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MRDRC WP 2023-468

UM22-07

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September 2023

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Acknowledgements

The research reported herein was performed pursuant to a grant from the U.S. Social Security Administration (SSA) funded as part of the Retirement and Disability Research Consortium through the University of Michigan Retirement and Disability Research Center Award RDR18000002-04. The opinions and conclusions expressed are solely those of the author(s) and do not represent the opinions or policy of SSA or any agency of the federal government. Neither the United States government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of the contents of this report. Reference herein to any specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply endorsement, recommendation or favoring by the United States government or any agency thereof.

The Effect of the COVID-19 Pandemic on Expected Labor Supply

Abstract

The pandemic led to a sharp increase in unemployment, which, in previous literature, has been associated with a decline in the labor supply of older individuals: Unemployed persons retire rather than attempt to return to employment. But government programs softened the impact of unemployment during the pandemic. Further, the pandemic changed the amount and nature of work, particularly job flexibility, which may permit later retirement. Thus, the overall effect on future or longer-term labor supply is ambiguous. To resolve that ambiguity, we analyzed data from the Health and Retirement Study on the subjective probability of working at age 62 and several other ages as observed prior to the pandemic and in 2020. When compared with expectations from 2018, we found little if any decline in the expectations of working at age 62 or 65 but more declines in the expectation of working at age 70. The interpretation would be that the pandemic will have no long-run impact on labor supply at typical retirement ages (62 or 65), but that it may lead to an end in the long increase in working past age 70. The certainty of this interpretation, however, is reduced by the dynamic nature of the pandemic: Expectations of future work declined during the course of the survey year, suggesting that the average over the entire year is not representative of post-pandemic expectations. Expectations decreased for Black and Hispanic persons, suggesting that the differences in retirement ages of white persons and of Black and Hispanic persons may continue to increase.

Citation

Hudomiet, Péter, Michael D. Hurd, and Susann Rohwedder. 2023. “The Effect of the COVID-19 Pandemic on Expected Labor Supply.” Ann Arbor, MI. University of Michigan Retirement and Disability Research Center (MRDRC) Working Paper; MRDRC WP 2023-468.
https://mrdrc.isr.umich.edu/publications/papers/pdf/wp468.pdf

Introduction

The COVID-19 pandemic's uncertain risks of infection, hospitalization, and even mortality affected many aspects of life, such as the loss of social contact due to the lockdowns. But the labor market was especially affected. For many, the nature of work changed. Some employees could or even were required to work from home. This shielded them from the worst risk of infection and provided job flexibility to accommodate shocks such as school closings. At the same time, isolation from work caused a loss of social context, which has been associated with worsened health, and, in some cases, reduced the meaning derived from work, possibly affected mental health. Other employees were forced to continue to work on-site and bear the attendant risk of infection. Such employees were disproportionately less educated and, as the pandemic progressed, more likely to become unemployed (Mongey et al. 2021). For everyone, economic uncertainties increased.

Unemployment had a direct impact on the economic position for many, especially those who experienced long-term unemployment. Low-wage workers were particularly likely to have been unemployed (Dalton et al. 2021; Chetty et al. 2023; Vavra 2021).

Uncertainty about employment security likely increased even among those who remained employed. However, some or most of the actual harm from unemployment was offset by government programs, such as the CARES act (Goda et al. 2023), which repaired damaged finances or even resulted in windfall gains for some (Ganong et al. 2020).

The pandemic led, in some cases, to a change in the nature of work. Being able to work from home or having greater job flexibility is highly valued by workers (Maestas

et al. 2023, Hudomiet et al. 2021. All else equal, an increase in these job attributes should delay retirement. But the pandemic damaged health in ways that are not well understood, such as the prevalence of long COVID-19 (Becker et al. 2021). Worse health would lead to earlier retirement.

The first year of the pandemic did lead to earlier retirement, especially among those older than 65 (Davis 2021). In the longer run, the effects are less certain: The large pandemic shock could lead to a change in future retirement behavior through several channels such as the health of the workforce, utility derived from work, income and wealth, and family connections that could variously lead to earlier or later retirement. The objective of this paper is to analyze evidence about longer-run retirement derived from expectations about future labor supply, specifically the subjective probability of future employment as reported by individuals.

Since 1992, the Health and Retirement Study (HRS) has asked individuals about their expectations of future employment at age 62 or other target ages in the form of subjective probabilities of working at those ages. Subjective probabilities predict well both future population employment and individual variation within a population and have several advantages for analysis over actual observed retirement behavior. They reveal within-person changes in the likelihood of future employment in response to observable events such as the Great Recession or the pandemic: We cannot directly study within-person changes in actual retirement. Subjective probabilities allow assessment at the time of a shock as to whether policy changes are needed. Actual retirement ages would provide at best an assessment years in the future: yet, policy change may be required in the nearer term. Further, intervening events make it difficult to observe the effects of a

shock on actual retirement. Subjective probabilities are scaled so that their averages can be compared with the frequency of population outcomes, allowing study of quantitative differences by race and ethnicity, SES, and job characteristics.

This project analyzed the effect of the COVID-19 pandemic on individual expectations regarding future labor supply. We compared expectations about future work in the form of subjective probabilities as elicited in the HRS 2018 and 2020. We found that, on average, expectations about future work at age 62 or 65 changed very little from the time of the 2018 HRS survey to the time of the 2020 HRS survey. However, the pandemic was not a static event: Many aspects of people's lives changed during its course so expectations elicited in a household survey would likely vary by when the survey interview was conducted. Indeed, we found that expectations about future work during the first part of the 2020 survey year were little changed from or possibly higher than expectations in 2018 measured over the same people. But as the year progressed, expectations declined relative to 2018 so by the end of the 2020 survey period they were 3 to 4 percentage points lower than they were in 2018. This progression naturally leads to speculation that, were the entire sample interviewed in late 2020 or early 2021, average expectations would have been lower than in 2018.

We found that across all respondents, expectations about working at age 70 declined. This may signal the end of a long upward trend in working past typical retirement ages. We also found differences by race and ethnicity. Black persons and persons of Hispanic ethnicity exhibited reduced expectations of future work relative to white persons. This may signal an increase in the gap in retirement age among those groups.

Data

Our main analytical tool for finding the effects of COVID-19 on future employment is a series of questions on the subjective probability of working to certain target ages. This question, asked in the HRS for many waves, states:

> *Thinking about work in general […], what do you think the chances are that you will be working full-time after you reach age 62?*

with additional target ages of 65 and 70. We call the resulting probabilities P62, P65, and P70. We also use P70a on the chances of doing any work, not just full-time work, after reaching age 70. P62 and P65 have been the subject of considerable research: they are highly predictive of actual work effort in longitudinal follow-up surveys (Hurd 2009; Kézdi and Shapiro 2022; Szinovacz et al. 2014).

Empirical strategy

We have characterized the pandemic as an event, but its effects varied sharply over the HRS' field period (March 2020 to May 2021). Figure 1 shows the monthly unemployment rate from January 2007, prior to the Great Recession, to June 2023. In February 2020, immediately prior to the onset of the pandemic, the unemployment rate was 3.5%. It increased to 4.4% in March and 14.7% in April. It then gradually declined but was still 6.9% in October 2020 and 5.8% in May 2021. With such a shock to the unemployment rate and the overall uncertainty in the economic environment, we would anticipate that expectations about future work would change but the change might vary by month of interview due to the large month-to-month change in unemployment. Therefore, we sought to assess change from 2018 to 2020 in P62, P65, P70, and P70a at the population level (average values in the population) and at the individual level

(average change among individuals observed both in 2018 and 2020) and to relate these changes to the month of the interview.

Season of interview and selection into interview

Because of the rapidly changing nature of the pandemic and the national labor market, we anticipated that persons interviewed in the early part of the pandemic would have different expectations from those interviewed later. We expected in particular that peaks in pandemic infection and mortality would affect expectations of future work. For example, COVID-19 mortality in the second week of January 2021 was 6.8 times that in the fourth week of June 2020 (Centers for Disease Control and Prevention 2023).

To assess how expectations might vary by time of interview, we divided the HRS sample for the 2020 wave into five "seasons." These were

1. Spring 2020 (March to May)
2. Summer 2020 (June to August)
3. Fall 2020 (September to November)
4. Winter 2020 to 2021 (December to February)
5. Spring 2021 (March to May)

We wanted to find changes in P62, P65, P70, and P70a between 2018 and 2020 by season of interview. However, a coding error in the survey instrument led to a skipping of P65 and P70 (but not P62 or P70a) in 2020 among workers until about June 1 when the error was corrected. Workers have systematically higher rates of P65 and P70 than nonworkers, so their omission would bias downward population estimates of P65 and P70 based on data collected in March to May.

A possible solution to this problem would be to use only the sample interviewed from June 2020 through the end of the sample period. If the season of interviews were random with respect to employment status, the analysis sample would be reduced but we could obtain unbiased estimates of P65 and P70. To assess any potential bias, we studied selection into an interview as a function of season and survey wave: We ask whether certain types of persons (particularly workers) are more or less likely to be interviewed according to the season in 2018 and 2020.

Figure 2 shows P62 in 2018 and 2020 by season. In 2018, P62 increased with season. There is no obvious economic reason for the increase: The unemployment rate had been declining slowly in 2017 but was stable in 2018, as shown in Figure 3. More likely, the increase in P62 in 2018 was due to selection: Those employed (and with higher P62) were more difficult to interview, and so it took repeated attempts to schedule and complete an interview. This meant that those who were employed were more likely to be interviewed in later seasons.

We addressed this issue by finding the dependence of employment rates on the interview season. As a benchmark, we did this for the 2018 wave when economic circumstances were steady. In Figure 4, the 2018 bars show the frequency of working in wave 14 (HRS 2018), classified by the wave 14 interview season. The 2020 bars show similar frequencies, with seasons classified by the HRS wave 15 interview season (2020). With respect to the wave 14 bars, if there were no seasonality in selection into interview, we would expect flat frequencies of working over the seasons because of unchanging unemployment as shown in Figure 3. Instead, the increase, which is rather substantial, indicates that selection into interview season in 2018 related to current labor

market status. As we suggested above, those not in the labor force were more likely to be easily interviewed and so appear in an earlier season.

In the 2020 wave, the rate of employment increased in a similar manner for about six months then diverged from the 2018 levels, likely due to a combination of sharply increasing unemployment and differing selection because of the difficulties of interviewing caused by the pandemic and economic circumstances. An implication of selection by season is that the missing population data on P65 and P70 are likely not random. Thus, there is no obvious way to compare 2018 and 2020 population-level values of P65 and P70.

Our conclusions about selection are that average P65 and P70 in 2020 calculated over the sample with responses would overrepresent a part of the population with below-average P65 and P70. Weighting would not solve the problem because of hypothesized changes in them as the pandemic progressed. Because of the difficulties in classifying by interview season, we based most results on within-person or longitudinal comparisons. That is, rather than population averages of P65 and P70, we studied them among those interviewed in both 2018 and 2020. However, within-person comparisons of P62, P65, P70, and P70a by season overcome many of the selection problems, but must be interpreted in the light of differential selection into interview according to employment status and stage of the pandemic.

Results

Table 1 shows the average subjective probability of working full-time at target ages 62, 65, and 70; the average subjective probability of working any amount at age 70 in 2018; and the values of P62 and P70a for 2020. While P65 and P70 suffered the

coding error noted above, P62 and P70a were asked of all age-eligible respondents in the 2020 wave, permitting population comparisons over time. The table shows little difference in average P62 between 2018 and 2020, but a slightly larger difference in P70a.

Figure 5 shows the average within-person change among individuals classified by their interview season in 2020. P62 was higher in 2020 in spring and summer, about the same in summer and lower in winter and the following spring. The overall change is practically zero. Although the pattern suggests that, as the interview year progressed, individuals became more pessimistic about future labor supply, none of the changes is statistically significant.

The pattern of the change in P65 is similar to that in P62, and the increase for summer is statistically significant at the 5% level. Note the lack of observations for Spring 2020 because of the coding error.

P70 declined in all seasons and overall (statistically significant at the 5% level). Although the absolute decline is modest, it is quite pronounced when considered against the base level, which was 11% in 2018. The overall reduction in P70a was about 1.6 percentage points (statistically significant at the 5% level). The reductions in P70 and P70a perhaps signal the discouragement of older workers who were particularly vulnerable to COVID-19 infection.

The subjective probabilities of future work show a consistent pattern of a reduction in expectations of working relative to 2018 as the pandemic progressed. The decrease in Spring 2021 is particularly large, and may have been influenced by the very large spike in mortality in early 2021. We cannot assess whether those interviewed

earlier would have exhibited such a decline had they been interviewed in Spring 2021. We would hypothesize, however, that the early interviews may have shown a decline had they been interviewed later, when more was known about the pandemic's seriousness and duration. Under this hypothesis, the average population change in P62 (Table 1) would have exhibited a much larger drop than the observed 0.3 percentage points.

Variation by personal characteristics: sex, race, and ethnicity

The pandemic affected groups differentially for many reasons, but the labor market experience across identifiable groups was an especially important difference because of the variation in the employment type across groups and of employers' differing responses (Cortes and Forsythe 2023). An important distinction was the ability to work from home. We anticipated that future work expectations would differ by sex and race and ethnicity because of different labor market experiences for these groups and other differential impacts of the pandemic.

We assessed longitudinal (within-person) change in the probability of future work. Table 2 shows that there was little overall change in P62 or P65 but somewhat larger change in P70. For P70a, working any amount at age 70, the decline is 1.6 percentage points, or a relative change of 7% on a base of about 22 percentage points. All groups substantially reduced expectations of working full-time at age 70 and even larger reductions for any work. By all four measures, men reduced their expectations more than women. Black persons reduced expectations at all target ages. Hispanic persons reduced their expectations for any work at age 70 by five percentage points.

Subjective survival

A possible reason for the reduction in P70 in the latter phase of interviewing (Spring 2021) is the high levels of pandemic illness and mortality in the first months of 2021. This could lead respondents to anticipate accelerated declining health and reduce the scope for working past the normal retirement age. HRS does not have a measure of anticipated future health declines, but it does have a consistent measure strongly related to health, subjective survival. Specifically, since 1992 it has asked respondents younger than 65:

What is the percent chance that you will live to be 75 or more?

We anticipated that subjective survival would decrease because of the high mortality from COVID-19 and reduced access to health care services, and that the reduction would be related to interview season, particularly because of variation in observed mortality over the course of the pandemic.

Figure 6 shows P75, the subjective probability of survival to age 75 in 2018 and 2020 where the sample is the same in both years. There is no overall difference between 2018 and 2020 and little variation in P75 by season of interview.

Actual mortality rates increased differentially during the pandemic by race and ethnicity, so we would expect variation in survival expectations by sex and race and ethnicity. Figure 7 shows within person (longitudinal) change. On average, we observe no change in P75. The only notable change is among Black persons whose P75 declined by 2.1 percentage points, a relative decrease of 3% on a base of 65.2 percentage points.

Actual and expectations of Social Security receipt

Unemployment at older ages is associated with Social Security and pension claiming (Coile and Levine, 2011; Mahmoudi, 2023), and so we would expect to see an increase in the fraction of the population receiving those benefits. Further, the turmoil and high unemployment induced by the pandemic may have affected perceptions of the stability of pensions and of the Social Security system. These perceptions, in turn, may have led to earlier claiming of benefits and to changed expectations about future benefits.

In Table 3, lines 1 and 2, we show the percentage of individuals receiving defined benefit pensions and the percentage receiving Social Security benefits in 2018 and 2020. The proportions of respondents receiving these was lower in 2020 than in 2018. The proportion receiving Social Security benefits decreased 1.2% (not statistically significant). This suggests that unemployment did not lead to early claiming of Social Security benefits, possibly because of the increased generosity of unemployment benefits.[1] The percentage of the relevant population expecting future receipt of Social Security income decreased but not by a statistically significant amount.

Comparison with the Great Recession

We sought to compare the effects of the shock caused by the pandemic with those caused by the Great Recession. We expected some similarities because of the

[1] Davis (2021) suggests that part-time workers rather than full-time workers most frequently left employment; but they were already drawing Social Security benefits, so that claiming did not increase.

high unemployment, but also some differences due to the underlying causes and the difference in policy response (Goda et al. 2023).

HRS wave 9 entered the field in March 2008. The unemployment rate had been increasing slowly before then, but the first noteworthy monthly increase was in May 2008 when it increased to 5.4% from 5.0% in April. It continued to increase until October 2009 when it reached 10%. House prices and the stock market both peaked prior to the 2008 HRS wave and continued to decrease during the field period. The sharp drop in the stock market in the Summer 2008 and the collapse of Lehman Brothers in September contributed to a sense of economic distress.

Figure 8 shows average P62 among 55- to 61-year-old respondents from wave 8 (2006) to wave 15. The most notable change is the increase from 2006 to 2008. While attribution is difficult due to the rapidly changing economic environment, it is likely that several factors played a role. Unemployment, at least at the beginning of the field period, had increased only modestly since 2006: For example, in July 2006 it was 4.7% versus 5.1% in March 2008. The stock market had declined by the beginning of the field period (although the largest declines were in the future); but, because stock holdings are highly concentrated, a large majority of households would not have had significant losses. By March 2008, the Case-Schiller housing price index had fallen about 10% from its peak in 2006. Thus two effects had roughly balanced: The stock and housing wealth losses led to an expectation of later retirement to compensate for the losses, yet unemployment was still relatively modest leading people to believe that remaining employed would not be difficult.

Following the very large increase in unemployment in 2009, P62 was about two percentage points lower in HRS 2010, and did not reach its 2008 level again until 2016, reflecting the extended recovery time from the recession.

In contrast with the effects of the Great Recession, we found almost no change in P62 from 2018 to 2020. Subject to the caveats about the interview season, this suggests that any long-term effect of the pandemic on employment at age 62 will be minimal. We did find, however, that the subjective probability of working at ages past the traditional retirement ages decreased substantially between 2018 and 2020, particularly for Black and Hispanic persons.

Discussion and conclusions

The COVID-19 pandemic inflicted a large shock to many aspects of life, particularly to the labor market. But the shock was heterogeneous both in its effects and in the populations affected. For example, the health risk associated with work greatly increased among those whose jobs required workplace attendance and or close contact with others. At the same time, health risks may have been reduced for those who worked remotely. Unemployment was unequally distributed, with long-term unemployment increasing substantially even as the unemployment rate fell following its peak in April 2020. Government policy buffered the economic impact of unemployment and of the pandemic on the low-income population, leading in some cases to a build-up of economic resources. Social contacts were disrupted, particularly for single persons living under lockdown. Stress and anxiety resulting from the pandemic affected extended families as well. Mortality risks increased substantially but unevenly.

It is natural to expect that the pandemic shock would induce changes in expectations: In the years following the Great Recession, expectations about future work declined and, given the greater disruption of the pandemic, we might have expected still larger changes from 2018 to 2020. The heterogeneity of the pandemic's effects, however, made it difficult to anticipate even the direction of the change because some of the effects could be to increase labor supply and some to reduce labor supply. For example, persons who became unemployed might need to work longer to compensate for lost earnings, and hence postpone retirement; but some persons would expect heightened difficulty in becoming re-employed at older ages because of the relatively higher unemployment rates in 2020 or because of worsened health leading to earlier retirement. Some individuals would feel both effects.

We found little change in P62 and P65. Because 62 and 65 span the ages at which most workers retire, this suggests that the pandemic will have little effect on long-term total labor supply at older ages. Our confidence in this conclusion is reduced by the variation in the subjective probabilities by interview season. Although imperfect because of selection, Figure 5 is consistent with a more pessimistic interpretation. As the pandemic deepened, expectations of future work declined. Even though the population average of expectations changed very little, the full force of the pandemic only became clear later in 2020 and 2021, by which time most of the interviewing had been completed. Were the entire sample interviewed in late 2020, average P62 might have been lower and then we would be more pessimistic about future employment. Further, the figure suggests that expectations likely continued to evolve into 2021 and

2022. A fuller picture on which to base forecasts of future labor supply will need to be based on later data gathered further from the peak of the pandemic.

With respect to differences by sex, the most reliable measure, P62, increased modestly among women, but decreased among men. This suggests that the long-term trend of increasing retirement ages of women relative to men will continue. Both for Black and Hispanic persons, we observed reductions in P65 and P70. This suggests the differences in retirement age among white, Black, and Hispanic persons may continue to increase. We found that P70 decreased, suggesting that the long-term increase in working at age 70 and beyond may be coming to an end.

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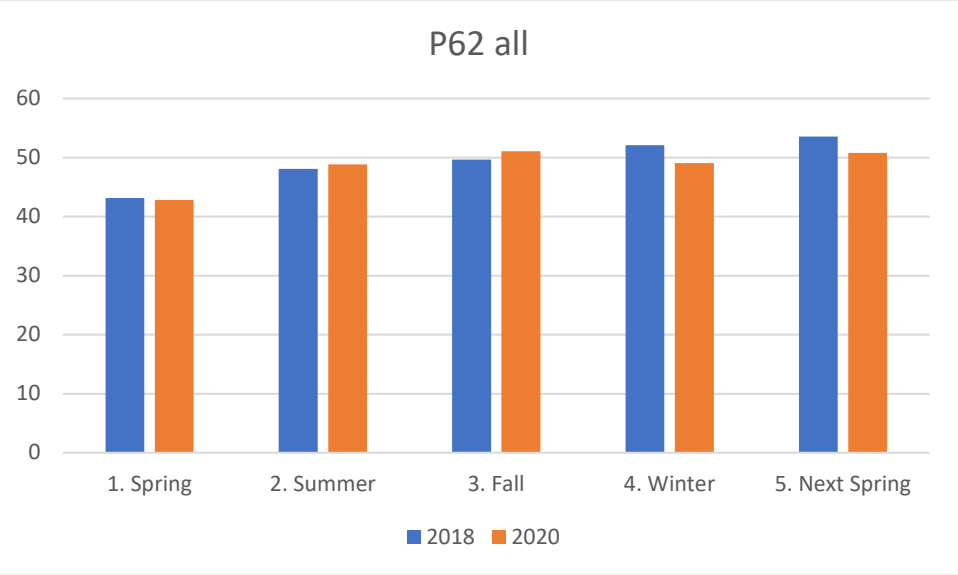
Figures and tables

Figure 1: Unemployment rate, monthly

Note: The dashed lines show the HRS field period**.**

Source: U.S. Bureau of Labor Statistics (BLS); downloaded from https://fred.stlouisfed.org/series/UNRATE

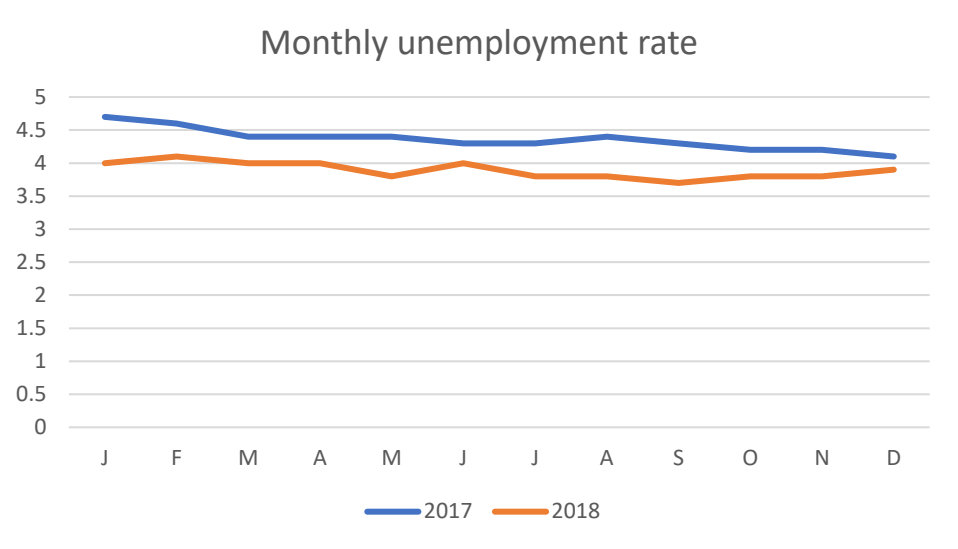
Figure 2: P62, all



Note: Weighted

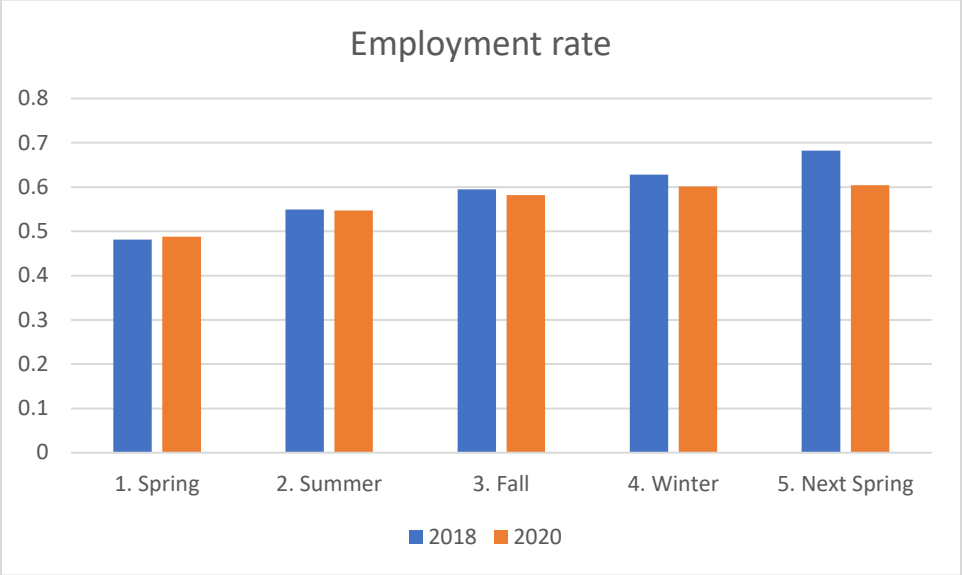
Source: Authors' calculations based on HRS

Figure 3: Monthly unemployment rate



Source: BLS; downloaded from https://fred.stlouisfed.org/series/UNRATE

Figure 4: Employment rate



Note: Weighted

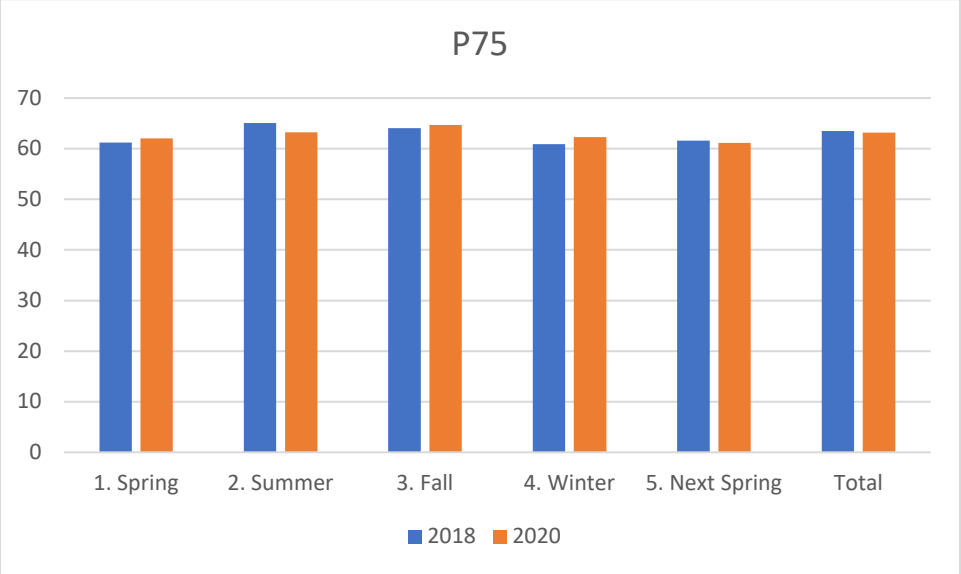
Source: Authors' calculations based on HRS

Figure 5: Average longitudinal change in P62, P65, P70, and P70a classified by interview season in wave 15

Note: Weighted. The following (shown in green) are significant at 5% level: Change in P65 summer; Change in P70 all; Change in P70a spring and all

Source: Authors' calculations based on HRS

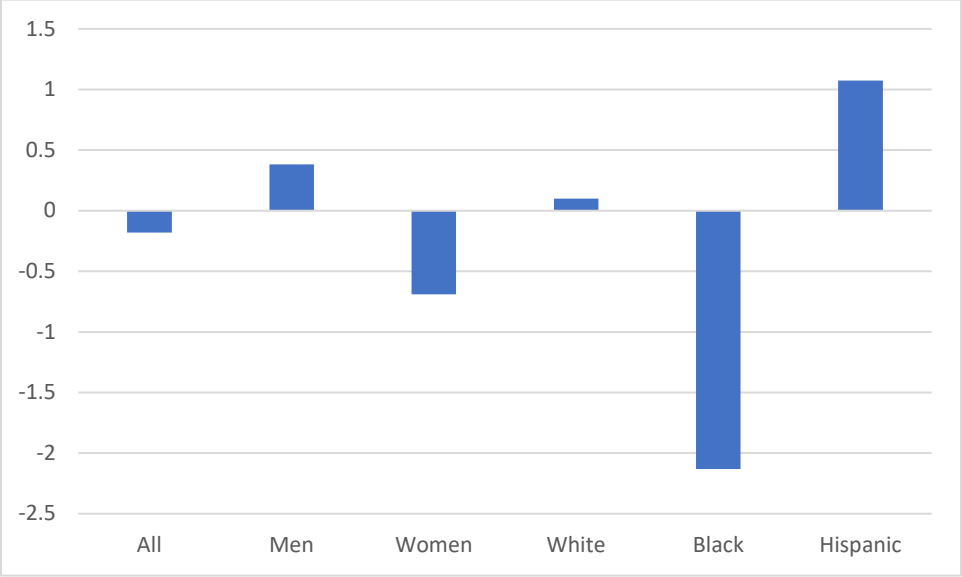
Figure 6: Average subjective probability of survival to age 75 in 2018 and 2020 according to interview season in wave 15



Note: Weighted; N for Total is 5,828 in 2018 and 5,353 in 2020.

Source: Authors' calculations based on HRS

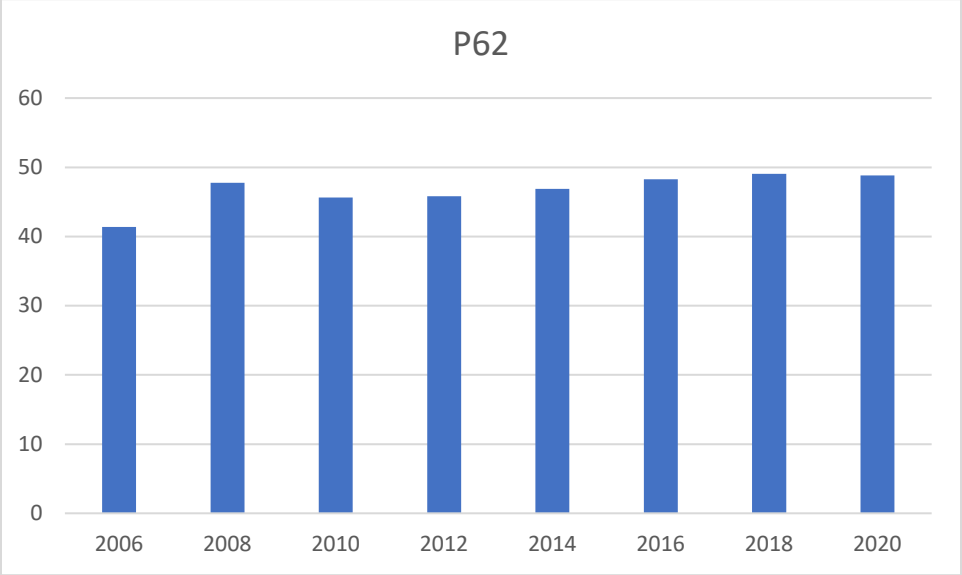
Figure 7: Weighted longitudinal change in P75



Note: No change is significant at 5% level

Source: Authors' calculations based on HRS

Figure 8: P62



Note: Weighted

Source: Authors' calculations based on HRS

Table 1: Average subjective probability of working

	2018	2020	Age range
P62	49.1	48.8	55-61
P65	32.9	XX	-
P70	11.0	XX	-
P70a	22.2	21.5	55-69

Note: Weighted. Cross-section

Source: Authors' calculations based on HRS

Table 2: Longitudinal change (%) between 2018 and 2020 in the subjective probability of working full-time past ages 62, 65, and 70 and of working at all at age 70

	All	Men	Women	White	Black	Hispanic
P62	0.31	-0.42	0.98	0.55	-1.43	0.46
P65	-0.08	-0.09	-0.07	0.42	-2.28†	-1.97
P70	-0.89†	-1.10	-0.71	-0.61	-1.38	-1.87
P70a	-1.57†	-1.81†	-1.35†	-0.71	-2.42	-5.09†
Number of observations						
P62	3,333	1,391	1,942	1,481	885	673
P65	4,302	1,747	2,555	2,023	1,148	808
P70	5,746	2,316	3,430	2,817	1,504	1,041
P70a	5,098	2,144	2,954	2,594	1,249	903

Note: Changes significant at 5% level are highlighted and marked with a †.

Source: Authors' calculations based on HRS.

Table 3: Receipt of pension income and Social Security income, and expectations of future receipt of Social Security income among those not receiving

	2018 Percent	2020 Percent	Difference In ppts.
1. Receives pension income	15.3	14.6	-0.75
2. Receives Social Security income	39.1	37.9	-1.23
3. Expects Social Security income	89.7	88.8	-0.87
	Age	Age	In age
4. Age expects Social Security income	66.1	66.2	0.09

Note: No difference is significant at 5% level. Weighted averages; individuals 55 to 69

Source: Authors' calculations based on HRS.