CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

HOW DOES COVID-INDUCED EARLY RETIREMENT COMPARE TO THE GREAT RECESSION?

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Abstract

In early 2020, the COVID Recession seemed like it would result in an increase in early Social Security claiming, similar to the Great Recession. However, pretty quickly the COVID Recession turned out to be quite different. It was spurred by a health crisis, potentially increasing the likelihood of early claiming among older workers and accompanied by a quick recovery in the stock market followed by rapidly-rising prices that could enable many with assets to retire early. On the other hand, the unprecedented expansion and generosity of unemployment insurance (UI) offered a way for lower-paid workers to stay in the labor force. The following analysis, using data from the *Health and Retirement Study* (HRS), compares how the claiming pattern changed in the recession years 2008-2010 from the expansion years 2004-2006 with how the pattern changed in the recession year 2020 from the expansion years 2016-2018.

The paper found that:

- Self-reported poor health did not lead to increased claiming during COVID, a story consistent with the Great Recession.
- The booming stock market associated with COVID induced early claiming among those with retirement assets, a stark difference from the Great Recession where workers remained in the labor market to replenish depleted balances.
- On the other hand, generous UI benefits reduced early claiming for workers in the two lowest earnings terciles, a stark difference from the Great Recession where the lower paid continued to retire earlier than the well paid.
- In the end, and in contrast to the Great Recession, the competing effects more than canceled each other out and resulted in an actual decrease in early claiming during the COVID Recession and slightly higher monthly Social Security benefits.

The policy implications of the findings are:

- Generous UI benefits dramatically alter the work-life trajectories of the lower paid.
- They also allow the lower paid to avoid actuarial adjustments from early claiming that would have left them with lower monthly benefits.

Introduction

As COVID shut down the economy in early 2020, the press asked repeatedly how the economic turmoil – combined with a health crisis and a plunge in the stock market – would affect older workers. At that time, the natural inclination was to draw similarities to how older workers responded in the Great Recession. Specifically, despite a desire to work longer to replenish lost savings, the lack of available jobs forced many to claim Social Security benefits as soon as they were eligible – at 62. During the Great Recession, Social Security provided an important and much-needed safety net for displaced older workers. Early claiming, however, is costly to these workers in that it leads to permanently reduced monthly benefits for the rest of their lives.

Of course, the COVID experience turned out to be very different than the Great Recession. Although the Dow Jones Industrial Average plunged by 34 percent between mid-February and March 23, it soon recovered and increased to 30,000 at the end of 2020 and 36,000 by the end of 2021 – before beginning a major decline in 2022. The economy also quickly bottomed out, and the NBER defined it as the shortest recession in history – from a peak in February to the trough in April. And unprecedented government support for the unemployed made looking for a job much more attractive than claiming Social Security benefits. As a result, the percentage of 62-year-olds claiming benefits continued a decades-long decline with no interruption.

While the contours of the two recessions differ sharply, older workers continued to retire and claim Social Security. The questions explored in this study are the relative impacts of the COVID Recession and the Great Recession on the claiming behavior of different groups and how any change in claiming affected Social Security benefits.

Specifically, the analysis, using data from the *Health and Retirement Study* (HRS), first compares how the claiming pattern changed in the recession years 2008-2010 from the expansion years 2004-2006 with how the pattern changed in the recession year 2020 from the expansion years 2016-2018. This step, which is based on a discrete-time hazard model, reveals the extent to which the two recessions differentially affected particular groups, defined by race/ethnicity, educational attainment, gender, age, and wealth. Using the results from the hazard model, the analysis then estimates how changing patterns affected monthly Social Security benefits and how these effects differed during the two recessions.

The discussion proceeds as follows. The first section provides background on the Great Recession and the COVID Recession and summarizes what research to date reveals about the basic contours of the two recessions. The second section describes the data for the current analysis, and the third section details the empirical methodology. The fourth section summarizes the results of the relative impact of the two recessions on the claiming behavior of different groups. The fifth section quantifies how much induced early claimers lose in monthly Social Security benefits and compares the losses for different groups in both recessions.

The final section concludes with three findings. The COVID Recession did not increase the relative likelihoods of early claiming among those in poor health. This result is surprising, but consistent with the findings for the Great Recession. The other two findings were in stark contrast to what happened during the Great Recession. First, during the COVID Recession the booming stock market increased the relative likelihood of early claiming among those with retirement assets, whereas during the Great Recession workers remained in the labor market to replenish depleted balances. Second, generous UI benefits reduced early claiming among workers in the lowest two earnings terciles, whereas little change was evident during the Great Recession. In terms of the overall impact, the competing effects of the COVID Recession more than canceled each other out and resulted in an actual decline in early claiming as a result of the COVID Recession, whereas the percentage claiming early rose notably during the Great Recession. For low and middle earners, the generous UI benefits allowed them to claim slightly later than planned and enjoy slightly higher monthly Social Security benefits.

Background

Before examining the differences in Social Security claiming between COVID-19 and the Great Recession, it is helpful to understand the basic story surrounding older workers during these two periods.

The Impact of the Great Recession on Older Workers

The crucial aspect of the Great Recession is that it was sparked by the Global Financial Crisis, which involved a collapse of both equity values and housing prices. Problems started in the housing market where low interest rates and lax underwriting standards had led to a bubble in housing prices. As the Federal Reserve increased interest rates between 2004 and 2006, many

low-income borrowers with adjustable-rate mortgages could not make their monthly payments. As mortgage loan delinquency started to rise, housing prices stopped increasing and peaked in 2006. And the supply of low-rate mortgages declined as Freddie Mac stopped investing in certain subprime loans. The bursting of the housing bubble and the subsequent high default rate on subprime mortgages led to a continued decline in housing prices from their peak in 2006 to a trough in 2012 (see Figure 1).

The problems in the housing market soon spread to the equity markets, as the decline in home prices stoked fears of recession. Simultaneously, firms involved in the subprime mortgage market started to report trouble. New Century, a real estate investment trust specializing in subprime mortgages, filed for bankruptcy in April 2007. Similarly, in July 2007, Bear Stearns was forced to bail out two of its hedge funds with exposure to subprime mortgages. Eventually, the firm was forced to liquidate these funds and in March 2008 faced bankruptcy. Instead of bankruptcy, however, the Federal Reserve agreed to guarantee Bear Stearns' loans, which facilitated its acquisition by J.P. Morgan Chase. While trouble continued throughout 2008, the most memorable event was the collapse of Lehman Brothers in September, when the Federal Reserve declined to guarantee its loans. As a result of all this turmoil, the Dow Jones Industrial Average fell from around 13,500 in December 2007 to 6,550 in March 2009 – losing roughly half its value (see Figure 2). For those workers with 401(k) plans, the decline in equity prices meant a big drop in their retirement balances.

The other financial outgrowth of the Global Financial Crisis was a decline in real interest rates. Real rates, as measured by the difference between nominal returns on 10-year Treasuries and the Cleveland Federal Reserve's inflation expectations, fell from more than 2 percent in 2007 to 0 percent in 2012 (see Figure 3). The decline in rates meant that older workers who planned to live off the interest income on their investments had to save even more than they had planned.

The combined impact of the Global Financial Crisis and the ensuing Great Recession had a two-pronged impact on older workers (Munnell and Rutledge 2013). On one hand, the decline in equity prices, lower interest rates, and the drop in housing values reduced the resources people had to support themselves in retirement. To compensate, older workers had three options – save more, live on less in retirement, or work longer. Initial surveys indicated that working longer

was most attractive to older households,[1] and several studies have found that older workers delayed retirement in an effort to recover lost earnings and wealth (Helppie McFall 2011; Chan and Stevens 1999; Goda, Shoven, and Slavov 2011).

On the other hand, a weak labor market with high unemployment made working longer very difficult. In previous recessions, older workers were largely shielded from job loss, because firms were reluctant to lay off long-tenured workers in whom they were heavily invested. As a result, the unemployment rate increase for workers 55 and older was much less than for prime-age workers in the recessions of the 1970s and 1980s. But declining tenure, together with increasing layoff risk for higher-educated or unionized employees, led to increased rates of job loss for older workers in the Great Recession. Specifically, a record 14 percent of workers over age 50 experienced a job loss at some point between 2007 and 2009; the previous high (since 1983) was just over 10 percent (Farber 2011).

The duration of jobless spells also increased. At the onset of the recession, the median duration of unemployment for workers of all ages was 8.3 weeks; by March 2012, the median spell had increased to 20.5 weeks (U.S. Bureau of Labor Statistics 2008 and 2012). Workers ages 55-64 have more difficulty finding reemployment under normal circumstances (Johnson and Mommaerts 2011), so their median duration was 10.8 weeks in December 2007 and peaked at 43 weeks in September 2011 (U.S. Bureau of Labor Statistics 2022).[2]

Though job prospects were poor, older workers held fast. In fact, the labor force participation rate actually increased by more than a percentage point for both men and women ages 55-70, and the employment-to-population rate for this age group declined only slightly (see Figure 4). In contrast, the employment rates for prime-age and younger workers dropped noticeably during the Great Recession.

The slight drop in the proportion of older individuals working translated into an uptick in early claiming (Rutledge and Coe 2012). More specifically, the proportion of 62-year-olds claiming Social Security benefits at 62 increased by 5 percentage points (see Figure 5). This

[1] The Employee Benefit Research Institute (EBRI) reported that between 2006 and 2011, the proportion expecting to retire before age 65 decreased from 33 percent to 23 percent (Helman, Copeland, and VanDerhei 2011). Another survey by the Center for Retirement Research at Boston College found that 40 percent of workers ages 45-59 with substantial retirement assets planned to work longer (Coe and Haverstick 2010).

[2] The increase in jobless duration mirrors the difficulty that older workers had finding reemployment relative to their prime-age counterparts. Johnson and Butrica (2012) find that younger workers found a new job much quicker than older workers: 18 months after job loss, better than three quarters of those under 50 were reemployed, compared to only 65 percent of those ages 50-61 and 41 percent of those ages 62 or older.

shift meant that about 132,000 people claimed benefits earlier than they would have otherwise. Immediately thereafter, the downward trend in early claiming resumed.

COVID Recession Is Different

Like the Great Recession, the COVID Recession came after several years of a strongly expanding economy. While initially many feared that the COVID Recession would result in a spike in early claiming among older workers, research on the pandemic recession has found only very small increases in retirement rates (Quinby, Rutledge, and Wettstein 2021). This difference in outcomes reflected the many ways in which the COVID Recession differed from the Great Recession.

- *Cause:* The cause of the COVID Recession was a health crisis that shut down offices and businesses and increased mortality. The pandemic represented a particular threat for older workers, who were more vulnerable to the virus. Some observers were also concerned that older workers would be less able to work from home, although the evidence suggests that they were just as likely as younger workers to be employed in occupations where remote work is possible (Chen and Munnell 2020).
- *Asset Prices:* The COVID Recession was accompanied by a quick recovery in the equity and housing markets, followed by rapidly rising prices. After stock prices fell over 34 percent from mid-February to March 23, 2020, the market roared back with the Dow Jones Industrial Average breaking 30,000 in December 2020 and hovering around 36,000 in December 2021 (see Figure 2).[3] Similarly, housing prices have risen sharply since the onset of COVID (see Figure 1).
- *Duration:* While the Great Recession dates from a peak in December 2007 to the trough in June 2009 – 18 months, the COVID Recession began in February 2020 and the trough occurred in April 2020 – 2 months later. More importantly, the unemployment rate fell back to 6 percent after 4 months, compared to 64 months after the trough of the Great Recession (see Figure 6).
- *Relief Measures*: In the COVID Recession, the government dramatically increased unemployment insurance benefits. In March 2020, the Coronavirus Aid, Relief and

[3] While the stock market has since dipped from this peak, the annualized 3-year, 5-year, and 10-year returns at the time of writing are still about 10 percent, despite the recent decline in stock prices.

Economic Security Act (CARES) provided $268 billion in additional unemployment insurance (UI) benefits through $600 weekly supplements, an expansion of the eligible population,[4] and an additional 13 weeks of benefits for those who exhausted the regular benefits.[5] In December 2020, the Coronavirus Response and Relief Supplemental Appropriations Act included an 11-week extension of the supplement (at a reduced level of $300) and the other provisions of the CARES Act. Finally, in March 2021 the American Rescue Plan Act further extended unemployment support programs through September 2021.[6]

- *Demographics:* The effects of the COVID recession varied by race/ethnicity and gender. Black and Hispanic workers were more concentrated in occupations with greater exposure to the virus, which – combined with higher prevalence of comorbidities – meant that they faced higher risk of hospitalization and death (Clark, Lusardi, and Mitchell 2020; Borjas and Cassidy 2020; Chetty et al., 2020). Women were also adversely affected by the COVID Recession, because school closures and loss of regular caretakers increased their caretaking duties (Alon et al. 2020).

Two recessions with such different profiles would be expected to have very different impacts on older workers. And, indeed, that appears to be the case. The COVID Recession, like all recessions, pushed many older workers out of the labor force. Before the outbreak, about 15 percent of older workers would leave employment within a year. This percentage rose sharply in April 2020 to 31.5 percent (see Figure 7). In subsequent months, the percentage leaving declined but remained near or above 20 percent during the rest of 2020. Overall, the share of people ages 55 or older who left the workforce during the pandemic increased by a statistically significant 7.6 percentage points (Quinby, Rutledge, and Wettstein 2021).

[4] The Pandemic Unemployment Assistance program temporarily provided unemployment benefits to people unable to work for reasons related to COVID-19 who were not usually eligible for unemployment assistance, including the self-employed, independent contractors, and those with limited work. This program paid for up to 39 weeks of unemployment benefits between January 27, 2020 and December 31, 2020.

[5] The Families First Coronavirus Response Act, which was signed into law on March 18, 2020, provided $4.7 billion in additional funding to state governments to administer unemployment programs and to fund benefit payments.

[6] This legislation increased the total number of weeks available for unemployment benefits from 50 to 79 for self-employed people and other unemployed people deemed ineligible for state UI benefits; increased eligibility for benefits from 24 to 53 weeks for those who exhausted their benefits; and continued the $300 per week supplement. It also exempted the first $10,200 in 2020 unemployment benefits from federal income tax for households with incomes below $150,000 per year. However, 25 states opted to terminate temporary pandemic UI programs by June or July 2021. See Whittaker and Isaacs (2021).

Interestingly, while older workers who leave the labor force typically decide to retire at the same time, self-reported retirement hardly increased at all during the COVID Recession (Goda et al. 2021; Quinby, Rutledge, and Wettstein 2021). The trend is largely flat: the average 12-month retirement rate before the pandemic (through March 2020) was 12 percent, compared to 13 percent post-pandemic (see Figure 8). Moreover, the only group that saw a statistically significant increase in retirement was workers ages 70 and over. Supporting that finding is the fact that the percentage of 62-year-olds claiming early benefits did not tick up but rather continued its downward trajectory (see Figure 5).

Although the likelihood of early retirement did not increase in the wake of COVID, people continued to withdraw from the labor force and claim their Social Security benefits. The first question is whether the mix of early retirees changed as the economy moved from the expansion years 2016-2018 to the 2020 COVID Recession and how profiles of COVID retirees compare to those who retired early when the economy moved from the expansion years 2004-2006 into the Great Recession. The second question is how changes in claiming patterns, if any, affected Social Security monthly benefits in both recessions. It will be particularly interesting to see whether the unprecedented UI benefits during the COVID Recession affected the likelihood of early claiming among lower-wage workers.

In terms of groups affected, the unique nature of the COVID Recession suggests three hypotheses about the changing composition of early claimers:

- Workers facing health risks and unable to work remotely would be more sensitive to high unemployment rates during the COVID Recession and be more likely to exit the labor force and claim early, relative to the Great Recession.
- Wealthier workers would likely have benefited from the booming stock market and housing market during the COVID Recession, enabling them to claim early.
- Workers with low earnings, who faced high replacement rates from the unprecedented expansion and increased generosity of UI benefits, would be less likely to claim early in the COVID Recession than in the Great Recession.

Given the opposite forces at play, the effect of the COVID Recession on the early claiming behavior of older women and Black and Hispanic workers is ambiguous. Women carried a larger share of the caregiving duties and Black/Hispanic workers faced higher risk of hospitalization and death from COVID-19, which might make them more likely to claim early

relative to the Great Recession. However, they are also more likely to be low earners, for whom generous UI benefits make it highly beneficial to look for a job rather than claim Social Security.

Data

The analysis of the relative impact of the COVID Recession and the Great Recession on retirement claiming is based on the HRS, a panel survey of older Americans conducted by the University of Michigan. Comparing the impact of the Great Recession and COVID-19 on early claiming first requires defining "early claiming." In this analysis, early claiming is defined as claiming before the Full Retirement Age (FRA).[7] The claiming age for most respondents comes from administrative linked data. For respondents who could not be linked, we use their self-reported claiming age.

The sample is comprised of respondents who are between ages 62 and their respective FRA during the 2004-2010 and 2016-2020 waves.[8] As a result, the sample includes four cohorts: the original HRS (birth years 1931-1941), War Babies (1942-1947), Early Baby Boomers (1948-1953), and Mid Baby Boomers (1954-1959). Several groups of respondents are dropped from the sample: individuals who receive Social Security Disability Insurance (SSDI) at any time, since their retirement benefit claiming age is pre-determined; individuals not linked to administrative claiming data who self-report claiming before age 62, as this is due to survivor benefits or reporting error; and individuals with no claiming information at all.[9] The final sample consists of 4,398 individuals who are between age 62 and their FRA and are observed at some time between 2004-2010 or 2016-2020.[10]

[7] Early claimers can also be defined only as people who claim at the earliest possible age, age 62. We include the group that claims after 62 but before their FRA for two reasons. The first is that the share of older workers who claim at age 62 has been declining for several decades and is only representative of about a third of older workers' claiming decisions (see Chen and Munnell 2021). In fact, claiming at all ages before the FRA has been declining in recent decades. Second, including those who claim at all ages before the FRA allows for a larger sample size for later empirical analysis.

[8] Earlier waves of the HRS are also used for information on pre-62 characteristics of some respondents.

[9] SSDI beneficiaries are automatically rolled into retirement benefits at the FRA, so their retirement benefit claiming is predetermined and is not going to respond to macroeconomic conditions.

[10] Since retirees can file for up to four months before the planned benefit start date, we also include individuals who report first claiming in the four months before their 62nd birthdays.

Methodology

The analysis proceeds in two steps – first using a hazard model to examine changes in claiming patterns and then using the results of the hazard model to estimate the impact of changes in claiming patterns on benefits.

Changing Early Claiming Patterns in Recessions

To understand whether specific groups of older workers were more likely to claim Social Security benefits early due to pandemic-related unemployment and how that compared to the Great Recession, the analysis estimates two hazard models – one for each recession period. We define recession period as when the unemployment rate is greater than 6 percent; this definition differs from the NBER's peak-to-trough period. The benefit of a hazard model over other regression models is that it makes it possible to continuously trace the decision to claim between age 62 and the FRA in response to changes in macroeconomic conditions. Hazard model results can then be used to predict counterfactual claiming behavior in the absence of high unemployment rates and estimate the effect of early claiming on monthly Social Security income and how that differs by socioeconomic and racial/ethnic groups.

The models estimate the probability of claiming early – between ages 62 and the FRA – conditional on not having claimed in prior months:

$$h_{ijt} \equiv Claim_{it} \mid S_{it} = \Phi(\beta_0 + \beta_1 U_t + \beta_2 X_{it} + \beta_3 X_{it} U_t + \beta_4 RelativeUIRR_{jt} + \beta_5 Earn_i RelativeUIRR_{jt} + \tau_t + \delta T_t + \nu_i \quad (1)$$

where S_{it} is the survival function, i.e., the probability that the individual had not claimed in any period prior to t.[11] The 3-month unemployment rate, denoted by U_t, captures contemporaneous labor market conditions during the COVID-19 Recession (or the Great Recession) and the preceding expansion. The model includes a vector of individual characteristics, denoted by X_{it}, which encompasses demographics, retirement assets and pensions, work history, earnings tercile, and information on spousal work history and age.[12] The demographic characteristics are

[11] We estimate the discrete-time hazard model with a probit regression, with indicator variables for each month since 62, τ, to allow for non-linear duration dependence. To reduce the number of covariates, the month fixed effects are grouped in two-month bins.

[12] X_{it} is a vector of individual characteristics that may or may not vary over time.

interacted with the unemployment rate to determine whether certain demographic groups may have responded differently to unfavorable economic conditions.

A unique aspect of COVID-19, relative to the Great Recession and other recessions, is the enormous expansion in unemployment insurance (UI) benefits, especially among low-wage workers. During prior recessions, older workers who lost their jobs may have been forced to claim early in order to cover regular expenses. In contrast, during the pandemic, older workers could instead choose to claim UI benefits and put off claiming Social Security. $RelativeUIRR_{jt}$ denotes a calculated pseudo unemployment replacement rate relative to pre-recession periods, where $UIRR_{jt}$ measures the maximum UI benefits relative to pre-62 earnings for each earnings tercile j over time t (see Box for a detailed discussion of UI replacement-rate calculations).[13] To capture the potential effect of increased generosity for different earnings groups, the model also includes an interaction $RelativeUIRR_{jt}$ and a dummy variable for being in the pre-62 earnings tercile $Earn_i$ (with high earners as the omitted group). In addition to age-month fixed effects, τ_t, a linear time trend, T_t, is included to reflect the downward trend in early claiming rates over time.[14]

We expect the marginal effects of unemployment rates on claiming to be positive. Based on administrative data from SSA and recent research by Goda et al. (2021) and Quinby Rutledge, and Wettstein (2021), the size of the COVID-induced unemployment spike on claiming should be smaller than that during the Great Recession. The coefficient β_3 informs on which group's claiming decisions are more sensitive to increases in unemployment rates. The β_4 coefficient shows the extent to which higher UI replacement rates might mitigate the effect of poor labor market conditions on early claiming, while β_5 measures how lower earners respond to changes in UI relative to the excluded group of high earners.

[13] We do not observe state of residence for our sample. Nationwide weighted averages of UI replacement ratios by month and earnings tercile are calculated based on earnings and state of CPS respondents, then merged back to the HRS. This measure is earnings- and time-specific.

[14] For both hazard models, the marginal effects, rather than the coefficient are reported because of the nonlinearity of the probit mode. The marginal effect is the derivative of the claiming probability with respect to a variable evaluated at each variable's mean. The Delta Method is used to calculate the standard errors. We also report interaction effects and standard errors that account for the nonlinearity.

The final step in this first part of the analysis compares coefficients from the COVID Recession hazard model to those from the Great Recession model to investigate potential differences in the characteristics of early claimers in the two recessions.[15]

Box. *Calculation of Pseudo UI Replacement Rates*

Substantially expanded UI benefits were a unique aspect of the COVID Recession that could have had a significant impact on the claiming behavior of older workers. To measure how UI generosity changed during the Great Recession and the COVID Recession, we construct pseudo replacement rates for workers in each tercile of the earnings distribution. These rates were defined as the ratio of the maximum possible UI benefit to annual wages for workers who are projected to be eligible, in each tercile in each state.[16] The state numbers were then averaged to get national measures.

Following Ganong, Noel, and Vavra (2020), we merge wages for our sample with data on the maximum and duration of UI benefits in each state compiled by the Employment and Training Administration, Department of Labor (DOLETA) and Farber, Rothstein, and Valetta (2015).[17] Illustrative calculations are shown in Tables A and B.[18] These calculations are done for each respondent for each month in our analysis.

During the COVID Recession, Congress passed the CARES Act, which provided an additional $600 in weekly UI benefits and lasted 18 weeks, which equates to $10,800 in additional benefits (see Table B, column 4). The pseudo UI replacement rate (UIRR), shown in column 5, is calculated by dividing the maximum annual UI benefits by workers' annual

[15] Estimating a different hazard model allows us to compare whether different demographic groups were more likely to claim early during COVID-19 relative to the Great Recession; however, it does not allow us to understand if the likelihoods are statistically different. Comparing the coefficients across regressions rather than within one regression allows for easier interpretation and exposition as it does not involve triple interaction terms. However, the hazard model that incorporates the triple interaction shows similar results.

[16] Before COVID, eligible workers are defined as those with sufficient earnings in the base period who are not self-employed and do not quit their jobs. During COVID, reflecting the major expansion in eligibility, *all* workers are considered eligible, except for those who quit their jobs.

[17] One limitation of our measure is that it captures the hypothetical scenario of claiming UI benefits for all workers instead of those who became unemployed. In the HRS, we only observe the current labor force status, which prevents us from identifying those who lost jobs and were choosing between claiming UI and retiring early.

[18] For simplicity, we assume that weekly UI benefits are equal to one half of labor earnings, capped by the maximum amount allowed in each state. The uncapped 50-percent replacement rate approximates the real-life replacement rates in most states (Ganong, Noel, and Varva 2020). The analysis uses the maximum weeks of benefits faced by hypothetical UI applicants as of each month, excluding ex-post extensions; this duration was longer during the Great Recession given the more protracted nature of that downturn and recovery compared to the COVID period.

earnings. By program design, low earners enjoy higher UI replacement rates pre-recession and during recession periods. The last column presents the final measure, Relative UIRR, which is intended to normalize UI generosity in a way that focuses on changes over time and is consistent among individuals in all earnings terciles. The formula is to divide the pseudo UI replacement rate in each month by that in a benchmark period pre-recession.[19]

Policy relief during the Great Recession raised the pseudo UI replacement rate proportionately across all earnings terciles by doubling the maximum duration of benefits for everyone (see Table A, column 5). In contrast, increases in UI generosity during the COVID Recession are more concentrated among low earners due to two unprecedented changes to the program. Low earners benefit disproportionately from expanded UI eligibility, as they are more likely to be gig workers or have insufficient base-period earnings; and the $600 increase in weekly benefits replaced a much greater proportion of earnings for this group. Our measure of UI generosity, the pseudo UI replacement rate, captures both effects. It accounts for the expanded eligibility during COVID by using the earnings of *all* workers – including those previously ineligible -- by tercile, in the calculations; and it directly measures the impact of the $600 weekly benefit increase. As a result, during the COVID Recession, the replacement rate increased more than sevenfold for those in the lowest earnings tercile, while changes for the other two terciles were similar to those experienced during the Great Recession (See Table B, column 5).

[19] January 2006 is chosen as the benchmark period before the Great Recession. Similarly, January 2016 is the benchmark period before COVID.

Table A. *Calculation of Average Pseudo Unemployment Insurance Replacement Rate Before and During the Great Recession, by Earnings Tercile*

Earnings tercile	National weighted mean			Calculations	
	Weekly earnings (1)	Weekly UI benefits (2)	UI benefit duration (3)	Annual UI benefits (2)*(3)	UI replacement rate (4)/(52*(1))
Pre-Great Recession, Average UR: 5.5%					
Low	$243	$123	26	$3,208	25.4%
Middle	683	336	26	$8,770	24.7
High	1,546	490	26	$12,780	15.9
Great Recession, Average UR: 8.9%					
Low	$272	$136	52	$7,042	47.9%
Middle	787	375	52	$19,408	46.1
High	2,134	511	52	$26,481	29.0

Note: Earnings and UI benefits are in 2020 dollars.
Sources: Authors' calculations based on U.S. Census Bureau, *Current Population Survey, Annual Social and Economic Supplement* (CPS ASEC) (2006 and 2009); U.S. Department of Labor, DOLETA Database (DOLETA); and Farber, Rothstein, and Valetta (2015).

Table B. Calculation of *Average Pseudo Unemployment Insurance Replacement Rate Before and During the COVID Recession, by Earnings Tercile*

Earnings tercile	National weighted mean				Calculations	
	Weekly earnings (1)	Weekly UI benefits (2)	UI benefit duration (3)	Additional UI benefits (4)	Annual UI benefits (2)*(3)+(4)	UI replacement rate (5)/(52*(1))
Pre-COVID Recession, Average UR: 4.2%						
Low	$303	$151	24	$0	$3,660	23.1%
Middle	825	$379	24	0	9,112	21.2
High	1,837	$497	25	0	12,228	12.8
COVID Recession, Average UR: 9.5%						
Low	$303	$157	36	$10,800	$16,513	172.5%
Middle	825	$394	37	10,800	25,199	56.0
High	1,837	$498	37	10,800	29,148	28.8

Note: Earnings and UI benefits are in 2020 dollars.
Sources: Authors' calculations based on CPS ASEC (2016 and 2020); and DOLETA.

The Cost of Early Claiming

Next, the results from the hazard models are used to quantify how the poor labor conditions during the COVID-19 Recession and the Great Recession impacted monthly Social Security benefits as a result of changing early claiming patterns. To calculate differences in monthly benefit levels, we first estimate early claiming patterns based on our hazard model estimates.[20] For each individual, the unconditional predicted probability of claiming in month *t* is a function of the predicted hazard: $\widehat{p_{it}} = \prod_1^{t-1}(1 - \widehat{h_{is}})\,\widehat{h_{it}}$. We also calculate the claiming probability, p'_{it}, for the expansionary scenario of low unemployment rate periods with regular UI programs. Based on p_{it} and p'_{it}, the earnings profile of each individual can be used to compute their expected Social Security benefits based on the distribution of claiming probabilities under the recession scenario and the expansionary scenario.[21] The difference between the recession and expansionary Social Security benefits directly reflects the impact of each recession on monthly Social Security income. If the COVID Recession, with its expanded UI, has smaller effects on early claiming than the Great Recession, older workers may not lose as much in monthly benefits as their counterparts a decade ago.

Results

As noted, we are interested in two questions: 1) How do the characteristics of COVID-induced early claimers differ from those induced to retire during the Great Recession? and 2) How did the COVID Recession affect the Social Security benefits of claimers relative to the Great Recession? The results first show how claiming behavior *changed* during each recession relative to the previous expansionary period and then compares the *changes* to identify the differential impact of the Great Recession and the COVID Recession.

Who Were the Early Claimers During the Great Recession?

The analysis begins by examining the characteristics of early claimers during the Great Recession. The first column of Table 1 presents summary statistics of the full sample of older

[20] Specifically, predicted "hazard", $\widehat{h_{it}}$, represents the probability of claiming given that individual *i has not* claimed Social Security retirement benefits by month *t*.

[21] We calculate an individual's Social Security monthly benefits, Ben_{it}, with regard to early claiming penalties for each month of claiming up to the FRA period *T*, and then compute the expected Social Security benefits under the recession scenario, $E[Ben_{it}] = \sum_1^T \widehat{p_{it}} * Ben_{it}$.

individuals between age 62 and their FRA, followed by two columns showing early claimers during the Great Recession ("bad times") and the prior expansionary period ("good times"). Overall, early claimers are more likely to be married and White. While early claimers do not necessarily have less non-housing wealth in retirement, they are more likely to be in the bottom tercile of the earnings distribution before they become eligible for Social Security. Some notable differences also exist between those who claimed under different macroeconomic conditions. Early claimers during the Great Recession were more likely to be female, have a college degree, still have a mortgage, belong in the middle wealth tercile, and have a DC plan. The increase in early claiming among college educated, middle wealth, and DC plan holders indicates that widespread unemployment during the Great Recession induced more advantaged groups to claim early.

The results from the hazard model provide a more precise comparison (see Table 2).[22] Since the question is how claiming behavior changed for different groups when unemployment rates increased, the discussion will focus on Table 3, where the relative likelihood of early claiming for different groups is calculated using the average unemployment rate and UI replacement rate during the good times before the Great Recession (January 2004-July 2008, when unemployment rates were below 6 percent), and bad times during the recession (August 2008-December 2010, when unemployment rates rose above 6 percent).[23] For reference, the average unemployment rate and UI replacement rate for the periods are shown in Table A in the Box.

The results show that the Great Recession induced some more advantaged workers to claim early. Workers with a college degree were less likely to claim during the good times but their claiming behavior was not discernibly different from that of workers without a college degree during the Great Recession (see Table 3). Homeowners, those with a working spouse, and those in the middle-wealth tercile became more likely to claim earlier during the Great Recession as well. The relative increase in early claiming among more advantaged groups highlights the severity of the Great Recession.

[22] The results are all part of the same model and are only separated by columns for formatting purposes.
[23] The relative likelihood of early claiming across different groups is the combination of their "baseline" likelihood of claiming during the good times, shown in the first column of the hazard model, and their sensitivity to poor labor market conditions during the bad times, shown in columns two and three of the hazard model, multiplied by the unemployment rate or UI replacement rate. To help with interpretation, we calculate out the average marginal effects for our readers.

Not surprisingly, low and moderate earners were slightly more likely to claim early than the highest-tercile earners (the omitted group) both before and during the Great Recession. The increased generosity of UI benefits did not seem to disproportionately affect early claiming for low earners during the Great Recession, as they experienced proportionately similar increases in UI replacement rates as those in the top earnings tercile (see Box Table A above).

Are Early Claimers During the Pandemic Different?

Having established how the Great Recession affected Social Security claiming behavior, the next step is to examine how the unique nature of the COVID Recession might have induced a different set of behavioral responses. As noted, a few forces at play differ from the Great Recession. First, unprecedented health risks brought by the pandemic could have pushed those who cannot work remotely out of the labor force and into early claiming. Second, income effects as a result of booming stock and housing markets may have encouraged early claiming among more advantaged and higher-wealth individuals. Third, generous UI benefits may have offset the impact of job losses and led to delayed claiming.

The summary statistics confirm the strong effects from health risks, booming markets dominate, and increased UI generosity among high-wealth households (see Table 4). As expected, early claimers during COVID are more likely to report poor health than before COVID. Early claiming also increased among workers with a DC plan and those in the top two earnings terciles, suggesting the income effects among more advantaged groups. The decline in early claiming among bottom-tercile workers points to the strong UI effects.

The hazard model, however, paints a more nuanced picture. Once again, columns (2) and (3) of Table 5 report induced effects on claiming to increases in the unemployment rate for different groups. However, the focus of the discussion is Table 6, which combines these induced effects with the baseline likelihoods for the average unemployment and UI replacement rate, during the COVID Recession (April 2020-December 2020) and preceding expansionary period (January 2016-March 2020). These figures represent the relative likelihoods of early claiming for different groups and are easier to interpret. For reference, the average unemployment rate and UI replacement rate for the periods are shown in Table B in the Box.

The characteristics of pandemic-induced early claimers look very different from their counterparts during the Great Recession. The behavior among more advantaged workers was

somewhat split. Workers who had a DC plan were less likely to claim early during the good times, however during COVID their claiming behavior was not discernibly different than those without a DC plan. This result contrasts with the Great Recession, when workers, who needed to replenish the depleted balances in their DC plans, were less likely to claim early than those without a plan. Workers with a college degree, however, another advantaged group, were less likely to claim early than those who are not college educated both before and during the COVID Recession. Interestingly, the claiming behavior of those in poor health was no more sensitive to high unemployment rates than healthy workers even though the COVID Recession was the result of a health crisis.

As noted, one major differentiating aspect of the COVID Recession was the unprecedented increase and expansion of eligibility for UI benefits. These expanded benefits were especially beneficial for low-wage workers, as the additional $600 in weekly benefits would replace a much higher share of earnings for low-wage workers than for higher-wage workers. Before and during the Great Recession, low earners were always more likely to claim early. During COVID, however, their overall likelihood of early claiming looked similar to high earnings due to enhanced UI benefits (see Table 6).[24] As expected, the impact of high unemployment rates on early claiming for racial minority groups and women was undetectable, potentially because the health effects or demands of caregiving and the UI effects canceled each other out.

How Much Do Early Claimers Lose in Social Security?

Changes in early claiming have implications for Social Security benefits, because those who claim early will receive an actuarially reduced benefit. During the Great Recession, certain groups were induced to claim early due to the poor labor market conditions, resulting in lower benefits. During the COVID Recession, however, due to the generous UI benefits, older workers in the lowest earnings tercile were the least sensitive to the spikes in unemployment rates, allowing them to receive Social Security benefits with smaller early claiming penalties.

[24] Given data limitations, results from the hazard model only reflect short-term effects of the pandemic on Social Security claiming decisions. It remains to be seen whether low earners keep delaying claiming after the additional UI benefits ended in September 2021.

The hazard model allows us to trace out for both the Great Recession and the COVID Recession the full claiming trajectory of older workers prior to their FRA under the good times, when unemployment was low and UI benefits were at normal levels, and bad times, when unemployment was high and UI relief expanded. The average unemployment rate and UI benefits used to estimate changes in early claiming patterns and Social Security benefits are the same as the averages of pre-recession periods.

The results show that high unemployment rates during the Great Recession led to a 0.8 percentage-point increase in claiming by the FRA (see Table 7).[25] The induced effect was strongest among workers in the middle earnings tercile. This roughly 1-percentage-point increase in early claiming probabilities, however, had a very minimal effect – roughly one-third of a percentage-point decrease – on monthly benefits relative to benefits claimed at the FRA (see Table 8).

In contrast, because of the generous support for the unemployed, the COVID Recession actually led to decreases in early claiming among lower earners (see Table 9). Workers in the top earnings tercile, however, were slightly more likely to claim before the FRA, relative to before the pandemic. However, it is important to keep in mind that while high earners were more likely to claim early relative to other earners, they were still much less likely to claim early relative to their counterparts during the Great Recession. For lower earners, generous UI benefits negated the impact of high unemployment rates, and the resulting declines in early claiming penalties led to slight increases in their monthly benefit levels (see Table 10).

Conclusion

In early 2020, the COVID Recession seemed like it would result in an increase in early claiming, similar to the Great Recession. However, pretty quickly, it turned out to have very different characteristics. The COVID Recession was spurred on by a health crisis and older workers were much more susceptible to the health impacts, potentially increasing the likelihood of early claiming, especially among workers who could not work from home. The subsequent lockdown and lack of caretakers meant that women were also more likely to leave the labor force and claim early. Similarly, unprecedented gains in the stock and housing markets could enable those with significant assets to retire early. Pushing against the health and wealth effects was the

[25] This finding is consistent with data from Social Security's *Annual Statistical Supplement.*

unprecedented expansion and generosity of UI payments. For low-wage workers, these benefits were often more generous than Social Security, reducing their need to claim earlier than they had intended if they lost their job.

The COVID Recession did not increase the relative likelihoods of early claiming among those in poor health. This result is surprising but consistent with the findings for the Great Recession. The other two findings were in stark contrast to what happened during the Great Recession. First, during the COVID Recession, the booming stock market enabled those with those with retirement assets to claim earlier than they did before the recession, whereas during the Great Recession workers remained in the labor market to replenish depleted balances. Second, generous UI benefits reduced early claiming among workers in the lowest two earnings terciles, whereas little change was evident during the Great Recession.

In terms of the overall impact, the competing effects of the COVID Recession more than canceled each other out and resulted in a slight decline in early claiming, whereas the percent of 62-year-olds claiming at 62 rose by 5 percentage points during the Great Recession. For low and middle earners, the generous UI benefits allowed them to claim slightly later than planned and enjoy slightly higher monthly Social Security benefits.

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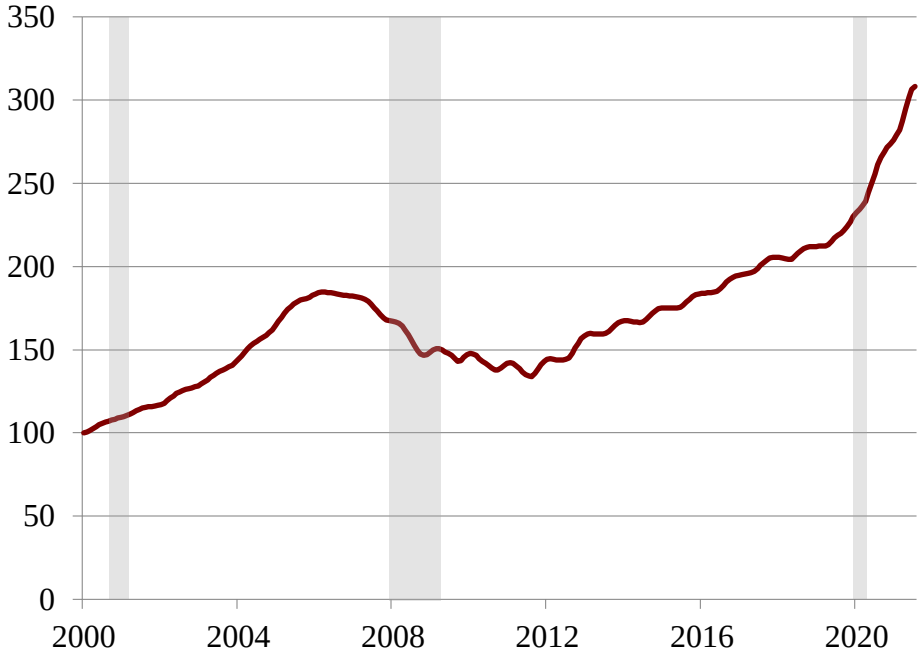
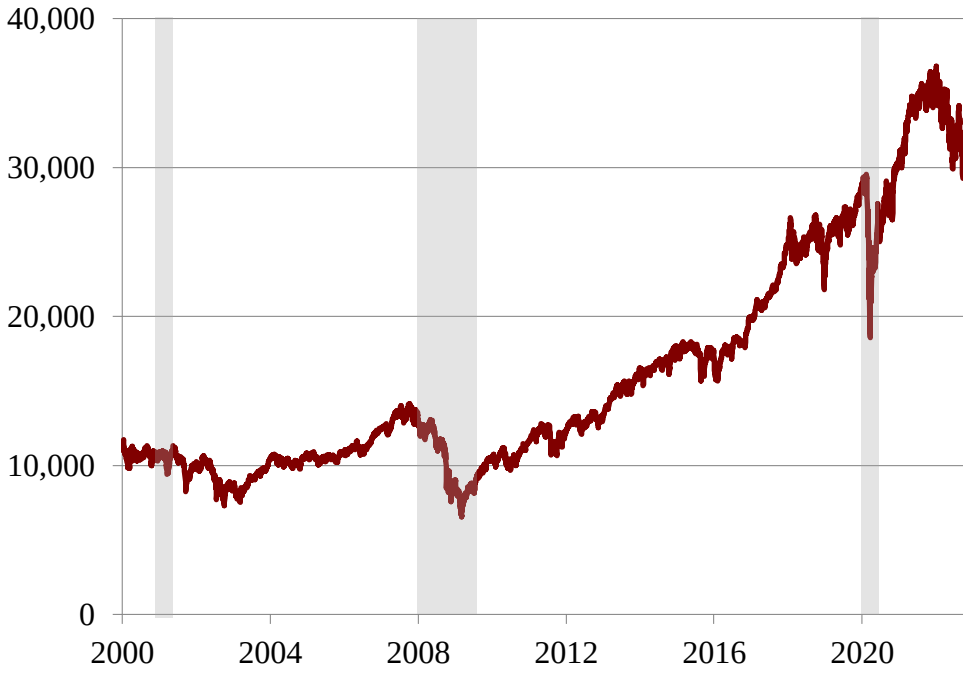
Figure 1. *S&P/Case-Shiller U.S. National Home Price Index, January 2000-June 2022*



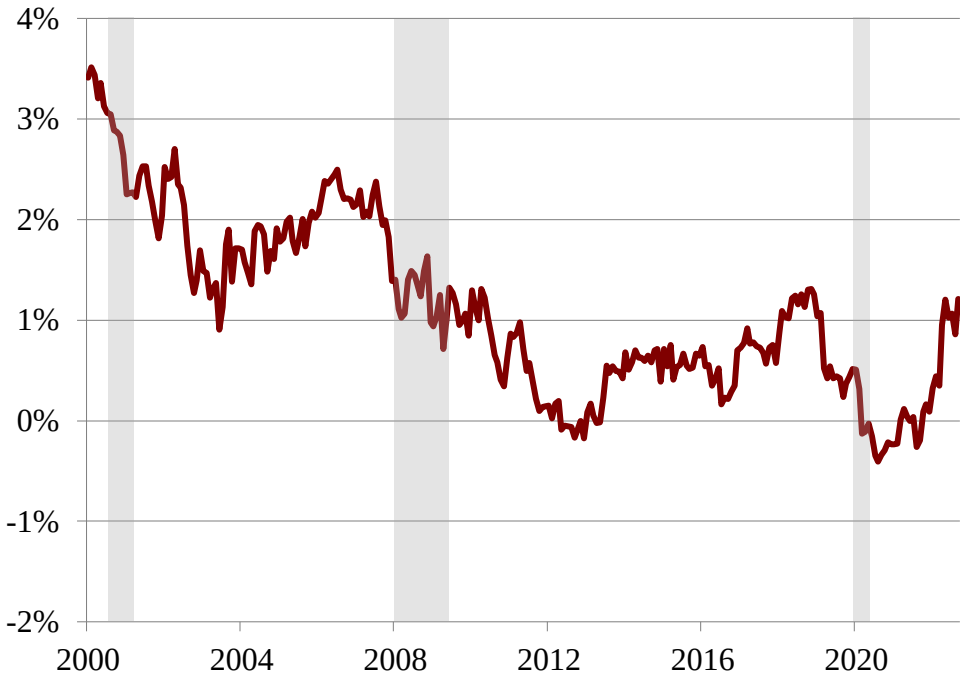
Notes: Index value of 100 in January 2000. Gray areas are recessions as defined by the National Bureau of Economic Research (NBER).
Source: Federal Reserve Bank of St. Louis (2022).

Figure 2. *Dow Jones Industrial Average, January 2000-September 2022*



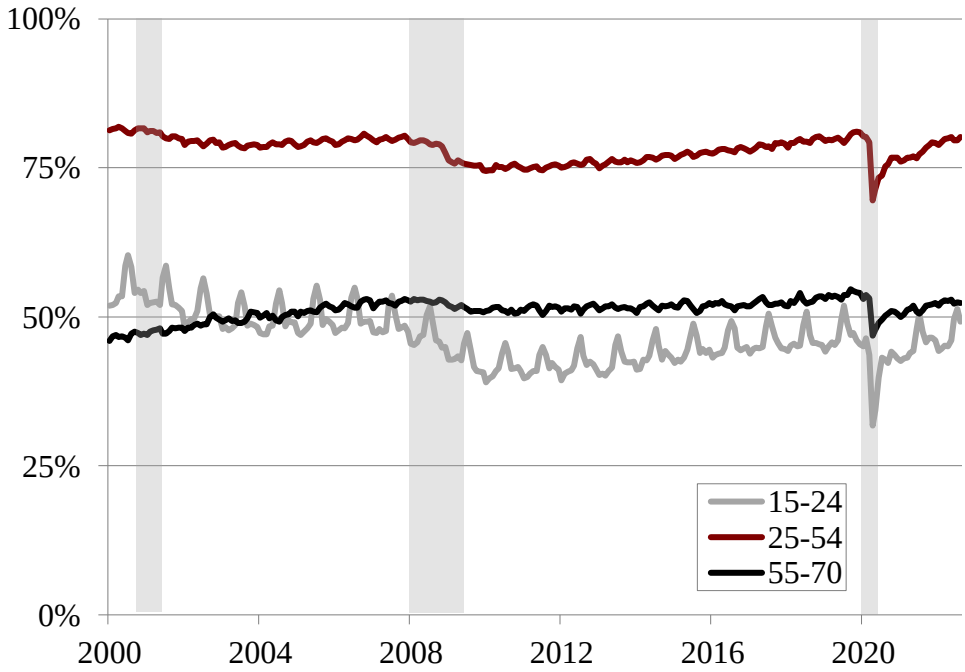
Note: Gray areas are recessions as defined by the NBER.
Source: Federal Reserve Bank of St. Louis (2022).

Figure 3. *Real Interest Rates, January 2000-September 2022*



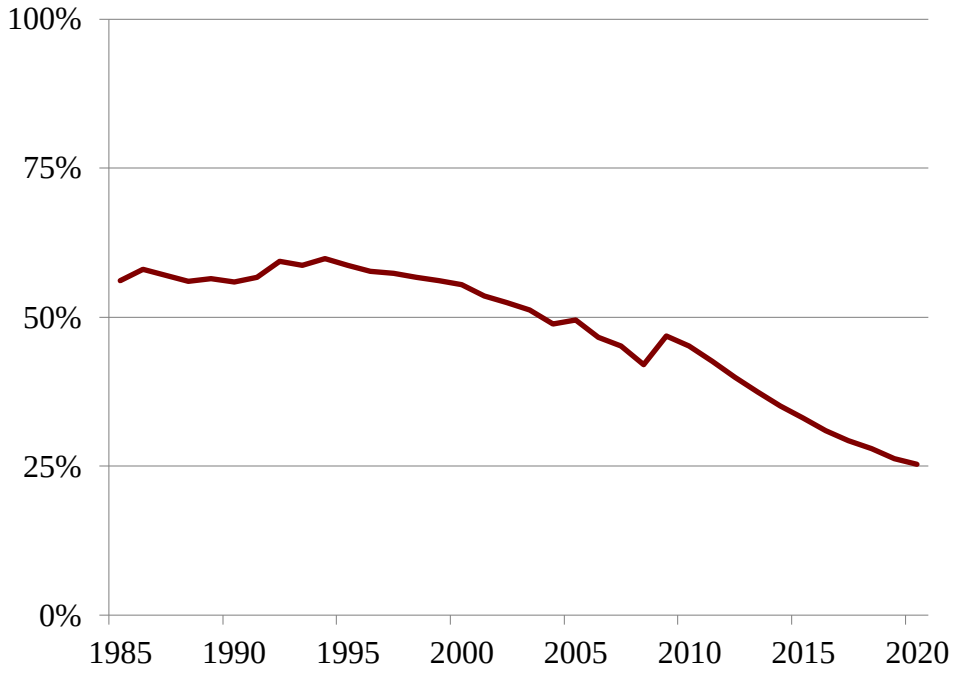
Note: Gray areas are recessions as defined by the NBER.
Source: Federal Reserve Bank of Cleveland (2022).

Figure 4. *Employment-to-Population Rate for Civilian Population, by Age, January 2000-August 2022*



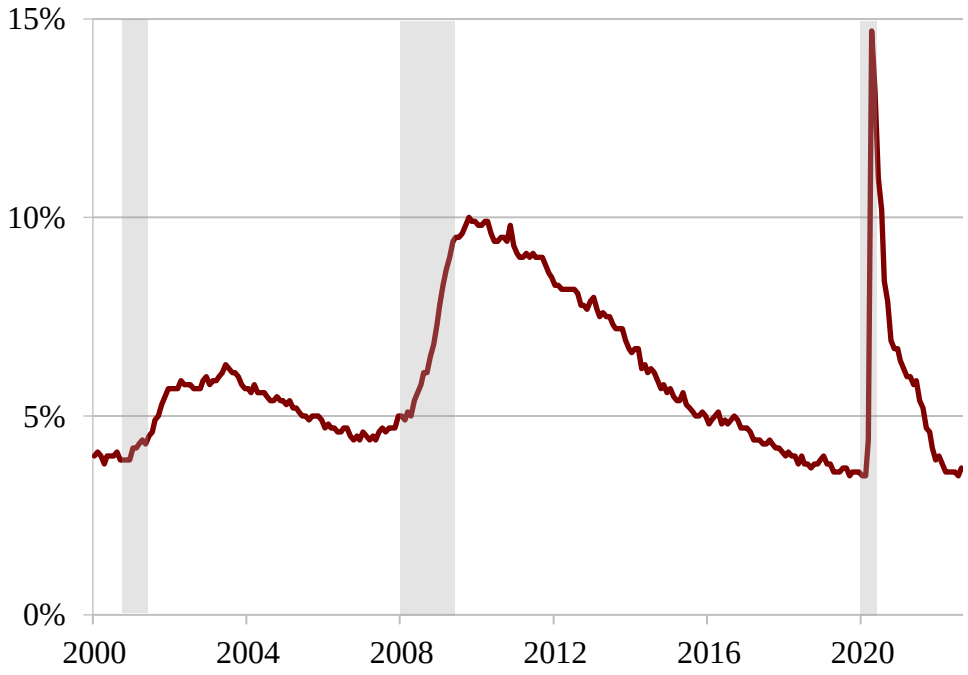
Note: Gray areas are recessions as defined by the NBER.
Source: Authors' calculations from U.S. Census Bureau, *Current Population Survey* (2000-2022).

Figure 5. *Percentage of Insured 62-year-olds Claiming Social Security Benefits at 62*



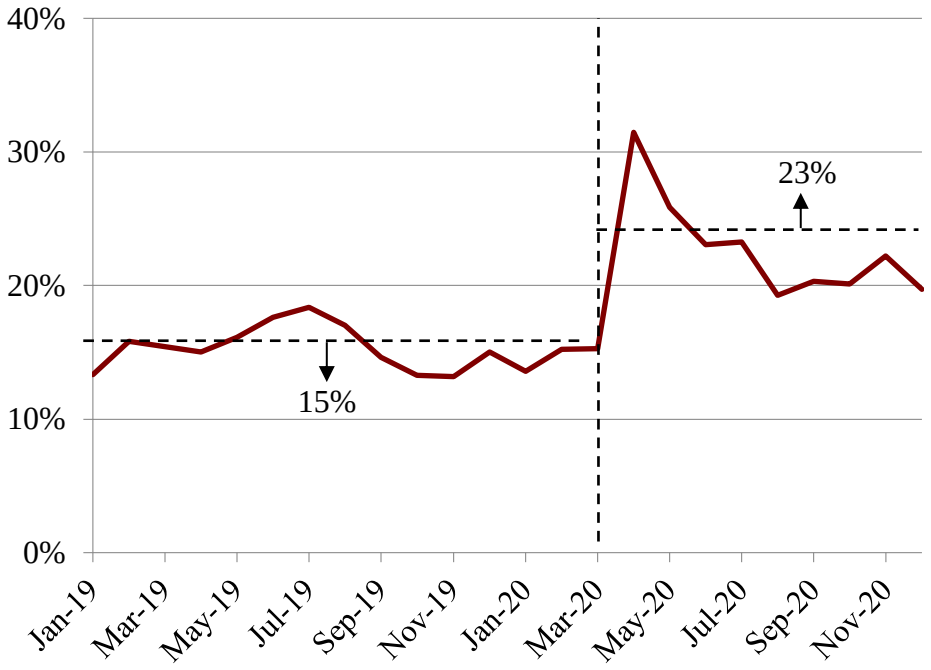
Source: Authors' update of Chen and Munnell (2021).

Figure 6. *Unemployment Rate, January 2000-August 2022*



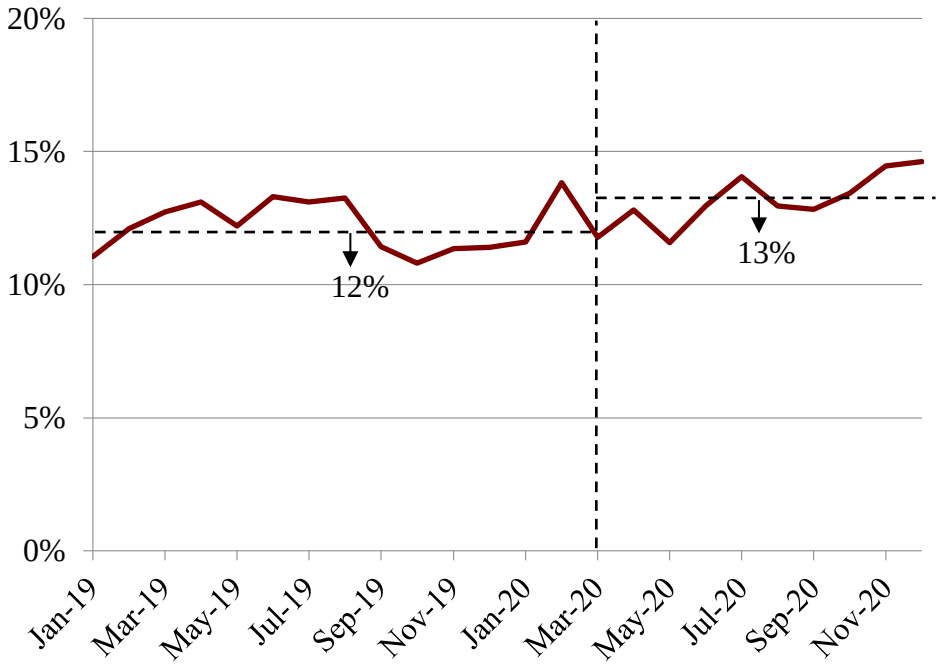
Note: Gray areas are recessions as defined by the NBER.
Source: Federal Reserve Bank of St. Louis (2022).

Figure 7. *Share of Workers Ages 55+ Leaving Their Jobs Over the Course of a Year, 2019-2020*



Note: The x-axis represents the end date of the one-year interval for each group of survey respondents.
Source: Quinby, Rutledge and Wettstein (2021).

Figure 8. *Share of Individuals Ages 55+ Transitioning to Retirement Over the Course of a Year, 2019-2020*



Source: Quinby, Rutledge and Wettstein (2021).

Table 1. *Summary Statistics of Social Security Early Claimers, 2004-2010*

	Full sample	Early claimers	
		Claimed during good times (UR<6%)	Claimed during bad times (UR>=6%)
Number of individuals between 62 and FRA	2,616	1,214	477
Female	57%	55%	61%
Married	75	77	79
Has college degree	28	23	27
Race: white	75	78	78
Has poor health	3	2	2
Homeowner	87	88	90
Has mortgage on primary residence	47	45	51
Median total non-housing wealth	$50,499	$48,750	$62,000
Total non-housing wealth: lowest tercile	33%	33%	33%
Total non-housing wealth: middle tercile	34	34	38
Total non-housing wealth: highest tercile	33	33	30
Has DC plan with current or last job	26	21	26
Ever had DB plan from employer	61	59	61
Spouse is working	43	44	46
Pre-62 earnings: lowest tercile	34	38	36
Pre-62 earnings: middle tercile	33	34	32
Pre-62 earnings: highest tercile	33	28	31

Notes: Calculations are based on the HRS. The sample is restricted to those who were eligible for Social Security retirement benefits between 2004 and 2010, never claimed before 2004, and responded to at least one wave of the survey after turning 62. Non-housing wealth is equal to the sum of all financial wealth (including non-imputed IRA and DC balance) less non-housing debt.
Source: Authors' calculations.

Table 2. *Hazard Model on Social Security Claiming between 62 to the FRA, 2004-2010*

	Main effects	Interacted with UR	Interacted with relative UIRR
3-month average unemployment rate (%)	-0.001		
	(0.001)		
Female	-0.006**	0.002	
	(0.002)	(0.001)	
Married	0.003	$4*10^{-4}$	
	(0.002)	(0.001)	
Has college degree	-0.011***	0.003*	
	(0.002)	(0.001)	
Race: white	0.007**	-0.001	
	(0.002)	(0.001)	
Self-reports poor health	-0.013**	0.002	
	(0.005)	(0.002)	
Homeowner	0.003	0.003+	
	(0.003)	(0.002)	
Has mortgage on primary residence	-0.001	-0.001	
	(0.002)	(0.001)	
Has DC plan with current work	-0.012***	0.001	
	(0.002)	(0.001)	
Ever had DB plan from employer	0.002	$1*10^{-4}$	
	(0.002)	(0.001)	
Spouse is working	0.002	0.002*	
	(0.002)	(0.001)	
Total non-housing wealth: lowest tercile	-0.003	0.004**	
	(0.003)	(0.001)	
Total non-housing wealth: middle tercile	0.003	0.003*	
	(0.002)	(0.001)	
Pre-62 earnings: lowest tercile	0.013***		-0.002
	(0.003)		(0.006)
Pre-62 earnings: middle tercile	0.006**		0.001
	(0.002)		(0.005)
Relative UIRR	0.012		
	(0.008)		
Linear year effects		Yes	
Fixed effects for age in months		Yes	
Number of individuals		2,616	
Number of individual-month observations		43,107	

Notes: The hazard model sample is restricted to those who were aged between 62 and FRA between 2004 and 2010, interviewed at least once in this period, and responded to at least one wave of survey after turning 62. Non-housing wealth is equal to the sum of all financial wealth (including non-imputed IRA and DC balance) less non-housing debt. UI replacement rates are calculated based on averages from the CPS for each income quintile, then divided by January 2006 replacement rates to measure relative program generosity over time. The model is interval-censored between 2004 and 2010. Average marginal effects are reported. Results are not weighted. Robust standard errors are reported in parentheses. + p<0.1, * p<0.05, ** p<0.01, *** p<0.001.
Source: Authors' calculations.

Table 3. *Average Marginal Effects on Claiming Hazard Between 62 and the FRA Before and After the Great Recession*

	Pre-Great Recession	Great Recession
Panel A. Measured at Unemployment Rates		
Female	-0.008***	-0.002
	(0.002)	(0.003)
Married	0.003	0.004
	(0.003)	(0.004)
Has BA or above	-0.015***	-0.005
	(0.002)	(0.003)
Race: white	0.008**	0.005
	(0.003)	(0.004)
Self-reports poor health	-0.016**	-0.007
	(0.006)	(0.009)
Homeowner	-0.001	0.009*
	(0.004)	(0.004)
Has mortgage on primary residence	$-1*10^{-4}$	-0.004
	(0.002)	(0.003)
Has DC plan with current work	-0.014***	-0.009**
	(0.002)	(0.003)
Ever had DB plan from employer	0.002	0.003
	(0.002)	(0.003)
Spouse is working	-0.001	0.008*
	(0.002)	(0.004)
Total non-housing wealth: lowest tercile	-0.007*	0.007+
	(0.003)	(0.004)
Total non-housing wealth: middle tercile	0.001	0.010*
	(0.003)	(0.004)
Panel B: Measured at Unemployment Rates and Relative UIRRs		
Pre-62 earnings: lowest tercile	0.014***	0.011*
	(0.003)	(0.005)
Pre-62 earnings: middle tercile	0.006*	0.006
	(0.002)	(0.004)

Notes: Robust standard errors are reported in parentheses. + p<0.1, * p<0.05, ** p<0.01, *** p<0.001.
Source: Authors' calculations.

Table 4. *Summary Statistics of Social Security Early Claimers, 2016-2020*

	Full sample	Early claimers	
		Claimed during good times (UR<6%)	Claimed during bad times (UR>=6%)
Number of individuals between 62 and FRA	1,782	799	51
Female	57%	56%	51%
Married	65	62	63
Has college degree	32	23	16
Race: white	55	51	49
Has poor health	2	2	10
Homeowner	73	71	71
Has mortgage on primary residence	38	36	39
Median total non-housing wealth	$45,000	$20,000	$25,000
Total non-housing wealth: lowest tercile	40%	44%	47%
Total non-housing wealth: middle tercile	32	34	37
Total non-housing wealth: highest tercile	28	23	16
Has DC plan with current or last job	36	30	43
Ever had DB plan from employer	50	47	45
Spouse is working	44	46	66
Pre-62 earnings: lowest tercile	36	43	25
Pre-62 earnings: middle tercile	33	35	47
Pre-62 earnings: highest tercile	30	22	27

Notes: Calculations based on the HRS. The sample is restricted to those who were eligible for SS retirement benefits between 2004 and 2010, never claimed before 2004, and responded to at least one wave of survey after turning 62. Non-housing wealth is equal to the sum of all financial wealth (including non-imputed IRA and DC balance) less non-housing debt.
Source: Authors' calculations.

Table 5. *Hazard Model on Social Security Claiming between 62 to the FRA, 2016-2020*

	Main effects	Interacted with UR	Interacted with relative UIRR
3-month average unemployment rate (%)	$-5*10^{-4}$		
	(0.001)		
Female	-0.002	$-4*10^{-4}$	
	(0.001)	(0.001)	
Married	-0.003	-0.001	
	(0.002)	(0.001)	
Has college degree	-0.009***	-0.001	
	(0.002)	(0.001)	
Race: white	0.001	$3*10^{-4}$	
	(0.002)	(0.001)	
Self-reports poor health	0.003	0.003	
	(0.006)	(0.003)	
Homeowner	0.002	0.001	
	(0.002)	(0.001)	
Has mortgage on primary residence	-0.001	$1*10^{-4}$	
	(0.002)	(0.001)	
Has DC plan with current work	-0.009***	0.001	
	(0.002)	(0.001)	
Ever had DB plan from employer	0.006***	$-1*10^{-4}$	
	(0.002)	(0.001)	
Spouse is working	-0.001	0.002*	
	(0.002)	(0.001)	
Total non-housing wealth: lowest tercile	0.002	$6*10^{-4}$	
	(0.002)	(0.001)	
Total non-housing wealth: middle tercile	0.004+	$-2*10^{-4}$	
	(0.002)	(0.001)	
Pre-62 earnings: lowest tercile	0.006*		-0.006
	(0.003)		(0.005)
Pre-62 earnings: middle tercile	0.006*		-0.009
	(0.002)		(0.006)
Relative UIRR	$3*10^{-4}$		
	(0.002)		
Linear year effects		Yes	
Fixed effects for age in months		Yes	
Number of individuals		1,782	
Number of individual-month observations		40,257	

Notes: The hazard model sample is restricted to those who were aged between 62 and FRA between 2016 and 2020, interviewed at least once in this period, and responded to at least one wave of survey after turning 62. Non-housing wealth is equal to the sum of all financial wealth (including non-imputed IRA and DC balance) less non-housing debt. UI replacement rates are calculated based on averages from the CPS for each income quintile, then divided by January 2006 replacement rates to measure relative program generosity over time. The model is interval-censored between 2004 and 2010. Average marginal effects are reported. Results are not weighted. Robust standard errors are reported in parentheses. + $p<0.1$, * $p<0.05$, *** $p<0.001$.
Source: Authors' calculations.

Table 6. *Average Marginal effects on claiming hazard between 62 and the FRA before and after the COVID Recession*

	Pre-COVID Recession	COVID Recession
Panel A. Measured at Unemployment Rates		
Female	-0.002	-0.004
	(0.002)	(0.005)
Married	-0.002	-0.010+
	(0.002)	(0.006)
Has BA or above	-0.009***	-0.015***
	(0.002)	(0.004)
Race: white	0.001	0.002
	(0.002)	(0.005)
Self-reports poor health	0.001	0.022
	(0.006)	(0.019)
Homeowner	0.001	0.006
	(0.002)	(0.005)
Has mortgage on primary residence	-0.001	$-4*10^{-4}$
	(0.002)	(0.005)
Has DC plan with current work	-0.009***	-0.004
	(0.002)	(0.005)
Ever had DB plan from employer	0.006***	0.005
	(0.002)	(0.005)
Spouse is working	-0.002	0.010+
	(0.002)	(0.005)
Total non-housing wealth: lowest tercile	0.002	0.005
	(0.002)	(0.007)
Total non-housing wealth: middle tercile	0.004+	0.003
	(0.002)	(0.005)
Panel B: Measured at Unemployment Rates and Relative UIRRs		
Pre-62 earnings: lowest tercile	0.007***	-0.064
	(0.002)	(0.112)
Pre-62 earnings: middle tercile	0.007***	-0.007
	(0.002)	(0.010)

Notes: Robust standard errors are reported in parentheses. + p<0.1, *** p<0.001.
Source: Authors' calculations.

Table 7. *Simulated Percentage-Point Change in Early Claiming Probabilities During the Great Recession, by Earnings Tercile*

	Before FRA
Overall	+0.8%
Lowest	+0.5
Middle	+0.9
Highest	+1.1

Source: Authors' calculations.

Table 8. *Simulated Percentage-Point Change in Monthly Benefits Relative to Benefits Claimed at the FRA, During the Great Recession, by Earnings Tercile*

	Average change in benefits
Overall	-0.3%
Lowest	-0.1
Middle	-0.3
Highest	-0.3

Source: Authors' calculations.

Table 9. *Simulated Percentage-Point Change in Early Claiming Probabilities During the COVID Recession, by Earnings Tercile*

	Before FRA
Overall	-0.2%
Lowest	-0.3
Middle	-0.4
Highest	+0.03

Source: Authors' calculations.

Table 10. *Simulated Percentage-Point Change in Monthly Benefits Relative to Benefits Claimed at the FRA, During the COVID Recession, by Earnings Tercile*

	Average change in benefits
Overall	+0.02%
Lowest	+0.04
Middle	+0.04
Highest	-0.02

Source: Authors' calculations.

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