

# Geodemographic analysis of End Learner sessions

## INTRODUCTION

We encouraged Digital Champions (DCs) to record details about the sessions where they helped people with digital skills ('End Learners' / ELs). As well as brief information about the type of help provided, we asked DCs to record the EL's home postcode if they were willing/able to provide one (and also note the postcode of the venue).

For this part of our evaluation we added EL session data from the legacy projects of Digital Plymouth and Digital Highland as comparators for the One Digital Phase 2 Deep Dive projects of Digital Gwynedd and Digital Brighton & Hove. This gave an additional level of richness to the insights, with two rural and two urban locations to compare.

Of a total of 9,732 session records collected between November 2015 and May 2020, 8,415 had a postcode that could be matched to a geographic area (a Lower Super Output Area – LSOA – or other geographical unit). We tend to use LSOAs as the most granular geographic unit for which some data (such as Index of Multiple Deprivation) is available. By comparing the number of sessions in each LSOA to other demographic features of that LSOA, we can identify some insights about the types of people our sessions were more likely to reach.

We did not collect demographic data directly from End Learners (e.g. age, sex, gender, race, religion etc) – we used the postcode data to map our End Learners against demographic factors for the LSOA in which they lived. When someone from an LSOA with greater levels of deprivation, or a higher proportion of people aged over 65 was helped, we do not know that this person directly experienced deprivation or that they were aged over 65.

Nonetheless, we think this data provides some insight into the people helped by Digital Champions – including Professional DCs (PDCs) employed by Citizens Online.

### KEY FINDINGS:

- 1. There is a correlation between the number of people claiming Pension Credit and the number of sessions provided. This suggests that older people were often helped with digital skills – but specifically older people *with lower incomes*.**
- 2. There is a correlation between the numbers of people in an area receiving Housing Benefit (a means-tested benefit indicating lower incomes) and the number of sessions provided. It suggests a number of people of working age on low incomes were helped by our teams.**
- 3. Sessions were more likely to take place in neighbourhoods that are among the most deprived in their respective country** (England, Wales, and Scotland have their own systems for measuring deprivation). This finding acts as ‘triangulation’ of the points above regarding Pension Credit and Housing Benefit.
- 4. Professional DCs (PDCs) were more likely to help learners who lived in more deprived locations – in Brighton & Hove and Plymouth in particular.**
5. More sessions took place in more urban locations. This mainly reflects the differing nature of the areas in which projects were undertaken (the DBH project has run for longer than the other projects, and populations are higher in Brighton & Hove and in Plymouth than in Gwynedd and Highland). It is possible that sessions can be run more efficiently (more sessions per year in an area) in urban rather than rural locations because density enables marketing to be more effective.
6. However, we are pleased to note that the Gwynedd and Highland projects were able to reach at least some people in the most rural parts of their areas. Indeed, in Highland, 56% of sessions were in the most rural (index 5-8) Data Zones.
7. DCs recorded a higher number of sessions in LSOAs with higher populations – as we would expect.<sup>1</sup> However, this factor alone does not explain all the variation in numbers of sessions – which suggests that other factors influenced how many sessions were provided.

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<sup>1</sup> We included this as a control variable to compare other measures against. LSOAs are designed to include broadly similar numbers of residents, but the session records were recoded from LSOAs with fewer than 500 residents (in the Highlands, where population densities are lower and the Scottish Government uses a slightly different system of ‘Data Zones’), to nearly 5,000 residents (in Brighton & Hove).

8. The number of residents aged 65 or over does not correlate well with the number of sessions provided – it explains less of the variation than population alone. This indicates that the above correlation with population is due to factors other than population alone (in other words, in places with higher numbers of residents, there are higher numbers of people with demographic characteristics that were associated with sessions).

### PENSION CREDIT, HOUSING BENEFIT, AND MULTIPLE DEPRIVATION

As well as a correlation between numbers of ELs and numbers of people receiving Pension Credit, there is a correlation between the numbers of people in an area receiving Housing Benefit – a means-tested benefit indicating lower income (see Figure 1). This helps to explain the smaller correlation with people aged over 65 (below) and suggests a number of people of working age on low incomes were helped.

The points about Pension Credit and Housing Benefit match a wider finding regarding the Index of Multiple Deprivation. Again, analysis shows there is at least some link between greater deprivation and a higher number of sessions. This is particularly the case in Brighton & Hove – where a much higher proportion of sessions (34%) were with people living in LSOAs that are among the 20% most deprived in England, than the mere number of people living in those LSOAs would explain.

This was also true to a lesser extent in Plymouth<sup>2</sup> – though in Plymouth the association is even stronger for people living in LSOAs among the 10% most deprived in England (32.7% of sessions were in these LSOAs, 50.1% in the 20% most deprived in England, and 80% in the most deprived half of LSOAs).

The effect is much less pronounced in the more rural projects – Gwynedd and Highland – where sessions more closely matched the distribution of people (and just 39.3% and 46.9% were in the most deprived half of neighbourhoods).

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<sup>2</sup> Not part of One Digital Phase 2 delivery but formed part of our data analysis for geodemographic insights

### AGE AND PENSION CREDIT

The number of residents aged 65 or over does not correlate well with the number of sessions provided – it explains less of the variation than population alone (see Figure 1).

This is perhaps surprising as we might expect to help more people from areas with higher numbers of older people – as older people are less likely to have digital skills. It is possible that sessions were less well targeted at older demographics (although anecdotal experience doesn't support this), or that assistance provided to people of working age around employment or disability have acted as a balance against sessions conducted with older people, which seems more likely.

There is a correlation between the number of people claiming Pension Credit and the number of sessions provided (see Figure 1). This suggests that older people were often helped with digital skills – but specifically older people *with lower incomes*.

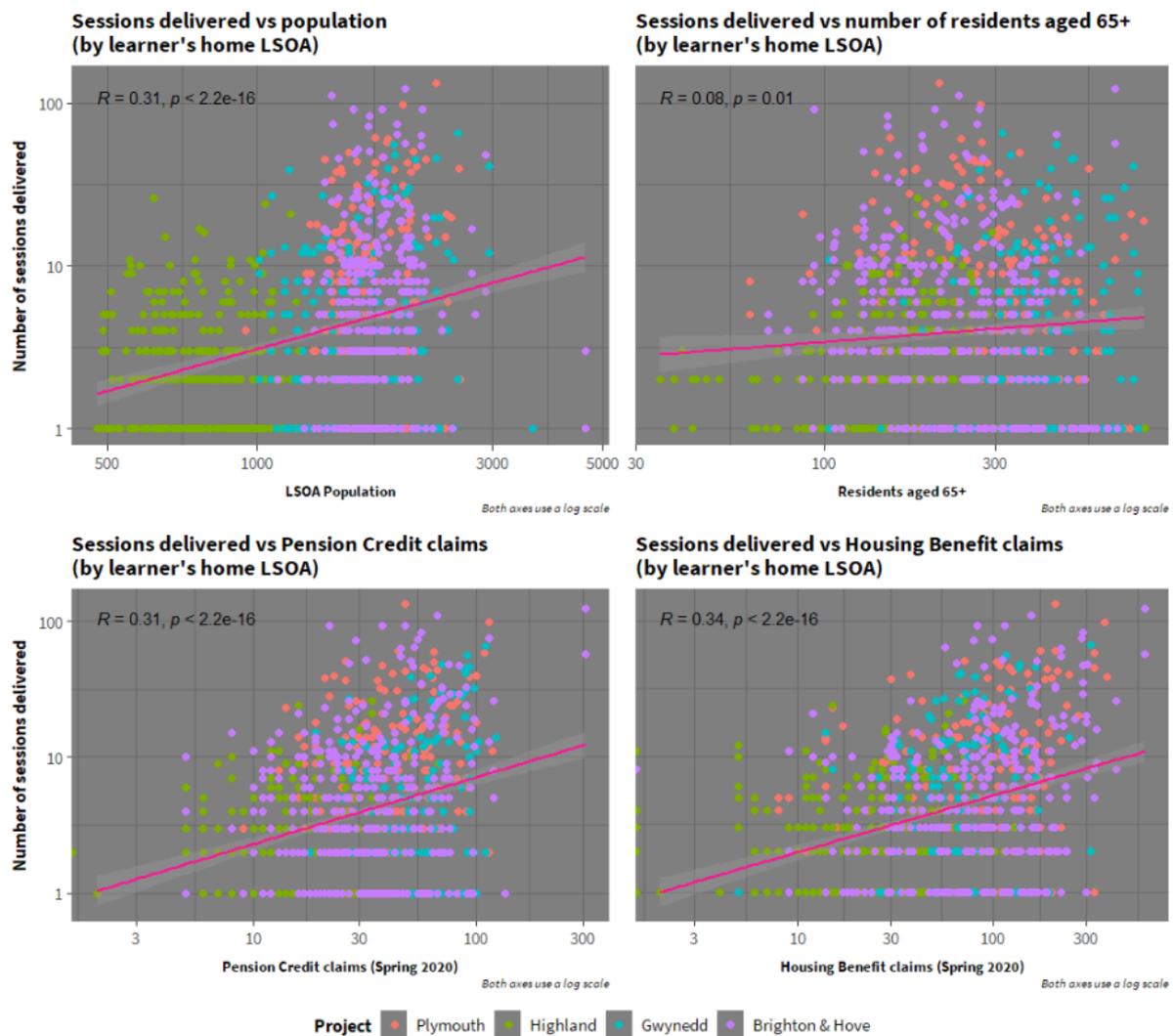
This is understandable – we know that people on lower incomes are less likely to have digital skills and that a significant proportion of older people do have digital skills. We can therefore assume that older people on lower incomes are more likely to account for the proportion of older people who do not have digital skills.

This potentially explains the previous point – sessions may often have been with older people on lower incomes, but if older people on medium or high incomes had digital skills and did not seek support, that would explain a reduction in the correlation with age alone – particularly if areas with high numbers of people aged over 65 are associated with those people aged over 65 with higher incomes (i.e. with older people on lower incomes more likely to live in areas with others on lower incomes of different ages, rather than with other older people).

Figure 1 below shows the strength of the relationship between the number of sessions delivered in an LSOA and various other characteristics of that LSOA. Each dot represents an LSOA (colour-coded by project). The steeper the pink line, the more closely the number of sessions (on the vertical axis) is correlated with the number of residents in the category on the horizontal axis.

# GEODEMOGRAPHIC ANALYSIS OF END LEARNER SESSIONS

Figure 1: Sessions delivered vs demographic features of LSOAs: population, residents aged 65+, Pension Credit, Housing Benefit



## TYPE OF DIGITAL CHAMPION AND SESSIONS DELIVERED, BY DEPRIVATION

**Did Digital Champions deliver more sessions to learners from areas that are more (or less) deprived, relative to the area profile?**

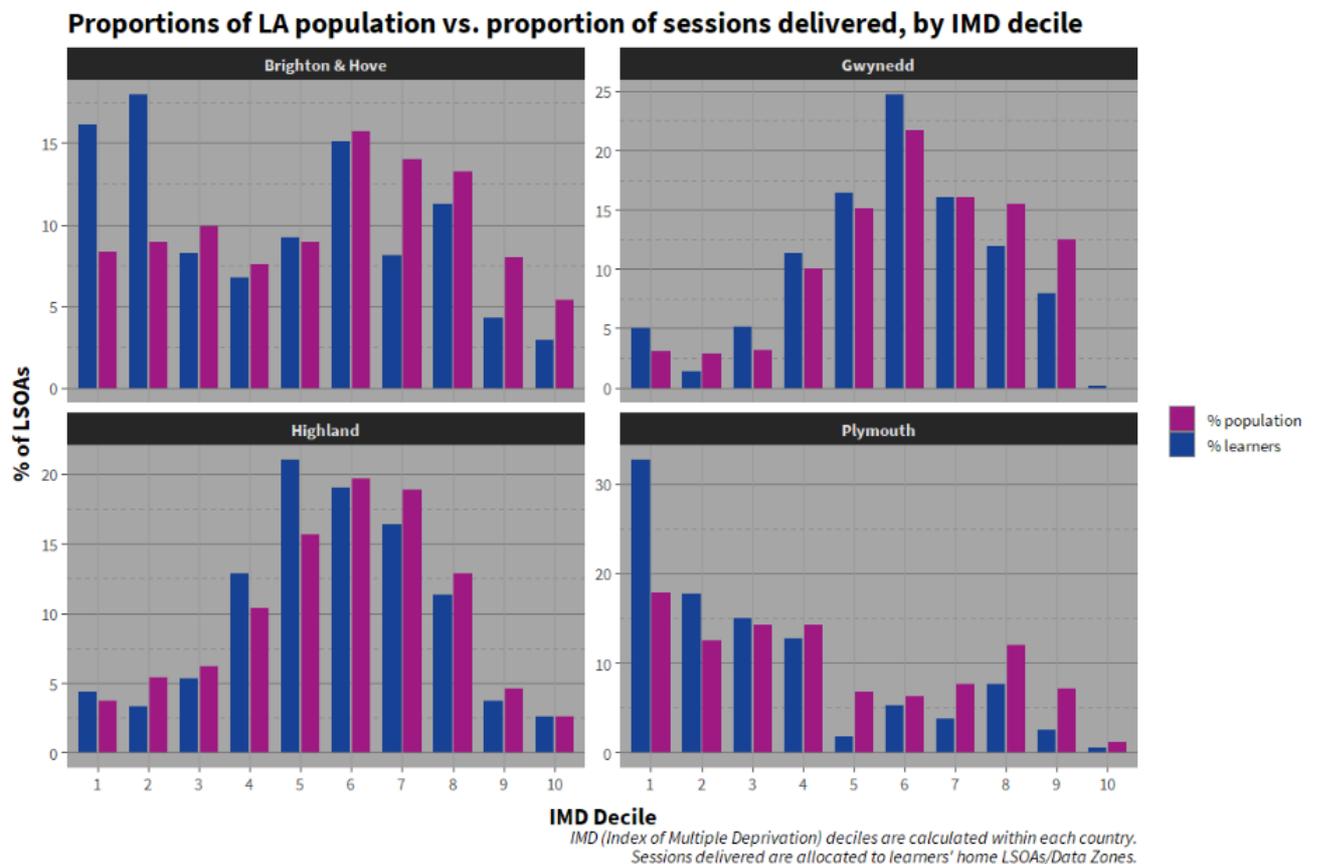
Figure 2 shows that in each project, the learners who received support were, proportionally, from more deprived LSOAs than the area population as a whole. This is shown where a blue bar is higher than its neighbouring purple bar, with the effect being most pronounced in Brighton & Hove and Plymouth.

## GEODEMOGRAPHIC ANALYSIS OF END LEARNER SESSIONS

Figures 3 to 5 show the difference between sessions provided by all DCs, PDCs alone, and other DCs alone in terms of the home LSOA of the learners they helped. PDCs helped the majority of the learners from LSOAs in deciles 1 and 2 (the most deprived areas), and their sessions were more often delivered to learners from more deprived areas (Figure 4), in line with the overall pattern (Figure 3), whereas other DCs helped people from a more balanced selection of LSOAs, their work being less concentrated on people from the more deprived LSOAs.

An important caveat to note here is that PDCs were generally more able to run sessions, and to be more consistent and frequent in recording their activity. This is as we would expect given they are employed – with monitoring forming a part of their job descriptions (vs unpaid volunteers); and are more able to allocate time to monitoring than EDCs. See our section on Professional Digital Champion Deployment elsewhere in this Evaluation for more information.

Figure 2: Proportions of people living in LSOAs in each IMD band, vs proportion of sessions, by project.



# GEODEMOGRAPHIC ANALYSIS OF END LEARNER SESSIONS

Figure 3: Sessions delivered by all DCs, by IMD decile of learners' home LSOA

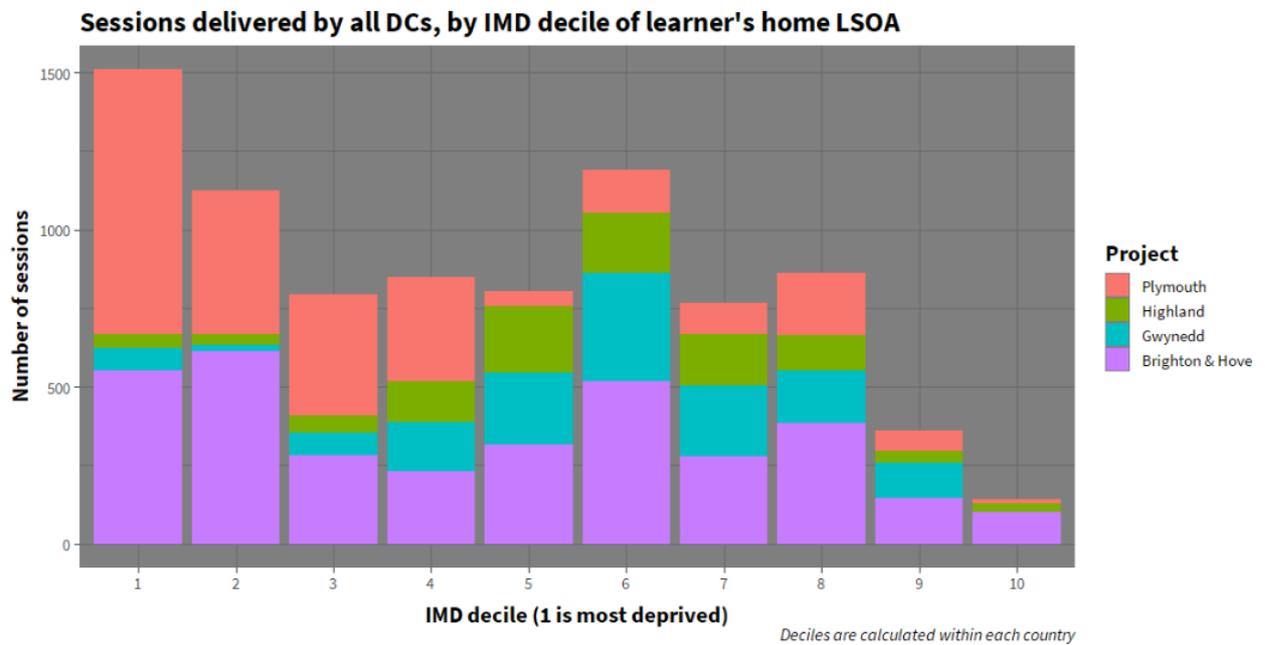
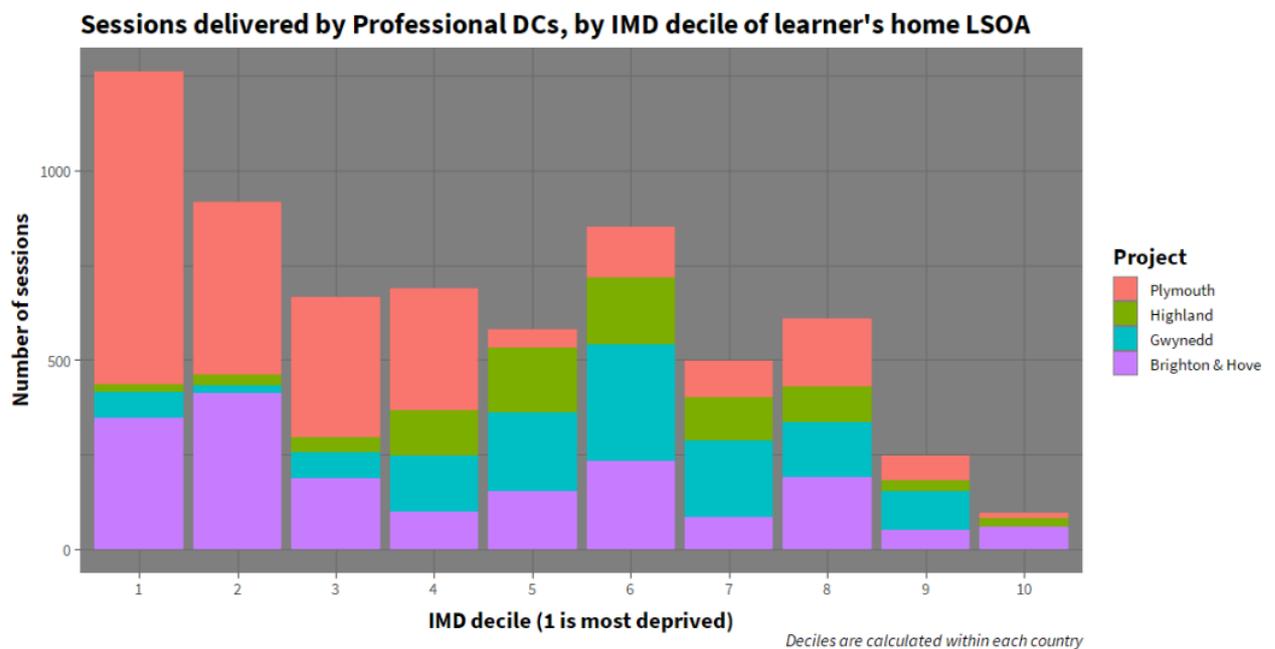


Figure 4: Sessions delivered by PDCs, by IMD decile of learners' home LSOA



## GEODEMOGRAPHIC ANALYSIS OF END LEARNER SESSIONS

Figure 5: Sessions delivered by other DCs, by IMD decile of learners' home LSOA

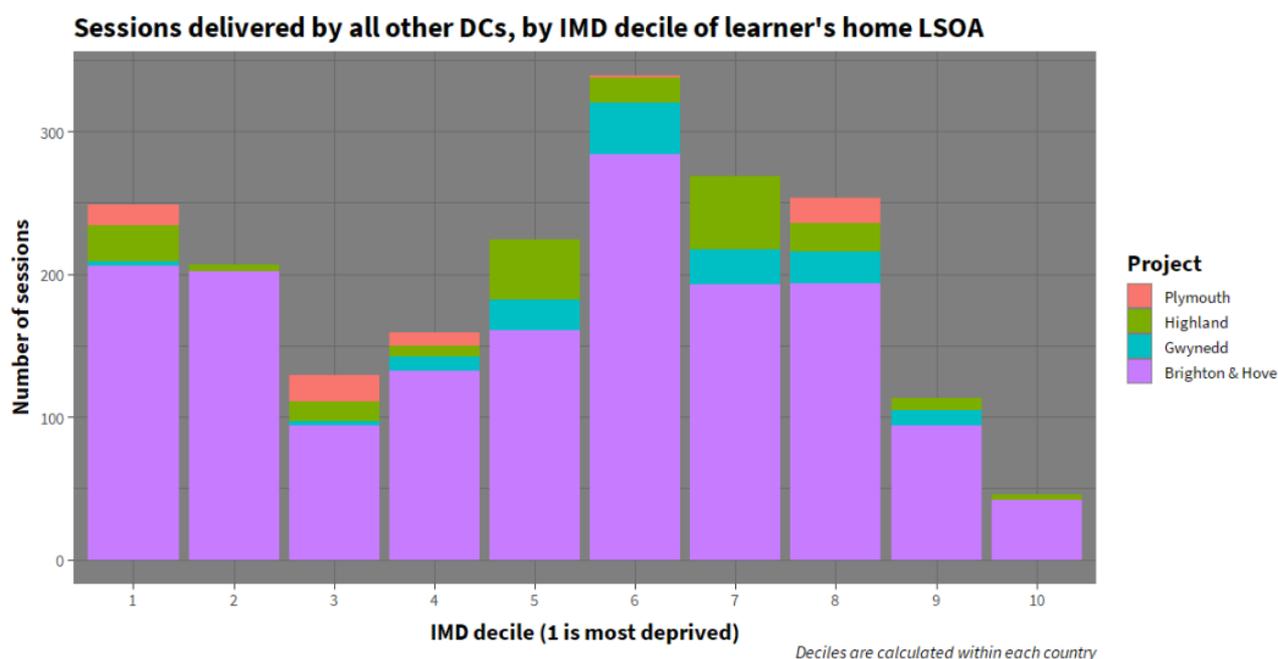


Figure 6: Proportions of sessions delivered to learners from LSOAs in the most X% deprived neighbourhoods in the relevant nation, versus proportion of the population in that project area living in LSOAs in those neighbourhoods

	Top 10% (Decile 1)		Top 20% (Deciles 1-2)		Top 50% (Deciles 1-5)	
	% Sessions	Population	% Sessions	Population	% Sessions	Population
<b>Brighton &amp; Hove</b>	16.2	8.3	34.1	17.3	58.3	43.6
<b>Gwynedd</b>	5.1	3.1	6.4	5.9	39.3	34.3
<b>Highland</b>	4.3	3.7	7.7	9.2	46.9	41.4
<b>Plymouth</b>	32.7	17.8	50.5	30.3	80.2	65.7
<b>Overall</b>	<b>18.0</b>		<b>31.3</b>		<b>60.5</b>	

Figure 6 accompanies Figure 2, and shows that (with the exception of Highland in deciles 1-2), all projects provided sessions to learners in these segments in greater proportions than the population of those areas alone would predict. In other words, **the projects tended to help people from more deprived areas.**

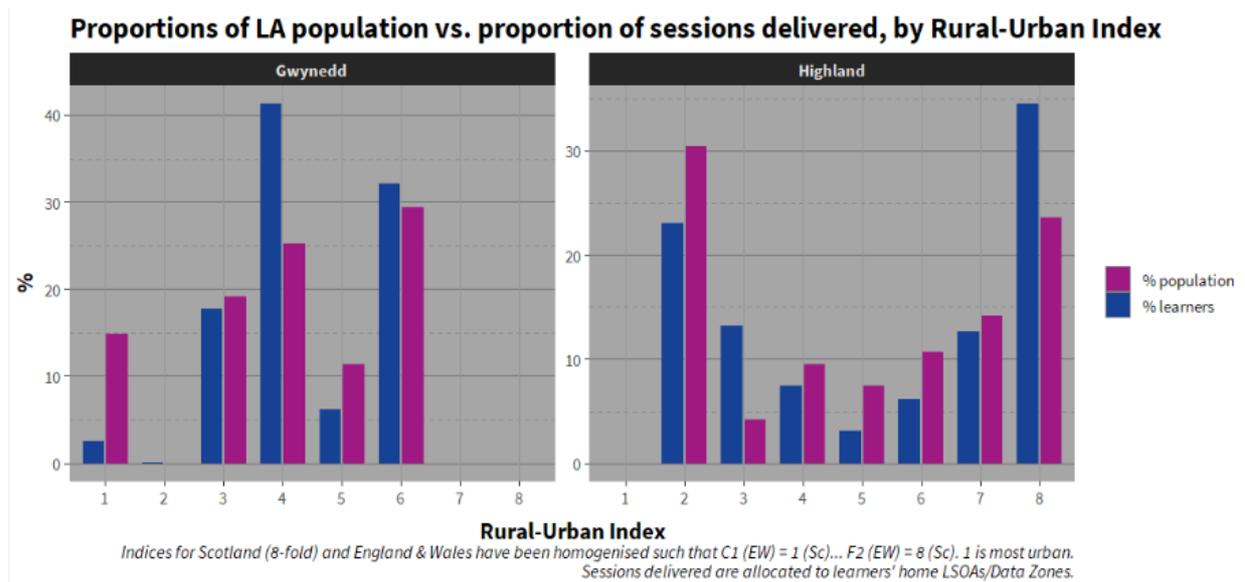
## RURALITY

The project areas in Brighton & Hove and Plymouth are uniformly urban so they have been omitted from the below figure and analysis, as there is no rural-urban spread to analyse.

In Gwynedd, learners from moderately rural areas (RUI 3-6)<sup>3</sup> received the vast majority of sessions delivered, with around 75% of sessions taking place in sparse rural settings (4, 6), more than the population in those areas would explain alone. However, relatively few sessions were delivered to learners from RUI 1 (C1: Urban City and Town) areas, and this can be explained by the lack of learners from Bangor, one of the major towns in Gwynedd (see map in Figure 10), reflecting a decision made to prioritise other areas of Gwynedd.

In Highland, sessions delivered versus population were fairly evenly matched, with DCs here notably providing help to a lot of learners from “Very Remote Rural” (RUI 8) areas – over 33% of sessions delivered to residents from these areas where less than 25% of the population in the Highland area live. DCs here also notably reached residents in RUI 3 areas (“Accessible Small Towns”) but did less so (proportionally) in RUI 2 (“Other Urban”) areas.

Figure 7: Did learners come from more urban or more rural areas than the area profile?



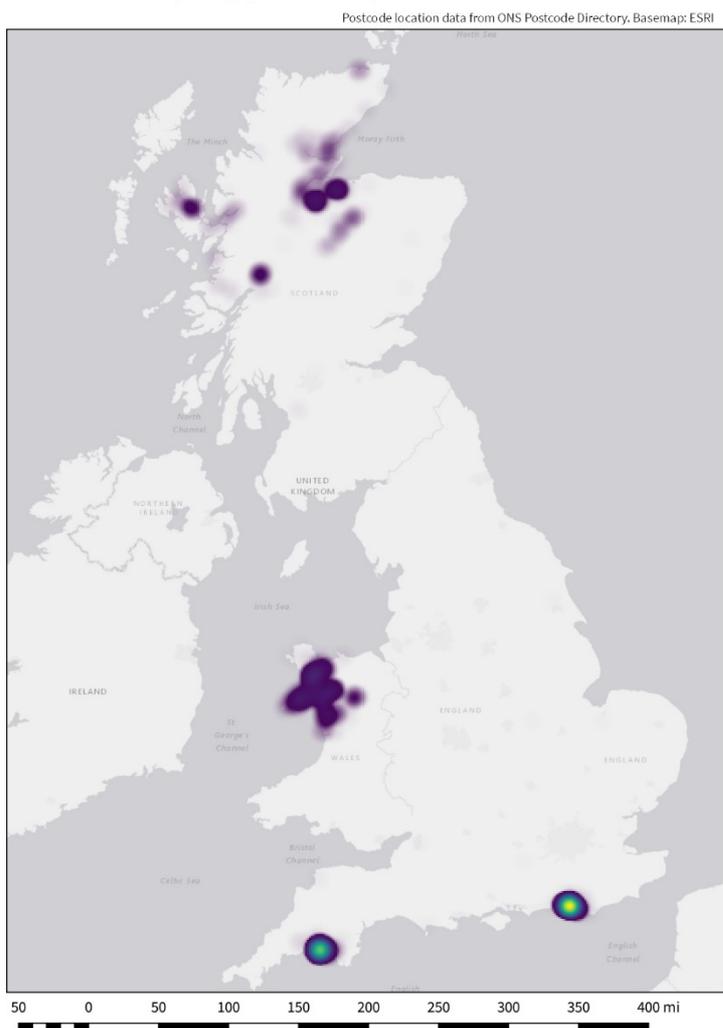
<sup>3</sup> RUI 3-6 = D1, “Rural: Town and Fringe”; D2, “Rural: Town and Fringe in a Sparse Setting”; E1, “Rural: Village”; E2, “Rural: Village in a Sparse Setting”

## MAPS OF LEARNER LOCATIONS

Figure 8 shows the distribution of learners associated with our four Deep Dive projects across the UK (of which only Brighton & Hove and Gwynedd formed Phase 2 delivery). The brighter green/yellow “hotspots” in Brighton & Hove and Plymouth represent areas with higher numbers of residents who received digital help from DCs. These two projects had more sessions recorded *overall*, and - as more densely populated urban areas - the heatmap visualisation emphasises the concentration of population more than it does in less densely populated areas. The coverage of DC work across the larger, rural areas of Gwynedd and Highland is also made visible here. Figures 9 - 12 show greater detail about the distribution of learners across each of the project areas, by LSOA/Data Zone.

Figure 8: Heatmap of digital support sessions recorded on the DCN, November 2015 - May 2020, by learner home postcode

Heatmap of digital support sessions recorded on the DCN, November 2015 - May 2020, by learner home postcode



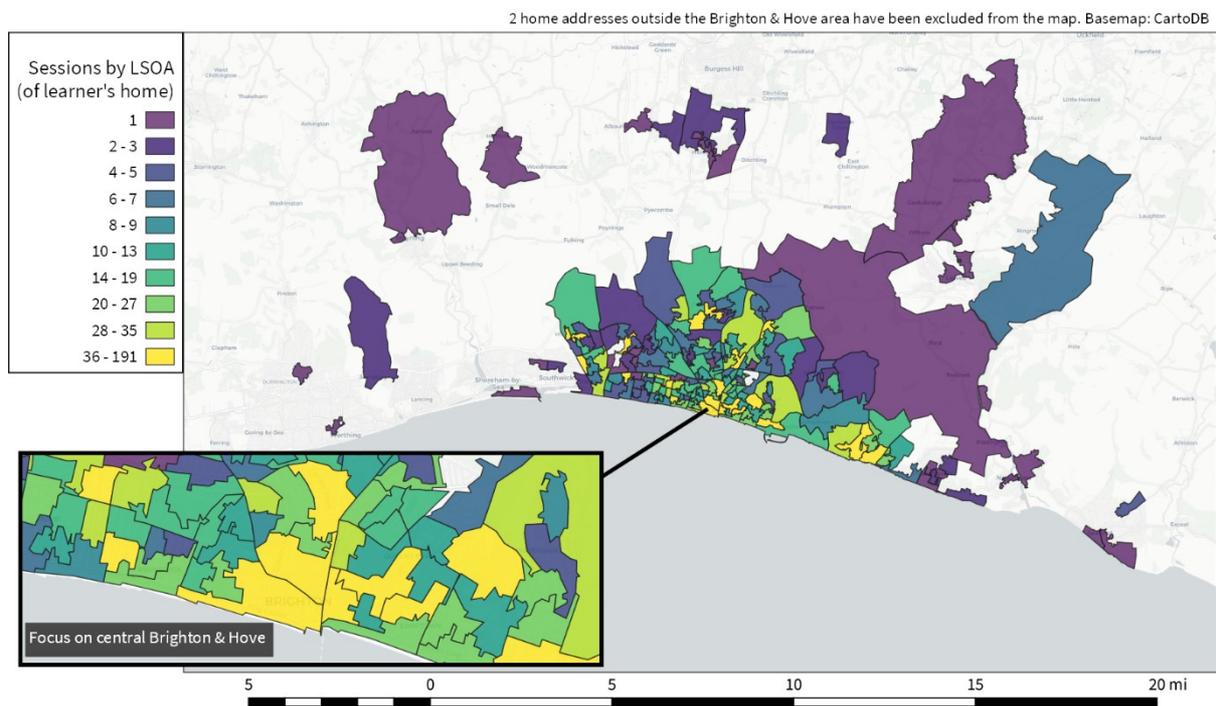
## DIGITAL BRIGHTON AND HOVE

In Brighton and Hove the LSOAs with the highest numbers of sessions for residents were in the city centre areas, as well as in Patcham/Hollingbury, Mile Oak/Portslade/Hangleton in the western part of Hove, and Saltdean/Rottingdean at the eastern edge of the city. It is also notable that some people were residents of places beyond the city boundary, some receiving help at considerable distance from their home address (perhaps associated with travel to work and/or public service locations such as jobcentres).

Figure 9: Number of digital support sessions recorded by the Digital Brighton & Hove project, by learner's home LSOA and as a heatmap

### Number of digital support sessions (n = 3,422) in the Digital Brighton & Hove project, recorded on the DCN, by learner home LSOA (n = 198)

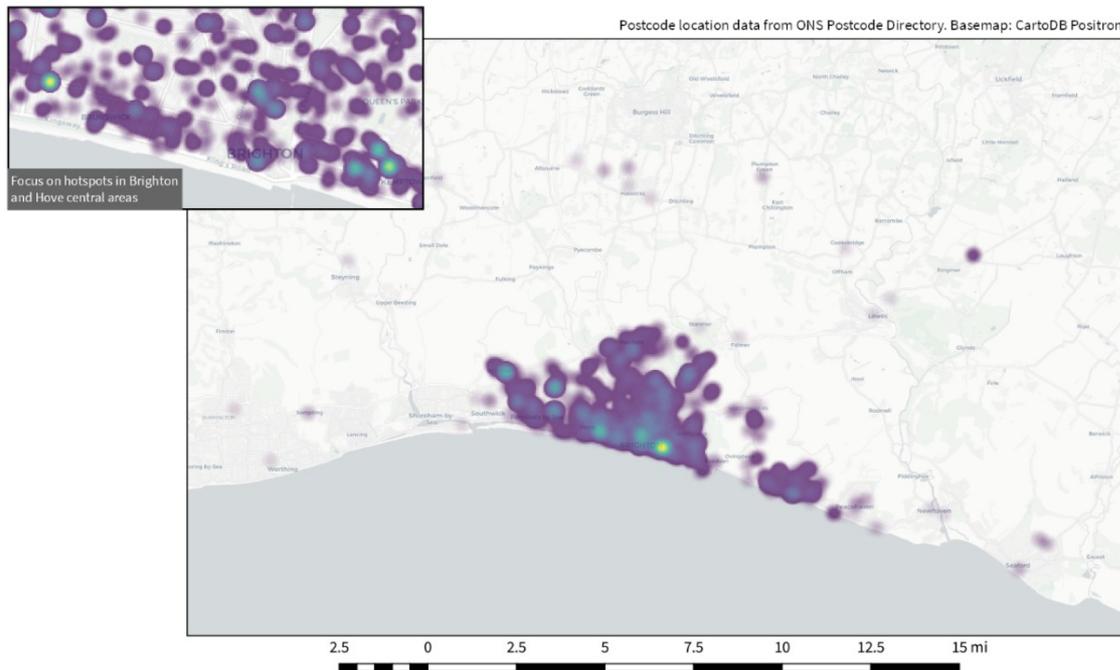
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# GEODEMOGRAPHIC ANALYSIS OF END LEARNER SESSIONS

## Heatmap of digital support sessions (n = 3,423) in the Digital Brighton & Hove project, recorded on the DCN, by learner home postcode.

Hotspots are located in the centres of Brighton and Hove, in particular Kempdown and Whitehawk, as well as Portslade and Mile Oak to the west of Hove.



## DIGITAL GWYNEDD

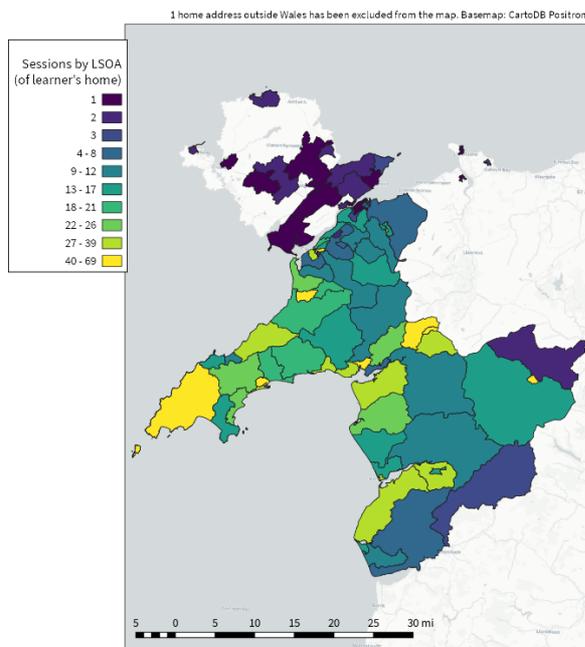
In Gwynedd, the LSOA map shows concentrations of learners can be seen in Caernarfon, Pwllhelli, Bala, Porthmadog, Abersoch and Blaenau Ffestiniog. The major town of Bangor, however, has relatively few sessions recorded for its residents. This reflects a decision by the project to focus on the more rural parts of the area.

The heatmap adds further detail around Pen-y-groes, Barmouth, Bethesda as well as areas outside Gwynedd such as Anglesey and Colwyn Bay. Again, in long-running projects we can see that people are sometimes willing to travel some distance for digital skills support if they are aware of it.

Figure 10: Number of digital support sessions recorded by the Digital Gwynedd project, by learner's home LSOA and as a heatmap

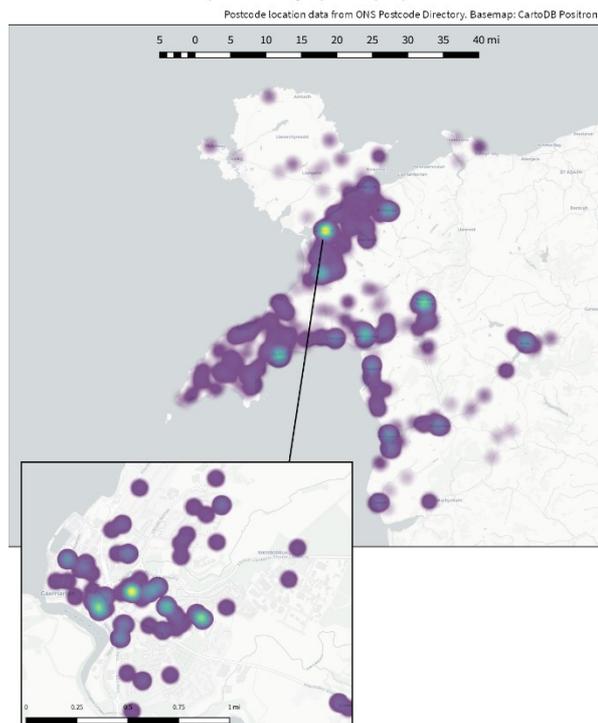
**Number of digital support sessions (n = 1,397) in the Digital Gwynedd project, recorded on the DCN, by learner home LSOA (n = 92)**

Concentrations of learners can be seen in Caernarfon, Pwllheli, Bala, Porthmadog, Abersoch and Blaenau Ffestiniog. The major town of Bangor, however, has relatively few sessions recorded for its residents.



**Heatmap of digital support sessions (n = 1,397) in the Digital Gwynedd project, recorded on the DCN, by learner home postcode.**

Hotspots are particularly located in Caernarfon, Blaenau Ffestiniog, Pwllheli and Porthmadog. Other areas with concentrations of learners are Pen-y-groes, Barmouth, Bala and Bethesda, as well as residents of areas outside Gwynedd such as Anglesey and Colwyn Bay.



## DIGITAL HIGHLAND

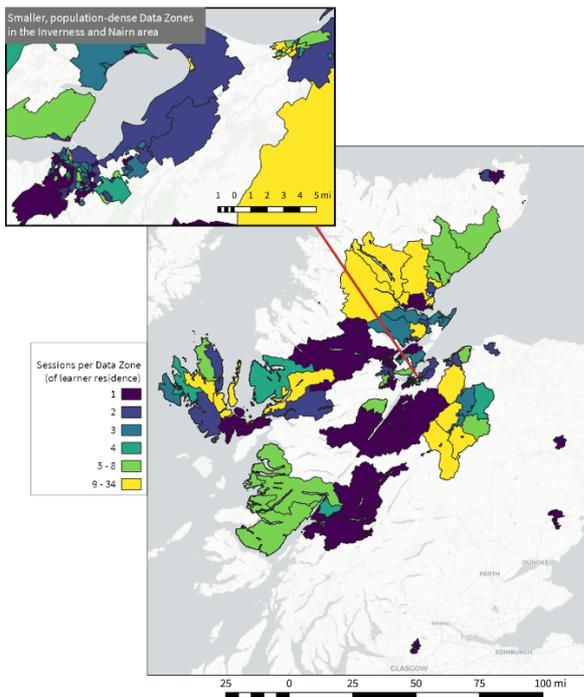
Although most sessions took place in the towns of Inverness, Nairn, Fort William and Portree, single Data Zones (DZs, the Scottish equivalent of LSOAs) in these areas did not tend to have the highest numbers of resident learners.

The single DZs with the highest numbers of learners were on Skye and in Nairn East, Ross and Cromarty, and Sutherland. The heatmap shows that learners were distributed over much of the inhabited parts of the Highland area. Again, some learners are from even greater distances.

Figure 11: Number of digital support sessions recorded by the Digital Highland project, by learner's home Data Zone and as a heatmap

**Number of digital support sessions (n = 1,013) in the Digital Highland project, recorded on the DCN, by learner home Data Zone (n = 224)**

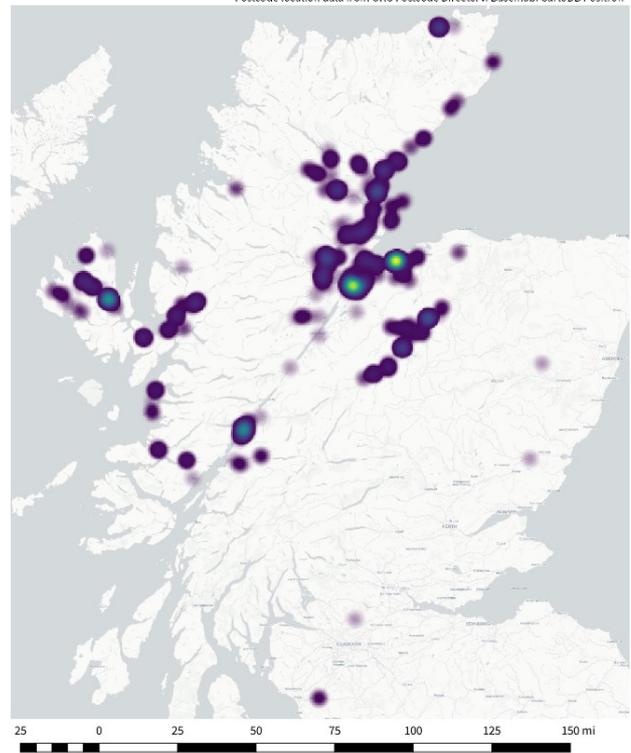
Although most sessions take place in the towns of Inverness, Nairn, Fort William and Portree, single Data Zones in these areas do not tend to have the highest numbers of resident learners. The single DZs with the highest number of learners are on Skye and in Nairn East, Ross and Cromarty, and Sutherland. 5 addresses outside Scotland have been excluded from the map. Basemap: CartoDB Positron



**Heatmap of digital support sessions (n = 1,013) in the Digital Highland project, recorded on the DCN, by learner home postcode.**

Hotspots are Inverness, Nairn, Fort William and Portree but learners are distributed across much of the Highland area.

5 postcodes outside Scotland have been excluded from the map. Postcode location data from ONS Postcode Directory. Basemap: CartoDB Positron



## DIGITAL PLYMOUTH

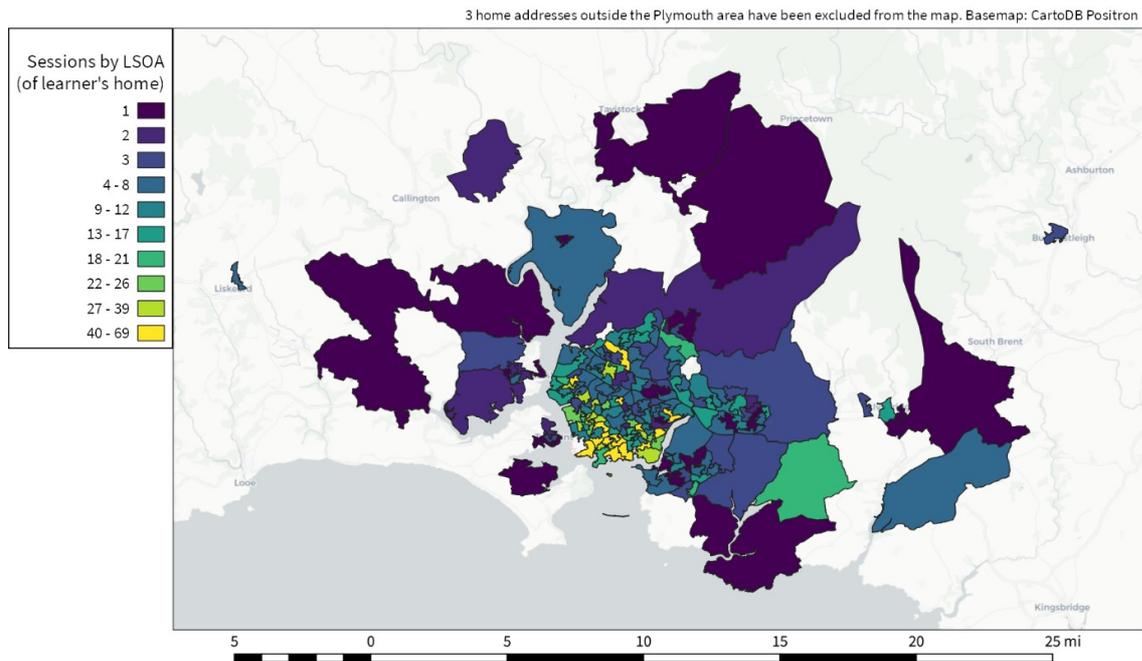
Help was provided to residents across almost all areas of the city, and to some beyond the city boundary. Help was particularly concentrated on residents in the south and west of the city – matching areas we had identified in our baseline assessment for the area.

# GEODEMOGRAPHIC ANALYSIS OF END LEARNER SESSIONS

Figure 12: Number of digital support sessions recorded by the Digital Plymouth project, by learner's home LSOA and as a heatmap

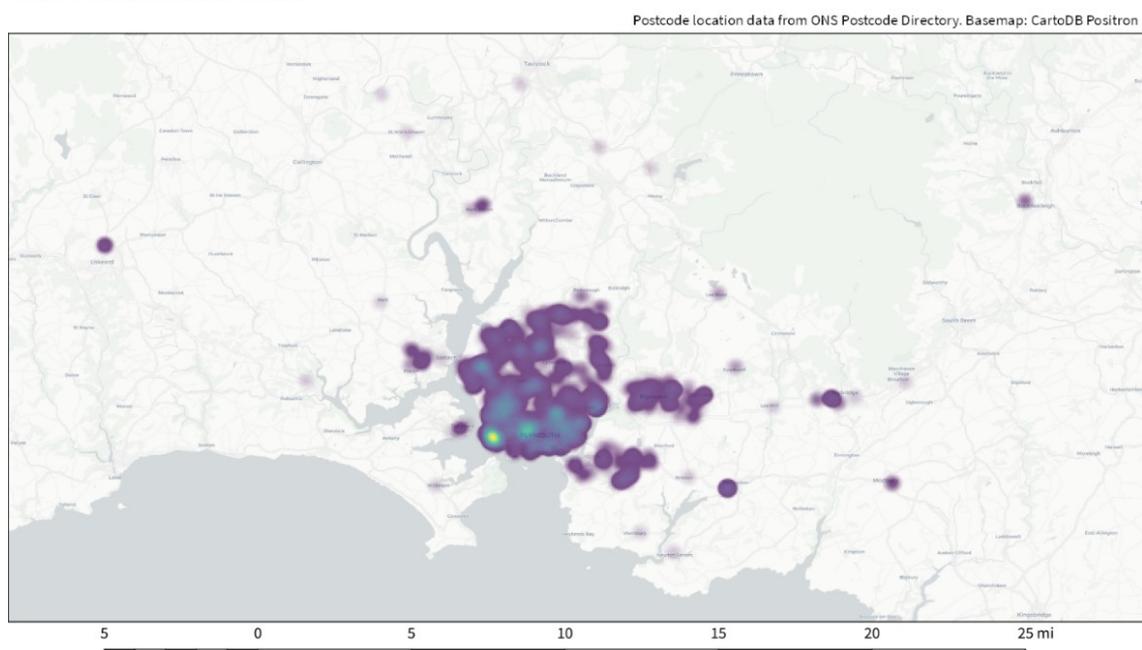
## Number of digital support sessions (n = 2,575) in the Digital Plymouth project, recorded on the DCN, by learner home LSOA (n = 197)

The majority of sessions were delivered to residents within Plymouth city, particularly in areas in the south and west of the city.



## Heatmap of digital support sessions (n = 2,575) in the Digital Plymouth project, recorded on the DCN, by learner home postcode.

Hotspots are in the Devonport Library area and Millbay and Stonehouse, all to the west of Plymouth city centre. Residents of suburbs such as Plymstock and Plympton also attended sessions in notable numbers.



## METHODOLOGY

Figure 13 below shows how the recorded sessions were split between the four projects. Figures 14 and 15 provide visual representations of the proportion of sessions which could not be allocated to a location for mapping or data analysis. This issue was only really significant with data from DBH. We do not believe it affects the overall conclusions.

Figure 13: Total session records, and details of numbers of locations geocoded, by project

Project	Sessions	Location available	Location unavailable
<b>Plymouth</b>	2,698	2,576	122
<b>Highland</b>	1,091	1,018	73
<b>Gwynedd</b>	1,538	1,398	140
<b>Brighton &amp; Hove</b>	4,405	3,423	982
<b>Totals</b>	9,732	8,415 (86.4% of total)	1,317

Figure 14: Numbers of session records where a valid postcode was obtainable or unobtainable

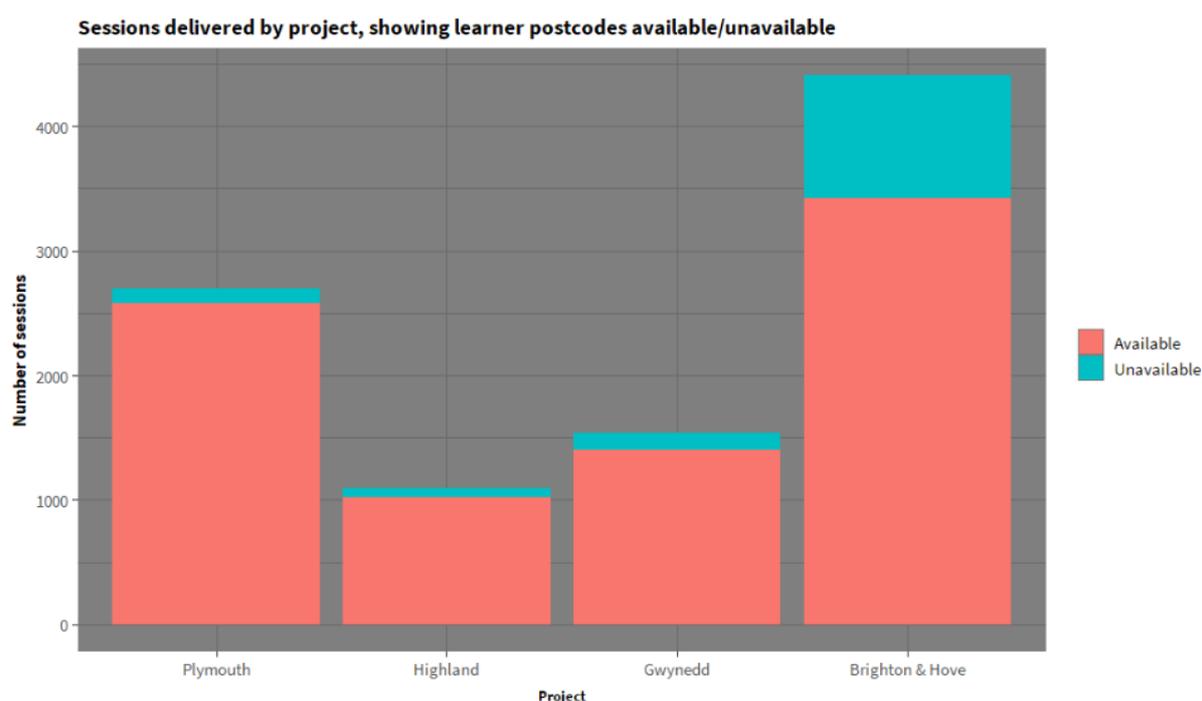
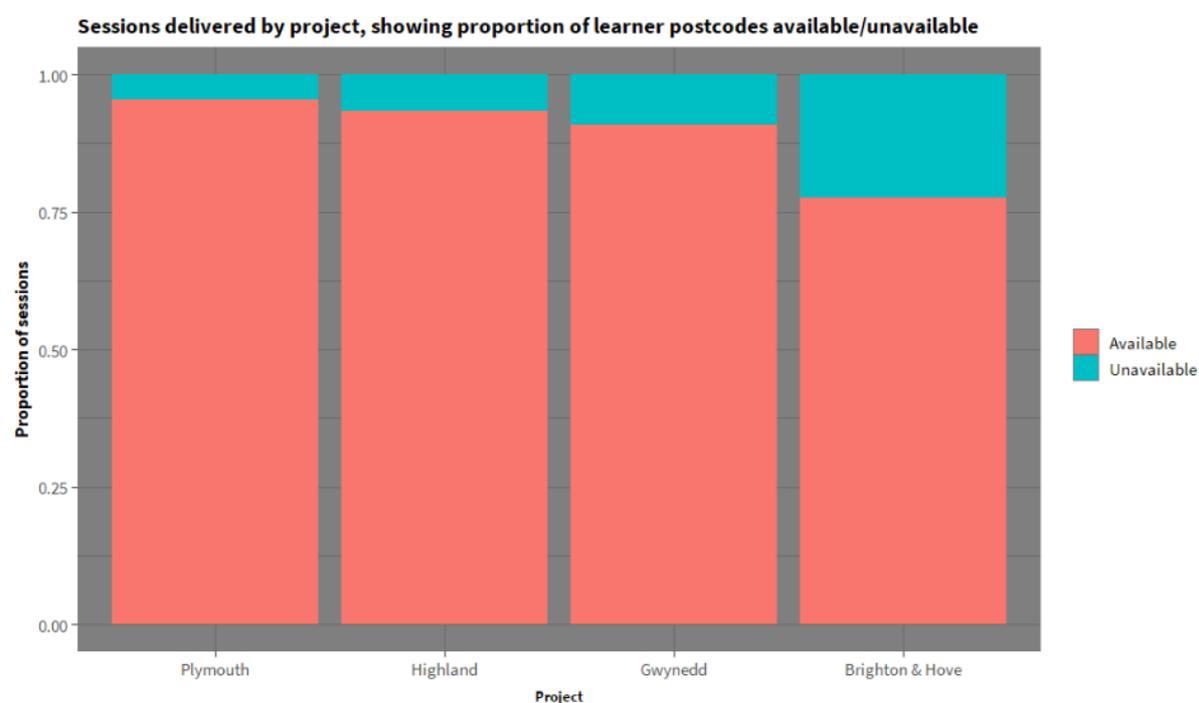


Figure 15: Proportions of session records where a valid postcode was available/unavailable



Brighton locations unavailable are largely anonymous learners and those of no fixed abode. At certain venues, mainly GP surgeries in Brighton & Hove, large numbers of sessions were recorded with de-identified names and the venue postcode entered as the learner’s home postcode. These have been removed from this mapping process as these data were clearly not representative of the learners’ LSOAs of residence.

Additionally, in all projects, a small proportion of learner home postcodes were unlocatable due to data entry errors (e.g. missing, invalid or incomplete postcodes). Where reasonable to do so, invalid postcodes were corrected and included. A total of 86.4% of sessions (8,415) were able to be located and included in the rest of the analysis. Once postcode cleaning was complete, a lookup process was used to identify the LSOA for each valid postcode, from which point further lookups of data - such as population, numbers of benefit claimants, and IMD decile - were possible. The correlation and scatter plots in Figure 1 were created using the *R* language and tools to plot sessions per LSOA against other metrics; the correlation lines were calculated using the ‘lm’ linear modelling function. The higher the value of the correlation (also called *R*), the stronger the relationship between the two variables. The *p* value indicates how confident we can be in that value, with the lower values of *p* showing that we can be very confident of the relationship shown by the line.