COVID-19, Unemployment, and Social Disadvantage amongst Young People in Ireland

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Preliminary Draft – Not for further circulation

Abstract

We examine the relationship between the COVID-19 pandemic and spatial variations in social deprivation for young people (aged between 18 and 29). How do COVID-19 pandemic unemployment rates differ for young people in more deprived areas, and what are the main area-level factors correlated with any differences. We construct Pandemic Unemployment Payment (PUP) rates for youths at Electoral District (ED) level from a unique, anonymised, administrative dataset. We find that ED's with average levels of social deprivation have higher rates of pandemic unemployment. These same areas also spend longer on average in receipt of the payment compared to more deprived areas. Furthermore, youths in more deprived areas are less susceptible to Government restrictions. When restrictions tighten, the youth PUP rates increase to the greatest extent in ED's with lower levels of social deprivation. In contrast, when restrictions are relaxed, the youth PUP rates decrease to the greatest extent in ED's with higher levels of social deprivation. There is evidence of a potential scarring effect, where PUP rates remain significantly higher in some areas during the final phase of the study (May to July 2021) when both infections and restrictions were low. A plethora of potential factors may be driving our results such as types of jobs, job security, social conditions, household income, savings and wealth, childcare availability, and other personal/household decision-making processes.

Keywords: COVID-19, unemployment, labour market shock, young people, labour market scarring, social disadvantage.

JEL Classifications: J6, J3, I1.

1. Introduction

It has been well documented internationally that the impacts of the COVID-19 pandemic have been disproportionately felt by low-income households, both from health and economic perspectives. Many low paid young workers are in essential occupations, such as retail, hospitality, and medical auxiliary services, and have a higher exposure to the virus. Low-income households are also more likely to be of higher density, which makes social distancing problematic leading to a greater spread of the virus. Sectors such as accommodation and food, which contains a high proportion of young minimum wage employees, were forced to furlough or close during the pandemic, which again disproportionately impacts low-income households.

In this study, we explore how COVID-19 unemployment rates for young people (aged between 18 and 29) vary in more deprived areas and what are the main area-level factors correlated with any heterogeneous effects. We specifically explore the relationship between the COVID-19 pandemic unemployment payment (PUP) and spatial variations in social deprivation at an ED level (3,409 in Ireland). The Pandemic Unemployment Payment (PUP) was a social welfare payment in Ireland in response to the pandemic and the resulting economic impact of lockdowns and restrictions. The payment was designed as income replacement for employees and the self-employed who lost their employment due to the public health emergency to mitigate the short-term impact on financial wellbeing that job loss would cause.

This paper uses a unique dataset of PUP recipients from the Department of Social Protection to examine to what extent pandemic unemployment relates to social deprivation at the Electoral Division (ED) level. We examine the relationship between pandemic unemployment with overall deprivation using the HP deprivation index and it's individual components of

deprivation including but not limited to: proportion of lone parents, the areas educational profile, proportion residing in local authority housing.

The COVID-19 pandemic period examined is from March 2020 to September 2021. We look at the relationship between youth PUP rates and deprivation over the whole period as well as at different points of the pandemic given the homogeneous nature of the responses taken by the government over time. We identify and examine periods of high infection rates with high restrictions (HI-HR), high infection rates and low restrictions (HI-LR), and low infection rates and low restrictions (LI-LR). Using data from the Department for Social Protection we observe information for all 768,188 individual PUP beneficiaries (age and gender) along with their associated ED. Restricting our sample to those aged 18-29 years, to correspond with the definition of young people used in the EU's reinforced Youth Guarantee policy, renders a sample of 257,906 youth observations.

2. Literature Review

Young people had a low risk of hospitalisation and mortality from COVID-19 (Bhopal et al., 2021; Lima, 2021) but were more susceptible to other adverse consequences of the pandemic. The social interruption of restrictions and lockdowns was felt more acutely by younger people, in particular those from socially disadvantaged backgrounds (Darmody et al., 2020). This is in part due to younger people, and people from socially disadvantaged backgrounds, being more likely to experience job disruption due to the pandemic. Furthermore, considering the long-term consequences of job disruptions / work experience for youth cohorts at such a critical development stage is concerning. Following the Great Recession, it was widely noted that scarring effects were seen for those who entered the labour market during the downturn (Eurofound, 2017; Cribb et al., 2017). While earlier work which predates the recession found that if the first experience of the labour market is negative there can be long-term effects on earnings and employment (Nordström Skans, 2004).

In Ireland, the Parliamentary Budget Office (2021) found youth unemployment to be twice the overall unemployment rate at the peak of pandemic unemployment and even some time later large numbers remained 'Not in Education, Employment, or Training' (NEET). Long-term unemployment had also increased during the pandemic, and it was estimated this could lead to a wage penalty of between 8 and 10 per cent for young people and an employment penalty of between 6 and 9% per cent (Parliamentary Budget Office, 2021). The increases in youth unemployment due to the pandemic were some of the worst in the EU alongside the Czech Republic, Estonia, Lithuania and Latvia (Eurostat, 2021).

However, despite the impact of scarring which was previously seen for young people following economic shocks we are now experiencing a very tight labour market which is in contradiction to some of the fears at the start of the pandemic (Quiilter-Pinner, H. et al., 2020). Youth unemployment in July was 10.9 per cent, which is lower than the pre-pandemic levels of youth unemployment seen in Ireland (13 per cent in July 2019 and 15.2 per cent in July 2017). This follows a peak of 19.9 per cent during the pandemic. However, given the concerns about the economy going forward this may be a short-

term phenomenon and research on the economic impacts of the pandemic on young people remains critical to identify those most impacted.

The impact of deprivation on pandemic unemployment has not been studied widely to date. However, there is clear evidence from several countries pointing to higher levels of COVID-19 infection in more deprived areas, as well as worse health outcomes amongst those with COVID-19 such as higher hospitalisation and ICU admission rates (Meurisse et al., 2022; Mena et al., 2021; Green et al., 2021; Hsiao et al., 2021; Clouston et al., 2021; Quan et al., 2021; Hawkins et al., 2020). Madden et al. (2021) examine the association between deprivation index, population density and COVID-19 cases in Ireland and find that there is a large range of spatial heterogeneity in COVID-19 cases at an Electoral District (ED) level. Their results show an association between deprivation index and COVID-19 incidence for the most deprived quintile compared to the least deprived. For Ireland, Dwan-O'Reilly and McNelis (2022) examine the destination of those who received the Pandemic Unemployment Payment (PUP) after they exit the benefit in Ireland. They find that despite disproportionate impacts being felt by young people, their recovery was swift with 80 per cent back in employment in the period from August to October 2021.

3. Data

The Pandemic Unemployment Payment (PUP) data used herein was made available to researchers by the Department for Social Protection. The data shows individual, anonymised, administrative data for all the recipients of PUP between the 18th March 2020 and 30th September 2021, a total of 768,188 observations. For our analysis of youths, we restrict the sample to those aged 18-29 years to correspond with the definition of young people used in the EU's reinforced Youth Guarantee policy. The number of youth PUP observations becomes 257,906. The dataset shows the weeks which the individual was in receipt of PUP over the course of the pandemic (up to the date for which data is available). Data also includes the individual recipients age, gender, and the ED in which they reside.[1]

Table 3.1 displays descriptive information showing that 52 per cent of PUP beneficiaries were male and 34 per cent were under the age of 30. The average age within this youth cohort is 23.7 years and is slightly lower (higher) for women (men) at 23.5 (23.8) years.

*Table 3.1 Descriptive Statistics of Pandemic Unemployment Payment (PUP) Data*

	All PUP Claimants (%)	Youth PUP Claimants
Male	55%	52%
Age Group		
18-29	33%	100%
30-40 years	28%	-
41-55 years	29%	-
56-65 years	11%	-
Average Age		

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[1] There are 3,409 EDs in Ireland

Average Age	37.5	23.7
Average Age (Female)	36.5	23.5
Average Age (Male)	38.1	23.8
N	*760,862*	*257,906*

The data from March 2020 to September 2021 covers 81 weeks, some recipients received the payment for a single week while others were on the payment for the entire 81-week period for which we have data. Figure 3.1 looks at the duration of total payments in more detail. The average PUP duration was 33 weeks, however this varied somewhat between the genders and between the youngest young people and the older individuals within the cohort. Women spent longer claiming PUP regardless of age. Younger women (21 and under) spent on average 35 weeks on PUP compared to 32 weeks for those 26-29 years. For men it was 33 weeks for the youngest group and 31 for those over 26 years.

Figure 3.1 PUP claimant durations by gender and age for youths
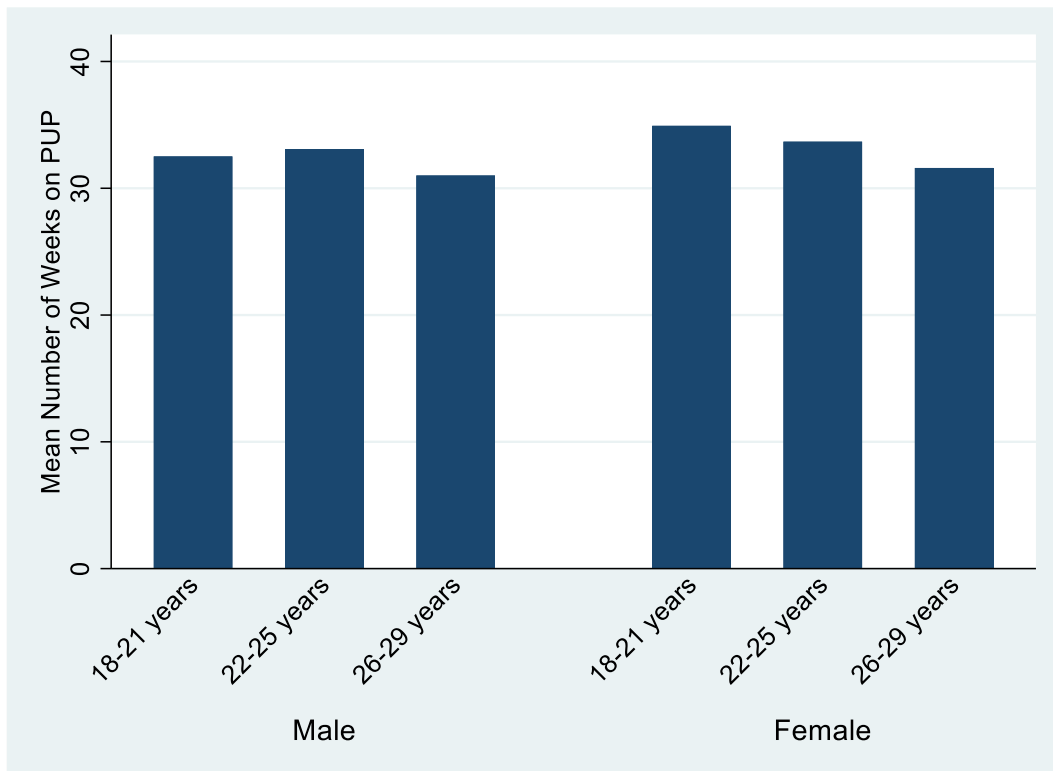
In order to examine how social deprivation relates to PUP rates, we aggregate the PUP recipients at an ED level to calculate a proportion of youths in an ED who received PUP over the pandemic. At a state level, between March 2020 and September 2021, 35 per cent of those aged 18-29 received the payment. At the individual ED level, the proportion of the those aged 18-29 who received PUP varied from 3 to 100 per cent. Areas where very large proportions of young people received PUP tended to be EDs with low populations of young people.

The data is then merged at the ED level with the 2016 Pobal Haase Pratschke (HP) index. The HP index gives two measures of deprivation: a relative deprivation measure and an absolute deprivation measure. The absolute measure is primarily used for examining changes in deprivation over time so given this study is interested in one point of time the relative deprivation measure is used. The measure is created using data from the 2016 Census for Ireland at a low geographical level on a range indicators for demographic profile, social class composition and labour market situation (including age dependency, population change, educational attainment, housing, occupation, lone parenthood, and unemployment).[2] We also examine the relationship between COVID-19 unemployment and the individual components of the HP deprivation index to examine what drives any disproportionate increases in PUP rates. The HP Relative Index Scores are rescaled to have a mean of zero and a standard deviation of ten at each census wave. This allows us to associate descriptive labels with the scores, grouping them by standard deviation units as outlined in Table 3.2. The spatial variation of the HP relative deprivation measure in shown in Figure 3.2.

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[2] For more on the Pobal HP index see http://trutzhaase.eu/deprivation-index/the-2016-pobal-hp-deprivation-index-for-small-areas/

Table 3.2 Classification of HP Relative Index Scores at ED level in Ireland, 2016

| Relative Index Score	Standard Deviation	Label	Number of EDs in 2016	Percentage of EDs in 2016	Our Classification (1-4)
20 to 30	2 to 3	Very Affluent	1	0.03%	4
10 to 20	1 to 2	Affluent	146	4.28%	4
0 to 10	0 to 1	Marginally Above Average	1274	37.37%	3
0 to -10	0 to -1	Marginally Below Average	1733	50.84%	2
-10 to -20	-1 to -2	Disadvantaged	239	7.01%	1
-20 to -30	-2 to -3	Very Disadvantaged	15	0.44%	1
Below -30	<-3	Extremely Disadvantaged	1	0.03%	1
Total			3409	100%	

Figure 3.2 Spatial distribution of HP Deprivation Index at ED level in Ireland

Descriptive evidence on the relationship between the HP Deprivation Index and the rate of PUP youth claimants at the ED level highlight differences in COVID-19 youth unemployment based on social deprivation. Figure 3.4 shows the youth PUP proportion at an ED level plotted against relative deprivation at the ED level. There is a clear relationship between relative

deprivation and the proportion of those 18-29 years in an ED who receive PUP. The most deprived areas have higher rates of PUP than more affluent areas (a score in the region of - 30 for relative deprivation represents the most deprived EDs in Ireland). This informs our main research question and we progress to formal modelling reported in Section 4.

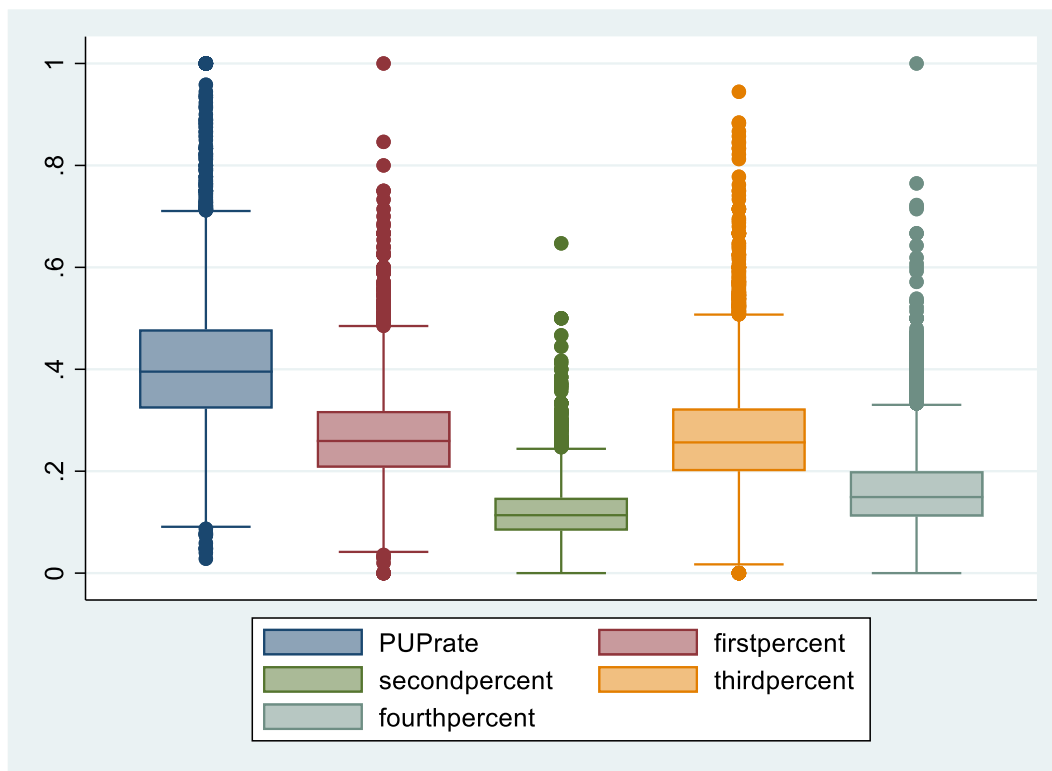*Figure 3.3 Youth PUP Rates and HP Relative Deprivation at ED level*
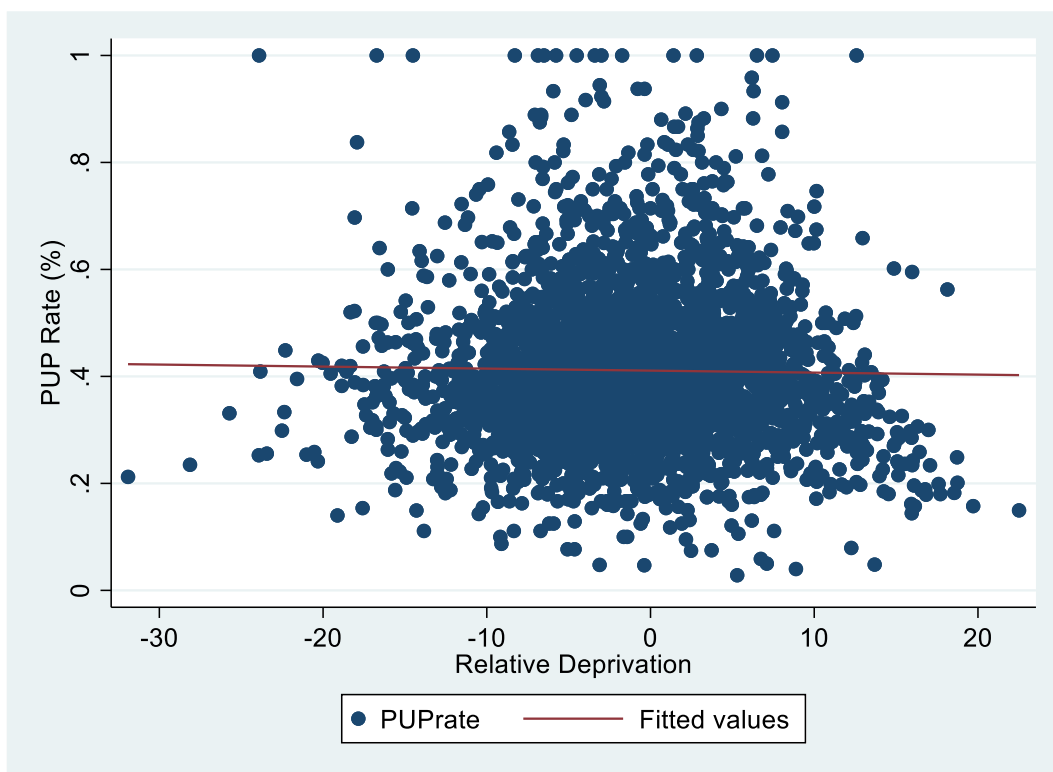
Given how the pandemic evolved over time with infections rising and falling, restrictions easing and constricting, PUP rates nationally also ebbed and flowed over time. As such, we also examine how PUP recipiency and the relationship with deprivation changes over time. We classify four distinct time periods based on the level of infections and restrictions at the time (Table 3.3).

Table 3.3 Classification of Four Pandemic Phases

Phase	Start date	End date	Infections	Restrictions
1	16th March 2020	3rd May 2020	High	High
2	3rd August 2020	20th September 2020	High	Low
3	11th January 2021	28th February 2021	High	High
4	31st May 2021	18th July 2021	Low	Low

Youth PUP rates at the ED level differed considerably over these time periods as shown in Figure 3.5. Overall, the total PUP rate varied from 4 to 59 per cent across the 3,409 EDs, while the Youth PUP rate (for those aged 18-29) varied from 3 to 100 per cent. However, the rate of PUP was highest in the early period of the pandemic. In the first phase, the average total PUP rate was 18% with variations between 3 and 52 per cent. In Phase 2, the total numbers in receipt of PUP were much lower, averaging at 8 per cent and the rate across EDs varying from 0 to 29 per cent. Figure 3.5 shows that the Youth PUP rate was highest in Phase 1 and 3, averaging close to 40 per cent, lowest in Phase 2 at around 10 per cent and 17 percent in Phase 4.

*Figure 3.5 Youth PUP Rates across the Four Phases of the Pandemic*

Figures 3.6 to 3.9 show the relationship between Youth PUP rates and HP deprivation across the four phases. The second and fourth phases appear distinctly different. In Phase 1 and Phase 3, the relationship is consistent with what was seen in Figure 3.4, PUP rates are higher in more deprived areas. However, in Phases 2 and 4 (Figures 3.7 and 3.9) the relationships change and we observe higher rates in the more affluent areas, although the correlation appears weaker than was seen in the other phases. This may be reflective of the low levels of restrictions during Phases 2 and 4 and how this interacted with the labour market.

Figure 3.6 – 3.9 Youth PUP Rates and HP Relative Deprivation at ED level, Phases 1-4
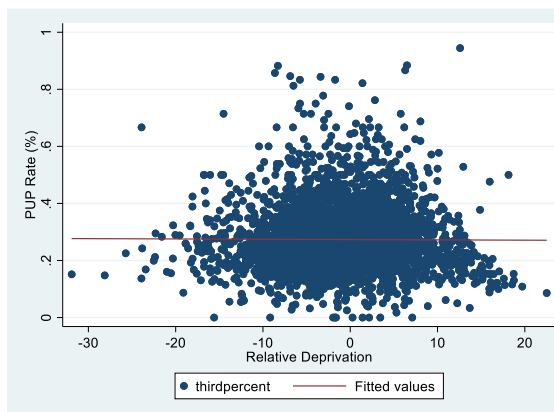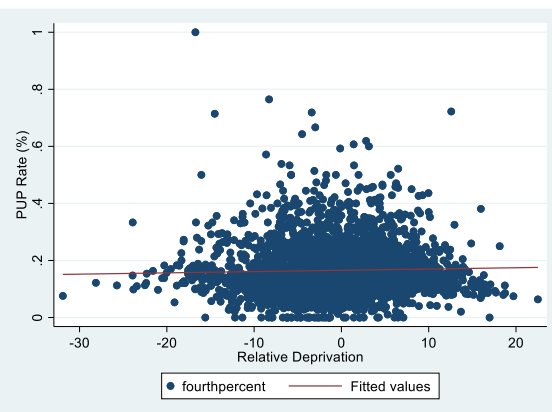
Phase 1 (HI-HR)　　　　　　　　　　*Phase 2 (HI-LR)*
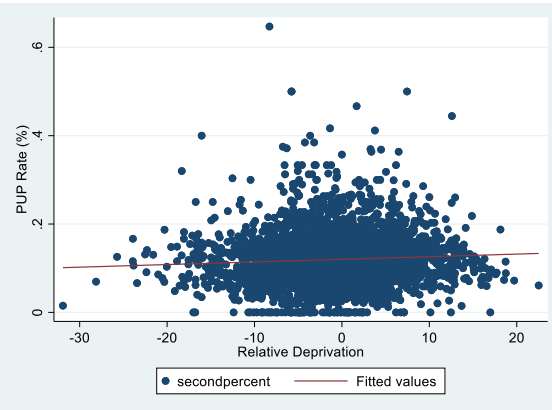
Phase 3 (HI-HR)　　　　　　　　　　*Phase 4 (LI-LR)*

Note: HI = High Infection rates; LI = Low Infection rates; HR = High Restrictions; LR = Low Restrictions

Given that certain jobs will be more likely to be affected by the pandemic based on how they were impacted by restrictions, we control for occupation within our models at the ED level, this data is taken directly from the 2016 Census. Occupations are primarily used over industry because they are more relevant to the research question and align better with the types of jobs affected by COVID-19. The occupations are classified as: (i) Managers, Professional Occupations; (ii) Associate professional occupations; (iii) administrative and secretarial;

skilled trades; (iv) caring, leisure and other service occupations; (v) sales and customer service occupation; (vi) process, plant and machine operatives; (vii) elementary occupations; and (viii) other.

While these descriptive tables and figures shown above are informative, we cannot draw robust conclusions without the use of formal regression models. The methodology for such models is discussed in the next section, followed by our presentation of the results.

2. Methodology

We generated a key dependent variable indicating whether an ED had a disproportionately higher rate of PUP receipt than expected. The ED PUP rate was divided by the average PUP rate nationally so that a ratio of 1 meant that the PUP rate in the ED was in line with the average PUP rate. Subsequently, a ratio of greater (less) than 1 means that the PUP rate within the ED was higher (lower) than average. A binary was then created whereby it was 1 for those with a ratio of more than 1.09, identifying those ED's which had disproportionately higher rates of PUP. All other EDs were coded as zero. Consequently, we estimate a probit model to examine EDs with disproportionately higher PUP rates and measures the impact of the deprivation while simultaneously controlling for other personal and area-level characteristics that could also influence PUP rates (Table 4.1). Several specifications were utilised, beginning with a model looking at the overall rate of PUP and then subsequently for the four phases described above. The probit model took the standard form to examine the effect of Deprivation on PUP rates at a regional level:

$$PUP\_RATE_j^* = \beta_1 X_j + \beta_2 DEP_j + \varepsilon_j$$

where $PUP\_RATE_j^*$ is the latent variable which denotes the proportion of ED's population claiming PUP, X_j equaks a vector of area-specific independent variables, individual and employment share characteristics, DEP_j is main independent variable of interest measuring the area-level deprivation of each ED, and ε_j is an iid error term. We begin by including the overall measure of deprivation from the HP deprivation index coded on a 4-point scale (as outlined in Table 3.3 above) where one denotes the most deprived areas and four the most affluent areas.[3] In subsequent model, we include measures of the sub-components which make up the HP index as controls to examine the key drivers rather than the overall composite indicator. Specifically, these are the ED's age dependency rate, educational attainment, lone parent rate, average persons per room, unemployment by gender and the tenure status of households. Migration while not included within the HP index is also added as control to the specification.

Occupations are then added as controls, given the relationship they will have with the likelihood to receive PUP, some occupations will be affected by restrictions much more than others, while some are more suitable for remote working than others. As occupation is included as a control, the deprivation components which measure skills level are dropped out due to the collinearity between occupation and skill level.

Given that we found more affluent areas to stay on PUP for longer durations how the PUP rate changes between phases is also examined. This is done using a difference-in-difference approach akin to that utilised in Harasztosi and Lindner (2019). Such an approach allows time

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[3] While a 6-point scale is normally used the proportion of ED's in either tail is very small and leads to imprecise estimates

invariant unobserved heterogeneity to be accounted for resulting in more robust estimates.

The difference-in-difference approach takes the following form:

$$\frac{Y_{it} - Y_{i(t-1)}}{Y_{i(t-1)}} = \alpha_t + \beta_t Deprivation + \gamma_t X_{it} + \varepsilon_{it}$$

where the outcome variable on the left-hand side is the percentage change in the PUP rate between two sequential phases. We are interested in the size of the change rather than the sign, as changes between phases are either on-flows (positive) or off-flows (negative) depending on how restrictions changed. In this instance, we use the continuous measure of deprivation starting at 0 and increasing up to 54. This was constructed by adding 32 to the HP relative deprivation index to ensure that the variable was at all points positive. This allowed us to avoid dealing with a continuous variable that ran from a negative number to a positive number, aids the interpretation of the findings and has no impact on the results.

4. Results

Contrary to what might be expected, the youth overall ED PUP rate is higher in ED's which are marginally above and below the average deprivation levels. As displayed in Table 4.1, the above (below) average deprived areas having an average PUP rate 18 (12) percentage points higher than in the most affluent areas. Interestingly, the most deprived group do not appear to have significantly different rates to the most affluent areas. This is likely to be due to the nature of the pandemic support, PUP was only available to those whose employment was affected by the pandemic meaning those who were unemployed could not avail of the payment. Therefore, in areas with high levels of youth unemployment, likely to the most deprived areas, rates may be lower given the proportion of people who would be ineligible for the benefit. When deprivation is the sole control (Column 1) all areas other than the most affluent have higher rates of PUP. However, when occupational structure of the ED is included as a covariate this is no longer statistically significant for the most deprived ED's.

Table 4.1 Estimation Results (Marginal Effects) from Probit Models examining EDs with High Youth PUP rates

	1		2		3		4	
Deprivation								
1 Most Deprived	0.12	**	0.10	*	0.05			
2	0.20	***	0.16	***	0.11	**		
3	0.25	***	0.22	***	0.17	***		
4 Least Deprived								
Deprivation Components								
Age dependency Rate							0.02	***
Primary education							0.00	*
Medium education							0.00	**
Third level education							Ref	
Lone parent rate							0.00	
Above average persons per room							-0.14	
Male Unemployment							0.00	
Female Unemployment							0.00	
Local Authority rented							-0.01	**
Place of birth (Ref: Ire/UK)								
EU born			0.00		0.00		0.00	
Non-EU born			-0.01	***	0.00		0.00	
Occupations (Ref: Professional Occupations)								
Managers, directors and senior officials					0.01	**	0.01	*
Associate professional and technical					0.00		0.01	
Administrative and secretarial					0.00		0.00	
Skilled trades					0.01	***	0.01	***
Caring, leisure and other service					0.01	*	0.01	**
Sales and customer service					0.00		0.01	**
Process, plant and machine operatives					0.00		0.00	
Elementary occupations					0.01	*	0.01	***
Not stated/Other					0.00		0.01	**
R2	0.01		0.02		0.03		0.05	

Notes: *** p<0.01 **p<0.05 *p<0.1; outcome variable is a binary if the ED has a higher than average rate of PUP

In particular, certain sectors are drivers of the PUP rate, areas with high proportions of individuals working in the following sectors relative to professional occupations have higher rates of PUP claiming: managers, directors and senior officials; skilled trades; caring, leisure and other services; and elementary occupations. In the final model (Column 4) when the deprivation components are included sales and customer services roles and EDs where larger proportions report their occupation as other or not stated are also impacting the PUP rate.

Furthermore, in Column 4, the components of the index are used as derived from the Census 2016 to gain an understanding of what particular elements of deprivation are driving the spatial differences in the PUP rates across ED's. Areas with a high age dependency ratio, low levels of educational attainment and high proportions of local authority rented accommodation are found to have higher than average youth PUP rates.   This contrasts to the findings for the overall PUP rates for the eligible population where areas with a high proportion of lone parents and an above average persons per room rate were more inclined to have higher than average PUP rates.

Table 4.2 utilises the same specification as is seen in the first column of Table 4.1 but this time the outcome variables are the PUP rate are analyses across the four phases of the pandemic. There is evidence of significant heterogeneity across the phases in terms of the proportion of youths receiving PUP and the relationship with deprivation.

Table 4.2: Estimation Results (Marginal Effects) from Probit Models examining EDs with High Youth PUP rates, Across Four Phases of the Pandemic

	Overall		HI;HR 1		HI;LR 2		HI;HR 3		LI;LR 4	
Deprivation										
1 Most Deprived	0.05		0.05		-0.01		0.03		-0.03	
2	0.11	**	0.12	***	0.01		0.07		0.03	
3	0.17	***	0.16	***	0.09	**	0.14	***	0.11	**
4 Least Deprived										
Place of birth (Ref: Ire/UK)										
EU born	0.00		0.00		0.00		0.00		0.00	
Non-EU born	0.00		0.00		0.01	*	0.00		0.00	
Occupations (Ref: Professional Occupations)										
Managers, directors, and senior officials	0.01	***	0.01	***	0.01	*	0.01	**	0.01	***
Associate professional and technical	0.00		0.00		0.01		0.00		0.00	
Administrative and secretarial	0.00		0.00		0.01	**	0.00		0.00	
Skilled trades	0.01	***	0.01	***	0.00		0.01	***	0.01	***
Caring, leisure and other service	0.01	*	0.01	**	0.01	**	0.01	*	0.01	***
Sales and customer service	0.00		0.01		0.00		0.00		0.00	
Process, plant and machine operatives	0.00		0.00		0.00		0.00		0.00	
Elementary occupations	0.01	*	0.01	**	0.00		0.00		0.00	
Not stated/Other	0.00		0.00	*	0.00	*	0.00		0.00	
R2	0.03		0.02		0.01		0.03		0.03	

Notes: *** p<0.01 **p<0.05 *p<0.1; outcome variable is a binary if the ED has a higher than average rate of PUP

Deprivation plays a considerably different role across the four phases which appears to be related to the state of restrictions at the time. In fact, the overall analysis in Column 1 is disguising some of the differences seen. In phases one and three, both periods with high levels of restrictions, those areas with slightly higher levels of deprivation compared to the most affluent areas see the highest rates of youths claiming PUP. Interestingly, in phase 1 early in the COVID-19 pandemic the highest rates of PUP amongst young people were seen in the third (marginally above average), and to a lesser degree the second category (marginally below average), these two categories encompass a large group in the middle of the deprivation scale. In Phase 2, youth PUP rates do not differ for the two least deprived categories relative to the most affluent group but again the third group (marginally above average) have youth PUP rates nine percentage points higher than the most affluent group. Again, in the fourth phase, the third group (marginally above average) see higher rates of 11 percentage points higher than the most affluent areas (showing a potential scarring effect for this group) but there is no statistically significant difference for the two most deprived groups of the four categories relative to the most affluent.

As shown in the previous models presented, sectors have an important role to play in examining the PUP rate. In particular the proportion of individuals in an area who are in skilled trades is important, with larger proportions in this occupation leading to higher youth PUP rates in the ED.

Given these interesting findings we also examine the length of time spent on the welfare payment amongst young people. Young people in more deprived areas spend on average less weeks on PUP relative to their counterparts in more affluent ED's. Figure XX displays the number of weeks young people spent on PUP by deprivation category, again with one being most deprived and four being the most affluent ED's. The average time spent o PUP by categories of deprivation is 31.26 weeks, 30.98 weeks, 32.17 weeks and 34.67 weeks based on the four categories running from most deprived to least deprived.

Figure XX: Weeks spent on PUP by Deprivation Category
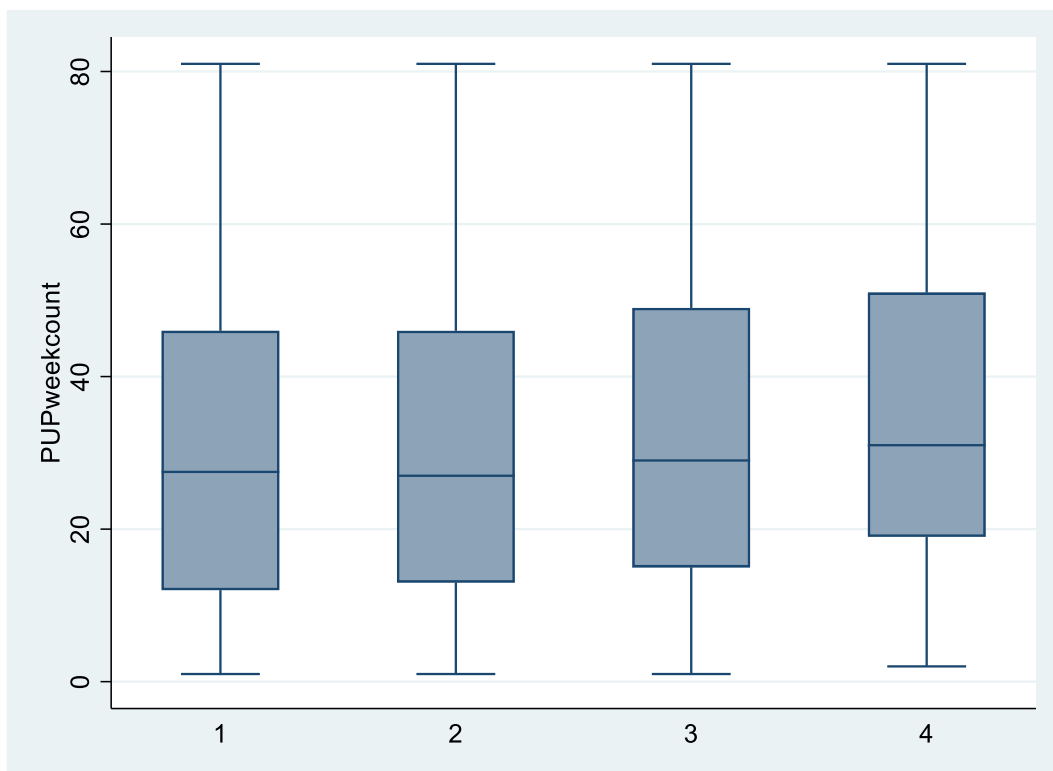
Notes: 1 is the most deprived group of ED's and 4 the most affluent, categories are described in Table 3.1.

When this is modelled formally, we find that as shown in descriptives the longest time spent on PUP is seen in the most affluent ED's. Table XX shows the results of a linear

regression model whereby the dependant variable is the average time spent on PUP in each ED. When deprivation is the sole variable on the right-hand side of the model the shortest average time on PUP is seen in the EDs in category 2, those which are only marginally below average. But when covariates are included controlling for the place of birth of residents within an ED and the occupational makeup of the area then the shortest duration spent on PUP is seen in the most deprived ED's. This suggests that young people's employment in the most deprived ED's was more susceptible to the restrictions which were imposed. Furthermore, areas with high proportions of individuals in caring, leisure and other service occupations had higher durations on PUP while areas with high proportions employed in process, plant and machine operative roles had lower average durations. In areas where large proportions reported their occupation as other or didn't report it also had longer average PUP claims. ED's with large proportions of residents who were born in non-EU countries had much longer PUP claims than area with more EU born or Irish/UK born residents.

Table 4.3: Estimation Results from OLS Models examining Duration of PUP Claims

	1		2		3	
Deprivation						
1 Most Deprived	-3.42	***	-2.87	***	-2.98	***
2	-3.69	***	-2.90	***	-2.95	***
3	-2.50	***	-1.85	***	-1.89	***
4 Least Deprived						
Place of birth (Ref: Ire/UK)						
EU born			-0.09	***	-0.08	***
Non-EU born			0.26	***	0.22	***
Occupations (Ref: Professional Occupations)						
Managers, directors, and senior officials					0.05	
Associate professional and technical					0.01	
Administrative and secretarial					0.06	
Skilled trades					0.02	
Caring, leisure and other service					0.09	*
Sales and customer service					-0.01	
Process, plant and machine operatives					-0.09	**
Elementary occupations					0.01	
Not stated/Other					0.06	**
R2	0.02		0.04		0.04	

In the next step of the analysis, we examine further how youth PUP rates change over time and again considerable heterogeneity is evident. Figures 5.1 to 5.3 show the rate of change between subsequent phases plotted against deprivation.

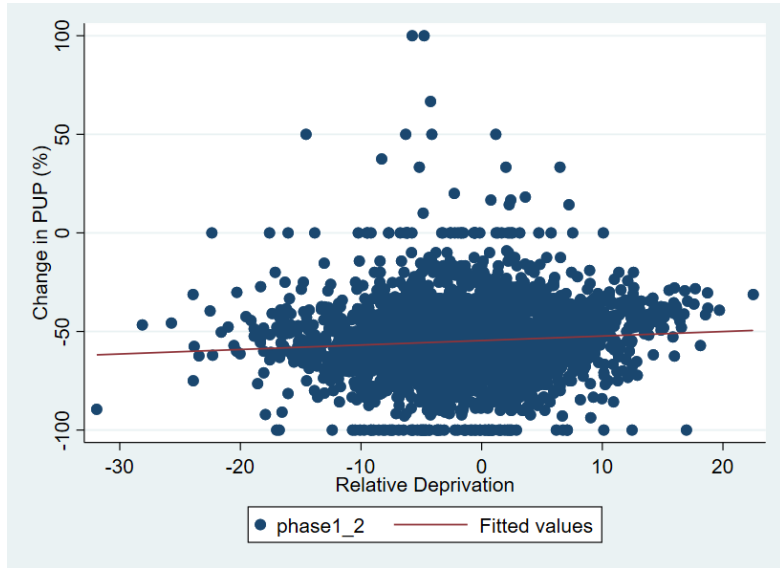*Figure 5.1 Rate of off-flow from PUP between Phases 1 and 2*

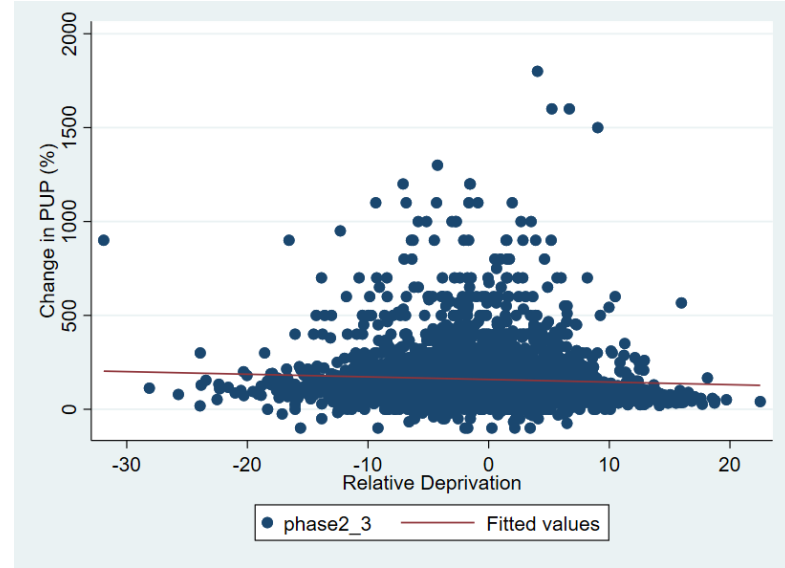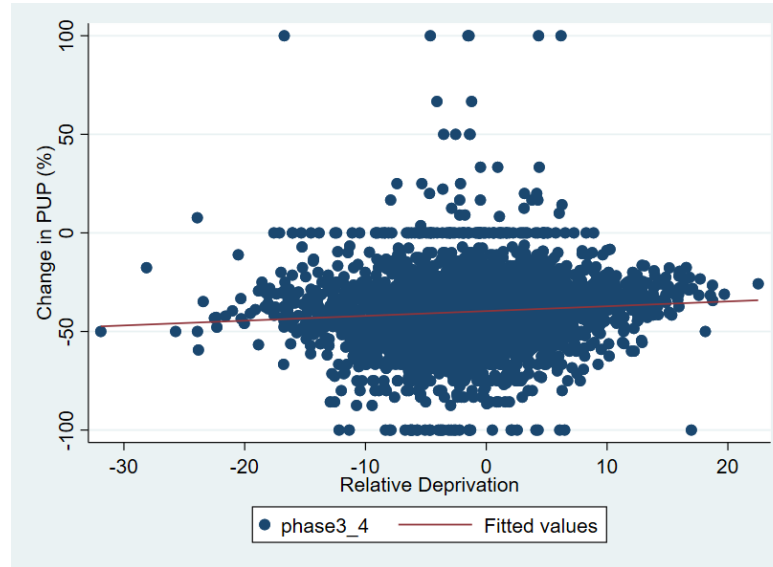*Figure 5.2 Rate of on-flow to PUP between Phases 2 and 3*

Figure 5.3 Rate of off-flow from PUP between Phases 3 and 4

The percentage change is always greater in deprived areas. When in a period of off-flow that is between phases 1 and 2 and phases 3 and 4 (Figure 5.1 and 5.3) the fall in PUP is greater in the more deprived areas. When in a period of on-flow that is between phases 2 and 3 when restrictions tighten, and people start to claim PUP the increase is largest in the most deprived areas. Table 5.3 displays the results of a difference-in-differences model whereby the outcome variable is the percentage change in the rate of PUP at an ED level. Both a basic specification with only deprivation is shown as well as a specification based on those previously used controls for place of birth occupation structure within the area.

Table 4.4: Estimation Results (Marginal Effects) from Probit Models Examining Changes in the Youth PUP Rates between Phases at ED level

	Phase 1 -2 (off-flow) Decrease in PUP Rate		Phase 2-3 (on-flow) Increase in PUP Rate		Phase 3-4 (off-flow) Decrease in PUP Rate	
	(1)		(2)		(3)	
Deprivation						
1 Most Deprived	-4.70	**	25.74		-5.02	**
2	-4.88	***	28.26	**	-6.39	***
3	-3.79	**	26.34	**	-3.82	**
4 Least Deprived	Ref		Ref		Ref	
Place of birth (Ref: Ire/UK)						
EU born	-0.30	***	1.51		-0.11	
Non-EU born	0.48	***	-2.97	**	0.36	**
Occupations (Ref: Professional Occupations)						
Managers, directors, and senior officials	-0.05		0.34		-0.17	
Associate professional and technical	0.34	**	-2.87	**	-0.22	
Administrative and secretarial	0.10		-1.74		0.02	
Skilled trades	-0.08		2.22	***	0.00	
Caring, leisure and other service	-0.11		0.94		0.34	**
Sales and customer service	0.10		-1.71		0.08	
Process, plant and machine operatives	0.13		-2.67	***	-0.31	***
Elementary occupations	-0.17		-0.52		-0.11	
Not stated/Other	0.22	**	-0.45		0.00	
R2	0.03		0.04		0.02	

In Table 4.3, the negative coefficients for the more deprived areas in columns one and three, suggests that for off-flows (when there are mostly decreases in PUP), more deprived areas (compared to the most affluent group four) have significantly greater falls in the youth PUP rate although the magnitude differs somewhat. The results in column 3, show that for on-flows (when there are mostly increases in PUP), areas in the two middle groups (above and below average deprivation) have significantly greater changes (increases), compared to the most affluent group. Between phases 2 and 3, the marginally above average (below average) group have increases of 28 (26) per cent larger than the most affluent EDs. Interestingly, there are no significant differences for the most deprived ED's relative to the most affluent in this case.

Occupational composition of an area as one might expect has a role to play in determining the dynamic changes on and off PUP for youths. Areas with large proportions employed in skilled trades seen large on-flows while areas with large proportions employed in the process, plant and machinery operative sector seen lower changes when there was an on-flow between phases 2 and 3. This may reflect the initial lockdowns in this area at the start of the pandemic. Areas with larger proportions employed in associate professional and technical occupations seen greater changes in off-flow between phases 1 and 2. It is likely that these roles are suitable for remote working and thus were not affected to the same extent by the lockdowns and restrictions which were implemented. Areas with larger proportions employed in caring, leisure and other services seen slight increases in the PUP rate between phase 3 and phase 4 despite this being a period of falling PUP rates.

It may be that infection rates were falling which impacted on those in the caring portion of this occupational group.

These results suggest that youths in areas which were deemed marginally below average and marginally above average in terms of deprivation were more affected economically by the pandemic and that they also experienced the economic impact in a much more volatile manner than affluent areas. Young people in all areas relative to the most affluent, even after controlling for occupational composition (and other controls) were more likely to see change based on the ebb and flow of restrictions. This may be an important policy lesson for future events for which lockdowns are part of the government response. Furthermore, this is in contrast to what might have been anticipated that young people in deprived areas were affected to a greater extent that their counterparts in more affluent areas. We have found that for all working age people there is a strong relationship between deprivation and COVID-19 employment impacts with the most deprived affected to a greater extent.

5. Conclusions

There is a growing body of literature which points to the economic impact of the pandemic and to the impact that has been had in socially deprived communities. While this literature is relatively new the consensus thus far has been that deprived areas have been impacted by COVID-19 to the greatest extent and in a previous study we came to similar conclusions when examining the working-age population in Ireland. However, given the importance of early labour market interactions and the scarring effects which can be had from negative labour market shocks early in an individuals career a closer examination of how young people have fared is needed.

Using data from the Department of Social Protection we examined to what extent COVID-19 unemployment has been related to social deprivation at the ED level. This study benefits from data which covers 81 weeks over the course of the pandemic from March 2020 to September 2021 which allows us to examine the relationship at various stages accounting for the heterogeneity of the government response over time.

We found that while rates were lowest in the most affluent ED's the relationship was not as expected, PUP rates weren't any higher in the most deprived areas. It was the areas which were deemed marginally above average and marginally below average in terms of deprivation which seen higher than average PUP rates. This may be due to higher youth unemployment rates in the most deprived areas. Controlling occupation makeup within ED's also attenuated the effect of the most deprived areas, in particular areas with large proportions of individuals employed in skilled trades seen higher rates of PUP.

Given the heterogenous effects of government restrictions throughout the pandemic we also examined the relationship between pandemic unemployment and deprivation at

various phases. Again, the most deprived do not have higher than average rates of PUP regardless of which phase is examined. However, only in phase 1 d the marginally below average have higher rates of PUP than the most affluent. In phases 2 onwards the only group which has a statistically significant difference relative to the most affluent areas is the marginally above average deprivation group.

More deprived ED's were also found to have the lowest average length of PUP claim. The coefficients were all negative relative to the most affluent group suggesting individuals in the most affluent ED's spent the longest on the payment. Given the differences in length of time on PUP the changes across the phases were also examined. There were clear ebbs and flows in line with the government restrictions. Between phases 1 and 2 as well as phases 3 and 4 there were significant off-flows form PUP as restrictions eased. These changes were largest for those in the group of EDs deemed to be marginally below average. The most affluent group seen the lowest off-flows which is in line with them also having longer claims. Between phases 2 and 3 there were considerable increases in the PUP rate as restrictions were tightened. The most affluent also had the lowest on-flow. In this instance the on-flow in the most deprived areas was not statistically different from the on-flow in the most affluent areas. The marginally above and marginally below average deprivation groups seen larger on-flows. These two groups were more susceptible to the tightening and easing of government restrictions in terms of the impact that was had on their employment.

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