

Living Alone and Subjective Well-being during the COVID-19 pandemic across Four British Cohorts

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Abstract

The increase in solo living has been one of the major demographic shifts of recent decades. However, the common conflation of loneliness, isolation and solo living hampers our understanding of the effects of this major demographic trend. People who live alone might be very socially active outside of the household and not feel lonely. The physical distancing measures in the UK in the first year of the COVID-19 pandemic provide a case study for disentangling these concepts and provide insight to the wellbeing of individuals living alone. Whereas the lockdown measures were imposed on all households, the social isolation effect of this policy was much greater for individuals who were living alone and unable to socialise with other household members. We investigate the association between living alone and different measures of subjective well-being and loneliness using the COVID-19 Surveys of four largescale nationally representative British cohort studies. The main contribution lies in isolating the role of solo living in affecting levels of loneliness, by exploiting COVID-19 as a mechanism that prevented physical social interactions. Results indicate that those consistently living alone throughout the pandemic, compared to those who never live alone, report lower levels of subjective well-being and are at higher risk of feeling lonely.

1. Introduction

Today, one in three people lives alone in western societies (Eurostat Statistics Explained, 2022; U.S. Census Bureau, 2021) and the rise in the prevalence of solo living has been one of the major demographic shifts of the last decades. The most recent estimates show that in 2021, of all households, 29.6% were one-person households in the United Kingdom (Sharfman & Cobb, 2022). Concurrently, in recent years, the media started talking about a ‘loneliness epidemic’, as a serious public health concern that affects our physical and mental health (Leland, 2022; The Economist, 2018). Despite this alarming media coverage and acknowledging that loneliness is in fact a public health concern especially after COVID-19, it is unclear whether and by how much its prevalence increased over time in recent years (Klinenberg, 2013). What we do know is that ‘feeling lonely’ has a negative impact on several health outcomes, such as subjective well-being, heart diseases, depression, sleep problems, suicide risk and all-cause mortality (Courtin & Knapp, 2017; Hawkey & Cacioppo, 2010; Huxhold et al., 2022).

The term loneliness is often used synonymously with social isolation, but the two concepts have very different meanings: loneliness is defined as a subjective feeling, as a gap between the desired and the actual level of connectedness, while social isolation is measured by the amount and frequency of individuals’ social interactions (Banerjee & Rai, 2020; Huxhold et al., 2022; Hwang et al., 2020; Jeste et al., 2020). This definition points also to a distinction between social isolation, solo living, and loneliness. Individuals who live by themselves can feel lonely or be isolated, but they can also be very socially connected, and this is especially true since the digital revolution, internet diffusion and the existence of social media (Coget et al., 2002; Jeste et al., 2020). Also, those who live alone might spend a lot of their time with other people (e.g. at work, at school, in their leisure time) whereas those in multi-person households might be alone for extended periods of time throughout the day or feel lonely despite living with others.

During the first year of the COVID-19 pandemic the UK government took extensive measures to reduce the spread of the virus, such as extended lockdowns in spring and summer

2020, and in December 2020. All non-essential businesses had to close, most people were required to work from home and people were not allowed to meet people from other households. These social (and physical) distancing measures had different implications for people living alone and people sharing their household with parents, partners, children, or roommates (Evandrou et al., 2021). Those who were living alone, for a long period of time – until support bubbles were introduced in June 2020 – could not see and physically interact with anyone. Even after the introduction of support bubbles, their social interactions were limited to only one other household.

The impact of the lockdown measures on people's ability to maintain social contact with other people also varied by their age, socioeconomic status, life stage and employment status. Digital social interactions increased and became more common across all households, especially for education and work purposes, but also to enhance social relationships by serving as a substitute for unsanctioned physical gatherings. Digital interactions substantially expanded people's social networks beyond household members, potentially reducing the risk of social isolation. However, the extent to which digital interaction could mitigate the restricted physical contact was contingent on having the technology and the ability to make this shift. This is less the case among older adults who are, on average, less comfortable with new technologies and (if retired) had fewer opportunities for digital interaction (Haase et al., 2021). It is therefore particularly important to differentiate between age groups when analysing the association between solo living and mental wellbeing and loneliness.

In this study, we investigate the association between living alone during COVID-19 (between spring 2020 and winter 2021) and different measures of subjective well-being and loneliness, to understand how physical social isolation differentially impacted general mental health and loneliness more specifically. We do this by using the COVID-19 Survey of four nationally representative British cohort studies of individuals born in 1958, 1970, 1989-90, and 2000-2002. The main contribution to the literature lies in isolating the role of solo living and its associations with levels of loneliness, by exploiting the COVID-19 mitigation measures as a mechanism that

prevented physical social interactions outside of the household for an extended period. Specifically, outside of a public health emergency period, people who live alone might be very socially active outside of the household and do not feel lonely, as they can choose the amount of interactions according to their preference. Although the physical distancing and lockdown measures were imposed on all households, the *social* isolation that such national policies potentially generated was much greater for individuals who were living alone and unable to socialise with other household members during this time.

2. Data and Methods

Our analyses use data from four nationally representative British birth cohort studies: the 1958 National Child Development Study, the 1970 British Cohort Study, Next Steps (individuals born in 1989 and 1990) and the Millennium Cohort Study (born 2000-2002). In 2020, cohort members from all four studies were asked to complete an online COVID-19 survey to gather information about the effects of the pandemic on their lives. Three waves of data collections during the pandemic were carried out. The first online survey (Wave 1) was conducted in May 2020, during which time the first and most stringent lockdown was taking place, and focused on how the pandemic outbreak in March 2020 had changed people's social and economic lives. Cohort members were aged 62, 50, 29-30 and 18-20, in the respective cohorts, at the time. The second online wave took place in September/October 2020 to understand how people reacted to the easing of lockdown restrictions from June 2020. The third wave (a mix of online and telephone interviews) occurred in February/March 2021, when the third lockdown was underway. For Wave 1 the survey team could only contact cohort members whose email addresses were known, because mass postal mailings were not possible. However, in Waves 2 and 3 a combination of email and postal invitations was possible, boosting contact and thus response rates. Given the non-response weights restore sample representativeness, we include respondents who participated in at least one of the three COVID-19 data collection waves. For our preliminary analyses, we include all

respondents who provided information on the variables included in the analysis. We used household roster variables to determine living arrangements and combined information collected in each wave to determine the presence of non-cohabiting children or partners, and the employment status throughout the pandemic period.

2.1 Solo Living

Using information collected in each wave about household composition, we were able to determine whether an individual was living alone or with other individuals (e.g. spouse, children, parent, grandparent, grandchildren, sibling, friend, etc.). Not all individuals participated in every wave. To maximize sample size for preliminary analyses, we built a categorical variable with the following categories:

- 000/00/0 for those who are not living alone in all the 3 waves, in 2 waves (because we have information only on 2 waves), in 1 wave (because we have information only on 1 wave);
- 111/11/1 for those who are living alone in all the 3 waves, in 2 waves (because we have information only on 2 waves), in 1 wave (because we have information only on 1 wave);
- 001/011/01 for those who were not living alone initially, but transitioned to and remained living alone;
- 100/110/10 for those living alone initially but subsequently transitioned to living with others, either because they moved in with someone else or had someone move in with them;
- 010 for those not living alone in wave 1, living alone in wave 2, not living alone in wave 3;
- 101 for those living alone in wave 1, not living alone in wave 2, living alone in wave 3.

2.2 Outcomes of Interest: Subjective Well-being and Loneliness

The key outcomes of interest are measured at wave 3 and represent measures of well-being, mental health and loneliness. Specifically, we investigated the association between solo living and the following variables:

- Life Satisfaction (0 = Not at all satisfied - 10 = Completely satisfied);
- Self reported Mental Health (i.e. “In general would you say your mental health is: 1 = Excellent - 5 = Poor);
- Feeling Down, Depressed or Hopeless in the last 2 weeks (1 = Not at all - 4 = Nearly every day);
- Self reported general Health (1 = Excellent - 5 = Poor);
- The 4 self-reported dimensions of the UCLA loneliness scale are the following: ‘Feels lack of companionship’; ‘Feels left out’; ‘Feels isolated’; ‘Feels lonely’. These items were measured on a three-point Likert scale ranging from 1 (hardly ever) to 3 (often). We used each one of them separately dichotomising between those who answered ‘hardly ever’ (=0) and those in the other two more frequent categories (=1). We also summed up the scores to each question, creating an index ranging from 4 to 12 (Cronbach’s alpha = 0.91).

2.3 Confounders

The association between solo living and mental health and loneliness might be influenced by other confounding variables that should be taken into account in the analysis. Using information from Wave 3, we adjusted for gender, birth cohort, whether respondents have non-cohabiting children, whether they have non-cohabiting partners, and employment status during COVID-19. For employment status, we assigned respondents to one of three categories depending on their answer in Wave 3 (supplemented with answers in Wave 1 and Wave 2 if information in Wave 3 was missing): ‘In paid work (including furlough)’, ‘Not in paid work’, or ‘In education’. For all loneliness-specific questions, we also included the answer to those same questions both in wave 1

and wave 2, to consider the previous levels of loneliness and rule out the possibility that people who felt lonely in past waves selected themselves into solo living.

2.4 Analytical Strategy

Our analytical approach varied by the outcome of interest. We implemented ordered logistic regressions for life satisfaction, self-reported mental health, depression and self-reported health. For the four components of the UCLA loneliness scale we used binary logistic regressions, and for the UCLA scale as a whole we ran an OLS regression model.

3. Preliminary Results

Table 1 reports the patterns of solo living across different birth cohorts. Across all cohorts the most frequent group is that of those never living alone, but with large differences across cohorts. Those who are always living alone during the pandemic are 16.6% among those born in 1958, 10.7% for those born in 1970, 9.5% for respondents born in 1989-1990 and 0.9% for respondents born in 2000-2001. These differences are reflected also among women and men. Also, more women than men live always alone during the pandemic in the 1958 birth cohort, while more men than women live alone in the 1970 birth cohort and Next Steps.

The regression results are reported in Table 2. Living alone throughout the pandemic has a significant negative association with subjective well-being. In particular, those who always live alone compared to those who never live alone (across three waves if interviewed in all waves, across two waves if interviewed only twice, and in one wave if interviewed only once) show lower life satisfaction, worse self-reported mental and physical health, higher risk of depression, and report higher risk of loneliness in all its components, i.e. 'lack of companionship', 'feeling left out', 'feeling isolated', and 'feeling lonely'.

Table 1. % Living Alone across Waves and Cohorts

Living Alone	NCDS	BCS70	Next Steps	MCS
000/00/0	66.0	80.5	81.1	93.9
001/011/01	6.9	4.2	4.6	1.9
10	2.9	1.1	1.0	1.7
100/110/10	6.6	3.1	3.6	1.6
101	1.0	0.4	0.2	0.0
111/11/1	16.6	10.7	9.5	0.9
N	6,783	5,725	4,136	4,837
Men				
000/00/0	67.2	78.5	77.0	94.4
001/011/01	6.2	4.4	5.1	1.3
10	3.3	1.0	1.4	1.5
100/110/10	7.1	2.8	3.7	1.8
101	0.9	0.5	0.2	0.1
111/11/1	15.3	12.8	12.6	0.9
N	3,147	2,427	1,553	1,882
Women				
000/00/0	65.0	82.0	83.5	93.6
001/011/01	7.5	4.0	4.2	2.2
10	2.5	1.1	0.9	1.8
100/110/10	6.1	3.4	3.5	1.4
101	1.2	0.3	0.3	0.0
111/11/1	17.7	9.2	7.6	0.9
N	3,636	3,298	2,583	2,955

Similar results can be observed for those who were not living alone in the first and/or second wave and then transitioned to solo living. In this case, there is no association with self-reported physical and mental health or with ‘feeling left out’, but the magnitude and the significance of the effect is very similar to those who consistently lived alone for the other outcomes. Other living arrangements, such as living alone and then moving in with other household members in subsequent waves, or transitioning in and out of solo living do not have a significant association with well-being and loneliness. Subjective well-being measures and loneliness seem to be worse among younger cohorts, especially among respondents from the Millennium Cohort Study. As expected, measures of loneliness in wave 1 and wave 2 have a strong and significant association with our outcomes of interest in wave 3, with magnitudes eclipsing the main effects on living alone.

Table 1. Regression Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ordered Logit	Ordered Logit	Ordered Logit	Ordered Logit	Logit	Logit	Logit	Logit	OLS
	Life Satisfaction (OR)	SRMH (OR)	Depress. (OR)	SRH (OR)	Lack of Companionship (OR)	Left Out (OR)	Isolated	Lonely	UCLA scale
Living Alone (Ref: 000/00/0)									
001/011/01	0.728*** (0.0504)	1.107 (0.0906)	1.193** (0.0927)	1.078 (0.0796)	2.303*** (0.303)	1.176 (0.154)	1.503*** (0.188)	2.053*** (0.292)	1.565*** (0.146)
010	0.779** (0.0765)	1.151 (0.116)	1.150 (0.137)	1.084 (0.121)	1.081 (0.153)	1.216 (0.182)	1.079 (0.147)	1.181 (0.169)	1.050 (0.0969)
100/110/10	1.016 (0.0683)	0.958 (0.0689)	1.054 (0.0825)	1.009 (0.0679)	0.970 (0.122)	1.140 (0.146)	1.013 (0.117)	1.148 (0.144)	0.976 (0.0742)
101	0.574*** (0.109)	1.453* (0.280)	1.349 (0.300)	1.110 (0.209)	1.604* (0.426)	1.073 (0.270)	1.384 (0.313)	1.282 (0.371)	1.337* (0.209)
111/11/1	0.492*** (0.0231)	1.717*** (0.0994)	1.669*** (0.0923)	1.559*** (0.0788)	1.854*** (0.179)	1.510*** (0.141)	1.316*** (0.118)	1.707*** (0.168)	1.346*** (0.0856)
Female	0.803*** (0.0224)	1.631*** (0.0539)	1.711*** (0.0563)	1.138*** (0.0311)	1.252*** (0.0677)	1.261*** (0.0749)	1.335*** (0.0678)	1.500*** (0.0849)	1.202*** (0.0445)
Cohort (Ref: 1958)									
1970	0.716*** -0.0271	1.682*** -0.0703	1.666*** -0.0794	1.163*** -0.045	0.988 -0.0694	1.117 -0.0803	0.992 -0.0643	1.103 -0.0802	1.057 -0.0428
1989-1990	0.578*** -0.0269	2.748*** -0.149	3.429*** -0.193	1.007 -0.0475	1.018 -0.103	1.454*** -0.15	1.580*** -0.15	1.500*** -0.159	1.245*** -0.0774
2000	0.356*** -0.0239	4.730*** -0.433	5.427*** -0.419	1.072 -0.0732	2.762*** -0.36	2.193*** -0.273	1.882*** -0.25	3.942*** -0.576	2.431*** -0.225
Employment Status during COVID (Ref: In Paid Work (includes furlough))									
Not in Paid Work	0.646*** (0.0244)	1.403*** (0.0589)	1.697*** (0.0737)	1.594*** (0.0603)	1.163** (0.0766)	1.091 (0.0766)	1.234*** (0.0773)	1.202*** (0.0838)	1.194*** (0.0504)
In Education	0.747*** (0.0484)	1.306*** (0.127)	1.230*** (0.0865)	0.945 (0.0614)	1.453*** (0.195)	1.467*** (0.200)	1.564*** (0.215)	1.473*** (0.218)	1.363*** (0.141)
In a non-cohabiting relationship	1.259*** (0.0543)	0.895* (0.0516)	0.974 (0.0461)	0.949 (0.0435)	0.452*** (0.0436)	0.963 (0.0877)	0.786** (0.0739)	0.632*** (0.0682)	0.718*** (0.0513)
Any non-cohabiting children	1.042 (0.0363)	1.079** (0.0409)	0.974 (0.0410)	1.152*** (0.0413)	1.046 (0.0672)	0.986 (0.0653)	0.998 (0.0595)	0.989 (0.0651)	0.995 (0.0368)
Feel Lack of Companionship W1 (Ref: Hardly ever)									
Some of the time					3.553*** (0.236)				
Often					5.578*** (0.794)				
Feel Lack of Companionship W2 (Ref: Hardly ever)									
Some of the time					4.994*** (0.305)				
Often					11.59*** (1.817)				
Feel Left Out W1 (Ref: Hardly ever)									
Some of the time						3.895*** (0.238)			
Often						7.088*** (1.262)			
Feel Left Out W2 (Ref: Hardly ever)									
Some of the time						4.683*** (0.282)			
Often						11.37*** (1.960)			
Feel Isolated W1 (Ref: Hardly ever)									
Some of the time							3.177*** (0.179)		
Often							5.753*** (0.695)		
Feel Isolated W2 (Ref: Hardly ever)									
Some of the time							4.184*** (0.264)		
Often							7.828*** (1.254)		
Feel Lonely W1 (Ref: Hardly ever)									

Some of the time									3.991*** (0.261)
Often									7.752*** (1.291)
Feel Lonely W2 (Ref: Hardly ever)									
Some of the time									5.143*** (0.344)
Often									12.03*** (2.058)
UCLA Loneliness Scale W 1 (Range 4-12)									1.422*** (0.0185)
UCLA Loneliness Scale W 2 (Range 4-12)									1.526*** (0.0197)
Constant					0.154*** (0.0127)	0.115*** (0.00977)	0.213*** (0.0162)	0.113*** (0.00962)	3.543*** (0.238)
N	20,767	16,114	20,702	21,306	10,481	10,437	10,456	10,453	10,391
R-squared									0.518

*** p<0.01, ** p<0.05, * p<0.1

4. Next Steps

Given the preliminary stage of these analyses, we will develop this study further by following these next steps. We will focus on a sample with complete information, excluding those who do not report information on *all* the variables used in the analysis. We will also include additional control variables. Specifically, the COVID-19 surveys include variables on perceived social support, such as ‘whether respondent can count on people to help if sick’, ‘whether respondent can rely on people to listen to problems’, ‘whether respondent feels close to other people’. There is also a social provisions scale made of three items, to understand if respondents have family and friends who can help to make them feel secure, if there is someone they can trust to turn to for advice, if there is someone they feel close too. Further, we will consider time use variables (collected in Wave 1 and Wave 2), to understand the amount of time typically spent on several activities, such as work, leisure activities, socializing etc. Given that it could be connected with living arrangements and mental health, we will also consider whether respondents experienced widowhood or divorce, whether respondents have siblings and whether parents are still alive. Finally, we will consider the geographical area where people live, and in particular if it is an urban or a rural area.

To exploit the longitudinal dimension of the COVID-19 surveys and to account for unobserved time invariant factors we will run additional analyses on respondents who have been interviewed in at least two waves and implement fixed effects models. This will allow us to study

how a transition in/out of solo living affects changes in loneliness. Finally, given that the preliminary results show that subjective well-being and loneliness are on average worse among younger cohorts, among those who are not in paid work, among those who do not have a partner, we will include interaction terms in the regression models: in particular interactions between solo living variables and cohorts (to understand if the implications of living alone depend on age), between solo living variables and having a non-cohabiting partner, between solo living variables and social support variables, between solo living variables and employment status, and between presence of children and cohorts

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