How did European retirees respond to the COVID-19 pandemic?

Marco Bertoni, Martina Celidoni, Chiara Dal Bianco, Guglielmo Weber

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How did European retirees respond to the COVID-19 pandemic?

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Abstract

We investigate the role of retirement on the adoption of preventive behaviours and on mental health during the first wave of the pandemic. We address the endogeneity of the timing of retirement using variation in early retirement and old-age pension eligibility. We find that those who retired earlier responded to the pandemic by limiting their mobility more, and by adopting stricter preventive behaviours in public. These limitations did not hamper their mental health.

Keywords: COVID-19, retirement, SHARE.

JEL codes: I12, J14, J26.

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1. Introduction

We investigate the role of retirement on the adoption of preventive behaviours and on mental health during the first wave of the COVID-19 pandemic.

Compared to workers of similar age, retirees can isolate themselves better because they do not need to leave their home for work-related purposes. Retirees may also become warier of health risks: several papers (see e.g. Celidoni et al., 2017, Heller-Sahlgren, 2017, Mazzona and Peracchi, 2017, and Bertoni et al., 2018) have used country-specific, time-varying public pension eligibility rules to estimate a negative causal effect of early retirement on physical and mental health at later ages.

We use data from the Survey of Health Ageing and Retirement in Europe (SHARE) to assess if subjects who retired earlier were more likely to limit mobility and to adopt preventive behaviours in public for any given age. We find that this is the case. We also assess whether this higher degree of social isolation made them suffer from worse mental health due to the pandemic, but find limited evidence of this.

2. Data

2.1. Data sources and sample selection

We draw our data from SHARE, a longitudinal dataset that collects face-to-face harmonized information about health and socio-economic status of community-dwelling Europeans and Israelis aged 50+. In March 2020, due to the outbreak of COVID-19, the planned data collection for the eighth wave was suspended in all participating countries and in June-July 2020 a new telephone administered survey collected data on the health-related and socio-economic impact of COVID-19 among elderly individuals.

We combine data from the SHARE Corona Survey with the information from previous SHARE waves on socio-demographic characteristics, health status and employment histories, as well as country and time-specific eligibility rules for early retirement and old-age pensions. We focus on individuals residing in 19 countries that took part in the SHARE Corona Survey and for whom we were able to reconstruct information on pension eligibility ages. Our final sample includes 31,882 individuals aged between 55 and 90. We start at 55 because all individuals aged below 55 in our data are not eligible to retire, and stop at 90 to avoid severe survival bias. Our reconstruction of pension eligibility rules concerns the evolution of early retirement as well as old-age pension eligibility ages over the last four decades. Details are in the Appendix.
Appendix Table A.1 reports descriptive statistics for the full sample and separately for individuals below and above age 67. While up to age 66 we observe variation in pension eligibility status conditional on age, from age 67 onwards everyone is eligible to retire, but there is considerable heterogeneity in time since retirement eligibility for any given age. As a result, we focus on the former sub-sample to study the short-term effects of retirement status, and on the latter to estimate the long-term effects of the time spent in retirement given age.

2.2. Measuring preventive behaviours and mental health

The following questions in the SHARE Corona questionnaire investigate preventive behaviours during the pandemic:

1. Have you ever left home during the outbreak?

If respondents answer positively, a series of follow-up questions investigate how often they carried out the following activities:

2. Going shopping;
3. Going out for a walk;
4. Meeting more than 5 people outside the household;
5. Visiting other family member;
6. Wearing a face mask in public;
7. Keeping distance from others in public.

In analysing the data, we recode questions 2-7 in such a way that “never left home” appears as an independent answer option, and discard question 1. Respondents also report whether they:

8. Washed hands more than usual;
9. Used hand sanitizer more than usual;
10. Covered coughs and sneezes more than usual.

We reduce the dimensionality of the data by applying principal component analysis (PCA). Since answers were on discrete or ordinal scales, we use polychoric PCA. PCA is carried out separately in each sub-sample, but results are consistent. Two components have eigenvalues larger than one and explain roughly 70 percent of the total variance. Questions 2-7 load on the first principal component, while questions 8-10 load on the second one.

Mental health is assessed by asking respondents whether they:

1. Felt nervous, anxious, or on edge in the last month;
2. Felt sad or depressed in the last month;
3. Had trouble sleeping recently;
4. Felt lonely.

In case of a positive answer, the respondent reported if the problem was more so, less so, or about the same as before the outbreak of COVID-19. We applied PCA and obtained a single component with eigenvalue above 1 that explains 65 percent of the total variance. For both preventive behaviours and mental health, we standardize the resulting scores to have zero mean and unit standard deviation (SD) in each sub-sample. The signs of the scores are such that a higher value indicates higher adoption of preventive behaviours and worse mental health. Descriptive statistics for each item are reported in Appendix Tables A.2 and A.3.

3. Empirical strategy

We first focus on the sub-sample of individuals aged 55-66, for whom we observe variation in retirement eligibility conditional on age, and estimate the effect of retirement status on the adoption of preventive behaviours and mental health using the following linear model:

$$Y_i = \alpha + \beta \text{Retired}_i + \gamma \text{Age}_i + X_i'\delta + v_i$$  \hspace{1cm} (1)

In Equation (1), $Y_i$ is a vector of outcome variables that includes the two prevention scores and the mental health score as described; $\text{Retired}_i$ is a dummy variable equal to 1 if the individual reports being retired from work, and 0 otherwise. $\text{Age}_i$ is a linear age trend; vector $X_i$ includes the following set of additional controls: gender, marital status, education level dummies, number of limitations in (instrumental) daily activities and dummies for the wave when these were recorded (they are pre-determined). We also include country dummies, month of interview dummies and country-specific linear trends in the month of interview. Finally, $v_i$ is an error term.

Since retirement status depends on individual health and preference for leisure, we instrument it with two dummies measuring individual eligibility for early retirement and old-age pension. Retirement rules vary both across countries for a given age and within countries across ages and reflect pension reforms that took place over the last four decades across most European countries. Considering that pension eligibility rules vary by country, cohort and gender, we cluster standard errors at this level.

In the second part of our analysis, we focus on the sub-sample of individuals aged 67+, for whom we observe no variation in retirement eligibility (everyone is eligible to retire) but large variability in the number of years since pension eligibility. We exploit this variation to estimate the long-term effects of time since retirement on preventive behaviours and mental health conditional on age using the following linear model
\[ Y_i = \alpha + \beta \text{YearsInRetirement}_i + \gamma \text{Age}_i + X'_i \delta + \nu_i \]  

(2)

Equation (2) is analogous to Equation (1), but we condition on years in retirement instead of retirement status, and instrument it using years since eligibility for early retirement and old-age pension.

In both equations (1) and (2) age enters as a linear trend. This helps us to benchmark the effects of (years in) retirement against those of age. However, estimation results are robust to including age dummies and country-specific age trends (see Appendix Table A.4).

3. Results

Table 1 reports the estimated effects of age and retirement on the outcomes.

We report OLS and TSLS estimates in odd and even columns, respectively. For TSLS estimates, we also report the p-values of the Hausman and Hansen tests as well as the Kleibergen-Paap first-stage F-statistic.

OLS results in Column (1) show that – compared to same-aged respondents still in the labour force – retirees more likely refrained from going out and adopted preventive measures when in public spaces (prevention score 1). This result is confirmed by the TSLS estimates in Column (2) and is most likely driven by retirees’ not needing to leave home for work-related purposes. The effect is also large in magnitude, and equal to roughly 0.2-0.4 SD of the outcome. Columns (3) and (4) show that, consistent with their higher degree of isolation, retirees were less likely to adopt further preventive behaviours such as washing hands, using sanitizer or covering while coughing (prevention score 2). This effect is however small in magnitude, and insignificant with TSLS. Finally, while OLS reveals a positive association between retirement and mental health issues – see Column (5) – the relationship is negative and insignificant in Column (6) when we address the endogeneity of retirement using TSLS. We conclude that the consequences of retirement on mental health during the first wave of the pandemic were immaterial.

In Table 2 we focus on respondents past retirement eligibility and verify whether, conditional on age, those who retired earlier behaved differently during the pandemic. Results are comparable to the ones for individuals below retirement eligibility: early retirees reacted by limiting their mobility and adopting preventive behaviours in public. On average, the adoption of behaviours summarised by the prevention score 1 increases by 0.2 SD every 10 years of age. The effect is 50% larger for retirees, suggesting that early retirement accelerates the take-up of preventive behaviours that comes with age. Mental health was instead not much affected by the pandemic, despite the adoption of these behaviours.

4. Conclusions
The reaction of European retirees to the first wave of the pandemic was to limit mobility and adopt preventive behaviours. Our key finding is that age has a strong, positive effect on such behaviours and an extra year in retirement increases by 50% the effect of age. For senior individuals, we find that age has an important effect on mental health, but years in retirement does not.

References


### Table 1. The effects of retirement status on prevention and mental health.

<table>
<thead>
<tr>
<th></th>
<th>Prevention score 1</th>
<th>Prevention score 2</th>
<th>Mental health score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>TSLS</td>
<td>OLS</td>
</tr>
<tr>
<td>Retired</td>
<td>0.193***</td>
<td>0.377***</td>
<td>-0.110***</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td>(0.098)</td>
<td>(0.027)</td>
</tr>
<tr>
<td>Age/10</td>
<td>0.135***</td>
<td>-0.011</td>
<td>-0.063*</td>
</tr>
<tr>
<td></td>
<td>(0.037)</td>
<td>(0.085)</td>
<td>(0.036)</td>
</tr>
</tbody>
</table>

Hausman test (p-value) 0.044
Hansen test (p-value) 0.969
First stage F statistic 60.9

Notes: Observations: 9,669. Each model includes the set of additional controls described in the text. For TSLS models, retirement status is instrumented with eligibility for early retirement and old-age pension. Standard errors clustered by country, gender and year of birth are reported in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

### Table 2. The effects of years in retirement on prevention and mental health.

<table>
<thead>
<tr>
<th></th>
<th>Prevention score 1</th>
<th>Prevention score 2</th>
<th>Mental health score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>TSLS</td>
<td>OLS</td>
</tr>
<tr>
<td>Years in retirement/10</td>
<td>0.072***</td>
<td>0.121***</td>
<td>0.016</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.027)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Age/10</td>
<td>0.255***</td>
<td>0.207***</td>
<td>-0.193***</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.029)</td>
<td>(0.017)</td>
</tr>
</tbody>
</table>

Hausman test (p-value) 0.02
Hansen test (p-value) 0.14
First stage F statistic 440.4

Notes: Observations: 22,213. Each model includes the set of additional controls described in the text. For TSLS models, years in retirement is instrumented with years since eligibility for early retirement and old-age pension. Standard errors clustered by country, gender and year of birth are reported in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.
Online Appendix: “How did European retirees respond to the COVID-19 pandemic?”

A. Additional tables

Table A.1. Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Age range 55-90</th>
<th>55-66</th>
<th>67-90</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
</tr>
<tr>
<td>Retired</td>
<td>0.796</td>
<td>0.404</td>
<td>0.384</td>
</tr>
<tr>
<td>Years in retirement</td>
<td>11.27</td>
<td>9.47</td>
<td>2.57</td>
</tr>
<tr>
<td>Eligible for early retirement</td>
<td>0.902</td>
<td>0.297</td>
<td>0.678</td>
</tr>
<tr>
<td>Eligible for old-age pension</td>
<td>0.796</td>
<td>0.403</td>
<td>0.328</td>
</tr>
<tr>
<td>Years since early retirement eligibility</td>
<td>12.71</td>
<td>0.10</td>
<td>2.73</td>
</tr>
<tr>
<td>Years since old-age pension eligibility</td>
<td>9.33</td>
<td>8.450</td>
<td>0.67</td>
</tr>
<tr>
<td>Age</td>
<td>71.40</td>
<td>8.33</td>
<td>61.67</td>
</tr>
<tr>
<td>Female</td>
<td>0.542</td>
<td>0.498</td>
<td>0.567</td>
</tr>
<tr>
<td>In a couple</td>
<td>0.691</td>
<td>0.833</td>
<td>0.782</td>
</tr>
<tr>
<td>ISCED level</td>
<td>3.048</td>
<td>1.460</td>
<td>3.397</td>
</tr>
<tr>
<td># ADL</td>
<td>0.159</td>
<td>0.656</td>
<td>0.076</td>
</tr>
<tr>
<td># IADL</td>
<td>0.307</td>
<td>1.059</td>
<td>0.108</td>
</tr>
</tbody>
</table>

Table A.2. Descriptive statistics. Preventive behaviours.

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
<th>Mean % (age &lt;67)</th>
<th>Mean % (age&gt;=67)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ever left home</td>
<td>93.31</td>
<td>79.45</td>
</tr>
<tr>
<td>2</td>
<td>If left home: Going shopping (not any more or less often)</td>
<td>64.42</td>
<td>71.42</td>
</tr>
<tr>
<td>3</td>
<td>If left home: Going out for a walk (not any more or less often)</td>
<td>38.52</td>
<td>45.92</td>
</tr>
<tr>
<td>4</td>
<td>If left home: Meeting more than 5 people (not any more or less often)</td>
<td>84.77</td>
<td>90.80</td>
</tr>
<tr>
<td>5</td>
<td>If left home: Visiting other family members (not any more or less often)</td>
<td>81.76</td>
<td>86.10</td>
</tr>
<tr>
<td>6</td>
<td>If left home: Wearing a face mask in public (always)</td>
<td>56.45</td>
<td>58.06</td>
</tr>
<tr>
<td>7</td>
<td>If left home: Keeping distance from others in public (always)</td>
<td>75.69</td>
<td>77.98</td>
</tr>
<tr>
<td>8</td>
<td>Washed hands more than usual (always)</td>
<td>91.06</td>
<td>88.12</td>
</tr>
<tr>
<td>9</td>
<td>Used hand sanitizer more than usual (always)</td>
<td>89.73</td>
<td>81.37</td>
</tr>
<tr>
<td>10</td>
<td>Covered coughs and sneezes more than usual (always)</td>
<td>90.05</td>
<td>82.58</td>
</tr>
</tbody>
</table>

Notes: question numbering corresponds to the description provided in section 2.2.
Table A.3. Descriptive statistics. Mental health.

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
<th>Mean % (age &lt;67)</th>
<th>Mean % (age&gt;=67)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Felt nervous, anxious, or on edge in the last month</td>
<td>27.99</td>
<td>29.06</td>
</tr>
<tr>
<td></td>
<td>If yes: More so as before the outbreak of COVID-19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Felt sad or depressed in the last month</td>
<td>21.69</td>
<td>26.19</td>
</tr>
<tr>
<td></td>
<td>If yes: More so as before the outbreak of COVID-19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Had trouble sleeping recently</td>
<td>23.61</td>
<td>28.38</td>
</tr>
<tr>
<td></td>
<td>If yes: More so as before the outbreak of COVID-19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Felt lonely (often or some of the time)</td>
<td>21.09</td>
<td>29.96</td>
</tr>
<tr>
<td></td>
<td>If often or some of the time: More so as before the outbreak of COVID-19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: question numbering corresponds to the description provided in section 2.2.

Table A.4. The effects of retirement status and years in retirement on prevention and mental health controlling for age dummies and country-specific linear age trends.

<table>
<thead>
<tr>
<th>Panel A.</th>
<th>(1) Prevention score 1</th>
<th>(2) Prevention score 2</th>
<th>(3) Mental health score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retired</td>
<td>OLS</td>
<td>TSLS</td>
<td>OLS</td>
</tr>
<tr>
<td></td>
<td>0.200***</td>
<td>0.360***</td>
<td>-0.112***</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.112)</td>
<td>(0.028)</td>
</tr>
</tbody>
</table>

Panel B.

<table>
<thead>
<tr>
<th>Years in retirement/10</th>
<th>(1) Prevention score 1</th>
<th>(2) Prevention score 2</th>
<th>(3) Mental health score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>TSLS</td>
<td>OLS</td>
</tr>
<tr>
<td></td>
<td>0.075***</td>
<td>0.095***</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.023)</td>
<td>(0.012)</td>
</tr>
</tbody>
</table>

Notes: see Tables 1 and 2 in the main text. The estimates in Panel A (B) replicate the ones in Table 1 (2) after replacing linear age trends with age dummies and country-specific linear age trends.

B. Early and old-age retirement eligibility criteria

The initial sources of information about early and old-age retirement eligibility criteria are Gruber and Wise (1999 and 2010), Wise (2012), the Mutual Information System on Social Protection (MISSOC) database¹ and Social Security Administration (SSA) data on ‘Social Security Programs throughout the World’². Other country-specific auxiliary data sources are reported below. ER = early retirement. OA = old-age retirement.

When an early retirement option is not available, we set early retirement eligibility criteria equal to old-age eligibility criteria.

Belgium – see Jousten et al. (2010)

Croatia

Czech Republic
ER: Early retirement is possible up to two years before normal retirement age.
OA: For men 60 from 1961 to 2002, 61 from 2003 to 2008, 62 from 2009 to 2015, 63 from 2016. For women, old-age retirement depends on the number of children:

<table>
<thead>
<tr>
<th></th>
<th>0 child</th>
<th>1 child</th>
<th>2 children</th>
<th>3/4 children</th>
<th>5+ children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1999</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>From 2000 to 2002</td>
<td>56</td>
<td>56</td>
<td>56</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>From 2003 to 2006</td>
<td>59</td>
<td>58</td>
<td>57</td>
<td>56</td>
<td>55</td>
</tr>
<tr>
<td>From 2007 to 2011</td>
<td>60</td>
<td>59</td>
<td>58</td>
<td>57</td>
<td>56</td>
</tr>
<tr>
<td>From 2012 to 2014</td>
<td>61</td>
<td>60</td>
<td>59</td>
<td>58</td>
<td>57</td>
</tr>
<tr>
<td>From 2015 to 2018</td>
<td>62</td>
<td>61</td>
<td>60</td>
<td>59</td>
<td>58</td>
</tr>
<tr>
<td>From 2019 onwards</td>
<td>63</td>
<td>62</td>
<td>61</td>
<td>60</td>
<td>59</td>
</tr>
</tbody>
</table>

Denmark – see Bingley, Datta Gupta and Pedersen (2010)
ER: 60 for both men and women.

Estonia – Schmähl and Horstmann (2002)
France – see Hamblin (2013)
ER: No early retirement until 1963. 60 from 1963 to 1980; 55 from 1981.

Germany – see Berkel and Börsch-Supan (2004), Mazzonna and Peracchi (2014) and DRV (2015)
OA: 65 for all until 2012; 67 from 2012.

Greece
ER: 60 for both men and women until 2012, 62 from 2013.

Hungary
ER: For men, 60 for those born before 1938 and 61 for those born in 1938 or later; 62 from 2015. For women, 55 until 2003, 57 from 2004, 59 from 2010 and 62 from 2012.

Italy – see Angelini, Brugiavini and Weber (2009) and Mazzonna and Peracchi (2014)
ER: From 1965 to 1995, early retirement was possible at any age with 35 years of contributions3 (25 in the public sector) for both men and women; from 1996, it was stepwise increased up to age 60 for both the private and public sectors (61 for the self-employed). From 2012, it is 62 for both men and women.
OA: The old-age retirement was 60 (65 in the public sector) for men and 55 (60 in the public sector) for women from 1965 to 1993. Several consecutive reforms (1992, 1995 and 1998) increased the old-age retirement to 65 for men and 60 for women, with stepwise increments from 1994. The old-age retirement was 66 from 2012 and 67 from 2019 for men; for women, it was 65 in 2012, 66 from 2013 (there is the possibility to retire at 62 from 2012, 63 from 2013, 65 from 2016 and 66 from 2018 in

3 We use work experience to define eligibility.
the private sector and at 63 from 2012, 64 from 2013 and 66 from 2018 for the self-employed). The old-age retirement is 67 for both men and women from 2019.

Israel
ER: No early retirement.

Luxemburg
ER: For both men and women, 65 as OA up to 1992. 57 for men from 1993 onwards. 60 for women from 1993 onwards.
OA: 65 for both men and women.

Netherlands – see Euwals, van Vuuren and Wolthoff (2010)
ER: No early retirement until 1975. 60 from 1975, for both men and women.
OA: 65 for both men and women until 2017 and 66 from 2018.

Poland
ER: 60 for women and 65 for men.
OA: 55 for women and 60 for men.

ER: No early pension before 1999. For both men and women, 55 since 2011, 57 from 2012, 55 from 2015, and 60 from 2017.

Slovenia – see OECD, 2013; Polanec et al, 2013; Guardiancich, 2010; Ahcan and Polanec, 2008; Majacen and Verbič, 2008; Mrak et al., 2004.
Before 1993, 55 for men 53 for women (40/38 years of contribution and no age requirements, we assume they start working at age 15). From 1993, 65 for men. For women, 61 from 1993 to 2004; 62 from 2005 to 2007; 63 from 2008 to 2013; 65 from 2014 onwards.

Spain – see Blanco (2000) and Mazzonna and Peracchi (2014)
OA: 65 for both men and women.

Sweden – see Mazzonna and Peracchi (2014)
ER: No early retirement until 1963. 60 from 1963 to 1997; 61 from 1998.
OA: 67 for both men and women until 1995; 65 from 1995.

Switzerland – see Dorn and Sousa-Poza (2003) and Mazzonna and Peracchi (2014)
References for pension reforms


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