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## Income and Wealth Shocks and Expectations during the COVID-19 Pandemic

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# Income and Wealth Shocks and Expectations during the COVID-19 Pandemic

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# Income and Wealth Shocks and Expectations during the COVID-19 Pandemic

## Abstract

In early April 2020 we conducted a survey on a representative sample of more than 8,000 US households to study the effect of the coronavirus crisis on household income and retirement wealth, households' expectations about the recovery, and the impact of the shock on individuals' economic choices. Wealth shocks are large across the population, but more pronounced for middle-age households and those higher in the wealth and income distributions. This contrasts with income shocks, which are stronger for younger households and those in lower income and wealth quintiles. Expectations about household spending are affected by income shocks, but not by financial wealth shocks. Both wealth and income shocks are associated with upward adjustments in expectations about household debt, desired working hours, and retirement age. Finally, respondents expect the recovery of the stock market to occur more quickly than for previous stock market crashes and beliefs on the duration are strongly correlated with expectations about own wealth, debt, and labor market activity.

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Keywords: coronavirus, wealth shocks, income shocks, expectations, inequality.

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<https://sites.google.com/site/tobinhanspal/survey>.

# 1 Introduction

The spread of the COVID-19 coronavirus pandemic and the policy measures put in place to contain the virus have caused major economies around the world to contract. With more than 17.5 million initial unemployment claims in the United States in the three weeks following the onset of the pandemic, the effect of the crisis on labor markets is unprecedented. At the same time, the crisis has sent major stock markets around the world plummeting, with the S&P500 losing an unprecedented third of its value during the sharp drop of stock prices in February and March 2020.<sup>1</sup> The downturn in the stock market implies a substantial wealth shock for households, particularly those in countries with high stock market participation and where a large fraction of households' retirement wealth is invested equity markets, such as the United States. Unexpected income and wealth shocks are likely to affect different groups of households differentially, and should affect households' expectations and decisions with regard to spending, debt and retirement planning.

In this paper we ask three sets of questions: First, how are income shocks and retirement wealth shocks distributed across groups, such as the age, income and wealth distributions? Understanding which groups are most affected by the economic contraction, and through which channels, is of utmost importance for understanding the overall impact of the coronavirus pandemic on inequality and the standard of living across groups. Second, what is the effect of unexpected shocks to both financial wealth and income on planned and realized economic behavior? In order to gauge the welfare losses from the economic downturn it is essential to understand how wealth and income losses differentially affect spending decisions, and therefore learn about the degree of insurance against the shock across households. Moreover, changes in people's expectations about their retirement age and their desired work hours in the next years will help to forecast medium- and long-term effects of the current crisis on the US labor market. Finally, how optimistic are US households about the recovery of the stock market and their own wealth, and how

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<sup>1</sup>The time series of the US stock market and jobless claims are displayed in Figure 1. Stock prices have recovered about half of their losses since their trough in March 2020, and as of 15th April they are at a level of about 16 percent below their peak level before the onset of the crisis.

do beliefs about recovery duration correlate with households' economic decisions?

To shed light on these questions, in early April 2020 we conducted a survey on a sample of more than 8,000 US households, representative in terms of age, gender, income, and region. In the survey we elicit the value of participants' wealth holdings in retirement accounts and in other financial accounts as of January 2020, as well as the capital losses they experienced in those accounts due to the drop in US stock prices. We also elicit unexpected changes to participating households' net incomes over the first quarter of 2020. We then measure our respondents' expectations about the duration of time the US stock market will need to recover to its pre-crisis levels, as well as their expectations regarding their own circumstances and their economic decisions. Our survey includes an experimental section, in which random subsets of respondents receive information on the duration of the recovery in the case of one of three historical stock market crashes, which we use to study the formation of beliefs about the recovery. Our survey offers a unique and comprehensive real-time snapshot of household finances and expectations in the US. It informs on both changes in financial wealth and net income that households experience during the crisis. By contrast, administrative data documenting the consequences of the current crisis on households' finances only will become available with a lag, potentially extended by the current lockdown.

We report six key findings. First, we document the distribution of wealth and income losses across groups. Shocks to financial wealth due to the February/March 2020 stock market crash are strongly increasing in net wealth and income. They are pronounced throughout the age distributions, but stronger for those in middle age. Losses are larger for holdings in retirement accounts than for holdings outside of retirement accounts. By contrast, shocks to household income are strongest for the poorest and younger households and are almost zero for those with high incomes or wealth and for older households. Thus, income and wealth losses are negatively correlated across different groups of households. Focusing solely on income losses would overstate the short-run effect of the coronavirus pandemic on inequality in available economic resources. At the same time, financial wealth shocks primarily hit households with substantial savings who should be better

able to cope with these shocks, while income shocks hit the most vulnerable parts of the population.

Second, large fractions of individuals report that they have upward adjusted their expectations about household debt at the end of 2020, their desired working hours over the next years, or their retirement age due to the current crisis (about one third of respondents for each outcome). The changes in expected desired working hours are particularly pronounced among younger households, but also present for older households. Lower income or wealth as well as younger households make stronger adjustments to their expectations about outstanding household debt due to the crisis. Expected percent changes in household spending are most pronounced in the second and third quintile of the net wealth and of the income distribution, respectively, and strongest for those in middle age.

Third, we examine how wealth and income shocks are correlated with changes in expected economic decisions. Households exposed to larger income losses during the coronavirus pandemic are more likely to report that they will decrease total expenditure, while shocks to financial wealth have no significant effect on expected spending. However, both larger income and larger wealth shocks are associated with a greater likelihood of upward adjustments of expectations about household debt outstanding by the end of 2020, retirement age, and desired working hours.

Fourth, we study households' beliefs about the duration of the stock market recovery. Our respondents on average expect the US stock market to take 1.9 years to recover from the recent crash associated with the coronavirus crisis. The mean and variance of these estimates is significantly lower than for respondents' beliefs about the duration of recovery from historic stock market crashes.

Fifth, respondents' beliefs about the duration of the stock market recovery are strongly correlated with their expectations about the recovery of their own income and wealth. A longer expected recovery is not associated with significant differences in expected household spending, but with a significantly greater likelihood of reporting increases in expected debt, desired working hours and retirement age.

Sixth, when respondents are provided with information on a longer or shorter duration

of recovery from historical stock market crashes, this makes them more pessimistic or more optimistic about the development of the stock market and their own wealth in the coming years. This suggests i) that beliefs about past crashes shape respondents' expectations about the current crash and ii) that respondents' expected stock market development casually affects their own economic prospects.

We contribute to a rapidly expanding literature on the economic consequences of the spread of the coronavirus (Alon et al., 2020; Barrot et al., 2020; Guerrieri et al., 2020; Jordà et al., 2020; Kuchler et al., 2020). Bu et al. (2020) use survey data from a panel of respondents in China and document a sharp decrease in risk-taking stemming from changes in beliefs after the onset of the coronavirus pandemic. Giglio et al. (2020b) document changes in expectations about stock returns and GDP growth among Vanguard clients around the February-March 2020 stock market drop. Binder (2020) examines how beliefs about inflation and unemployment respond to information about the Fed's interest rate response to the coronavirus crisis. Fetzer et al. (2020) study the role of beliefs about contagiousness, mortality and disease-spread of the coronavirus in shaping people's economic sentiment. Coibion et al. (2020b) and Adams-Prassl et al. (2020a,b) provide evidence on the labor market impact of the coronavirus shock. Andersen et al. (2020) and Baker et al. (2020) document changes in consumer spending during the outbreak of the coronavirus using transaction-level data. We contribute to this literature by providing the first evidence on the joint effect of the coronavirus crisis on household incomes and retirement wealth as well as US households' expectations about spending, debt, labor market activity and the recovery of their wealth and income.

Our findings on the exposure of different groups to an economic contraction relates to a literature studying the earnings exposure to GDP growth of different groups of workers (Guisarri et al., 2017, 2014). Our evidence on the association of income and wealth shocks with expected changes in spending and other outcomes connects to a large literature on the consumption response to changes in economic resources (Bräuer et al., 2020; Christelis et al., 2018; Fuster et al., 2018a; Jappelli and Padula, 2015; Kueng, 2018).

Finally, previous papers have used information provision experiments to study belief



formation in the context of expectations about inflation (Armantier et al., 2016, 2015; Binder and Rodrigue, 2018; Cavallo et al., 2017; Coibion et al., 2020a, 2019, 2018), house prices (Armona et al., 2018; Fuster et al., 2018b) and GDP growth (Roth and Wohlfart, 2019).

The remainder of the paper is structured as follows. In section 2 we describe the survey and the sample. Section 3 provides descriptive evidence on retirement wealth and income losses, and how they are distributed across the population, and sheds light on how retirement wealth losses and income losses affect economic decisions. In Section 4 we provide descriptive and experimental analysis of people’s beliefs about the recovery of the stock market and their own economic circumstances. Section 5 concludes.

## 2 Survey design and data

In this section we provide details on the structure of our survey, as well as the administration of the survey and the characteristics of our sample.<sup>2</sup>

### 2.1 Survey design

Our survey starts with a set of questions on demographics such as age, gender and household income. The respondents then answer questions on the value of i) their retirement accounts and ii) the value of all financial assets they held outside of their retirement accounts at the end of January 2020. We ask them explicitly to think of the value of their assets before the start of the current crisis. To ease cognitive strain we ask our respondents to indicate the brackets into which the values of their assets fell instead of asking them for exact estimates. Respondents then report the percent shares of financial assets in retirement accounts and of financial assets in other accounts that were invested in stocks or stock mutual funds at the end of January. Finally, respondents estimate by what percent the total value of their retirement accounts and the total value of their other financial accounts changed as a result of the stock market developments since the beginning of the crisis until the day of the survey. The survey continues with questions on

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<sup>2</sup>The exact wording of the survey questions is available at <https://sites.google.com/site/tobinhanspal/survey>

whether respondents lost their job since the beginning of the year, and whether their net household income in the first quarter of 2020 was higher or lower than they had expected before the crisis, and by what percent it was higher or lower.

Respondents then proceed to the short experimental part of the survey. They are randomly allocated into one of seven groups. Respondents in arms *FinCrisisInfo* and *FinCrisisControl* are asked to estimate the number of years it took the stock market to recover from the drop during the Financial Crisis in 2007. Only respondents in arm *FinCrisisInfo* are then provided with the actual number of years it took the stock market to reach its pre-crisis level (5 1/2 years). Similarly, respondents in arms *DotComInfo* and *DotComControl* and in arms *BlackMondayInfo* and *BlackMondayControl* report prior estimates and receive information on recovery duration from the burst of the Dot-com Bubble in 2000 (7 years) and the Black Monday stock market crash in 1987 (2 years), respectively.<sup>3</sup> Finally, respondents in the *PureControl* arm are not shown any questions on priors or information and immediately proceed to the next part of the survey. Online appendix table A1 displays a simple overview of the treatment arms.

Next, all respondents report their beliefs about the stock market recovery in the US. They report the year in which they expect the stock market to recover to its January 2020 level, as well as their agreement on three qualitative statements on the severity of the recent drop in stock prices on 7-point scales.<sup>4</sup> Respondents are also asked in which year they expect their own household’s net wealth to recover to its pre-crisis level, including an option that their net wealth will never recover. Finally, the respondents allocate probabilities across eight intervals into which the US stock market return over the next 12 months might fall, which are mutually exclusive and collectively exhaustive.<sup>5</sup>

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<sup>3</sup>The information treatments included a dynamic figure contrasting the respondent’s prior belief with the information. Figure A1 in Appendix A plots an example survey screen for the *FinCrisisInfo* information treatment.

<sup>4</sup>Specifically, respondents are asked to what extent they agree or disagree with the following statements: “The outbreak of the coronavirus will keep US stock prices below their January 2020 levels for many years.”; “The outbreak of the coronavirus has set the level of the stock market back by many years.”; “The US stock market will have recovered by the end of the year 2020.”

<sup>5</sup>Specifically, respondents report the percent chance they assign to each of the following brackets of aggregate stock returns: less than -30 percent, between -30 and -15 percent, between -15 and -5 percent, between -5 and 0 percent, between 0 and 5 percent, between 5 and 15 percent, between 15 and 30 percent, greater than 30 percent.

The survey continues with a set of questions on respondents' expectations' about their own economic and financial situation as well as their decisions. Specifically, respondents answer a qualitative question on the financial prospects of their household, and questions on whether they expect the total spending and the total net income of their household to be higher or lower in 2020 as compared to 2019, and by what percent they expect it to be higher or lower. Those who report an expected reduction in their household income also forecast the year in which they expect their household income to have recovered. The participants then respond to qualitative questions on whether the current crisis affects their expectations about their retirement age, their desired working hours in the next years, as well as their outstanding household debt at the end of 2020. Finally, those who held any financial assets in the beginning of 2020 are asked whether they have made any active adjustments to the share of their financial assets invested in stocks or stock mutual funds, and whether they plan to do so over the next weeks.

In the final section of the survey the respondents answer additional background questions, including a question on credit constraints, questions on whether they lost stock wealth during past stock market crashes, self-assessed financial knowledge, years of experience in stock investment, risk aversion, as well as additional questions on their labor market situation as of January 2020 and the value of real estate and debt holdings of their households at the beginning of the year.

## 2.2 Data

**Survey administration** We collaborate with the survey company *Lucid*, which is widely used in economic research. The survey was conducted between 6th April and 13th April 2020. The US stock market had somewhat recovered at the time of the survey, but still showed drastic losses of about 20 percent compared to its pre-crisis level, and the number of initial jobless claims had escalated (Figure 1). Participants were recruited from the provider's online panel and then completed the survey on our own platform, and proceeded to the main survey after initial screening according to demographics in order to achieve representativeness according to observables. In total, 8,075 respondents completed our survey.

**Sample characteristics** Table 1 shows summary statistics of our sample, including a comparison with targets from the 2018 American Community Survey. The composition of our sample is close to the general population in terms of gender (52 percent females vs 51 percent in the ACS), mean age (48.3 years compared to 47.6 years in the ACS) and median gross household income (\$62,500 vs \$62,500 in the ACS), as well as Census region of residence. As it is common in online samples, a slightly larger fraction of our respondents have a Bachelor’s degree compared to the general population (38 percent in our sample vs 31 percent in the ACS).

### **3 Shocks to wealth and income from the coronavirus pandemic**

In this section we i) describe how retirement wealth shocks and household income shocks are distributed across the population and ii) examine how retirement wealth shocks and income shocks affect US households’ realized and planned economic decisions.

#### **3.1 Wealth and income shocks across the population**

The top left panel of Figure 2 displays the average percent change in value of household financial assets by quintile of the pre-crisis net wealth distribution.<sup>6</sup> Wealth losses due to the stock market crash are strongly increasing along the net wealth distribution, with overall financial losses amounting to 4 percent of pre-crisis financial wealth in the lowest quintile and amounting to about 17 percent in the highest quintile. Across the distribution, net capital losses were stronger for asset holdings in retirement accounts than for holdings outside of retirement accounts, largely reflecting that our respondents report a higher share of stocks and stock mutual funds in their retirement accounts.<sup>7</sup> The middle panel at the top of Figure 2 displays changes in values of financial assets by quintile of the pre-crisis net income distribution. The income gradient in losses due to the stock market crash is similarly pronounced as the wealth gradient, with those in the

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<sup>6</sup>For the distribution of losses in dollar terms see Figure A3 in Appendix A.

<sup>7</sup>This can be seen in Figure A4, which displays the share of financial wealth invested in stocks or stock mutual funds across groups.

bottom quintile losing 4 percent and those in the top quintile losing 18 percent of their overall financial wealth on average.

Changes in financial wealth by age group are displayed in the panel on the top right of Figure 2. Percent changes in net wealth are most pronounced for those aged between 25 and 54 (net capital losses of between 13 and 14 percent), and markedly lower for younger individuals (8 percent) and for older individuals (11 percent for those aged 55-64 and 10 percent for those above 65). These patterns reflect i) different fractions of households with no financial wealth before the crisis, who did not incur any losses, across groups, as well as ii) changes in the risky portfolio share, and therefore exposure to the stock market, over the life-cycle.

The bottom row of Figure 2 displays average shocks to household net income in the first quarter of 2020 across groups. Strikingly, income shocks exhibit the opposite pattern compared to wealth shocks, with income losses being strongest for households in the bottom net wealth or income quintiles (10 and 8 percent respectively), and gradually becoming less severe, with those in the highest quintiles losing almost no income. There is also a strong age gradient in income losses, with young households being affected most severely and older households being more insulated.

In Figure A5 we examine individual employment shocks — the main drivers of changes in household incomes — across demographic groups. A striking 26.4% of our respondents report that they have lost their job from January 2020 until the time of our survey in early April.

In the top left row we examine how job loss varies across the wealth and income distributions. While there is a high rate of job loss across the distributions, lower net wealth and lower income households are more likely to report a job loss during the period of our study. As shown in the middle row of the figure, job losses are much more prevalent among individuals under the age of 35 and those with lower levels of education. These findings are in line with anecdotal evidence suggested by recent media as well as other survey data from the US and the UK (Adams-Prassl et al., 2020a,b). The bottom row of Figure A5 shows that part-time workers are more likely to have lost their job during the

Coronavirus pandemic, and there is a slightly higher share who have lost their job among women. In general, our results suggest that job loss occurred frequently during the first quarter of 2020 and reaches all demographic segments of our sample. At the same time, those with lower income, wealth, and education, as well as younger individuals, are more likely to report separations from their employment.

Taken together, these findings indicate that income losses and wealth losses during the current crisis tend to be negatively correlated across groups. One implication of these findings is that focusing solely on income losses overstates the short-run effect of the coronavirus shock on inequality in overall available economic resources. At the same time, financial shocks primarily hit households that should be more able to cope with these shocks due to higher levels of savings and higher incomes.

**Result 1.** *Shocks to financial wealth due to the February/March 2020 stock market crash are strongly increasing in net wealth and income. They are pronounced throughout the age distributions, but stronger for those in middle age. Losses are larger for holdings in retirement accounts than for holdings outside of retirement accounts. Shocks to net household income are strongest for the poorest and younger households and are almost zero for those with high incomes or wealth and for older households.*

### **3.2 Changes in planned economic decisions across the population**

How do wealth and income shocks experienced during the coronavirus crisis affect US households' economic behavior? Figure 3 provides an overview of different measures of our respondents' planned and realized economic decisions. 44 percent of respondents expect that the overall spending of their household will be lower in 2020 compared to 2019. Among those who held positive wealth in stocks before the crisis, roughly 50 percent did not make any active adjustments to the share of their wealth invested in stocks since the onset of the crisis, and 53 percent are not planning to do so. Among those who have made or expect to make adjustments to their risky portfolio share, a majority have increased or expect to increase their risky share (62 and 55 percent), and the rest has

actively decreased or expects to actively decrease the risky portfolio share.

We also ask our respondents whether their expectations about the total outstanding debt of their household at the end of 2020, their desired working hours in the next years, or their expected retirement age are affected by the current crisis. 36 percent of our respondents report that they expect their household to have more debt outstanding by the end of the year as a result of the current crisis, while 11 percent say they expect lower debt. Strikingly, 53 percent and 44 percent of those respondents who are currently in the labor force have increased their expectations about their desired working hours or about their retirement age due to the current crisis, while almost all others report that they have not changed those expectations. These findings point to an increase in labor supply in the US over the next years.

The top row of Figure 4 displays the expected percent change in total household spending for 2020 compared to 2019 across demographic groups. Households in the second and third quintile of the net wealth or net income distribution respectively report the largest expected reduction in spending by about 10 percent, while expected changes in spending are smaller at the bottom and at the top of the distributions, consistent with the idea that a large fraction of spending is subsistence consumption for households in the lowest quintiles, and that households in higher quintiles are less likely to become constrained by the crisis. Moreover, expected changes in spending are more pronounced for those aged between 35 and 64.

In the bottom row of Figure 4 we plot the percentage of households who report increasing their expectations about outstanding household debt through 2020 due to the current crisis. The percentage expecting higher debt is substantial across groups, but more pronounced among those with below median net wealth or income, and among younger households. In Figure 5 we plot the percentage of respondents in the labor force who report that the current crisis leads them to upward adjust their expectations about their desired working hours over the next years (top row) or about their retirement age (bottom row). The percentage of subjects reporting greater desired working hours or later retirement are close to uniform across net wealth and net income groups. Moreover,

increased expectations about desired working hours are most prevalent among younger households aged 34 or lower, with about 60 percent reporting an increase in expectations about desired working hours, and are lowest for those aged 64 and older with still about 40 percent. Upward adjustments in expected retirement age due to the coronavirus crisis are most prevalent at about 40 percent among those in the labor force between age 25 and 64, and lower for very young and older households.

**Result 2.** *Large fractions of individuals report that they have upward adjusted their expectations about household debt at the end 2020, their desired working hours over the next years, or their retirement age due to the current crisis (about one third of respondents for each outcome). The changes in expected desired working hours are particularly pronounced among younger households, but also present for older households. Lower income or wealth as well as younger households make stronger adjustments to their expectations about outstanding household debt due to the crisis. Expected percent changes in household spending are most pronounced in the second and third quintile of the net wealth and of the income distribution, respectively, and strongest for those in middle age.*

### 3.3 Association of shocks and economic decisions

The previous sections document substantial wealth and income losses as well as changes in expected economic decisions across different groups of households. In this section we document how changes in wealth and income correlate with expected economic decisions.

The top row of Figure 6 plots the expected percent change in total household spending for 2020 compared to 2019 by the change in financial wealth due to the recent stock market developments (left) and by the change in household income during the first quarter (right). For each change variable, as previously, we aggregate households into quintiles such that lower quintiles experience a smaller loss, and in some cases a gain. Households in quintile five experience the largest losses in total financial wealth or in net household income. Households exposed to larger shocks to economic resources expect greater reductions in their spending in 2020 compared to 2019. The association of shocks and



expected spending is stronger for income shocks than for financial wealth shocks, with the difference between the top and bottom income shock quintiles being a near 15% decrease in spending. This is consistent with the idea that financial wealth shocks primarily hit households with higher levels of saving, who were more equipped to cope with the shock.

The bottom panel examines how increases in expectations about debt holdings are distributed across the wealth and income shock distributions. As expected, larger income and financial wealth losses correlate with households reporting an upward adjustment in their debt expectations. Again, the association between shocks and expectations about debt is more pronounced for income shocks than for financial wealth shocks. The households experiencing the largest income shocks are more than 20 percentage points more likely to report that the crisis leads them to expect higher debt at the end of 2020.

Similarly, in Figure 7 we examine how wealth and income shocks correlate with adjustments of labor supply expectations. The top row examines adjustments in expected desired working hours, while the bottom focuses on adjustments in expected retirement age. Larger losses of wealth shocks are associated with stronger upward adjustments in expected labor supply at both the intensive and extensive margins, i.e. people expect higher desired working hours and to retire later in life. The relationship between income shocks and labor supply expectations appears to be more nuanced, but except for those in the bottom shock quintile there is also a positive relationship between shock size and adjustments in labor supply expectations.

We also regress expectations about economic decisions jointly on financial wealth shocks and income shocks as well as a set of control variables. As shown in Table 2, a one percent unexpected reduction in net household income is on average associated with a 0.18 percentage points lower expected household spending in 2020 compared to 2019. By contrast, conditional on income shocks, financial wealth shocks have no effect on expectations about spending in 2020, supporting the idea that financial wealth shocks primarily hit those households with a lot of insurance against shocks. However, both income and wealth shocks are associated with upward revisions in expected outstanding household debt, expected desired working hours in the next years, and expected retirement age. A

one percent reduction in financial wealth makes respondents 0.57 percentage points, 0.5 percentage points and 0.64 percentage points more likely to increase expected household debt, desired working hours or retirement age, respectively. The coefficients are smaller in magnitude for income shocks, which naturally imply smaller losses in dollar terms for most households.

**Result 3.** *Larger wealth and income shocks are associated with greater adjustments to planned economic activity. Households exposed to larger losses during the Coronavirus pandemic are more likely to report that they will decrease total expenditure and increase debt holdings. Furthermore, households more exposed to the shock are more likely to report upward adjustments in expected labor supply at both the intensive and extensive margins by working more hours, and retiring later in life.*

## 4 Beliefs about recovery

In this section we document households' beliefs about the recovery of the stock market, and how those beliefs are correlated with expectations about their own wealth and expected economic decisions.

### 4.1 Association of shocks and beliefs about recovery

The survey asks respondents about their expectations regarding how long it will take until the US stock market has recovered to its level of January 2020. To measure recovery duration expectations, we asked respondents to indicate the calendar year in which they expect the the US stock market to have recovered to pre-crisis levels. Expected recovery duration is then measured as the distance between the expected year of recovery to the year 2020. In a similar way, we elicit respondents expected time of recovery for their own household's financial wealth and net income. For the latter two concepts, respondents alternatively could indicate that they expect their own net wealth or income to never recover.

The left column of Figure 8 documents expected recovery durations for the US stock market, and respondents' own household net wealth and net income by net wealth quintile,

net income quintile, and age group. The figure is based on respondents in the *PureControl* arm, who were not asked about nor received any information on recovery durations in previous crises. On average, respondents estimate that it will take 1.9 years for the stock market to recover to pre-crisis levels. Households expect their own financial wealth and net income to recover faster than the stock market, with on average 0.83 years and 0.30 years. Households higher in the wealth and income distributions and those in middle age expect their net wealth to take more time to recover, in line with those households being most severely affected by wealth shocks. Estimated income recovery duration is somewhat higher for the young.

The right column of Figure 8 documents that the tendency to answer that own financial wealth will never recover is most prevalent among low net wealth and net income households, as well as among older respondents. Older respondents are also more likely to believe that their net income will never recover.

Finally, Figure 9 demonstrates that households who experienced larger wealth or income shocks expect their wealth and incomes to take more time to recover. These results also hold in when we jointly regress measures of expected recovery duration jointly on wealth shocks, income shocks and a set of controls (Table 3). Own wealth and income shocks do not significantly affect respondents' predicted duration of the overall stock market recovery.

## 4.2 Beliefs about historic recoveries

In Figure 10 we document our respondents' expectations about the recovery relative to other stock market crashes in recent history. The figure plots the distribution of the expected duration of recovery in years for the US stock market. In the first plot (top-left) we focus on the current coronavirus crisis. Again, the sample consists of subjects in the *PureControl* arm, who did not see any questions or information on past stock market crashes. The top-right panel focuses on the Financial Crisis of 2007-2009 and the sample consists of all individuals reporting prior beliefs about the length of recovery after the Financial Crisis (in the *FinCrisisControl* or *FinCrisisInfo* group) and the expected

duration was elicited prior to the treatment. The bottom-left and bottom-right panels focus on the Dot-com bubble and the financial crisis following Black Monday on October 19, 1987. The samples therefore consist of individuals in those treatment and control arms.

Our respondents report a mean expected duration of 1.9 years for the recovery from the recent stock market crash. This contrasts strongly with their beliefs about other episodes of historic stock market crashes, where the expected duration reported by subjects are significantly longer. Individuals provide a mean value of 5.3 years for the Financial Crisis of 2007-2009, 6 years for the Dot-com bubble, and 6.4 years for Black Monday (indicated by the black dashed lines). The actual time the US stock market took to recover for these three episodes were 5.5, 7, and 2 years, respectively (indicated by the red dashed lines). Interestingly, the further back in history the episode, the further away is the respondents' average estimated duration from the actual value. In addition, the plots highlight that subjects provide a more narrow distribution of responses for the Coronavirus stock market crash compared to previous crashes. The variance in responses increases monotonically for crashes further in the past.

**Result 4.** *Subjects in the sample report a mean expected duration of 1.9 years for the US stock market to recover from the recent crash associated with the Coronavirus crisis. The mean and variance of estimates is significantly lower than for reported estimates about the duration of historic market downturn durations.*

### **4.3 Beliefs about recovery and expectations about own situation**

How do individuals' beliefs about the stock market recovery affect their expectations about their own situation and their economic decisions? In Table 4 we regress different outcomes on the respondent's expected recovery duration of the stock market and a set of control variables. These estimations only use respondents in the pure control group, who were not asked about their beliefs about past stock market crashes before responding to the survey questions on those outcomes.

As shown in Table 4 Panel A, respondents who expect the stock market to take one year longer to reach its pre-crisis level report 2 percentage points lower expected stock returns over the next year (column 1), but do not perceive a different riskiness of stocks (column 2). In fact, a one year longer expected duration of recovery is reflected in a downward shift of the respondents' subjective distribution over stock returns, with respondents putting a 2 percentage points higher probability on a "disaster" of a drop in stock prices by more than 30 percent (column 3). Conversely, they put about 1.5 percentage points lower probability on a stock market boom with returns exceeding 30 percent (column 4).

Our respondents' expectations about the length of stock market recovery are also reflected in expectations about the development of their own situation. A one year longer expected stock market recovery is associated with a 0.16 years longer expected recovery of respondents' own wealth (column 5), with a lower perceived likelihood of expecting own wealth or own income never to recover (columns 6 and 8), with a 0.5 of a standard deviation worsening of respondents' overall household financial prospects (Panel B column 1), and with reduced income expectations (column 2).

Do respondents consider the recovery of the stock market to be relevant for their own economic decisions? There is no significant relationship between beliefs about the length of recovery and expected household spending (Panel B column 3). Again, this is in line with the idea that households whose wealth is most affected by movements of the stock market have access to various insurance mechanisms to maintain spending levels. However, a one year longer expected recovery is associated with a greater tendency to report that the current crisis increases expectations about household debt (column 4), desired working hours (column 5), and retirement age (column 6). There is no significant relationship between the expected length of stock market recovery and plans to make adjustments to the portfolio share invested in stocks. This is in line with recent evidence showing a very small role of subjective expectations about stock returns in affecting trading decisions, at least at the extensive margin (Giglio et al., 2020a).

Taken together, these results suggest that not only wealth and income shocks experi-

enced so far, but also beliefs about the performance of the stock market in the next years play an important role in shaping US households' expectations about their own economic situation and plans.

**Result 5.** *Respondents' beliefs about the duration of the stock market recovery strongly affect their expectations about stock returns and the recovery of their own income and wealth. A longer expected recovery is not associated with significant differences in expected household spending, but with a significantly greater likelihood of reporting increases in expected debt, desired working hours and retirement age.*

#### 4.4 Experimental evidence on role of beliefs about past crashes

Our survey also included a short experimental section, in which respondents report their beliefs about the duration of recovery following historical stock market crashes, measured as the time from the start of the stock market drop until the stock market was back at its peak. Subsets of respondents receive information on the actual duration of the recovery in the case of a historic crash. We use this experimental setup to study how beliefs about past crashes causally shape beliefs about the recovery from the current crash.

As shown in Figure 10 our respondents on average underestimate the duration of recovery of the stock market in the case of the Financial Crisis 2007-9 (5 1/2 years) and of the burst of the Dot-com Bubble in 2000 (7 years), but overestimate it in the case of the Black Monday in 1987 (2 years). How do our respondents change their beliefs about the current stock market crisis when provided with information on the length of recovery of past crashes?

In Table 5 we regress respondents' post-treatment expectations about the stock market and the development of their own circumstances on dummy variables indicating whether they have received information. Each panel focuses on beliefs and information about one historical crash, and uses the subset of about 2,000 respondent who reported prior beliefs about the recovery duration after that crash (half of whom received information on the actual duration).

As shown in Panel A, respondents expect a significantly longer recovery duration (column 1) when they are shown the pessimistic information from the Financial Crisis 2007-2009 (recovery of 5 1/2 years). They become significantly more pessimistic according to their agreement to qualitative statements on the severity of the current crisis (columns 2-4). The treatment also significantly reduces the respondents' expected stock returns (column 5) and increases their perceived disaster probability (column 7). Respondents also extrapolate from the exogenous change in their stock market expectations to beliefs about the recovery of their own wealth (column 8), and their household's overall financial prospects. These patterns become stronger if we only focus on those who have underestimated the duration of the recovery after the Financial Crisis (Panel B).

The results are similar when respondents are provided with pessimistic information on the recovery duration after the burst of the Dot-com bubble in 2000 of 7 years (Panels C and D). By contrast, providing respondents with more optimistic information on the short recovery duration of only two years after the Black Monday in 1987, they become significantly more optimistic about the overall stock market and the recovery of their own wealth.

Taken together, these results suggest i) that individuals' beliefs about past stock market crashes significantly affect their expectations about the recovery from the current crash; and ii) that US households' expectations about the further development of the stock market significantly affect their prospects for their own households.

**Result 6.** *When respondents are provided with information on the duration of longer or shorter historical stock market crashes, this makes them more pessimistic or more optimistic about the development of the stock market and their own wealth in the coming years. This suggests i) that beliefs about past crashes shape respondents' expectations about the current crash and ii) that respondents' expected stock market development causally affects their own economic prospects.*

## 5 Conclusion

We conduct a survey on a sample of more than 8,000 US households, which is representative in terms of gender, age, income and region. Our survey offers a unique real-time snapshot of US households' finances and expectations about the future in the middle of the COVID-19 pandemic. We document that shocks to households' net incomes were concentrated among those in the bottom of the wealth and income distributions, while shocks to households' financial wealth exhibit the opposite pattern. Shocks to income and wealth significantly affect US households' expectations about spending, household debt and labor market activity. Finally, households believe that the stock market will recover more quickly than in the case of historical stock market crashes. Expectations about the stock market recovery are reflected in respondents' expectations about debt and labor market activity, and causally respond to information about historical crashes.

Our findings have several implications. First, income and wealth shocks from the current crisis tend to be negatively correlated across groups. This implies that in order to adequately gauge the short-run impact of the current crisis on inequality in overall economic resources one should consider both types of shocks. Second, shocks to financial wealth hit primarily groups with more savings who are better able to cope with these shocks. By contrast, government policies should focus on helping households' at the bottom of the income distribution, whose incomes were most severely affected by the current crisis and who have close to zero wealth. Third, our findings on substantial increases in expected retirement age or work hours suggest that there will be an increase of labor supply in the US in the coming years, as households are trying to make up for the lost income and wealth. This could put downward pressure on wages and further aggravate economic hardships for those in the bottom of the distribution. Finally, beliefs about the recovery seem to be central to individuals' subjective economic prospects and expected decisions, indicating that policymakers may stimulate the economic recovery after the lockdown by managing these expectations.



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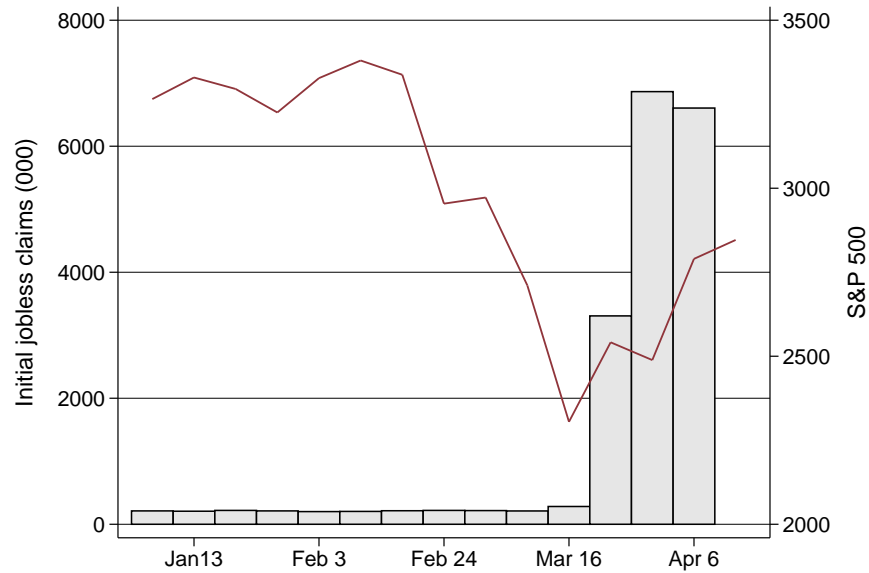
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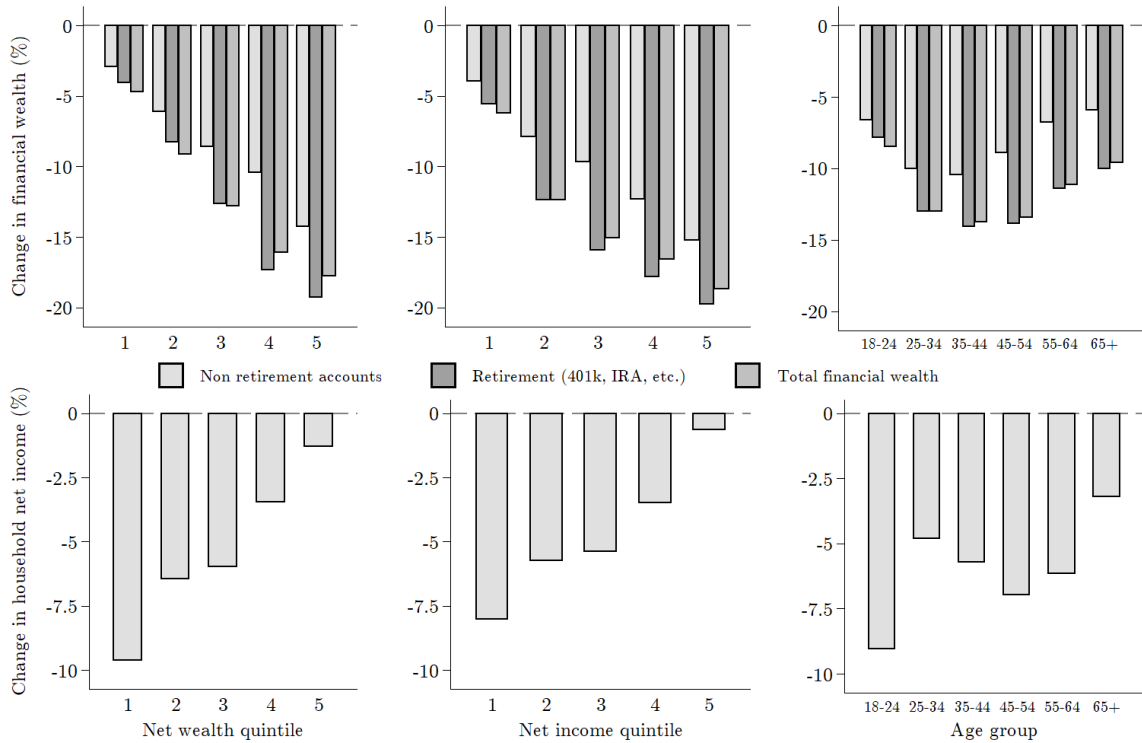
## Main figures

Figure 1: US stock market and number of initial jobless claims around the survey period



*Notes:* This figure displays the development of the development of the S&P500 US stock market the (right-hand scale) and the number of initial jobless claims (in thousands) over the first 15 weeks in 2020, on a weekly basis. This includes the April 6-13 survey period.

Figure 2: Income and wealth shocks across groups



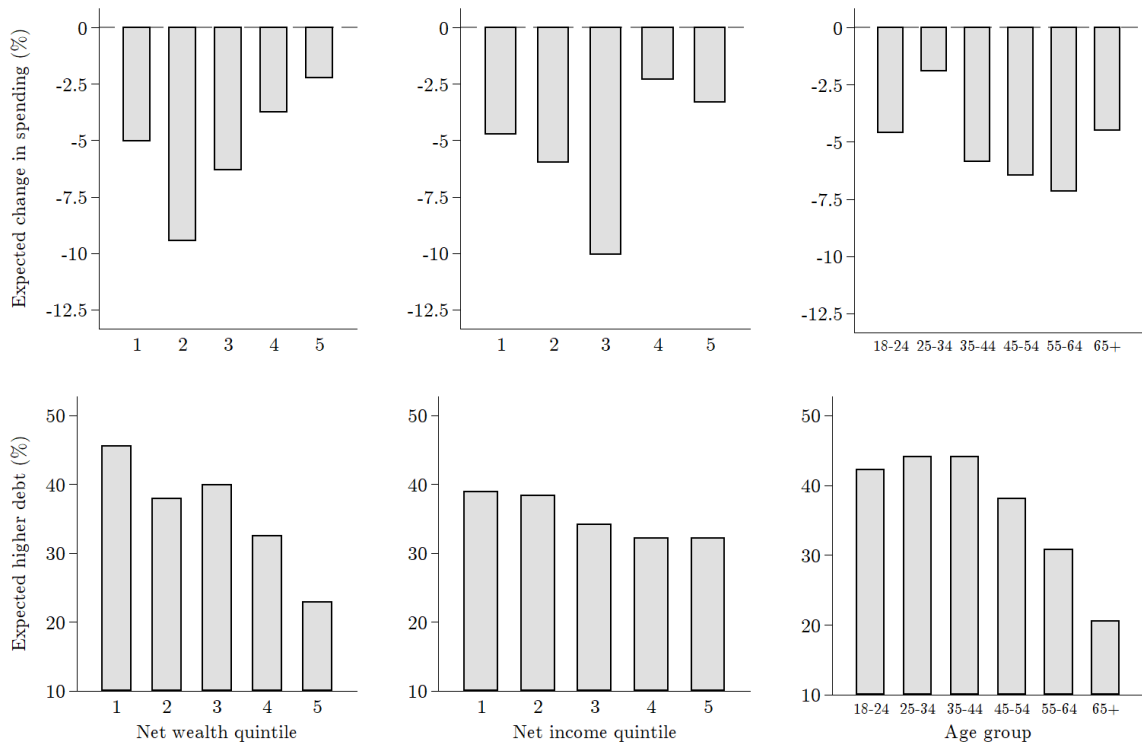
*Notes:* This figure displays the average percent change in the value of financial assets due to the stock market drop until the survey date (top row) and unexpected changes in net household incomes during the first quarter of 2020 (bottom row), by quintile of the pre-crisis net worth distribution (left column), by quintile of the pre-crisis net income distribution (middle column) and by age group (right column). Changes in value of financial assets are displayed separately for financial assets outside of retirement accounts, for financial assets in retirement accounts, and for the combined value of all financial assets. Changes in value of financial assets are net capital losses for the majority of respondents, and net capital gains for a small fraction of respondents.

Figure 3: Average changes in planned economic behavior



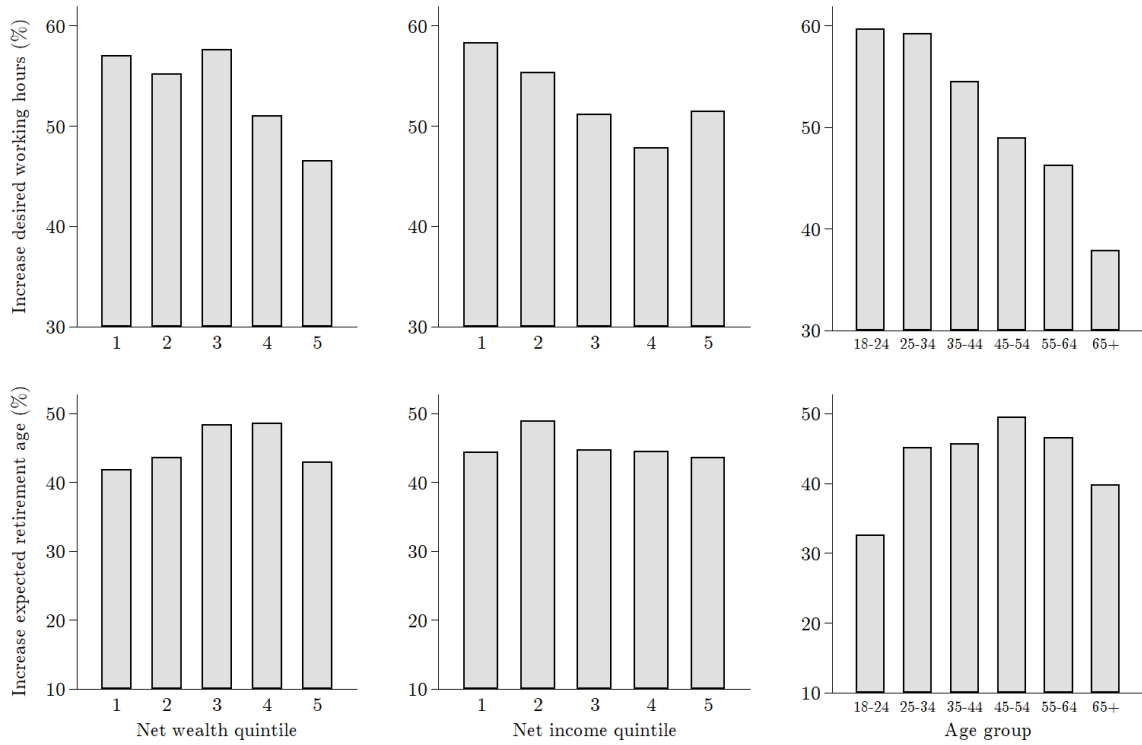
*Notes:* This figure displays the average changes in planned economic behavior across the sample. The top row displays the percent of respondents expecting higher or lower consumption in 2020 compared to 2019, the percent who have made or who expect to make active adjustments to the overall share of all financial wealth (the combined wealth inside and outside retirement accounts) invested in stocks or stock mutual funds in the following weeks. The bottom row displays the percent of respondents who report that their expectations about their total outstanding household debt through the end of 2020 have increased or decreased due to the current crisis, and the percent whose expected desired working hours or retirement age are affected by the current crisis.

Figure 4: Changes in expected spending and debt across groups



*Notes:* This figure displays average percentage change in expected total household spending in 2020 compared to 2019 (top row) and the percent of respondents reporting that the current crisis increases their expected outstanding household debt for the end of the year 2020 (bottom row), by quintile of the pre-crisis net worth distribution (left column), by quintile of the pre-crisis net income distribution (middle column) and by age group (right column).

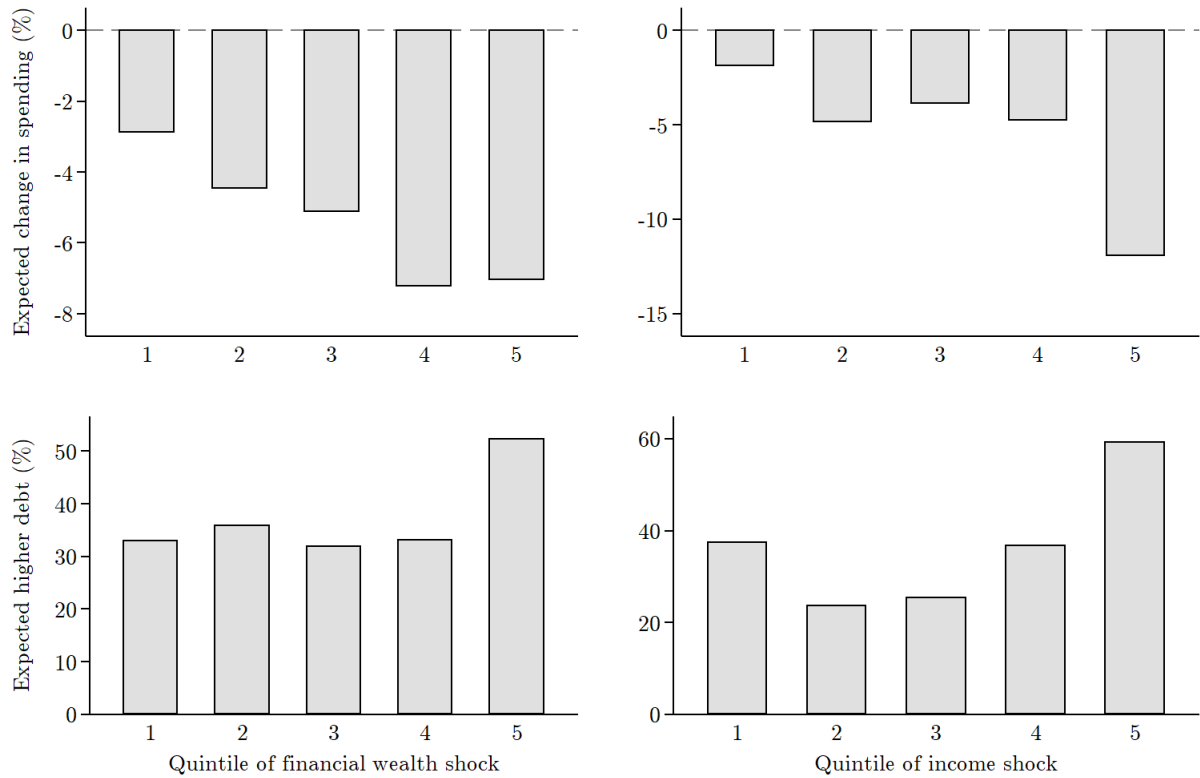
Figure 5: Changes in expected labor market activity across groups



*Notes:* This figure displays the percent of respondents who report that they have adjusted their expectations about desired working hours in the next years (top row) or retirement age (bottom row) due to the current crisis, by quintile of the pre-crisis net worth distribution (left column), by quintile of the pre-crisis net income distribution (middle column) and by age group (right column).

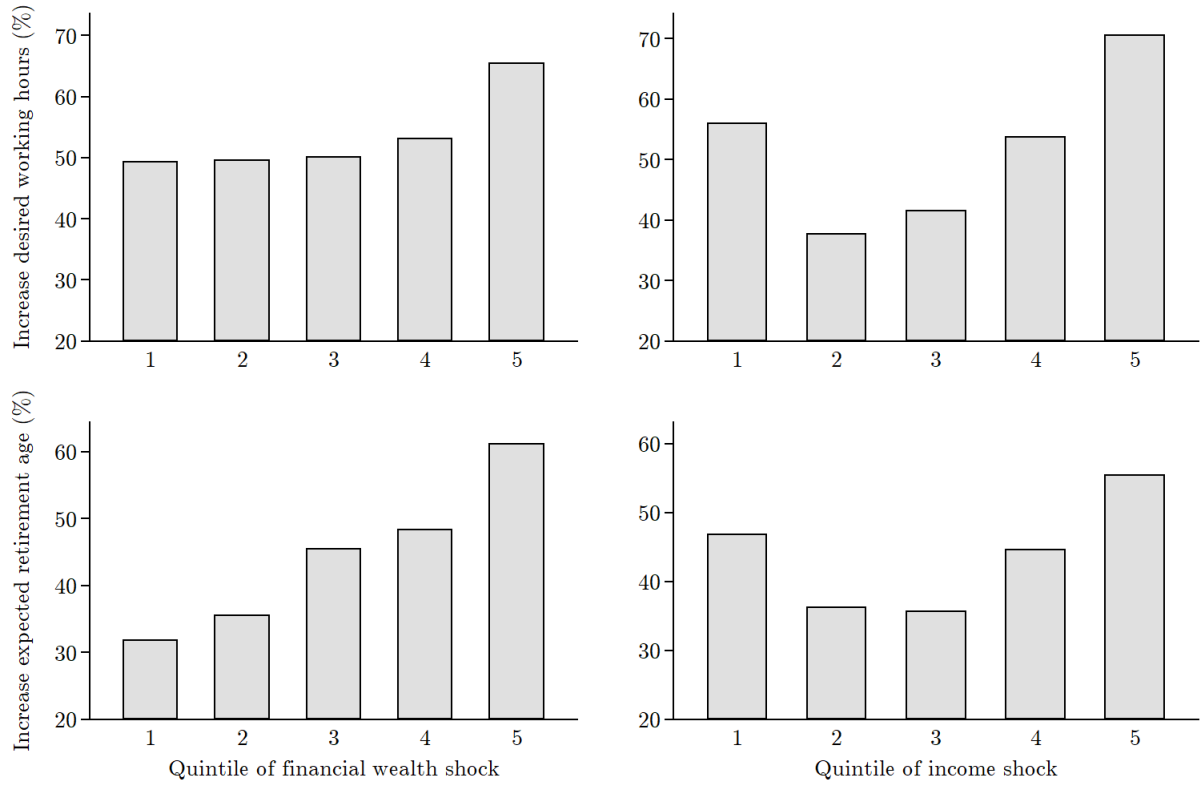


Figure 6: Changes in expected spending and debt by shock quintile



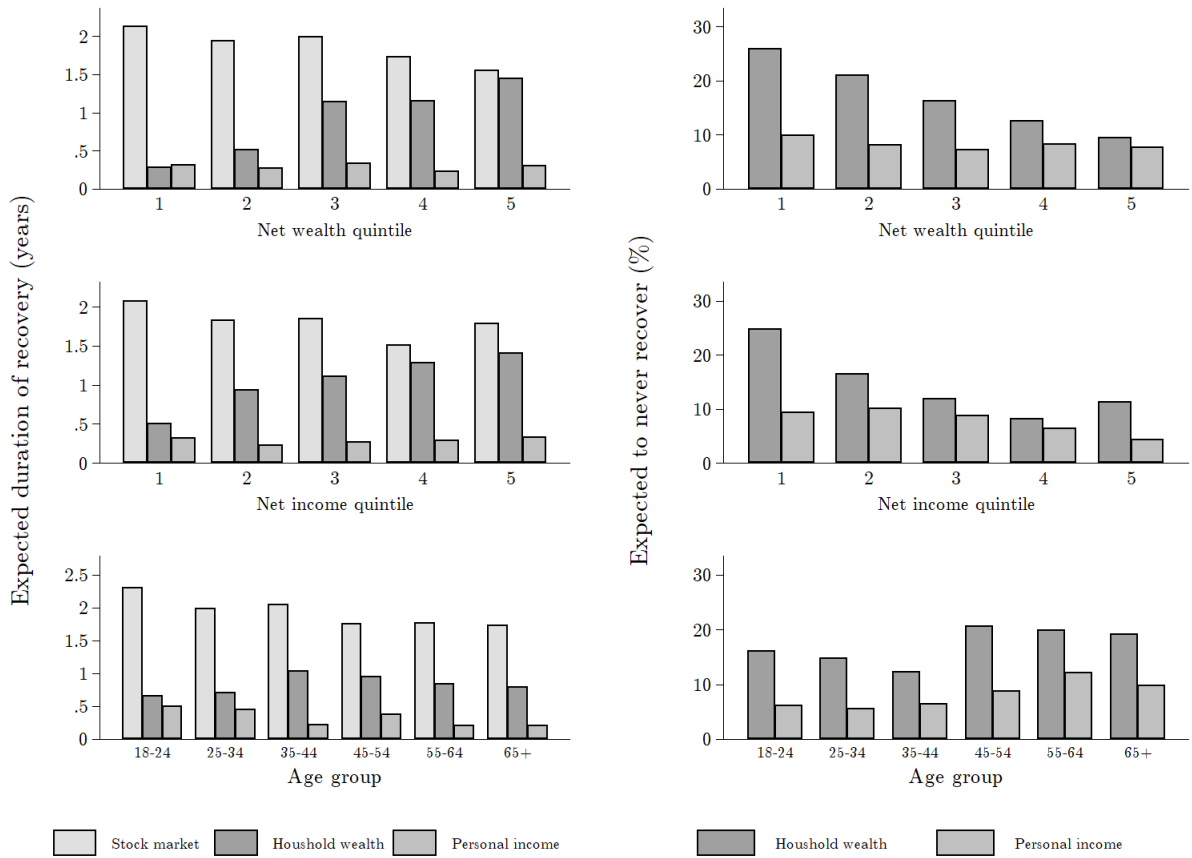
*Notes:* This figure displays average percent change in expected total household spending in 2020 compared to 2019 (top row) and the fractions reporting that the current crisis increases their expected outstanding household debt for the end of the year 2020 (bottom row), by quintile of average percent change in the value of financial assets due to the stock market drop until the survey date (left column) and by quintile of unexpected changes in net household incomes during the first quarter of 2020 (right column). For both changes in wealth and income, quintile 5 represents the largest *decrease* while quintile 1 is the smallest decrease, which represents a gain for some households.

Figure 7: Changes in expected labor market activity by shock quintile



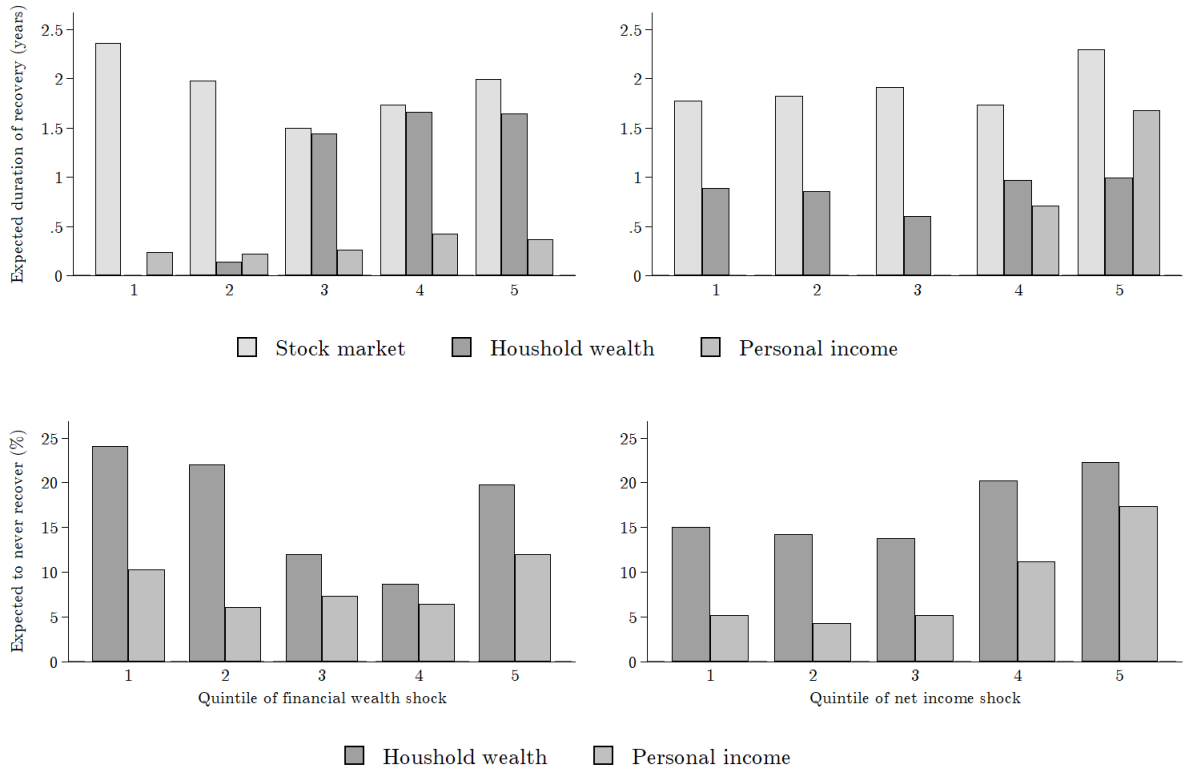
*Notes:* This figure displays the percentage of respondents who report that they have adjusted their expectations about desired working hours in the next years (top row) or retirement age (bottom row) due to the current crisis, by quintile of average percent change in the value of financial assets due to the stock market drop until the survey date (left column) and by quintile of unexpected changes in net household incomes during the first quarter of 2020 (right column). For both changes in wealth and income, quintile 5 represents the largest *decrease* while quintile 1 is the smallest decrease, which represents a gain for some households.

Figure 8: Expected duration of recovery across groups



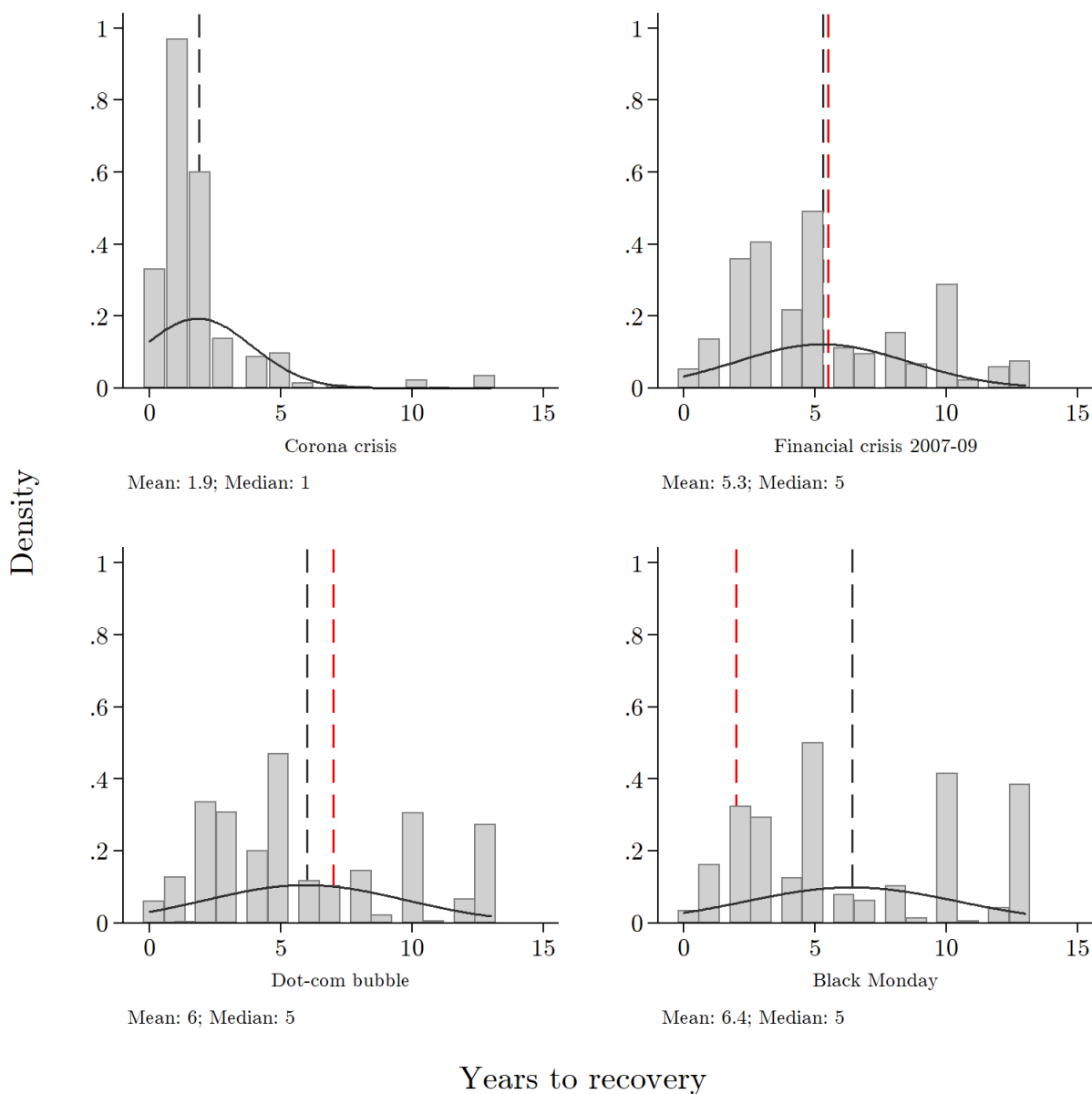
*Notes:* This figure displays the expected duration of recovery in years for the US stock market, subjects' wealth, and subjects' income (left column) and the fraction of subjects' who believe that their wealth and income will never recover (right column) by net wealth quintile (top row), net income quintile (middle row), and by age group (bottom row). The sample consists of subjects who were part of the control treatment in the experimental survey.

Figure 9: Expected duration of recovery by shock quintile



*Notes:* This figure displays the expected duration of recovery in years for the US stock market, subjects' wealth, and subjects' income (top row) and the fraction of subjects' who believe that their wealth and income will never recover (bottom row) by quintile of average percent change in the value of financial assets due to the stock market drop until the survey date (left column) and by quintile of unexpected changes in net household incomes during the first quarter of 2020 (right column). For both changes in wealth and income, quintile 5 represents the largest *decrease* while quintile 1 is the smallest decrease, which represents a gain for some. The sample consists of subjects who were part of the control treatment in the experimental survey.

Figure 10: Expected durations of current and historical stock market recoveries



*Notes:* This figure displays the expected duration of recovery in years for the US stock market for the Coronavirus crisis (top-left), the Financial Crisis of 2007-2009 (top-right), the Dot-com bubble (bottom-left) and the crisis following Black Monday on October 19, 1987 (bottom-right). The sample for the Coronavirus crisis consists of the pure control sample while for the Financial Crisis (Dot-com, Black Monday) it consists of the control and treatment samples for each of the appropriate treatment arms. The expected duration is elicited prior to the subject receiving information about the true duration (red dashed line). The mean value is displayed with the black dashed line.

# Main tables

Table 1: Descriptive statistics

	Mean	ACS	SD	P10	Median	P90	Obs.
Female (d)	0.52	0.51	0.50				8,075
Age category (d)							
18-24 years	0.11	0.12	0.31				8,075
25-34 years	0.16	0.18	0.36				8,075
35-44 years	0.18	0.16	0.39				8,075
45-54 years	0.17	0.16	0.37				8,075
55-65 years	0.19	0.18	0.40				8,075
65 years and older	0.19	0.19	0.39				8,075
Bachelor's degree or higher (d)	0.38	0.23	0.48				8,075
HH income (gross, USD)	80,239	62,500 (med.)			62,500		7,984
<15,000 (d)	0.09		0.28				7,984
15,000-25,000 (d)	0.08		0.27				7,984
25,000-50,000 (d)	0.21		0.41				7,984
50,000-75,000 (d)	0.17		0.38				7,984
75,000-100,000 (d)	0.14		0.35				7,984
100,000-150,000 (d)	0.17		0.38				7,984
150,000-200,000 (d)	0.07		0.26				7,984
>200,000 (d)	0.05		0.23				7,984
Census Region (d)							
West	0.22	0.24	0.41				8,075
Midwest	0.25	0.21	0.43				8,075
Northeast	0.21	0.18	0.40				8,075
South	0.33	0.38	0.47				8,075
Employment situation (d)							
Employed	0.52		0.50				8,075
Self-employed	0.07		0.25				8,075
Unemployed	0.07		0.26				8,075
Retired	0.21		0.41				8,075
Other	0.13		0.34				8,075
Married (d)	0.52		0.50				8,075
Retirement wealth (USD)	120,628		180,603	0	17,500	575,000	7,629
Other financial wealth (USD)	87,287		158,937	0	7,500	325,000	7,680
Real estate wealth (USD)	225,832		337,398	0	150,000	625,000	7,810
Debt outstanding (USD)	71,071		137,361	0	7,500	250,000	7,781
Household net wealth (USD)	366,620		539,632	-12,500	145,000	1,150,000	7,327
Subj. financial knowledge (0-10)	7.33		2.39	4	8.00	10.00	8,075
Subj. Risk tolerance (0-10)	5.53		2.81	1	6.00	9.00	8,075
Stock market participation (d)	0.61		0.49	0	1.00	1.00	8,075
Equity share in fin. wealth (%)	30.66		33.56	0	18.85	85.40	7,518
Investment experience > 10 years (d)	0.55		0.50	0	1.00	1.00	4,886

*Notes:* The table shows summary statistics for across the 8,075 participants. Stock market experience is elicited for respondents who participate in the stock market only. Observation numbers for some wealth items vary due to some respondents indicating to "prefer not to answer".

Table 2: Income and wealth shocks and expected economic decisions

	Exp. spend. change (percent)	Incr. exp. HH debt	Incr. exp. desired hours	Incr. exp. retirement age
	(1)	(2)	(3)	(4)
$\Delta$ HH net income (ppt)	0.177*** (0.021)	-0.364*** (0.034)	-0.303*** (0.038)	-0.200*** (0.040)
$\Delta$ HH fin. wealth (ppt)	0.008 (0.027)	-0.623*** (0.050)	-0.573*** (0.060)	-0.700*** (0.061)
Individual controls	Yes	Yes	Yes	Yes
Adj. R-squared	.04	.115	.074	.056
Observations	6719	6883	4321	4321

*Notes:* This table shows OLS estimates of the association between shocks to the respondent's household net income and financial wealth and expected economic decisions. The outcome in column 1 is the expected change in household spending in 2020 compared to the year 2019, measured in percentage points. We trim the variable at the 2 and 98 percentiles. The outcome in column 2 is an indicator equal to one if the respondent expects her household's debt in 2020 to be higher or a lot higher by the end of the year 2020 as a result of the crisis. The outcome in column 3 is an indicator equal to one if the respondent expects to (certainly) try to work more hours in the next years. The outcome in column 4 is an indicator equal to one if a respondent expects to (certainly) retire later as a result of the crisis. Columns 3 and 4 only include respondents still active in the labor force. To limit the effect of outliers, we trim reported shocks to income and financial wealth at the 2 and 98 percentiles. Non-response to any of the net wealth items (retirement wealth, other financial wealth, real estate wealth, debt) furthermore reduces the number of observations in the analyses. All specifications control for the respondent's age category, net household income quintile, net household wealth quintile, census region, gender, marital status, an indicator of whether the respondent obtained a bachelor's degree or higher, employment status, an indicator of whether the respondent is the household's main financial decision-maker, an indicator of above-median self-assessed financial knowledge and risk tolerance, respectively, participation in equity, the share of the household's financial wealth allocated to equity, and an indicator of above-median investment experience in stock and stock mutual funds. Robust standard errors are reported in parentheses. \* denotes significance at the 10 pct., \*\* at the 5 pct., and \*\*\* at the 1 pct. level.

Table 3: Beliefs about the duration of recovery

	Exp. stock market rec. duration	Exp. wealth recovery duration	Exp. wealth never to recover	Exp. inc. recovery duration	Exp. inc. never to recover
	(1)	(2)	(3)	(4)	(5)
$\Delta$ HH net income (ppt)	-0.001 (0.004)	-0.006** (0.003)	-0.001 (0.001)	-0.028*** (0.002)	0.001*** (0.000)
$\Delta$ HH fin. wealth (ppt)	-0.002 (0.005)	-0.023*** (0.005)	0.002*** (0.001)	-0.007** (0.003)	-0.001 (0.001)
Individual controls	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	.023	.234	.122	.263	-.012
Observations	1017	943	943	872	872

*Notes:* This table shows OLS estimates of the association between shocks to the respondent's household net income and financial wealth and beliefs about the duration of recovery of the US stock market as well as of the household's own financial wealth and net income. The survey asks respondents to report the calendar year in which they expect the US stock market to have recovered to the level of January 2020, before the start of the crisis. We measure respondents' beliefs about the recovery duration of the US stock market as the distance of this estimate and the year 2020, measured in years. The survey furthermore asks for the year in which respondents expect their own household net wealth and net income to recover to pre-crisis levels. Respondents can enter a year or, alternatively, indicate that they expect their net wealth/net income never to recover. Using the same logic as for beliefs about the recovery duration of the stock market, we construct measures of respondent's beliefs about the recovery duration of their own net wealth/net income. Column 1 uses the expected stock market recovery duration as the dependent variable. The outcome in column 2 is the expected recovery duration of the respondent's household financial wealth. The outcome in column 3 is an indicator equal to one if the respondent believes his household net wealth to never recover. The outcome in column 4 is the expected recovery duration of the respondent's net household income. The outcome in column 5 is an indicator equal to one if the respondent believes his household net income to never recover. As all outcomes are elicited post-treatment, the regressions base on respondents in the *Control* arm, who are not shown any information in the course of the treatment. To limit the effect of outliers, we trim reported shocks to income and financial wealth at the 2 and 98 percentiles. Non-response to any of the net wealth items (retirement wealth, other financial wealth, real estate wealth, debt) furthermore reduces the number of observations in the analyses. All specifications control for the respondent's age category, net household income quintile, net household wealth quintile, census region, gender, marital status, an indicator of whether the respondent obtained a bachelor's degree or higher, employment status, an indicator of whether the respondent is the household's main financial decision-maker, an indicator of above-median self-assessed financial knowledge and risk tolerance, respectively, participation in equity, the share of the household's financial wealth allocated to equity, and an indicator of above-median investment experience in stock and stock mutual funds. Robust standard errors are reported in parentheses. \* denotes significance at the 10 pct., \*\* at the 5 pct., and \*\*\* at the 1 pct. level.



Table 4: Belief about stock market recovery duration and expected economic decisions

	Exp. stock return: Mean	Exp. stock return: SD	Exp. stock return: Prob.<-30%	Exp. stock return: Prob.>30%	Exp. wealth recovery duration	Exp. wealth never to recover	Exp. inc. recovery duration	Exp. inc. never to recover
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Panel A: Exp. macro &amp; pers.</b>								
Exp. stock market recovery duration (yrs.)	-1.827*** (0.310)	0.134 (0.130)	1.907*** (0.449)	-1.439*** (0.375)	0.160*** (0.035)	0.021*** (0.005)	0.031 (0.020)	0.009** (0.005)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	.061	.04	.049	.023	.277	.06	.022	.01
Observations	1162	1162	1162	1162	1079	1162	990	1162
	HH fin. prospects (z)	Exp. inc. change (percent)	Exp. spend. change (percent)	Incr. exp. HH debt	Incr. exp. desired hours	Incr. exp. retirement age	Exp. incr. stock share	Exp. decr. stock share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Panel B: Exp. pers. &amp; behavior</b>								
Exp. stock market recovery duration (yrs.)	-0.569** (0.271)	-0.101*** (0.014)	0.306 (0.284)	1.450** (0.595)	2.613*** (0.955)	2.819*** (0.837)	-0.005 (0.005)	0.003 (0.006)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	.027	.097	.019	.09	.039	.052	.157	.087
Observations	1120	1162	1126	1162	724	724	942	942

*Notes:* The table shows OLS estimates of the association between respondents' expected recovery duration of the stock market in years and their expectations regarding different economic outcomes. The outcomes in Panel A Columns 1 and 2 are the mean and the standard deviation of the respondent's reported probability distribution over the one year-ahead stock market return. The outcomes in Panel A Columns 3 and 4 are the probability (in percentage points) the respondent assigns to stock returns below -30 percent or above 30 percent, respectively. The outcomes in Panel A Columns 5 and 7 are the expected recovery duration of the respondent's household financial wealth and household net income. The outcomes in Panel A Columns 6 and 8 are dummies indicating if the respondent thinks her household net wealth or net income will never recover. The outcome in Panel B Column 1 is based on a categorical question on overall household financial prospects, z-scored using the mean and standard deviation in the sample. The outcomes in Panel B columns 2 and 3 are the expected changes in overall net household income and in overall household spending in 2020 compared to 2019, measured in percentage points, trimmed at the 2nd and 98th percentiles. The outcomes in Panel B Columns 4-6 are dummies indicating whether the respondent has upward adjusted her expectations about total outstanding household debt at the end of 2020, about desired working hours in the next years, or about retirement age due to the crisis. Columns 5 and 6 only include respondents in the labor force. The outcomes in columns 7 and 8 are dummies for plans to (somewhat/strongly) increase or decrease the share of stocks and stock mutual funds in household's financial wealth in the next weeks. The regressions are based on respondents in the *PureControl* arm, who are not shown any information in the course of the survey. All specifications control for the respondent's age category, net household income quintile, net household wealth quintile, census region, gender, marital status, an indicator of whether the respondent obtained a bachelor's degree or higher, employment status, an indicator of whether the respondent is the household's main financial decision-maker, an indicator of above-median self-assessed financial knowledge and risk tolerance, respectively, participation in equity, the share of the household's financial wealth allocated to equity, and an indicator of above-median investment experience in stock and stock mutual funds. Robust standard errors are reported in parentheses. \* denotes significance at the 10 pct., \*\* at the 5 pct., and \*\*\* at the 1 pct. level.

Table 5: Experimental evidence on beliefs about stock market recovery duration

	Exp. stock market rec. duration	Agree: Recovery many yrs. (z)	Agree: Set back many yrs. (z)	Agree: Recover in 2020 (z)	Exp. stock return: Mean	Exp. stock return: SD	Exp. stock return: Prob.<-30%	Exp. wealth recovery duration	Exp. inc. recovery duration	HH fin. prospects (z)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<b>Panel A: Fin. crisis 2007</b>										
Treated	1.245*** (0.111)	-0.184*** (0.041)	-0.159*** (0.041)	0.230*** (0.041)	-2.313*** (0.767)	0.105 (0.377)	1.900* (1.007)	0.444*** (0.073)	0.064 (0.055)	-0.078* (0.042)
<b>Panel B: Fin. crisis 2007 Underest.</b>										
Treated	1.594*** (0.117)	-0.297*** (0.050)	-0.296*** (0.050)	0.286*** (0.048)	-2.820*** (0.921)	0.182 (0.462)	1.574 (1.230)	0.500*** (0.081)	0.073 (0.057)	-0.086* (0.051)
<b>Panel C: Dot-com 2000</b>										
Treated	1.776*** (0.128)	-0.103** (0.041)	-0.134*** (0.041)	0.214*** (0.041)	-1.811** (0.764)	0.263 (0.381)	1.289 (1.008)	0.534*** (0.080)	0.007 (0.054)	0.018 (0.042)
<b>Panel D: Dot-com 2000 Underest.</b>										
Treated	2.346*** (0.135)	-0.193*** (0.052)	-0.205*** (0.051)	0.233*** (0.052)	-1.843* (0.943)	0.132 (0.465)	1.549 (1.277)	0.633*** (0.099)	-0.007 (0.065)	0.021 (0.052)
<b>Panel E: Black Monday 1987</b>										
Treated	-0.949*** (0.109)	0.095** (0.040)	0.094** (0.040)	0.077* (0.040)	1.006 (0.738)	0.418 (0.369)	-2.071** (0.902)	-0.126* (0.068)	-0.002 (0.050)	0.025 (0.041)
<b>Panel F: Black Monday 1987 Overest.</b>										
Treated	-1.289*** (0.131)	0.171*** (0.045)	0.190*** (0.045)	-0.031 (0.045)	1.573* (0.823)	0.456 (0.416)	-2.664*** (1.024)	-0.216*** (0.081)	-0.036 (0.062)	0.057 (0.046)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Notes:* The table shows OLS estimates of the effect of being shown information on the actual duration of a past stock market crash on expectations regarding different economic outcomes. Panels A and B examine the effect of providing pessimistic information on recovery duration from the financial crisis (5 1/2 years). Panels C and D examine the effect of providing pessimistic information on recovery duration from the burst of the Dot-com bubble (7 years). Panels E and F examine the effect of providing optimistic information on recovery duration from the Black Monday stock market crash (2 years). Panels B and D only focus on underestimators of the recovery duration and Panel F only focuses on overestimators. All regressions only focus on groups in the corresponding arms who have reported priors and partially received information on the corresponding crash. The outcomes are the respondent's expected stock market recovery duration in years (column 1); agreement on 7-point scales to statements describing the severity of the current stock market crash (columns 2-4); mean and standard deviation of the respondent's reported probability distribution over the one year-ahead stock market return (columns 5-6); the probability (in p.p.) the respondent assigns to stock returns below -30 percent (column 7); the expected recovery duration of the respondent's household financial wealth and household net income in years (columns 8-9); a categorical measure of overall household financial prospects. The outcomes in columns 2-4 and 10 are z-scored using the mean and standard deviation in the sample. All specifications control for the respondent's age category, net household income quintile, net household wealth quintile, census region, gender, marital status, an indicator of whether the respondent obtained a bachelor's degree or higher, employment status, an indicator of whether the respondent is the household's main financial decision-maker, an indicator of above-median self-assessed financial knowledge and risk tolerance, respectively, participation in equity, the share of the household's financial wealth allocated to equity, and an indicator of above-median investment experience in stock and stock mutual funds. Robust standard errors are reported in parentheses. \* denotes significance at the 10 pct., \*\* at the 5 pct., and \*\*\* at the 1 pct. level.

# Online Appendix: Income and Wealth Shocks and Expectations during the COVID-19 Pandemic

Tobin Hanspal<sup>1</sup>    Annika Weber<sup>2</sup>    Johannes Wohlfart<sup>3</sup>

## **Summary of the online appendix**

Section A and section B provide additional figures and tables, respectively.

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## A Additional figures

Figure A1: Information Treatment *FinCrisisInfo*

You estimated that stock prices recovered to their pre-crisis level **5 years** after the beginning of their drop in October 2007.

We now provide you with information on the actual development of stock prices during the Financial Crisis that started in 2007.

Starting from the beginning of the drop in stock prices in October 2007, it took **about 5 ½ years** until stock prices recovered to their pre-crisis level in March 2013.



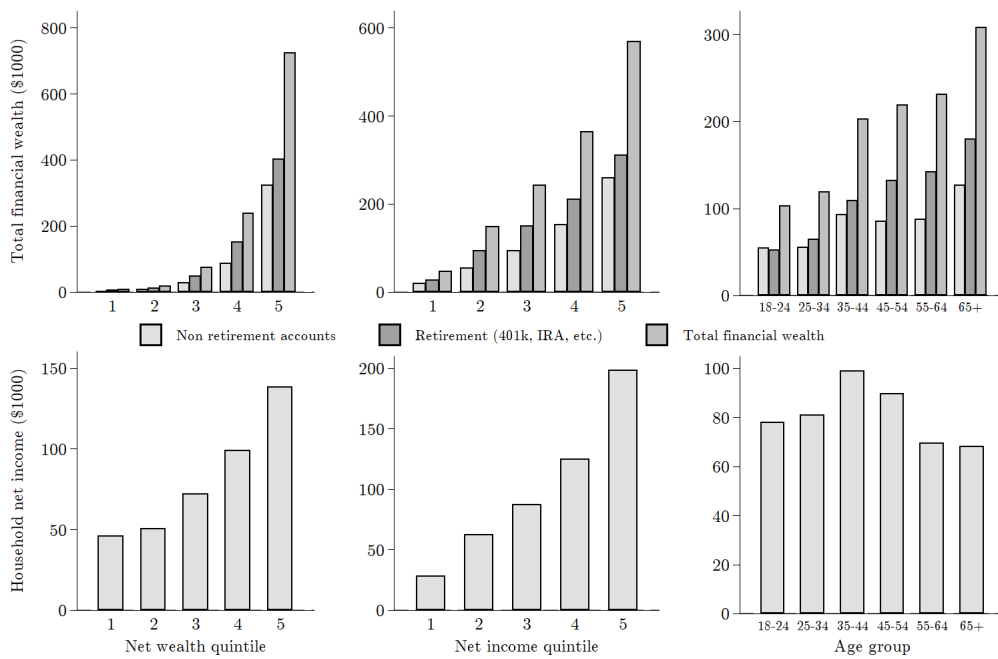
Source: The number is based on the time that the stock market index S&P500 needed to recover to its pre-crisis level.

Note: You will be able to go to the next slide after you have spent a few seconds on this slide.



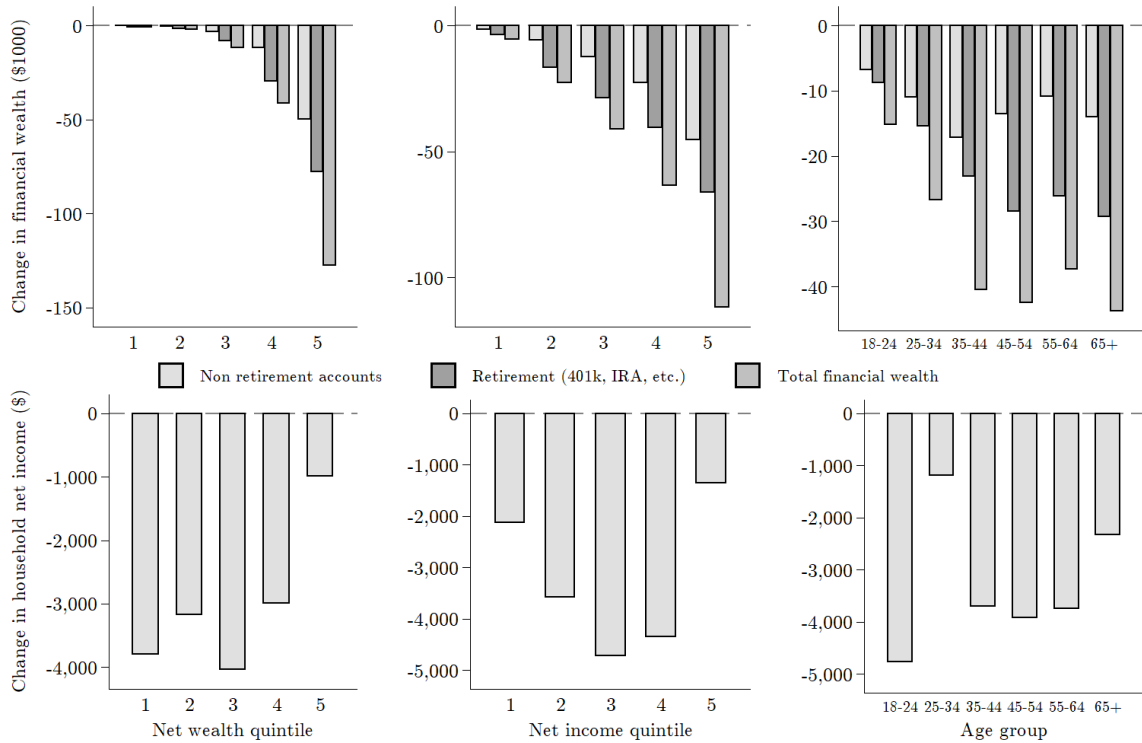
*Notes:* This figure illustrates the information treatment screen, exemplarily for the *FinCrisisInfo* treatment arm. The information treatment includes a dynamic figure contrasting the respondent's prior belief (in dark orange, on the right) with the actual number of years it took for the US stock market to recover to its levels before the 2007-2009 Financial Crisis (in yellow, on the left). Recovery durations for the three different information treatments *FinCrisisInfo*, *BlackMondayInfo* and *DotComInfo* are calculated based on monthly time-series data of the S&P500.

Figure A2: Value of financial assets in 2019 by net wealth quintile



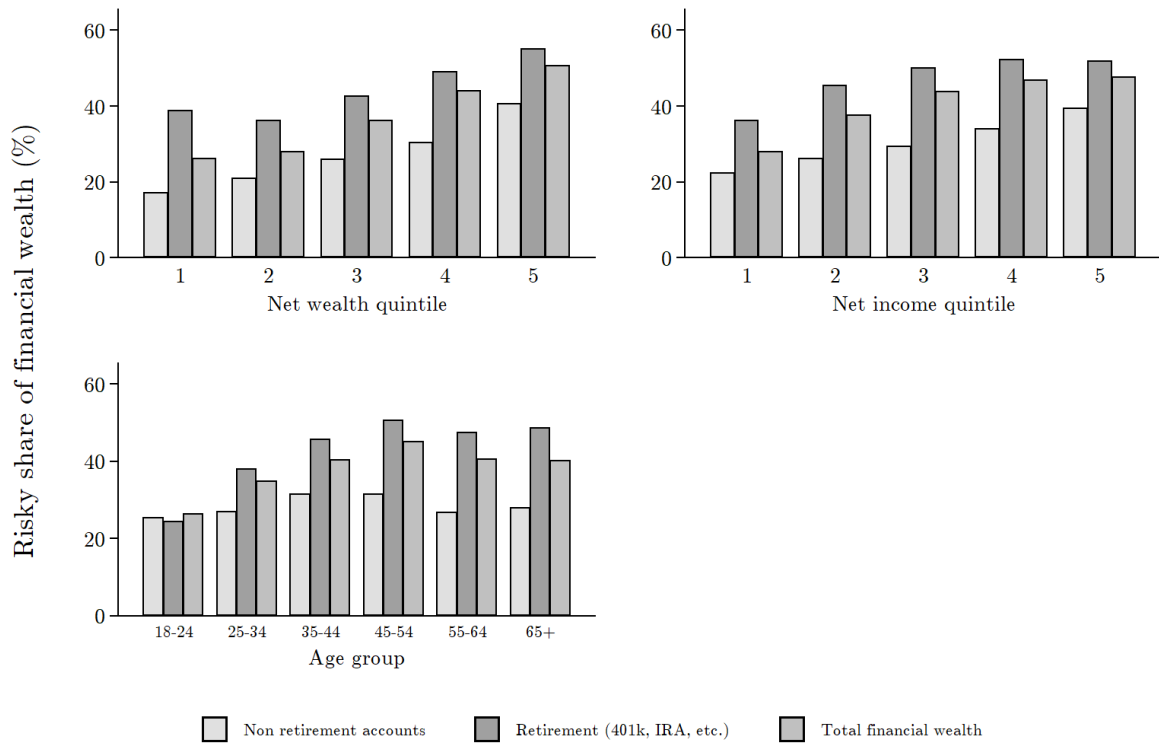
*Notes:* This figure displays the average value of financial assets (top row) and gross household income during the first quarter of 2020 (bottom row), by quintile of the pre-crisis net worth distribution (left column), by quintile of the pre-crisis net income distribution (middle column) and by age group (right column). Values of financial assets are displayed separately for financial assets outside of retirement accounts, for financial assets in retirement accounts, and for the combined value of all financial assets.

Figure A3: Income and wealth shocks in levels (USD) across groups



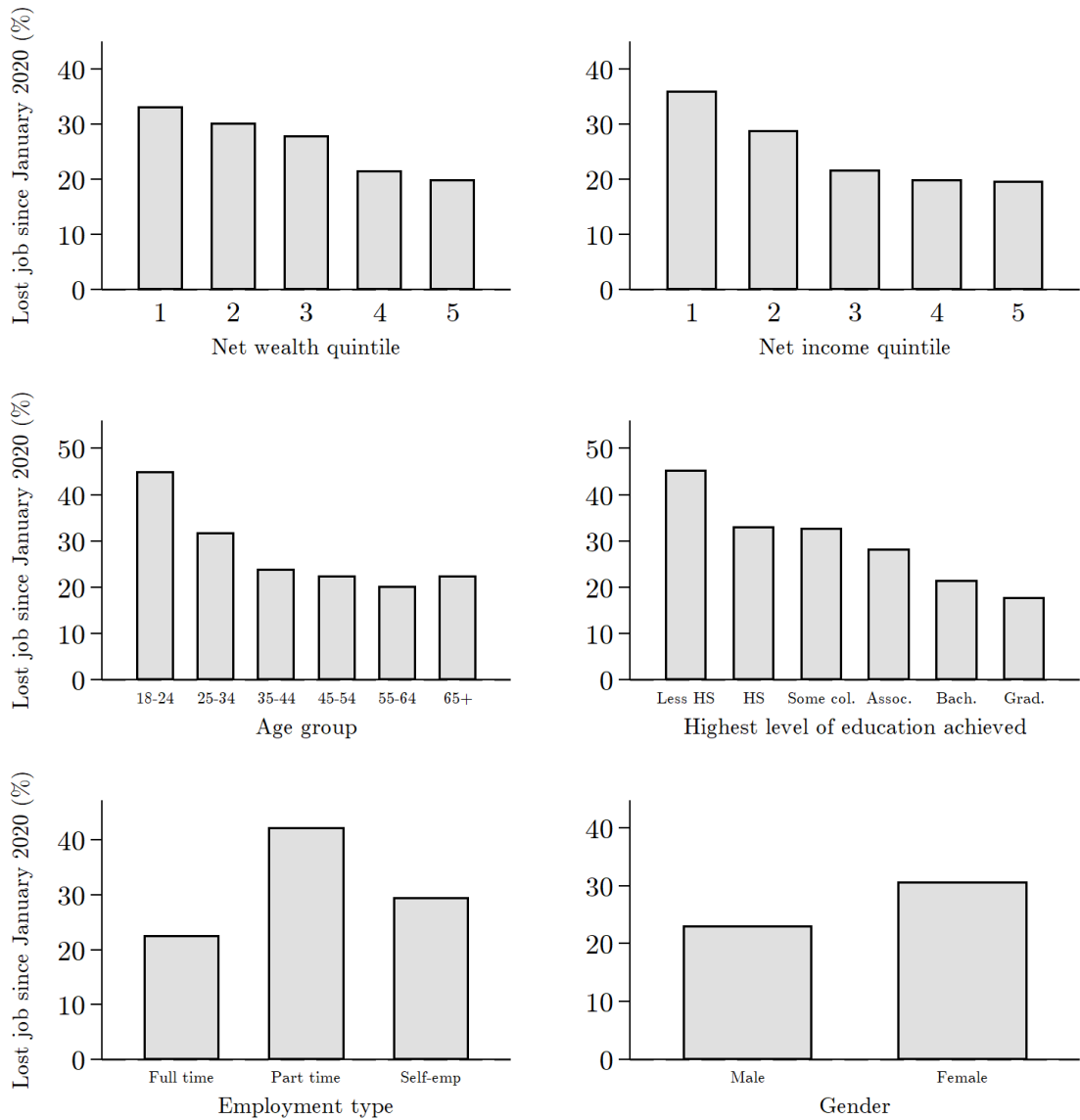
*Notes:* This figure displays the USD value change in financial assets due to the stock market drop until the survey date (top row) and unexpected changes in net household incomes during the first quarter of 2020 (bottom row), by quintile of the pre-crisis net worth distribution (left column), by quintile of the pre-crisis net income distribution (middle column) and by age group (right column). Changes in value of financial assets are displayed separately for financial assets outside of retirement accounts, for financial assets in retirement accounts, and for the combined value of all financial assets. Changes in value of financial assets are net capital losses for the majority of respondents, and net capital gains for a small fraction of respondents.

Figure A4: Risky share of financial wealth across groups



Notes: This figure displays the risky share of financial wealth held in stocks or mutual funds by quintiles of net wealth (top-left), net income, (top-right), and by age group (bottom-left).

Figure A5: Job loss experience since the Coronavirus crisis across groups



*Notes:* This figure displays the percentage of subjects who have stated that they experienced a job loss since January 2020. We state the percentage of subjects who stated they lost their job by net wealth quintile (top-left), net income quintile (top-right), age (middle-left), education (middle-right), employment type (bottom-left), and by gender (bottom-left).



## B Additional tables

Table A1: Treatment and sample detail

Treatment	Sample	Information	Subjects
Financial Crisis 2007	Information	5.5 years	1,145
	Control	-	1,150
Dot-com bubble	Information	7 years	1,136
	Control	-	1,150
Black Monday	Information	2 years	1,186
	Control	-	1,146
Pure control	Control	-	1,163
Total			8,076

*Notes:* The table shows the various control and treatment samples across the survey. The final number of participants is listed in the column *Subjects*.