Economic inactivity and the labour market experience of the long-term sick

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Abstract

The coronavirus pandemic has brought increased focus to the role of sickness in the population. The interaction of sickness and the labour market has been less studied, and some basic facts are not widely known. This paper offers a fresh look at the role of long-term sickness in the labour market, where we go beyond official definitions of long-term sickness which look at only those for whom it is their main reason for economically inactivity. Amongst the working age population, a staggering 16% report themselves as long-term sick. This proportion has increased steadily over recent decades, and rapidly during the pandemic, justifying attention. The long-term sick experience persistently lower labour market participation rates and higher unemployment rates than their non-sick counterparts. Amongst the economically inactive, the long-term sick are more likely to want a job but less likely to search for one or get one, than the non-sick, and the homeworking revolution of the pandemic has not closed these gaps. The working long-term sick are more likely to work part-time, and even after controlling for this, work fewer hours on average than the non-sick. Between the end of 2019 and the start of 2022, the UK has seen an increase in economic inactivity of around half a million people, the majority of which can be explained by increases in the long-term sick (although only about half give this as their main reason for inactivity). We conclude with some implications for monetary policy and broader economic understanding: 1) a large and growing share of the workforce are long-term sick, so economic models and analysis would benefit from considering this group; 2) higher rates of long-term sickness in the population (at least partly due to long-covid, and longer NHS waiting lists) is likely to limited labour supply through both lower participation rates and lower average working hours, reducing potential output; and 3) measures of labour market tightness might benefit from differentiating between the long-term sick and non-sick given their different labour market experiences.

Keywords: labour market, participation, long covid, sickness, health, employment

JEL codes: E24, J14

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1. Introduction and summary

There appears to have been a sharp rise in inactivity and long-term sickness in the UK since the start of the pandemic. This paper reviews some of the salient facts concerning that rise, and speculates on some causes. We find the following.

First, although some of the changes in shares of activity are small, the underlying numbers are large; in some cases very large. Pre-pandemic, the UK working-age population was 41m, of whom 33m were "active" (employed or unemployed seeking and available for a job) with the remaining 8m inactive. Over the pandemic, employment fell by just under 370,000 and inactivity rose by 450,000.

Long-term sickness has been growing by around 0.5% per year over the last 25 years, so that by the start of the pandemic 6.4m (16%) of working age reported themselves as long-term sick. That number grew by 5% over the pandemic, a rise of 450,000 prime age workers.

Second, the numbers hide some important behavioural changes. It might be thought that the inactive are completely detached from the labour market, but this is not so. Pre-pandemic, 22% of the inactive said they wanted a job (but were currently not searching, or were unavailable). Now, 20% report wanting a job. So the 450,000 rise in inactivity understates the extent of disconnection from the labour market: a larger rise of 560,000 of those inactive who didn't want a job, and hence a fall of 110,000 of those inactive who did want a job.

Third, it might be thought that the long-term sick are not working. However, this is not so. Of the long term sick, 3m (52%) were economically active (3.0m employed, 0.3m unemployed). The remainder (3.1m) were economically inactive, split between 2.3m who didn't want a job and 0.9m who did. The change has been twofold. First, of the rise in inactivity of 450k, almost all of it (88%, 400k) is due to a rise in long-term sick who are inactive. But second, this again understates the disconnection from the labour market, because fewer long-term sick now want a job. Of those long-term sick who are inactive, 23% of them now say they want a job, down from 27% pre-pandemic.

Fourth, the usual published data on inactivity and sickness do not use the above data on self-reported health and so, we believe, understate the rise in long-term sickness and inactivity. Instead, published data refer to a subset of long-term sickness, namely those who are inactive and self-report long-term sickness as the "main reason" for their inactivity. In the published data people cannot, for instance, be inactive due to both retirement and long-term sickness, thus understating the true degree of long-term sickness. This is why in the published data, there are 230,000 more inactive with sickness as the main reason since pre-pandemic, compared with 450,000 more inactive who self-report as long-term sick (main reason or otherwise).

Fifth, it might be thought that increased working from home might increase the ability of some groups to work who might have previously been unable to do so, perhaps the long-term sick. We find no evidence of this in the sense of no increased outflows into employment from long-term sickness (relative to the non-sick) over the pandemic.

The rest of this paper proceeds as follows. In section 2 we define labour market status and in section 3 long-term sickness. Section 4 looks at the labour market experience of the long-term sick and section 5 changes over the pandemic, speculating on some of the possible reasons for a rise in long-term sickness and long COVID. Section 6 concludes.

2. Definitions of employment, unemployment and inactivity

To fix ideas, Figure 1 divides the population, in the second row, into three mutually exclusive states: the employed (including the self-employed), the unemployed, and the economically inactive. To be unemployed, following ILO definitions, an individual must fulfil *all* of the following:

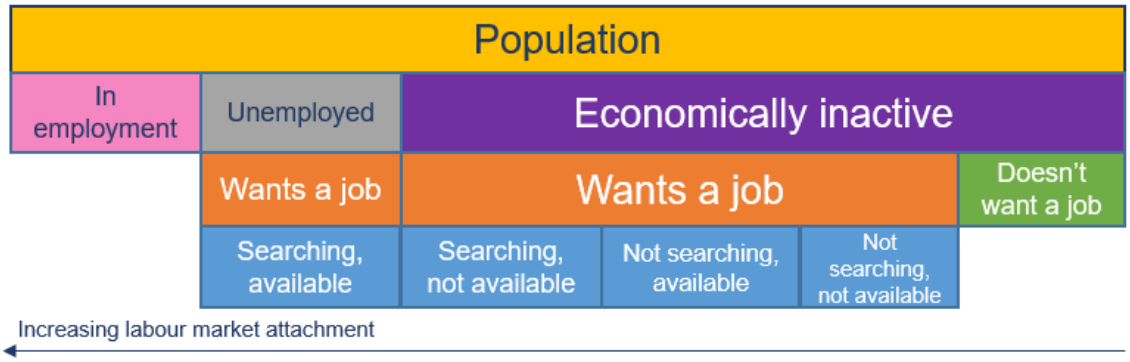
- Wants a job , *and*
- Have searched for a job in the past 4 weeks,
- Be available to start work in the next two weeks

After the employed and the unemployed, the rest of the population are economically inactive. It might be thought that the economically inactive do not want a job. However, the economically inactive consist of those who self-report they do not want a job *but also* those who want a job (perhaps at some unspecified time in the future). What then is the difference between inactivity and unemployment for those who want a job? As above, the unemployed are *both* searching *and* available. If only one, or neither, of these things are true, the individual is not unemployed, but economically inactive (even if they want a job). Thus the inactive consist of four groups:

1. Those who want a job and:
    a. Are searching, but not available
    b. Are not searching, but are available
    c. Are neither searching, nor available
2. Those who do not want a job

Group 2 is typically the largest. Of the others, group 1c tends to be largest. Groups 1a and 1b are to some degree statistical corner-cases.

Figure 1– Illustration of labour market status



Notes: Not to scale.

To give a sense of scale, Table 1 shows the composition of the working age (16-64 years old) population, just before the pandemic (Q4 2019), and in the latest data (Q1 2022). The labour market status data in Table 1 are all self-reported on the Labour Force Survey (LFS).

Starting in Q4 2019 in column 1, the working-age population was 41.37m of whom 31.69m were working and 1.23m unemployed. That leaves 8.45m economically inactive, of whom the majority (6.60m) did not want a job. The remaining 1.85m did want a job, but most of those were neither available nor searching. By Q1 2022, the latest data, the population had hardly changed, but employment had fallen by around 370k, with a rise in inactivity of 450k. In turn, that rise in inactivity consisted of a rise in those who don't want a job, of 560k, and fall in those who do want a job of 110k.

Table 1 – Labour market status of the working-age population (16-64 years old), millions of people, not seasonally adjusted (NSA), UK

		Total		Long-term sick		*Long-term sick (% of total)*	
		Q4 2019	**Q1 2022**	**Q4 2019**	**Q1 2022**	***Q4 2019***	***Q1 2022***
		(1)	(2)	(3)	(4)	*(5)*	*(6)*
Population	(1)	41.37	41.44	6.41	6.98	*16%*	*17%*
Employment	(2)	31.69	31.32	3.02	3.15	*10%*	*10%*
Unemployment	(3)	1.23	1.21	0.28	0.31	*23%*	*26%*
Inactive	(4)	8.45	8.90	3.12	3.52	*37%*	*40%*
of which:							
Don't want a job	(5)	6.60	7.17	2.26	2.70	*34%*	*38%*
Want a job	(6)	1.85	1.74	0.86	0.82	*46%*	*47%*
of which:							
Searching, not available	(7)	0.25	0.29	0.07	0.07	*26%*	*25%*
Available, not searching	(8)	0.51	0.46	0.19	0.17	*37%*	*37%*
Neither available, nor searching	(9)	1.08	0.99	0.60	0.58	*56%*	*58%*

Notes: may not sum due to rounding.

Source: authors' calculations from Labour Force Survey

3. Definitions of long-term sickness and ability to work

The pandemic has naturally raised the question of sickness, so we turn to this.

a. Long-term sick and limitation on work

The official data on long-term sickness and inactivity turns out to be a subset of the total long-term sick as follows. All respondents on the LFS are asked health questions. In this note, we define long-term sickness when a respondent:

- Answers YES to "Do you have any physical or mental health conditions or illnesses lasting or expecting to last 12 months or more?", *and*
- Answers YES to "Does this health problem affect the kind of paid work that you might do?"

In this paper therefore, we define the long-term sickness as a health condition or illness lasting 12 months or more, *and* that limits paid work in some way. The second restriction prevents the inclusion in our definition of people with long-term health conditions, such as asthma, but that does not affect their ability to work. We call workers who satisfy our adopted definition criteria "long-term sick" for short.

Column 3 and 4 of Table 1 shows the numbers who self-report as long-term sick for Q4 2019 and Q1 2022, and the fractions of the total are in columns 5 and 6. Looking at column 3, 6.41m (16% of the working age population) reported themselves as long-term sick.[1] However, it is important to note from the second row that 3.02m of those we identify as long-term sick were, in fact, employed and a further 0.28m were unemployed (i.e. seeking and available for work). So it is assuredly *not* the case that being long-term sick means one is "out of the labour market". As the rest of the data shows, the remaining 3.12m long-term sick were economically inactive, of whom 2.26m didn't want a job, and 0.86m did.

Turning to the change over the pandemic, the table shows there are roughly 0.55m more long-term sick in the population, of whom around 0.39m are inactive and the rest are employed or unemployed.

[1] To get a sense of the scale of these numbers, there are about 2.5m people working in manufacturing industries, 3.0m in retail, and 4.1m in healthcare (data for 2019, https://www.ons.gov.uk/file?uri=/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/broadindustrygroupsicbusinessregisterandemploymentsurveybrestable1/2019revised/table12019r.xlsx).

b. Official data on long-term sickness and inactivity

The data published by ONS on economic inactivity and long-term sickness are different to the above. Official labour market statistics give a breakdown of the economically inactive by the "reason for inactivity", with the reasons being "long-term sickness", as well as "retirement", "student", "temporary sickness" and various other reasons. This is derived from the following question on the Labour Force Survey (LFS):

- For those not searching for work in the last 4 weeks: "What was the main reason you did not look for work (in the last 4 weeks)"
- For those not able to start in the next two weeks: "Why would you not have been able to start within 2 weeks?" [instructions to interviews reads "code main reason only"]

The numbers in the official inactivity/long-term sickness data are then the sum of those people answering "long-term sick" as their main reason in these two questions. Thus, the breakdown in the official labour market statistics for inactive long-term sickness can be interpreted as the "main reason" for inactivity – one of which is "long-term sickness".

Figure 1 shows this approach covers only a subset of the long-term sick for two reasons. First, the long-term sick can be in employment or unemployment – defining them only as a subset of the economically inactive ignores this. Second, it might not even cover long-term sickness among the inactive.

A retired person could also be long-term sick, but give retirement as their "main reason" for inactivity. Indeed, long-term sickness could be the reason that they retired, but they could still give retirement as the "main reason" for their inactivity on the survey.

Our approach here uses alternative questions on the LFS to define the long-term sick in a broader sense, across all employment statuses. The vast majority of those with the "main reason" for inactivity being long-term sick are also identified in our measure, as well as others who are employed, unemployed, or inactive for different "main reasons".

4. The labour market experience of the working age long-term sick

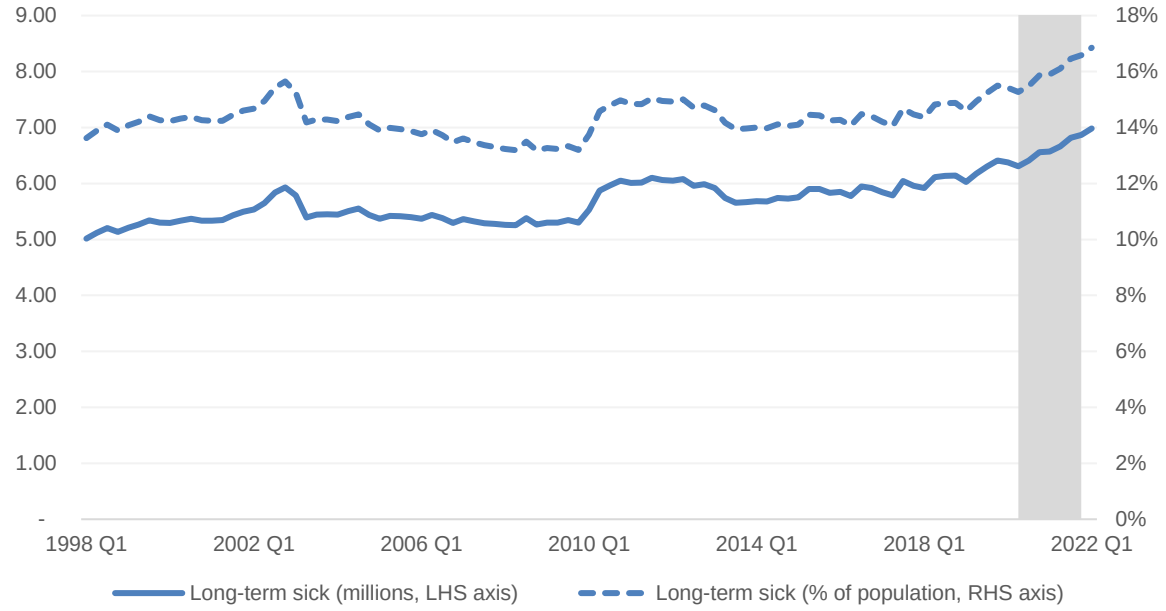
Before turning to the pandemic experience, we explore some long-run trends. Since there are many long-term sick amongst the elderly, we restrict the data in this section to people of working age (16-64 years old).

4.1. Demographics of the long-term sick population

Table 1 suggests that before the pandemic, 6.41m of the working age population described themselves are long-term sick which affected the work they do. Figure 2 shows a time series of the number, and proportion, of long-term sick in the working age population. The number rises from 5m in 1998, to 6.4m immediately before the pandemic, to 7m today. As a proportion of the working-age population, this rises from 14% in 1998, to 15% immediately before the pandemic, to 17% today.

The increase over the pandemic is an acceleration of a pre-existing trend. In the twenty years before the pandemic, the long-term sick working-age population was increasing by about 0.5% per year. During the two years of the pandemic, this has accelerated to about 4.1% per year.

Figure 2— Number and proportion of working-age population that are long-term sick, NSA, UK

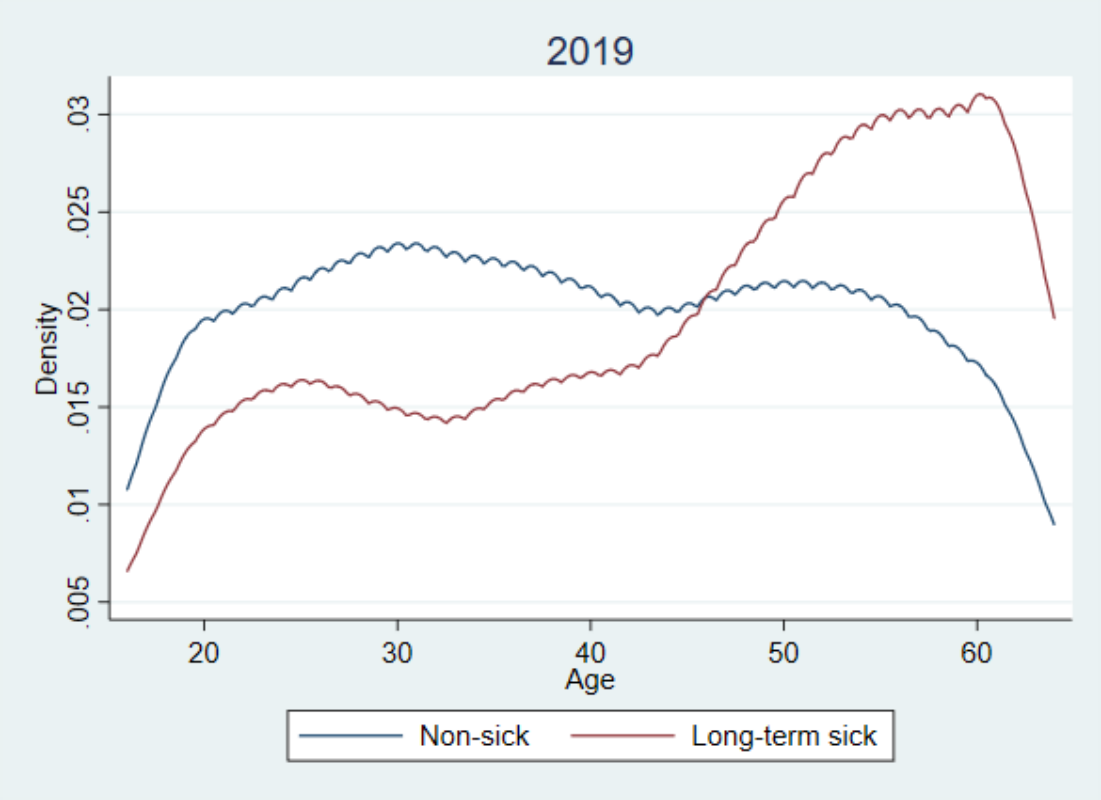


Notes: three changes in survey design affect the time series: in Q2 2002, additional questions on sickness were asked, which seem to have primed people to report sickness, and this persists in the data due to roll-forward imputation for five quarters; in Q2 2010, the coverage expanded to include non-working women aged 60-64 in line with an increase in the definition of "working age"; in Q2 2013, a filter question was changed, which seems to have reduced the number of people reaching the long-term sickness questions. These do not change the long-term trends, but focus on data since 2014 for a consistent time series.

Source: authors' calculations from Labour Force Survey

The long-term sick tend to be older than the non-sick, and are relatively much more concentrated amongst the 50+ age group. Figure 3 shows a kernel distribution of the age of the long-term sick and the non-sick populations in 2019. People ages 45 and over are over-represented in the long-term sick population relative to the non-sick population. The age distribution of the long-term sick has not changed much over the past two decades, while cohort age effects are far more obvious in the non-sick distribution.

Figure 3–Age distributions of the long-term sick and non-sick, 2019, UK, working age population

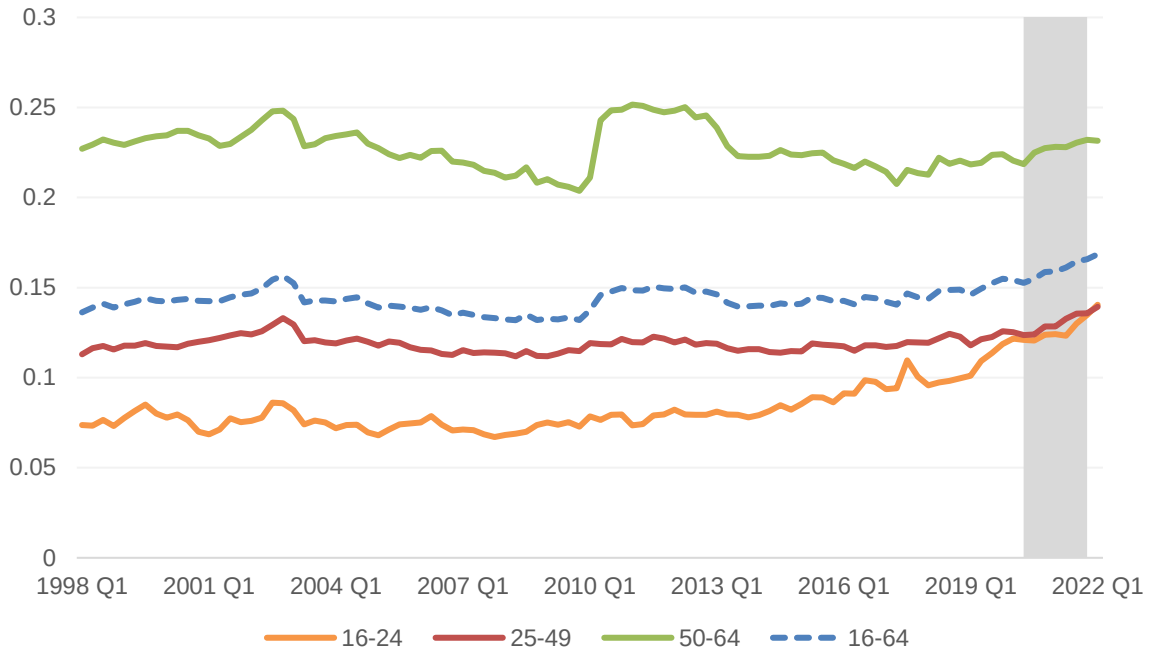


Notes: kernel density with the epanechnikov kernel, bandwidth 1 year. Working-age (16-64) population only.

Source: authors' calculations from Labour Force Survey

The increase in the number of long-term sick over time is not only because of an aging population. First, note that the data in Figure 2 is for the working-age population only (16 to 64 years). While there is also aging within this group, Figure 3 shows the proportion of long-term sick by age group within the working-age population. The most rapid increase before the pandemic was in the 16-24 years group. It is worth noting that the data are from a household survey, the Labour Force Survey (LFS), where the data on health problems is self-reported and does not require a professional diagnosis. So changes might reflect changes in social acceptability of self-reporting (e.g. of mental health), or medical advances that make diagnosis more likely.

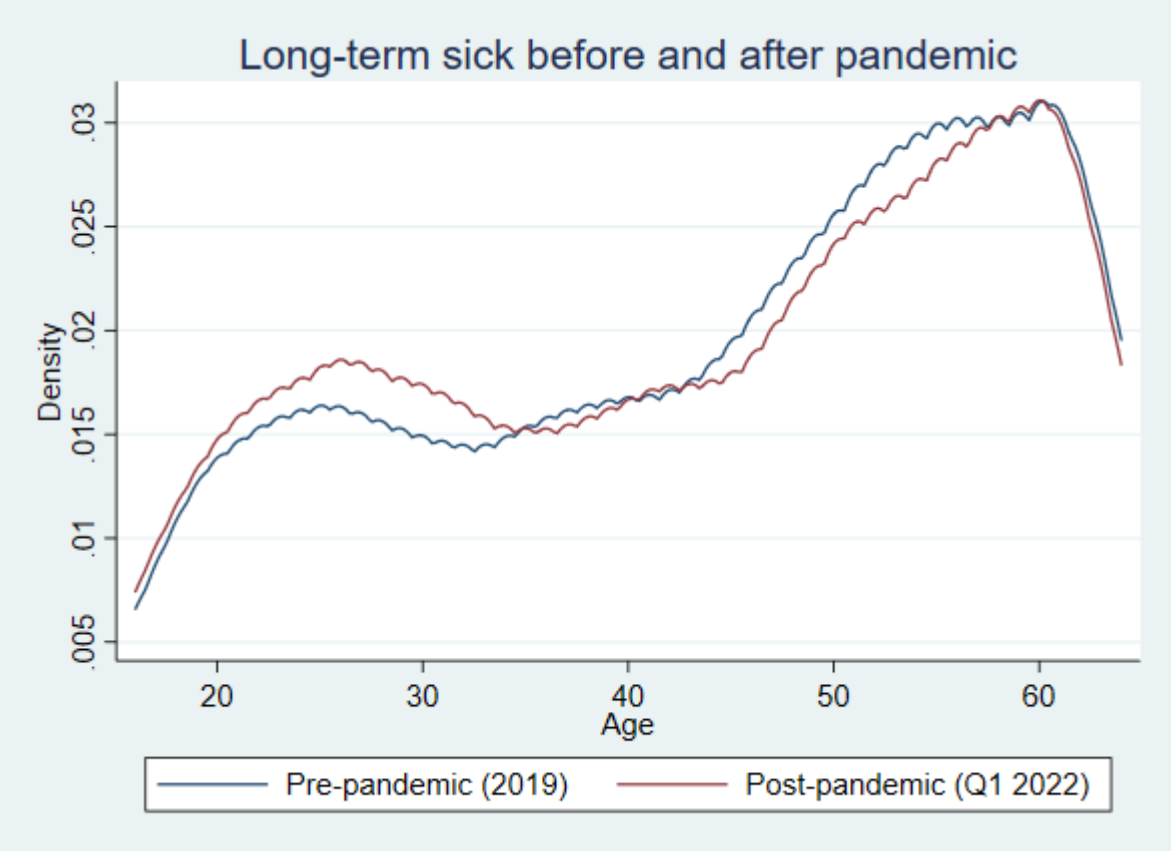
Figure 4–Proportion of long-term sick in working-age population by age group, NSA, UK



Notes: three changes in survey design affect the time series: in Q2 2002, additional questions on sickness were asked, which seem to have primed people to report sickness, and this persists in the data due to roll-forward imputation for five quarters; in Q2 2010, the coverage expanded to include non-working women aged 60-64 in line with an increase in the definition of "working age" (this can be seen to affect the 50-64 line and the 16-64 line, but not the other two age-groups); in Q2 2013, a filter question was changed, which seems to have reduced the number of people reaching the long-term sickness questions. These do not change the long-term trends, but focus on data since 2014 for a consistent time series. The 16-64 line (blue dashed) is the same as in Figure 2. Pandemic period shaded.

Figure 4 shows the age distribution of the long-term sick immediately before the pandemic, and in the latest quarter. During the pandemic, the largest increases in the long-term sick population were in the younger age-groups: 16-24 and 25-49. Ages 16 to about 34 now make up a larger part of the long-term sick population than before the pandemic, consistent with the data in Figure 3. Note, some cohort aging is also apparent, so not all of the changes will be due to the effects of the pandemic.

Figure 5–Age distributions of the long-term sick before the pandemic (2019) and in the most recent period (Q1 2022), UK

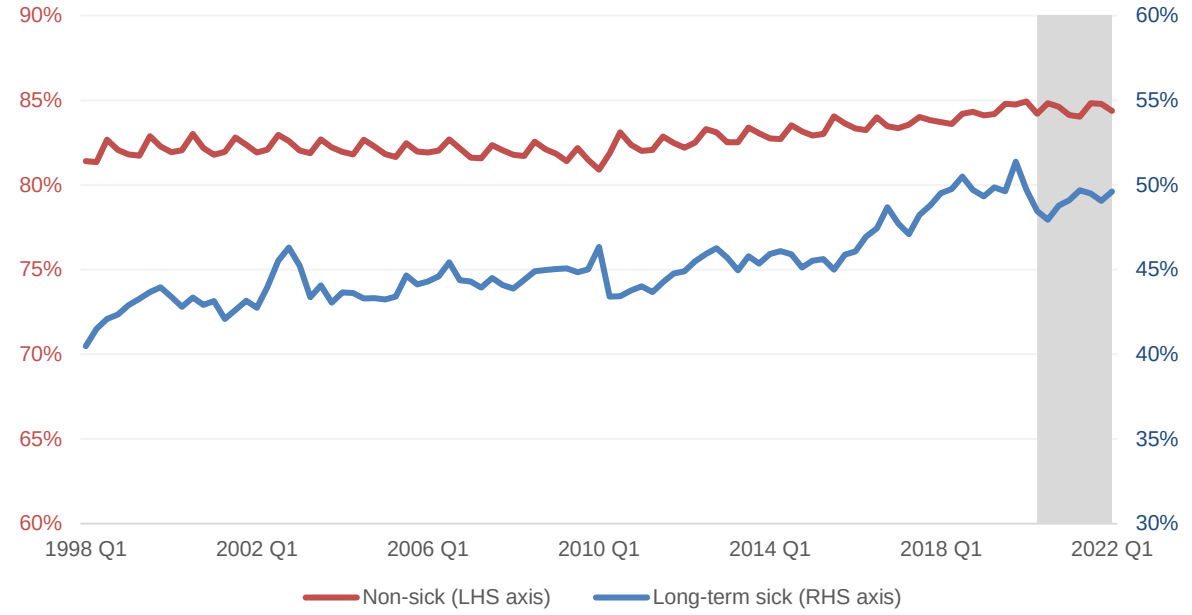


Notes: kernel density with the epanechnikov kernel, bandwidth 1 year. Working-age (16-64) population only.

4.2. Employment of the long-term sick

As Figure 6 shows, the long-term sick do participate in the labour market. Over 80% of the non-sick population are economically active, rising slowly over time. For the long-term sick, that figure is around 50% recently, having risen markedly between 2015 and 2019. Interestingly, the pandemic (and move towards homeworking) does not (yet) appear to have led to a significant boost in participation amongst the long-term sick.

Figure 6–Participation rate, long-term sick and non-sick, NSA, UK



Notes: long-term sick is against the right-hand axis (30-60%), non-sick is against the left-hand axis (60-90%). Pandemic period shaded in grey.

The inactivity rate is the inverse of the participation rate, and thus averages about 16% for the non-sick and 52% for the long-term sick in the 5 years before the pandemic. Thus, without controlling for other factors, being long-term sick makes one just over 3 times more likely to be economically inactive.

More formally, Table 2 shows the results of a series of logistic regressions that aim to predict economic inactivity with a range of factors including long-term sickness. The dependent variable takes the value 1 for inactivity, zero otherwise. Moving from left to right adds additional controls (and the time period and number of observations are consequently diminished reflecting availability of variables on a consistent basis over time). In each case, the coefficient on long-term sickness is large and statistically significant, and larger than any other variable in the regressions shown in Table 2.

To interpret the coefficients in the table we can take the exponent; this gives us the change in the odds of being economically inactive associated with the variable. The coefficients on long-term sickness imply that being long-term sick increases the odds of being inactive by around 5.5 times ($e^{1.729} = 5.64$).

Table 2 –economic inactivity and long-term sickness, various specifications and time periods (dependent variable: economic inactivity indicator)

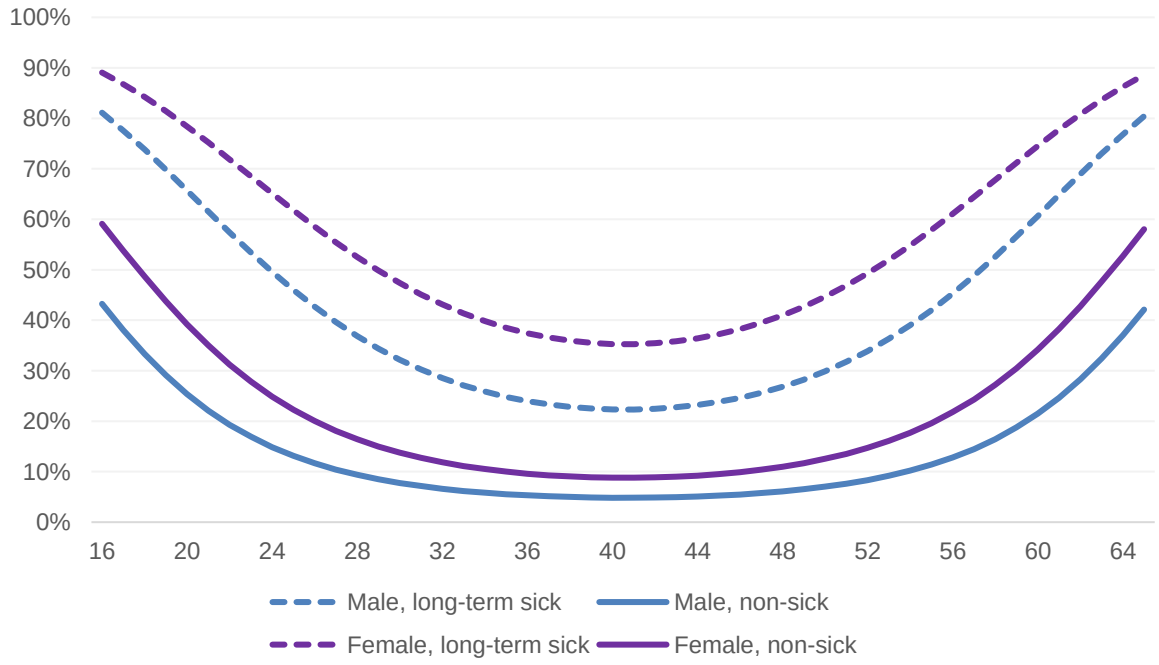
	(1)	(2)	(3)	(4)	(5)	(6)
Long-term sick	1.759***	1.967***	1.808***	1.800***	1.844***	1.729***
	(0.00245)	(0.00288)	(0.00507)	(0.00578)	(0.00601)	(0.00656)
Age		-0.347***	-0.371***	-0.375***	-0.392***	-0.363***
		(0.000503)	(0.000944)	(0.00108)	(0.00111)	(0.00126)
Age-squared		0.00433***	0.00451***	0.00456***	0.00485***	0.00447***
		(6.18e-06)	(1.16e-05)	(1.33e-05)	(1.38e-05)	(1.57e-05)
Female		0.893***	0.689***	0.656***	0.626***	0.640***

		(0.00225)	(0.00398)	(0.00455)	(0.00476)	(0.00540)
Constant	-1.442*** (0.00808)	4.081*** (0.0125)	4.804*** (0.0198)	4.967*** (0.0254)	5.075*** (0.0267)	4.392*** (0.0307)
Observations	6,944,277	6,944,277	2,295,501	1,790,929	1,685,094	1,386,286
Time period	1997Q2- 2022Q1	1997Q2- 2022Q1	2012Q1- 2022Q1	2014Q1- 2022Q1	2014Q1- 2022Q1	2015Q2- 2021Q4
Psuedo R-squared	0.0793	0.1853	0.2082	0.2085	0.2203	0.2324
Controls						
Housing tenure			YES	YES	YES	YES
Urban/rural				YES	YES	YES
Household composition					YES	YES
Highest education level						YES
Period	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Another intuitive way of interpreting the coefficients if by converting them to probabilities. This depends on the value and coefficient of every variable in the regression. Figure 7 shows the probability of being inactive by age, for men and women, for long-term sick and non-sick. Being long-term sick increases the probability of being inactive significantly for both men and women at all ages. The largest relative impact is in middle age, where the chance of being inactive for the non-sick is at its lowest. The average change in probability across all ages is just over 3.5 times for men, and about 3 times for women.

Figure 7–Probability of being economically inactive by age, sex, and long-term sickness



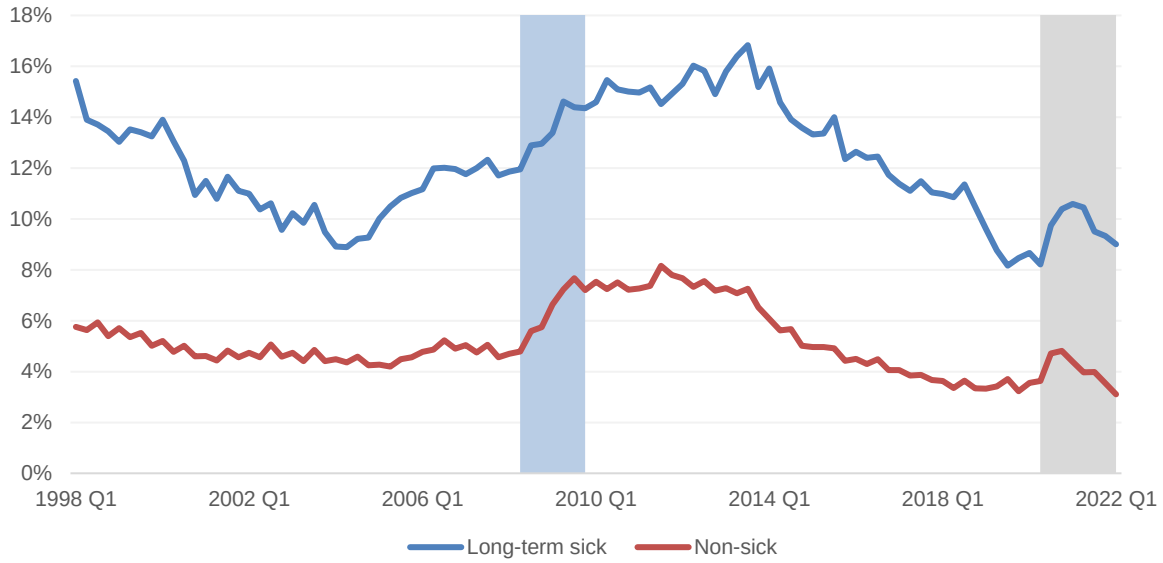
Notes: Probability calculated as $Odds/(1+Odds)$ where $Odds = e^{\sum \beta_i x_i}$. That is, Odds are equal to the exponent of the sum of all the variables multiplied by their respective coefficients. This Figure uses the coefficients from Model 6 of Table 2, abstracting from the control variables, which generally have small coefficients. The coefficients on the control variables are generally small

and not of primary interest. As Model 2 in Table 2 shows, omitting these control variables has relatively little impact on the coefficients on the variables of interest, and using these would not materially change Figure 6.

4.3. Non-employment of the long-term sick

Turning to unemployment, Figure 8 shows the long-term sick also have higher unemployment rates than the non-sick. Recall that the denominator for the unemployment rate is the economically active, so this is not due to higher inactivity amongst the long-term sick. The unemployment rate of the long-term sick was rising even before the 2008 economic downturn, and stayed higher for longer afterwards compared with the non-sick. Similarly during the pandemic, while the unemployment rate of the non-sick is now below pre-pandemic levels, for the long-term sick it is still above.

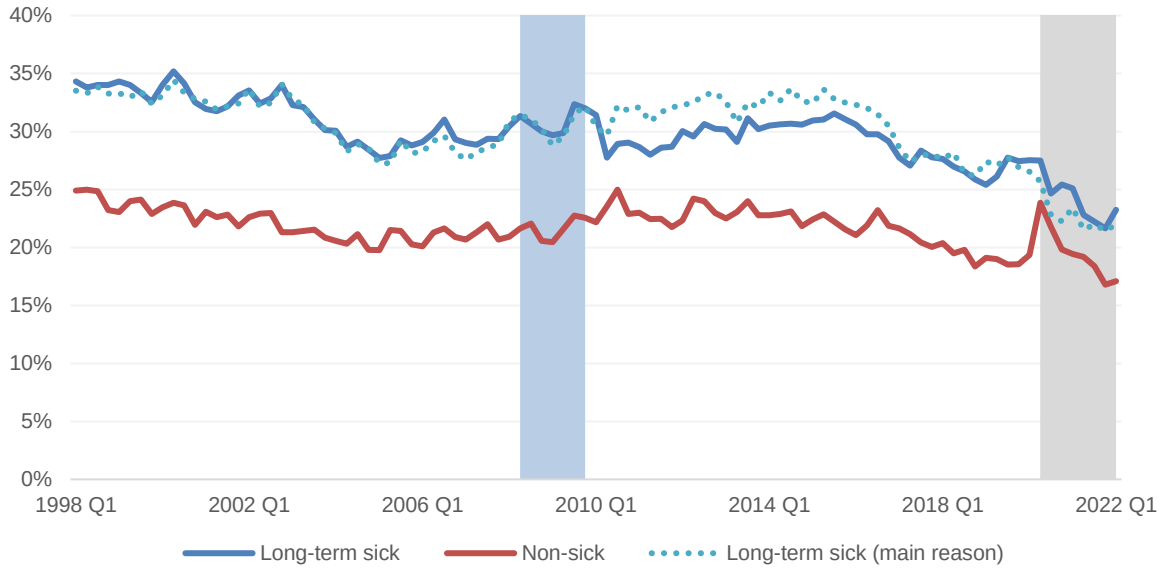
Figure 8–Unemployment rate, long-term sick and non-sick, NSA, UK



Notes: 2008/09 economic downturn period shaded light-blue. Pandemic period shaded in grey.

Recall that within the economically inactive there are those that want a job and those that do not. Figure 9 shows that a larger proportion of the inactive long-term sick want a job than of the inactive non-sick. This has been trending down since 2015/16 for both the non-sick and the long-term sick (both by our definition and the “main reason” definition in published ONS data), which would be consistent with an increasingly disengaged population. The proportion of the inactive who wanted a job was about 27% for the sick and 19% for the non-sick just before the pandemic. In Q1 2022, that was 23% for the sick and 17% for the non-sick.

Figure 9–Proportion of economically inactive who want a job, long-term sick and non-sick, NSA, UK



Notes: 2008/09 economic downturn period shaded light-blue. Pandemic period shaded in grey. Long-term sick (main reason) uses data from published labour market statistics from ONS, from dataset INAC01NSA.

Figure 10 looks at the make-up of the inactive who do want a job. It shows that a smaller fraction of the long-term sick are searching or available, than for the non-sick. This would suggest the presence of some structural or behavioural barriers for the long-term sick: they say they want to work, but a relatively small proportion are searching or available. Then again, there are relatively larger proportion who want a job (Figure 8).

Figure 10–Proportion of economically inactive who want a job, by category, NSA, UK

Figure 10a (left) – Non-sick

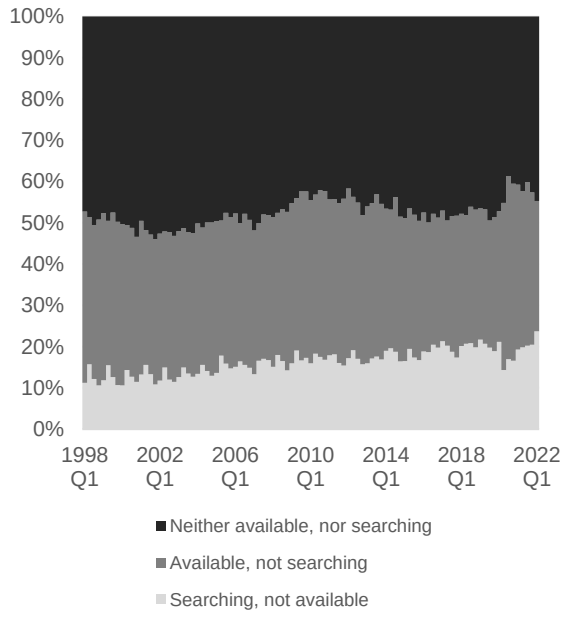
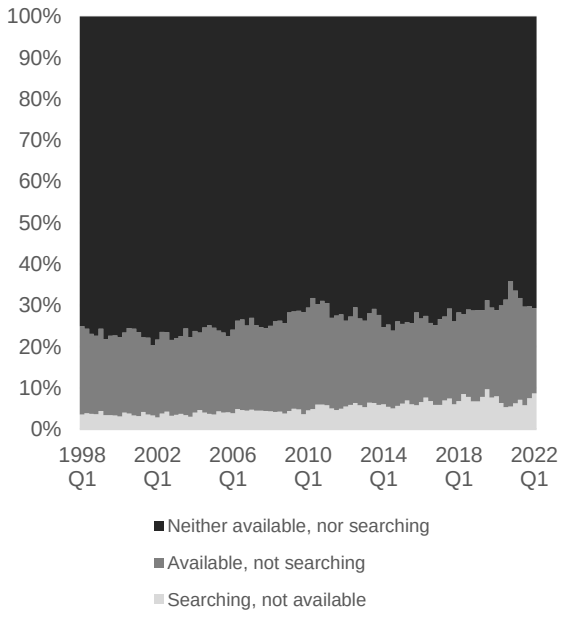


Figure 10b (right) – Long-term sick



4.4. Flows

We have seen that the long-term sick experience higher unemployment rates (Figure 7), and the inactive long-term sick are more likely to want a job (Figure 8), relative to the non-sick. But are they more likely to get a job? Using the two-quarter longitudinal version of the LFS, we examine flows from unemployment and inactivity to employment as a measure of "hiring". Figure 11 shows the proportion of the unemployed in period 1 who are employed in period 2, for the long-term sick and the non-sick. Figures 11b-11d do likewise but for flows from inactivity (10b), inactivity and wants a job (10c) and inactivity and doesn't want a job (10d). In each case, the long-term sick have lower hiring rates than the non-sick. As expected, flows are higher for unemployment than for inactivity, and for inactive who want a job than for inactive who don't want a job – in keeping with increased labour market attachment across the groups as shown in Figure 1.

The pandemic has led to a massive increase in homeworking, initially enforced by lockdowns, but later voluntarily, suggesting a change in social norms for working from home. One hypothesis is that such a change would facilitate working and hiring for the long-term sick, some of whom might find it difficult to work in an office or other business site. A first-pass test of this is that we would expect to see the hiring rates of the long-term sick increase, relative to the non-sick. Figure 12 shows the difference between the flow rate from unemployment to inactivity for the long-term sick and the non-sick, where a negative sign shows that flow rates are lower for the long-term sick than the non-sick. There has been no closing of this gap during the pandemic. On the basis of this simple test then, it does not look like working from home has improved relative employment inflow rates for the sick.

Figure 11–Flow rates from non-employment to employment, long-term sick and non-sick, NSA, UK

Figure 11a (left) – From unemployment

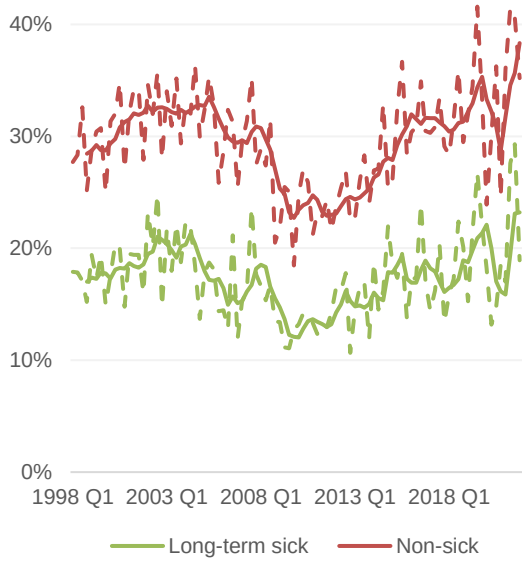


Figure 11b (right) – From inactivity (all)

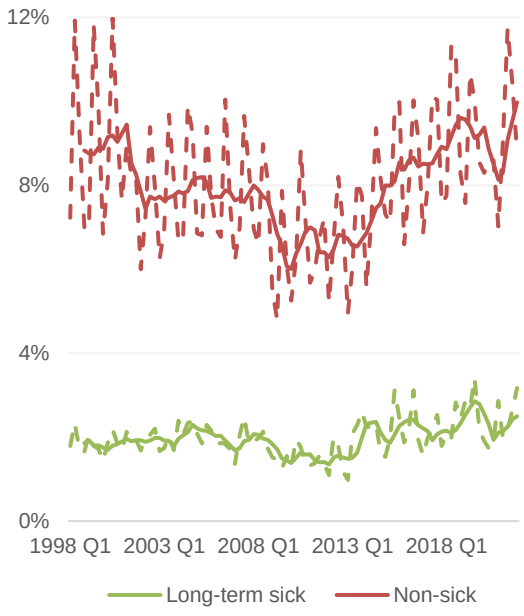
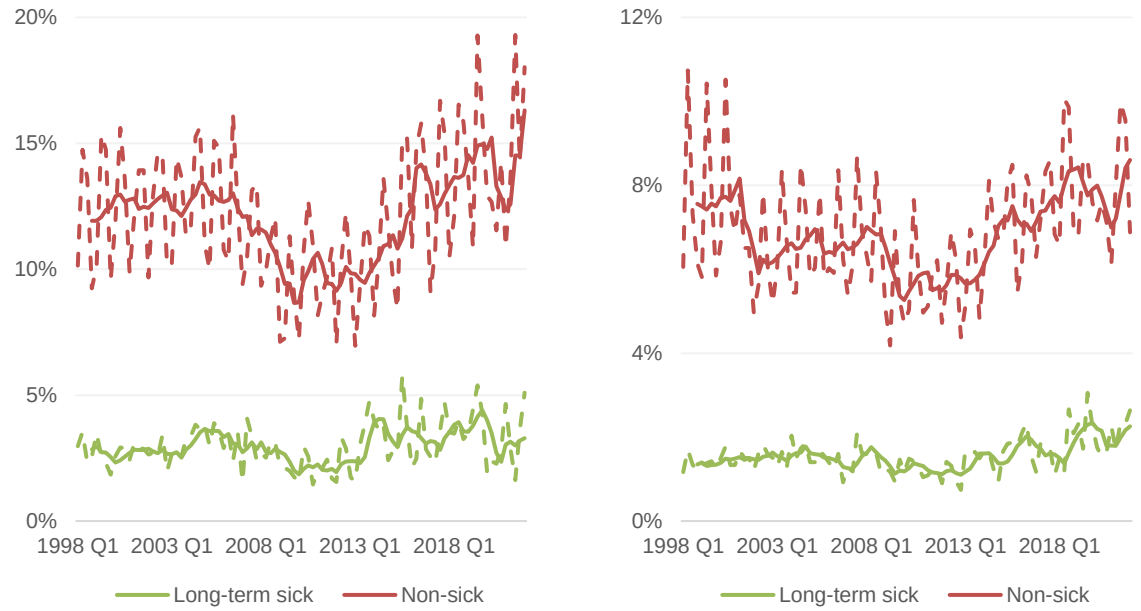


Figure 11c (left) – From inactive (wants a job)

Figure 11d (right) – From inactive (don't want a job)



Notes: Quarterly data in dashed lines, four-quarter rolling averages (backward looking) in solid lines. These results use the LFS weights from before the reweighting excersie in June 2022; the reweighted LFS 2Q dataset will be available from 19 July 2022; we do not expect this to make much difference to the results. Scales vary between charts.

Figure 12–Difference between flow rates from unemployment to employment for long-term sick and non-sick, NSA, UK

Notes: Long-term sick flow rate minus non-sick flow rate, such that negative sign shows a lower flow rate for the long-term sick. Quarterly data in dashed lines, four-quarter rolling averages (backward looking) in solid lines. In line with Figure 7, these results use the LFS weights from before the reweighting excersie in June 2022.

Not only are the long-term sick less likely to flow into employment, they are also more likely to leave employment than the non-sick. Figure 13a-c show that exit flows from employment, both to inactivity and to unemployment, are higher for the long-term sick than the non-sick. This could reflect lower job security for the long-term sick, and could be related to the types of jobs each group does. It could also

reflect higher rates of voluntary job exit by the long-term sick, associated with their sickness or other reasons.

Figure 13–Flow rates from employment to non-employment, long-term sick and non-sick, NSA, UK

Figure 12a (left) – To unemployment

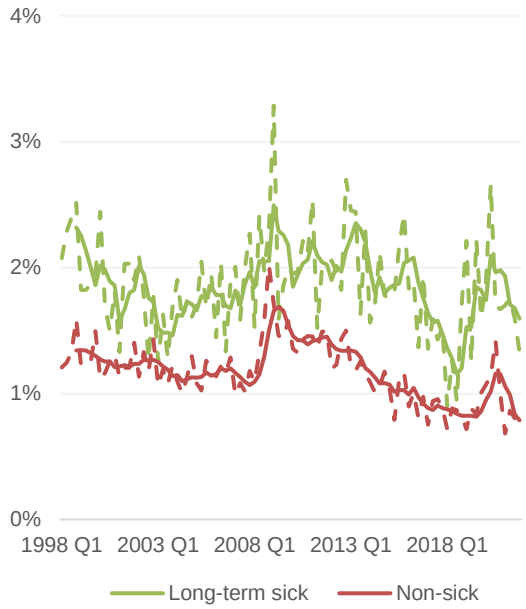


Figure 12b (right) – To inactivity

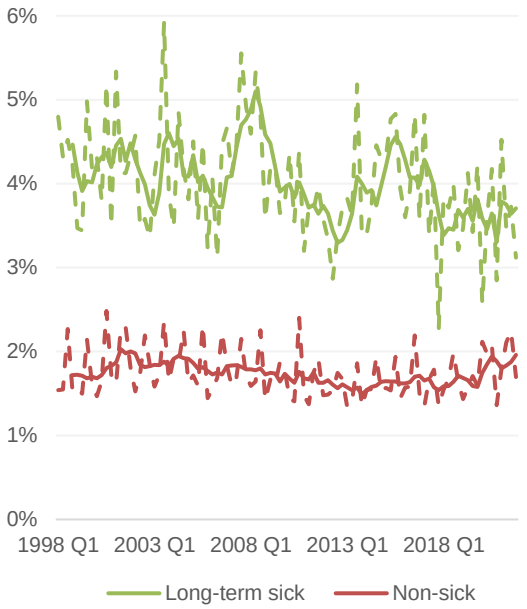
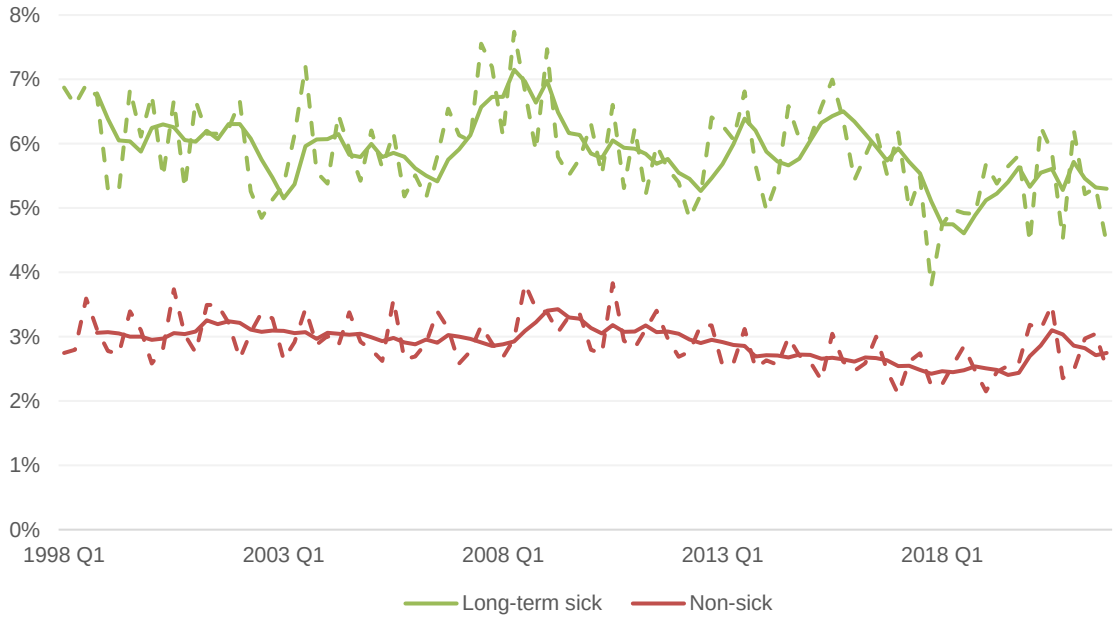


Figure 12c – To non-employment (either unemployment or inactivity)

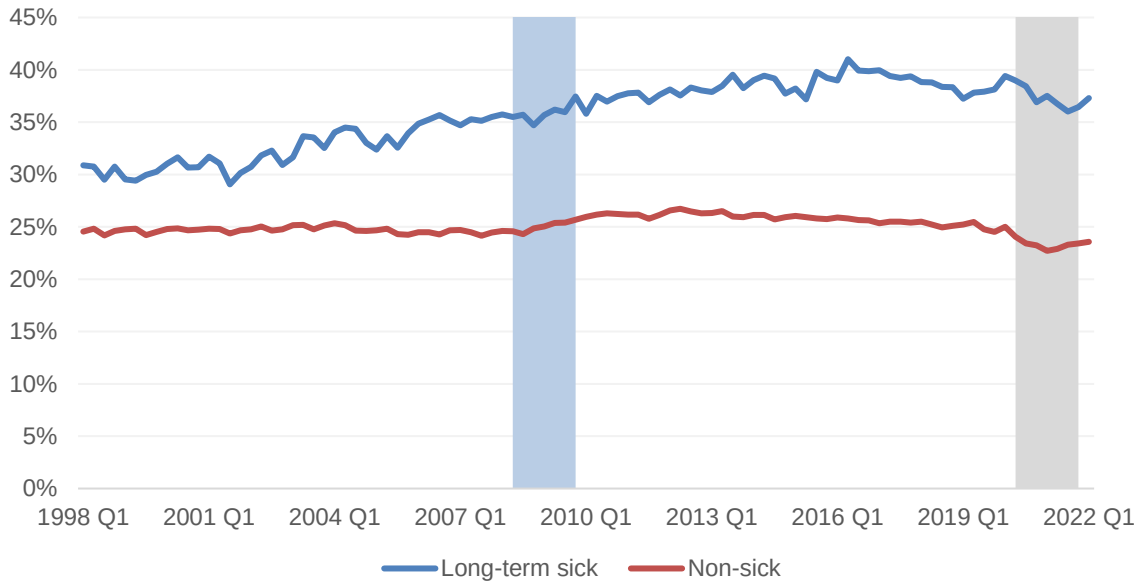


Notes: Quarterly data in dashed lines, four-quarter rolling averages (backward looking) in solid lines. These results use the LFS weights from before the reweighting excersie in June 2022; the reweighted LFS 2Q dataset will be available from 19 July 2022; we do not expect this to make much difference to the results. Scales vary between charts.

4.4. Working hours of the long-term sick

Figure 5 and Table 1 showed us that many long-term sick are in employment, and that the long-term sick make up a non-trivial portion of the working population. However, the long-term sick make up a consistently smaller portion of hours worked than they do of workers. This is partly because, as Figure 13 shows, the long-term sick are more likely to work part-time than the non-sick. While about 25% of the non-sick work part-time, that figure is about 35-40% for the long-term sick, having risen between the early 2000s and 2016, and fallen back slightly since then. The pandemic saw the share of part-time workers fall for both long-term sick and non-sick, although there is some signs of that reversing by the start of 2022.

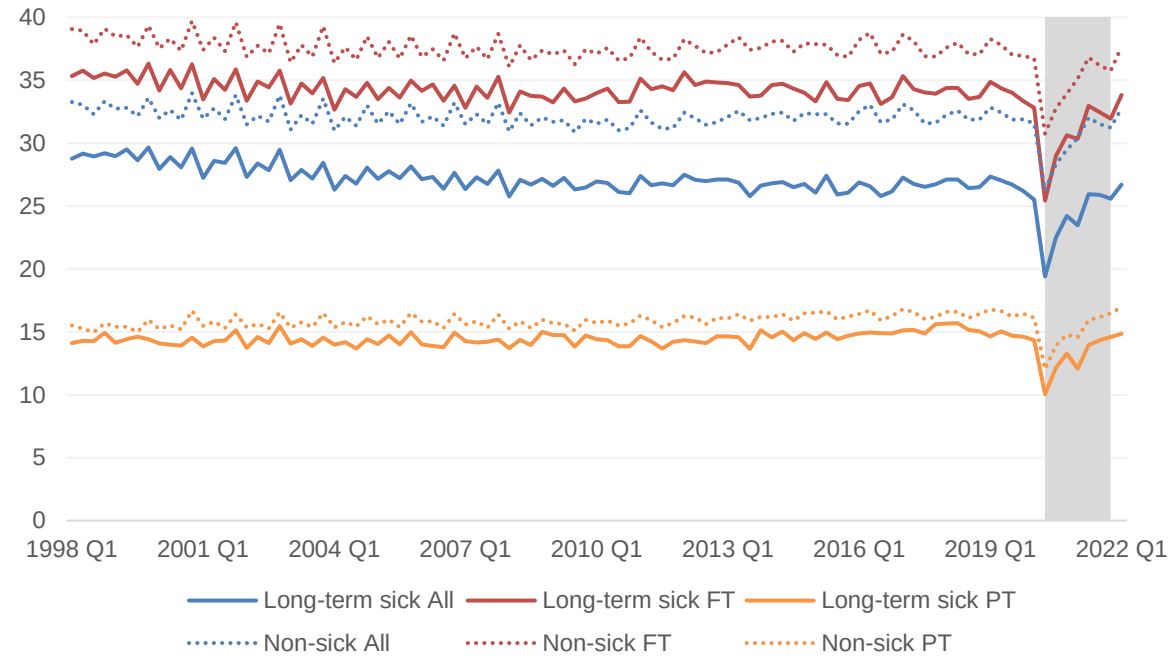
Figure 14— Proportion of workers who work part-time, long-term sick and non-sick, NSA, UK



Notes: 2008/09 economic downturn period shaded light-blue. Pandemic period shaded in grey.

The second reason that the long-term sick make up a smaller fraction of hours worked than they do of workers is that they work fewer hours on average, even after controlling for the larger share of part=time workers. Figure 15 shows average weekly hours worked for all working patterns (blue lines), full-time workers (red lines), and part-time workers (orange lines), for the long-term sick (solid lines) and the non-sick (dotted lines). Amongst both full-time and part-time workers, and overall, the long-term sick work fewer hours on average than the non-sick.

Figure 15–Average weekly hours worked, by working pattern, long-term sick (solid lines) and non-sick (dotted lines), NSA, UK



Notes: Long-term sick in solid lines, non-sick in dotted lines. Pandemic period shaded in grey. FT = full-time, PT = part-time.

Table 3 shows the results of a series of linear regressions where actual weekly hours worked are the dependent variable, and there are a range of explanatory variables including long-term sickness. Working from left to right, additional control variables are added, and the time period and number of observations are resultantly diminished reflecting availability of variables on a consistent basis over time. The coefficient on long-term sickness is fairly consistent at about -2.7 (hours), and is statistically significant in every case. With average weekly hours worked of the non-sick of about 32 hours (Figure 14), a 2.7 hour reduction due to long-term sickness corresponds to around 8%.

Table 3 – Actual weekly hours worked and long-term sickness (dependent variable: actual weekly hours worked)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Long-term sick	-4.972*** (0.0328)	-2.758*** (0.0287)	-3.087*** (0.0568)	-3.078*** (0.0569)	-2.794*** (0.0611)	-2.735*** (0.0662)	-2.724*** (0.0662)
Part-time		-21.11*** (0.0135)	-17.50*** (0.0312)	-17.23*** (0.0326)	-16.85*** (0.0349)	-16.53*** (0.0390)	-16.52*** (0.0390)
Temporary job			-1.918*** (0.0615)	-1.627*** (0.0620)	-1.936*** (0.0656)	-1.723*** (0.0731)	-1.734*** (0.0731)
Age			0.471*** (0.00740)	0.466*** (0.00758)	0.378*** (0.00811)	0.356*** (0.00908)	0.352*** (0.00908)
Age squared			-0.00538*** (9.09e-05)	-0.00533*** (9.25e-05)	-0.00443*** (9.95e-05)	-0.00414*** (0.000111)	-0.00409*** (0.000111)
Female			-3.819*** (0.0314)	-3.418*** (0.0330)	-3.470*** (0.0361)	-3.155*** (0.0407)	-3.150*** (0.0407)
Observations	4,949,862	4,948,190	1,128,662	1,124,070	963,326	808,392	808,392
Time period	1997Q2-2022Q1	1997Q2-2022Q1	2014Q1-2022Q1	2014Q1-2022Q1	2014Q1-2020Q4	2015Q1-2020Q4	2015Q1-2020Q4
R-squared	0.010	0.279	0.278	0.281	0.286	0.286	0.287

Controls							
Occupation					YES	YES	YES
Industry				YES		YES	YES
Education						YES	YES
Region							YES
Period	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5. Changes during the pandemic

Table 4 looks more closely at the data over the pandemic, between Q4 2019 (pre-pandemic) and Q1 2022 (latest data), and split between the long-term sick and the non-sick. In Table 1 we saw little change in the total working-age population, but the top row of Table 4 shows that this hides an increase in the long-term sick population of over half a million, and an almost commensurate decline in the non-sick population. This is consistent with people from the population becoming long-term sick during the pandemic. Total population grew less than it otherwise would, associated with emigration.

How much of this increase in long-term sickness in the working age population is due to long-covid (we study inactivity below)? This is somewhat uncertain, as the definition and measurement of long-covid are still debated and data are scarce. However, using ONS data on long-covid in conjunction with data in this paper, we estimate that long-covid would increase the number of self-reported long-term sick of working age by 517,000 by Q1 2022 (see Annex A for details) – remarkably similar to the overall increase in long-sickness of 570,000 in Table 4. While self-reported nature of much of this data makes the estimates uncertain, it seems likely that much of the increase in self-reported long-term sickness on the LFS during the pandemic is driven by long-covid.

Change in employment (row 2) and unemployment (row 3) mirror those of the population, with declines in the number of non-sick and increases in the number of long-term sick in each case. Employment of the non-sick falls by over half a million, but employment of the long-term sick rises by 137k, leaving total employment down 367k. This likely reflects people who were already in employment becoming long-term sick, rather than increased employment of previously sick individuals (as we saw in Figure 8, inflows to employment for the long-term sick have not increased noticeably during the pandemic). Likewise, unemployment of the non-sick falls 52k, while it increases 33k for the long-term sick.

Total economic inactivity (row 4) rose by about 450k. Table 2 shows that 400k of that comes from the long-term sick, with just 52k accounted for by the non-sick: that is, 88% of the increase comes from the long-term sick. Put another way, of the 570k more long-term sick in the working-age population (row 1), about 70% of them are economically inactive (row 4).

Of the increased economically inactive, row 5 of Table 4 shows that the majority comes from people who say they don't want a job. In fact, there are now *fewer* people who are economically inactive and say they do want a job (row 6). As a result, the increase in the inactive who say they don't want a job (row 5) is even greater than the increase in the inactive overall (row 4). A similar pattern exists for the long-term sick and the non-sick, although more pronounced for the long-term sick.

Thus the rise in those who are inactive and do not want a job (row 5) reflects two factors: an increase in the total inactive group (due to people leaving the active population), and an increase in the proportion of the inactive group who say they do not want a job (a change in reporting by the already inactive population). This is consistent with an increasing disengagement of the inactive population (both the long-term sick and the non-sick) during the pandemic. As Table 2 shows, this is driven by the long-term sick.

Table 4 – Changes between Q4 2019 and Q1 2022, by economic status and sickness, thousands of people, not seasonally adjusted, UK

	Row	Change in long-term sick	Change in non-sick	Total change	Proportion of change from long-term sick
Population	1	570	-504	67	
Employment	2	137	-504	-367	
Unemployment	3	33	-52	-19	
Inactive	4	400	52	452	88%
of which:					
Don't want a job	5	438	122	560	78%
Want a job	6	-38	-70	-108	35%
of which:					
Searching, not available	7	5	31	36	14%
Available, not searching	8	-18	-31	-49	36%
Neither available, nor searching	9	-25	-70	-95	27%

Taking the increase in unemployment and inactivity together, there are now around 433,000 more long-term sick people of working-age who are out of work. How much of this is because previously non-sick people in employment became long-term sick and less employed, and how much is because previous non-sick non-employed people became long-term sick and stayed non-employed? Again, this is difficult to establish. Figure 10 shows us that flow rates out of employment are not unusually high for either the non-sick or long-term sick. Flow rates into inactivity (Figure 10b) have risen somewhat for the non-sick, although they are not at unprecedented levels. With little pick-up in outflow rates amongst the long-term sick, it is difficult to ascribe much of the change to this channel.

However, the data does not rule out this channel completely. Since the long-term sick have consistently higher flow rates out of employment than the non-sick (Figure 12), and there are now more long-term sick in the population (Table 4), then we would expect higher outflows in absolute terms from a composition effect, even if the outflow rates themselves remain unchanged for each group. Figure 10c shows that about 3% of the non-sick leave employment each quarter, compared to over 5% for the long-term sick. If some previously non-sick employed people became long-term sick each quarter during the pandemic, and given a 2 percentage point higher exit rate for the long-term sick than the non-sick each quarter (Figure 12c), this composition effect could explain some of increase in inactive long-term sick in Table 4.

How much has long-covid contributed to the increase in long-term sick economically inactive? Reuschke and Houston (2022) estimate that long-covid caused 80,000 workers to exit employment as of March 2022, using data from the ONS Covid Infection Survey (CIS) and Understanding Society survey. We make a similar estimate based only on the ONS CIS, of 96,000 as of June 2022 (see Annex A for details). These are not trivial figures, but much smaller than the increase in non-employed long-term sick of 433,000 (Table 4). Some of this could also be explained by increases in health conditions other than long-covid, resulting from increases in NHS waiting lists. It seems likely, however, that at least some of the apparent increase in non-working long-term sick is due to a larger proportion of previously non-working people self-reporting as long-term sick.

However it came about, Table 4 makes clear there are now about 400,000 more inactive long-term sick, and about 440,000 more inactive long-term sick who don't want a job. These figures are both larger than those that can be calculated from official labour market statistics published by ONS.

Table 5 compares the data on long-term sickness introduced in this paper with those in the official figures. This is only possible for the economically inactive status, since the official figures are

contingent on inactivity. The official figures also don't provide the breakdown within the "inactive, want a job" group.

Table 5 – Changes in labour market statuses during the pandemic, long-term sickness as defined in official labour market statistics, and as defined in this paper, UK

	Row	Official (SA)				This paper (NSA)			
		Q4 2019	Q1 2022	# change	% change	Q4 2019	Q1 2022	# change	% change
Population	1					6,413	6,983	570	8.9%
Employment	2					3,016	3,153	137	4.5%
Unemployment	3					279	312	33	12.0%
Inactive	4	2,075	2,315	240	11.6%	3,118	3,518	400	12.8%
of which:									
Don't want a job	5	1,516	1,819	303	20.0%	2,263	2,701	438	19.4%
Want a job	6	571	506	-66	-11.3%	856	817	-38	-4.5%
of which:									
Searching, not available	7					66	71	5	7.6%
Available, not searching	8					186	169	-18	-9.5%
Neither available, nor searching	9					603	578	-25	-4.2%

Notes: long-term sickness is not very seasonal, so the difference between SA and NSA is very small. SA is used from the official figures since these are the more regularly quoted numbers. The official NSA change figures are 234k, 285k, and -51k respectively.

Row 4 of Table 5 shows that there the official figures capture many, but not all, of the inactive long-term sick (as defined in this paper) – only about two-thirds. The difference arises because the official figures only capture people whose "main reason" for inactivity is long-term sickness. The larger figures in this paper can be attributed to inactive people who have a different "main reason" for their inactivity, but are also long-term sick (by our measure). These could be early retirees, who give retirement as their "main reason" for inactivity, but are also long-term sick (indeed, long-term sickness could be one reason for their retirement).

The percentage increases during the pandemic in the number of inactive long-term sick (row 4) is similar using the official figures and the broader measures in this paper: 11.6% based on "main reason", and 12.8% using the broader measure. The percentage increase for the inactive long-term sick who say they don't want a job (row 5) is also similar between the measures: 20.0% based on "main reason", and 19.4% using the broader measure. However, the broader measures in this paper also show increases in long-term sick in the total population (row 1), employment (row 2), and unemployment (row 3), which the official figures are silent on.

6. Conclusions

This paper has tried to give a better understanding of the long-term sick in the labour market, but what are the implications of all of this for our understanding of the economy?

First, it is worth reiterating that *the long-term sick work* – about 10% of the workforce is long-term sick (as defined in this paper). This is a non-trivial group, and has implications for our understanding of variables labour market-related topics, including productivity, labour supply, labour market tightness, and more. If the long-term sick are systematically different to the non-sick along any labour market-relevant dimensions, then it will be helpful to pay attention to this group.

For instance, if the long-term sick are less productive on average than the non-sick, then a shift in composition of the workforce towards the long-term sick would tend to drag down aggregate productivity. It is difficult to measure individual-level productivity for many activities across the economy, so we do not provide evidence that the long-term sick are less productive.

What we do know is that the long-term sick work fewer hours on average than the non-sick (Figures 13 and 14, and Table 3). So an increasing share of long-term sick in the workforce would tend to reduce aggregate average hours worked, which, other things equal, would reduce potential output.

The long-term sick have lower labour participation rates than the non-sick. Thus, an increase in long-term sick in the population might reduce aggregate participation rates. That could be mitigated if the long-term sick were better able to access the labour market post-pandemic, driven by the widespread use of homeworking technology. As Figures 10 and 11 show, that does not yet seem to be the case, but the effect may show itself in future. The lack of effect might be because of skills mismatches, if the long-term sick are less likely to possess the necessary skills to use the technology that enables homeworking, or are less willing or able to retrain. Homeworking is also only an option in around half of all occupations (Dingel and Neiman, 2020; ONS, 2021) so if the skills of the non-employed long-term sick are not suitable for those roles, then homeworking technology may not help in any case.

The long-term sick are also much more likely to work part-time than the non-sick (Figure 9) – this might reflect a choice for flexibility, or the inability to find full-time work. The pandemic saw increased flexibility of working patterns for some, as people juggled home schooling, family life, and working. If a culture change made part-time or flexible time working more common, that could also increase the employment prospects of the long-term sick.

There are also implications for measurement. As we have shown, there can be a substantial difference between the "main reason" for inactivity being long-term sickness, and the fact that someone is long-term sick. The Labour Force Survey (LFS) fortunately asks the questions that permit the definition in this paper, although this is not something routinely reported or published by ONS. If labour market participation becomes a topic of increased interest in the wake of the pandemic, having more nuance on the reasons for inactivity might be useful for policy. Specifically, rather than respondents give only a main reason for inactivity, secondary reasons could also be useful. Broadening the range of reasons could also be useful, to include factors such as continued fear of infection (see e.g. Barrero, Bloom and Davis (2022) on "long social distancing"), long-covid, insufficient pay, and barriers to job search.

Finally, there are implications for the way we understand labour market tightness, and thus tools like the Philips curve. Traditionally, the measure of 'available labour' would be the unemployment, sometimes with different weights on the short-term and long-term unemployed. Such a measure is then used to define labour market tightness, either by the difference between current 'available labour' and the natural rate (e.g. the unemployment gap = U-U*) or as the ratio between vacancies and available labour' (e.g. the vacancies to unemployment ratio = V/U). However, as Figures 1, 8, 9 and 10 show, some economically inactive people do want a job. In fact, as discussed earlier, some inactive are even searching for a job, although they cannot be both searching and available or else they would be classified as unemployed. Thus, a more holistic measure of 'available labour' might account for at least some of the economically inactive as well as the unemployed.

As Figures 8 and 9 show, the long-term sick are quite different to the non-sick in respect to wanting and searching for a job while economically inactive. More of the inactive long-term sick want a job, but fewer of them are searching for a job. In fact, roughly the same proportion of the long-term sick *want* to be economically active (according to their LFS response) as the non-sick (i.e. employed, unemployed, or inactive and want a job). But the long-term sick are less likely to actually work, or job search, which could reflect differences in the ability or willingness to work or search. This might reflect cultural or systemic barriers to work and to job search for the long-term sick. It could also reflect mismatches between the location or skills of the long-term sick and the jobs available, or that the long-term sick have higher reservation wages than the market clearing wage (perhaps associated with higher costs of work for the long-term sick, such as changes in welfare entitlement, or travelling expenses).

Considering recent labour market tightness, wage growth has been strong, and vacancies at record highs, while the number of unemployed is little changed on pre-pandemic levels (Table 4). The number of unemployed in Q4 2019 was 1.23m and in Q1 2022 it was 1.21m, a change of just 19,000 people, or a 1.5% fall. This would seem out of sync with such labour market tightness. Yet, the number of economically inactive people who want a job (which we can consider as quasi-unemployed), has fallen much further – falling 108,000 from 1.85m in Q4 2019 to 1.74m in Q1 2022, or a 5.9% fall. Indeed, there are more economically inactive who want a job than there are unemployed. Taking these groups together, there has been a fall in 'available labour' of 127,000, a fall of 4.1%. Even if the 'weight' (reflecting the relevance of the group for labour market tightness relative to the unemployed) on the inactive who want a job was less than 1, this could still suggest a greater increase in tightness than by the unemployment numbers alone. It might therefore be useful to factor in different groups of inactive, with different weights, to our measures.

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Annex A – Data appendix on long-covid

Number of additional long-term sick in the working age population from long-covid

ONS data show that in the four-week period ending 5 March 2022, there were 1.74m in the UK with self-reported long-covid (ongoing symptoms after a covid infection). To satisfy our definition of long-term sickness, the health problem must have lasted, or be expected to last, 12 months. For many long-covid sufferers, it has not yet been 12 months since their symptoms began, and knowledge of long-covid remains low. Thus, it is unclear how long-covid suffers of, say, 3 months would respond to this question on the LFS. For a rough estimate, we assume all long-covid sufferers experiencing symptoms for at least 12 weeks would report a long-term health problem on the LFS.

In the four-week period ending 5 March 2022, there were 1.2m people in the UK with self-reported long-covid of at least 12 weeks duration, of which 1m were aged 17-69 (the closest we can get to 'working-age' from the age breakdown in the published data). This does not equate to 1m new long-term sick people in the population, since some of these people would already have classified themselves as long-term sick due to existing health conditions. ONS data shows that rates of long-covid are higher amongst people with existing health conditions, especially those that limit activity a lot. Nonetheless, 1.48% of people (of all ages) without existing health conditions reported having long-covid for at least 12 weeks in February 2022. From Table 1 we estimate the non-sick population of working age before the pandemic was 34.96m; 1.48% of that figure is 517,000, which is remarkably close to the increase in self-reported long-term sickness in Table 2. While self-reported nature of much of this data makes the estimates uncertain, it seems likely that much of the increase in self-reported long-term sickness on the LFS during the pandemic is driven by long-covid.

Calculating the effect of long-covid on employment

The ONS data on long-covid provides (in Table 9) the estimated proportion of workers by "employment sector" that have long-covid. The "employment sectors" used are not consistent with SIC 2007, and are self-selected by respondents to the CIS from a multiple-choice list. The list is relatively short and with limited guidance and details, and it is thus relatively unclear how to interpret these data. Only respondents who say they are in employment on a previous question are asked this "employment sector" question. We can thus be sure that anyone with an employment sector is employed.

The long-covid data does not provide the estimated number of people with long-covid in each sector, only the proportion. We map employment data by industry from the LFS to the employment sectors on the CIS, in order to estimate the number. We use the LFS here since industries on the LFS are also given by the respondent individual, as opposed to business surveys which will use information on the business register. Business register information is usually considered higher quality for industry statistics, but in this case we need to ensure consistency with the CIS, and the LFS is a more similar collection.

The LFS industry employment data does not have quite the sufficient detail to map to the CIS categories, so we complement it with jobs-by-industry data from ONS productivity tables.

Multiplying the rates of long-covid by the estimating number of workers per "employment sector" gives the number of long-covid sufferers in employment in each industry, and thus in employment in total. We also know (from Table 1) the number of long-covid sufferers in the population, irrespective of employment status. We can thus estimate the employment rate of long-covid sufferers. We repeat this for each of the levels of "impact on daily activity" of long-covid: "not at all", "a little", "a lot". Thus, we have an estimate of the employment rate of long-covid sufferers in each "impact" group.

We assume that any long-covid sufferers in impact group “not at all” would not leave employment because of long-covid. This follows since they have reported no impact of long-covid on their ability to carry out day-to-day tasks, and it therefore seems unlikely that would be sufficient to remove them from employment.

The employment rate of the “not at all” group is 67%, while for the “a little” impacted group it is 62% and for the “a lot” impacted group it is 56%. It is not clear whether all of this difference is because of the severity of long-covid, reporting biases, or other unobservables. On the assumption that the difference is due entirely to long-covid, we estimate the number of people in the “a little” and “a lot” group who would be employed if the group had the same employment rate as the “not at all” group, and compare that against our estimate of those who are actually working. The difference is our estimate of the number of people who have left employment because of long-covid.

Table A1 summarises. Row 1 gives the estimated number working, based on the “employment sector” rates described above. Row 2 gives the total, with data taken directly from ONS tables. Row 3 gives the number not working, which is row 2 less row 1. Row 4 is the employment rate, which is row 1 divided by row 2. Row 5 is the proportion not working, which is one minus row 4 (or equivalent row 3 divided by row 2). Row 6 is the number we would estimate would be working, if the employment rate as 67% as for the “not at all” impacted group. Row 7 gives our estimate of the number who have left employment due to long-covid, which is the difference between row 6 and row 1.

Table A1 – Summary of calculations of the employment impact of long-covid

		Long covid and impacted…		
	Population	**Not at all**	**A little**	**A lot**
Number working ('000)	32,558	367	609	227
Total ('000)	53,772	550	990	409
Number not working ('000)	21,214	183	381	182
Employment rate (proportion working)	61%	67%	62%	56%
Proportion not working	39%	33%	38%	44%
Number working if at "not at all" rates ('000)	35,846	367	660	273
Number left employment due to more severe long-covid ('000)			51	45

Table A1 also shows data for the whole population aged 16 and over. The employment rate in the population as a whole is lower than for long-covid sufferers, which may see odd. However, note that long-covid is disproportionately likely to affect people of working age, so we would expect employment rates of this group to be higher (unless their employment rates are adversely affected by long-covid symptoms, as for the “a little” and “a lot” groups).