.5$  as 1. (File: occupations\_workathome\_fixed.csv)

2. **Augmented list of essential industries based on [Tomer and Kane \(2020\) \(T&K\)](#)**: We begin with a [list](#) of North American Industry Classification System (NAICS) codes identified

as essential by T&K, who “related the qualitative information in the DHS list [of essential infrastructure workers] to specific industry codes... We chose to quantify essential workers by the broadest potential range of total industry employment.”

We merge in the corresponding census industry codes using the [crosswalk between 2012 NAICS codes and 2012 census industry codes provided by the Census Bureau](#) in order to facilitate merging with the SCF.

We augment this list by manually adding census industry codes that we deem “essential” based on our own reading of the US Department of Homeland Security’s Essential Critical Infrastructure Workforce advisory list ([version 3.0, March 28, 2020](#), henceforth “DHS advisory”). All census industry codes that were manually added have a *brookings\_added* value of 1. Every census industry code in this dataset is assigned a 1, essential; all census industry codes omitted from this dataset are deemed non-essential. (File: *brookings\_ind\_essential.csv*)

3. **Our own essential occupation classifications:** This data set is a full listing of all census occupation codes. We use our discretion and closely follow the text of the DHS advisory to designate all occupations as 0 or 1, non-essential or essential. (File: *bjk\_occ\_essential.csv*)

These three datasets are merged into the SCF, matching on census occupation codes for datasets 1 and 3, and matching on census industry codes for dataset 2. We use the variables *X7402* (reference person) and *X7412* (spouse) to merge industry-level designations and *X7401* (reference person) and *X7411* (spouse) to merge occupation-level designations. The full dataset yields three indicator variables for each worker: *teleworkable\_occ*; *essential\_ind\_brookings*; and *essential\_bjk\_occ* (there are ultimately six variables; those corresponding to the reference person have a suffix *\_r* and those corresponding to the spouse have a suffix *\_sp*).

We then construct our final binary essential worker variable for non-teleworkable workers. Workers who have both an essential industry code of 1 and our own essential occupation code of 1, receive a final “essential worker” value of 1; all other non-teleworkable workers have an “essential worker” value of 0. A final manual adjustment is made by flagging all unique industry and occupation pairings where the industry designation is non-essential, but the occupation designation is essential. We overrule 72 of these final codes based on our reading of the DHS advisory and adjust our final code for them from a 0 to 1.

### Household-level worker classifications

In the SCF, financial characteristics are reported at the household level. For our analysis, we choose one individual’s occupation and industry to represent the household. For households with both a reference person and a spouse, we choose the occupation and industry of the individual who earns the higher wage (we used *X4112*, *X4113*, *X4712*, and *X4713* to annualize wages of both the reference person and the spouse or partner). In cases where both individuals earn the same wage, we choose the reference person. Lastly, we choose the spouse when the reference person and spouse have the same wage, but there is no industry reported for the reference person

(we used X7401 and X7411, industry variables for the reference person and spouse, respectively, for this purpose). Usually, this is the case when the reference person has an X4100 variable code that is less than 50 but greater than 11, i.e. they are part of the labor force, but are not working at the moment. Our final variable names are *teleworkable\_occ* and *essential\_occ*.

### Computing rent + debt payment burdens

To calculate total payments in a given month, we adjust the total payments variable available in the SCF, *tpay*, by including auto lease payments (X2117 and X2118), monthly rent (X602, X603, X612, X613, X619, X620, X708, and X709) and monthly real estate taxes and fees (X703 and X704). We annualize all payments using amount and frequency information and then divide by 12. The rent value includes rent paid for a mobile home (rents home, owns site; owns home, rents site; rents home, rents site) and also rent paid for a non-mobile home. More information on the importance of including rent in this calculation can be found in [Chang, Hsu, Pack, and Palumbo \(2018\)](#).

### Unemployment rate sources

We also merge in two additional datasets into the 2016 SCF:

1. Bureau of Labor Statistics BLS June unemployment rates by occupation: [Table A-13](#). Employed and unemployed persons by occupation, not seasonally adjusted
2. BLS June unemployment rates by industry: [Table A-14](#). Unemployed persons by industry and class of worker, not seasonally adjusted

We categorize SCF industries and occupations by the broad BLS categories data (once again we use X7402, X7412, X7401, and X7411) before collapsing for related analysis.

### Derivation of the analysis sample

Lastly, we limit our sample to households that have a reference person who is <age 65 and for which we have industry and occupation data for at least one member (either the reference person or the spouse or partner). Ultimately, in the final sample we observe:

- 4714 age-eligible households
- 4115 households with at least one individual in the households working (such that we have industry and occupation data on them)
- Out of households with at least one individual working, we use the reference person's worker classification for 81.9% (unweighted) and 82.1% (weighted) of households, and the spouse's classification for the remaining households.

## Appendix Table

Appendix Table 1: Industries and occupations represented by SCF workers, by worker type

### A. BLS industries

	<u>Non-teleworkable</u>		Teleworkable	Total
	Non-essential	Essential		
Agriculture and related private wage and salary workers	0.3%	2.3%	0.2%	1.0%
Construction	0.1%	18.3%	2.9%	8.5%
Education and Health services	9.3%	21.2%	24.6%	20.9%
Financial activities	0.6%	1.2%	10.8%	5.4%
Government	6.9%	7.9%	5.7%	6.7%
Information	2.2%	1.0%	3.8%	2.5%
Leisure and hospitality	12.8%	7.7%	2.9%	6.3%
Manufacturing	11.4%	12.4%	8.1%	10.3%
Mining, quarrying, and oil and gas extraction	0.2%	0.8%	1.2%	0.9%
Other services	10.0%	4.8%	3.7%	5.1%
Professional and business services	23.5%	2.7%	24.8%	15.9%
Transportation and utilities	0.5%	12.1%	3.7%	6.5%
Wholesale and retail trade	22.4%	7.6%	7.8%	10.0%
Total	100.0%	100.0%	100.0%	100.0%

### B. BLS occupation categories

	<u>Non-teleworkable</u>		Teleworkable	Total
	Non-essential	Essential		
Construction and extraction	0.8%	16.3%	0.0%	6.5%
Farming, fishing, and forestry	0.3%	0.8%	0.0%	0.4%
Installation, maintenance, and repair	4.7%	7.2%	0.0%	3.6%
Management, business, and financial operations	2.3%	6.5%	43.0%	22.4%
Office and administrative support	9.2%	3.4%	16.4%	10.2%
Production	7.6%	10.3%	0.0%	5.2%
Professional and related	8.6%	19.0%	31.6%	23.1%
Sales and related	17.8%	4.1%	5.9%	7.1%
Service	36.1%	18.9%	2.8%	14.3%
Transportation and material moving	12.8%	13.5%	0.3%	7.4%
Total	100.0%	100.0%	100.0%	100.0%

Data sources: Survey of Consumer Finances (SCF) 2016 and Bureau of Labor Statistics (BLS) Employment Situation, with worker-type classifications as described in the paper.

Table 1: BLS unemployment rates of industries and occupations of SCF workers, by worker type

	Non-teleworkable		Teleworkable
	Non-essential	Essential	
Industry unemployment rate, 2019 (%)	3.7	3.9	3.3
Industry unemployment rate, 2020 (%)	18.3	17.6	12.8
<b>2019-2020 change in industry unemp. rate (pp)</b>	<b>14.6</b>	<b>13.7</b>	<b>9.4</b>
Occupation unemployment rate, 2019 (%)	3.6	3.5	2.1
Occupation unemployment rate, 2020 (%)	19.4	16.8	9.3
<b>2019-2020 change in occupation unemp. rate (pp)</b>	<b>15.7</b>	<b>13.2</b>	<b>7.3</b>

Data sources: Survey of Consumer Finances (SCF) 2016 and Bureau of Labor Statistics (BLS) Employment Situation, with worker type classifications as described in the text.

Table 2: Demographic characteristics, by worker type

	Non-teleworkable		Teleworkable
	Non-essential	Essential	
Age	41	42	44
Education			
Less than high school	0.18	0.14	0.04
High school graduate/GED (general equivalency diploma)	0.31	0.32	0.16
Some college or assoc. deg.	0.32	0.32	0.24
Bachelors deg. or higher	0.19	0.22	0.57
Race/ethnicity			
White, non-Hispanic	0.54	0.58	0.68
Black	0.16	0.16	0.12
Hispanic	0.16	0.15	0.08
Other and multiple race	0.14	0.11	0.11
Marital/partner status and presence of children			
Not married/living with partner (LWP), kids	0.15	0.11	0.12
Not married/LWP, no kids, head<55	0.19	0.18	0.18
Not married/LWP, no kids, head>=55	0.07	0.04	0.06
Married/LWP, kids	0.35	0.44	0.39
Married/LWP, no kids	0.24	0.23	0.24
Number of children	0.96	1.12	0.96
Number of workers (max=2)	1.35	1.43	1.46
Wage income (\$)	34,936	46,799	70,885
Total income (\$)	41,585	54,553	83,132

Data source: Survey of Consumer Finances 2016, with worker type classifications as described in the text.

Table 3: Asset and debt ownership, by worker type

	Non-teleworkable		Teleworkable
	Non-essential	Essential	
<b>A. Asset ownership by worker type</b>			
Liquid financial assets	0.97	0.97	1.00
Non-cash liquid financial assets	0.16	0.20	0.38
Quasi-liquid retirement assets	0.40	0.52	0.73
Vehicle	0.83	0.90	0.89
Primary residence	0.50	0.56	0.69
Other residential real estate	0.07	0.08	0.19
Business	0.12	0.11	0.20
<b>B. Debt ownership by worker type</b>			
Mortgages on primary residence	0.36	0.43	0.57
Mortgages on other residential properties	0.03	0.05	0.09
Other lines of credit	0.03	0.02	0.02
Credit card balances	0.48	0.49	0.51
Education loans	0.29	0.28	0.34
Vehicle loans	0.35	0.43	0.44
Other installment loans	0.13	0.15	0.11
Other debt	0.06	0.06	0.07

Data source: Survey of Consumer Finances 2016, with worker type classifications as described in the text.



Table 4: Levels of income, savings, and expenses, by worker type

		Non-teleworkable		Teleworkable
		Non-essential	Essential	
Annual total income (\$)	25 <sup>th</sup> percentile	23,291	32,404	48,214
	50 <sup>th</sup> percentile	41,585	54,553	83,132
	75 <sup>th</sup> percentile	70,885	91,137	147,582
Annual wage income (\$)	25 <sup>th</sup> percentile	14,965	25,145	36,455
	50 <sup>th</sup> percentile	34,936	46,799	70,885
	75 <sup>th</sup> percentile	60,758	81,011	121,516
Liquid cash assets (\$)	25 <sup>th</sup> percentile	500	700	2,900
	50 <sup>th</sup> percentile	2,026	3,106	10,000
	75 <sup>th</sup> percentile	8,000	13,000	38,000
Liquid non-cash assets (\$)	25 <sup>th</sup> percentile	0	0	0
	50 <sup>th</sup> percentile	0	0	0
	75 <sup>th</sup> percentile	0	0	7,000
Monthly rent and debt payments (\$)	25 <sup>th</sup> percentile	574	619	881
	50 <sup>th</sup> percentile	960	1,061	1,500
	75 <sup>th</sup> percentile	1,543	1,710	2,343

Data source: Survey of Consumer Finances 2016, with worker type classifications as described in the text.