Citizens Online
DIGITAL INCLUSION EXPERTS

Mapping data for Digital Inclusion activity

CITIZENS ONLINE'S APPROACH

This report uses an example from our Digital Brighton and Hove project to outline some aspects of the process of using data to identify areas to target Digital Inclusion activity. There are three sections to this report:

1. Data sources relevant to mapping digital exclusion
2. Software requirements and the basics of mapping data
3. How data can be used to assist the delivery, development, monitoring and evaluation of project

This report covers freely available, 'Open Source' datasets and data from Digital Unite's Digital Champions Network. It does not cover the role of 'proprietary data' either collected by organisations or bought from third-parties.

1. DATA SOURCES RELEVANT TO MAPPING DIGITAL INCLUSION

We know from research on digital inclusion that particular demographic groups are less likely to use the internet. A variety of data sets can be used to help understand and visually map differences in the distribution of these demographic groups between and within different areas, including:

- National digital inclusion datasets
- Nomis (from the Office for National Statistics)
- Census and DWP open data

NATIONAL DIGITAL INCLUSION DATASETS

There are a number of data sources which provide nationwide data relevant to digital inclusion. These include:

- OFCOM's data on the Communications Market and on internet use and attitudes.

- ONS data on internet users
- The Oxford Internet Surveys (OxIS)
- The Tech Partnership's work on Basic Digital Skills.

Headline data from a number of these sources is collated at the Gov.uk Digital Inclusion Dashboard.

These sources feature breakdowns by demographic characteristics. For example, the most recent ONS data on Internet Users (2017) suggests that 22.5% of disabled adults have never used the internet, compared to 4.9% of people who are not disabled. In other words: of those who have never used the internet as of the 2017 data, 2,752,000 or 57% are estimated to have self-assessed that they have a disability in line with the Equality Act definition of disability. National data like this can be combined with local data from the Census on the number of disabled people, or the DWP on the number of people receiving disability benefits, in order to estimate the number and geographic distribution of digitally excluded people.

NOMIS

Nomis is an Office for National Statistics service that provides free access to UK labour market data, via www.nomisweb.co.uk. Data from the ONS Nomis system can be used to help place an area in a regional or national context. For example, data on claimants highlights the number or percentage of people on low incomes, a factor known to be associated with greater risk of digital exclusion.

In Brighton and Hove, the level of claimants is higher (10% of the working age population) that for the region (8.3% across the South East), but lower than across Great Britain as a whole (11%). Employment and Support Allowance (ESA) and incapacity benefit claimants make up a higher proportion of the population in Brighton and Hove (6.2%) than across the South West (4.4%), and Britain as a whole (6.1%), however. Nomis also provides access to more detailed geographic data on particular claimants, such as those in receipt of ESA.

Table 1: Working-age client group - main benefit claimants - not seasonally adjusted (November 2016). Source: DWP benefit claimants – working age client group

	Brighton and Hove	Brighton and Hove	South East	Great Britain
	(numbers)	(%)	(%)	(%)
Total claimants	20,550	10	8.3	**11**
Job seekers	2,040	1	0.7	**1.1**
ESA and incapacity benefits	12,670	**6.2**	4.4	6.1
Lone parents	1,410	0.7	0.8	**1**
Carers	2,290	1.1	1.3	**1.7**
Others on income related benefits	280	0.1	0.1	**0.2**
Disabled	1,630	**0.8**	**0.8**	**0.8**
Bereaved	240	0.1	**0.2**	**0.2**
Main out-of-work benefits†	16,400	8	6.1	**8.4**

Notes:

† Main out-of-work benefits includes the groups: job seekers, ESA and incapacity benefits, lone parents and others on income related benefits.

% is a proportion of resident population of area aged 16-64

CENSUS AND DWP DATA

The UK Census is undertaken every 10 years, most recently on 27 March 2011. Data from the Census is collated into small geographic units called 'Census Output Areas' or OAs, which are designed to have similar population sizes and be as socially homogenous as possible based on tenure of household and dwelling type. To ensure confidentiality, each of these areas – which look like polygonal shapes on a map - contain at least 40 households and 100 persons, the target size being 125 households. The average OA contains 309 people. These OAs are grouped together into larger areas called Lower-layer Super Output Areas (LSOAs – containing 1-3,000 peoeple), and Middle layer Super Output Areas (MSOAs – 5-15,000 people). The 2011 Census provides data for 181,408 OAs; 34,753 LSOAs and 7,201 MSOAs in England and Wales. Terminology for these different geographic areas is different in Northern Ireland and Scotland. You can

learn more via the ONS webpage on Census Geographies. Census data is available via the ONS 2011 Census data portal.

Census data can also be explored at the level of Local Authority. In the 2011 Census, 44,569 people resident in Brighton and Hove (or 16.3% of the population) reported that their day to day activities were limited by a disability or health issue. Of this figure just under half, 20,445, said their day to day activities were limited a lot. We can combine such Census data with national digital inclusion data in order to produce estimates of the number of digitally excluded people. The ONS 2017 survey of Internet Users suggests 22.5% of disabled adults have never used to the internet (ONS, 2017) - applying this to the 44,569 disabled people in Brighton and Hove, we would thus estimate there were approximately 10,000 people who had never used the internet whose day to day activities were also limited. [1]

The ONS also provide estimates for Internet Users at local authority level, though estimates for these relatively small geographic areas are based on low samples and thus less robust than the national figure. To get a more robust figure we can calculate an average using data from 2011-2017. For Brighton and Hove this results in an estimate that 8.6% of the local population have never used the internet or last used it over three months ago (or 19,000 people). Again, combining this with a piece of national digital inclusion data – in this case that 57% of adults who have never used the internet self-assess as disabled – allows a local estimate: 10,830 people. While both methods provide tentative estimates, they both suggest that **there are roughly 10-11,000 disabled people living in Brighton and Hove who have never used the internet or last used it over three months ago**.

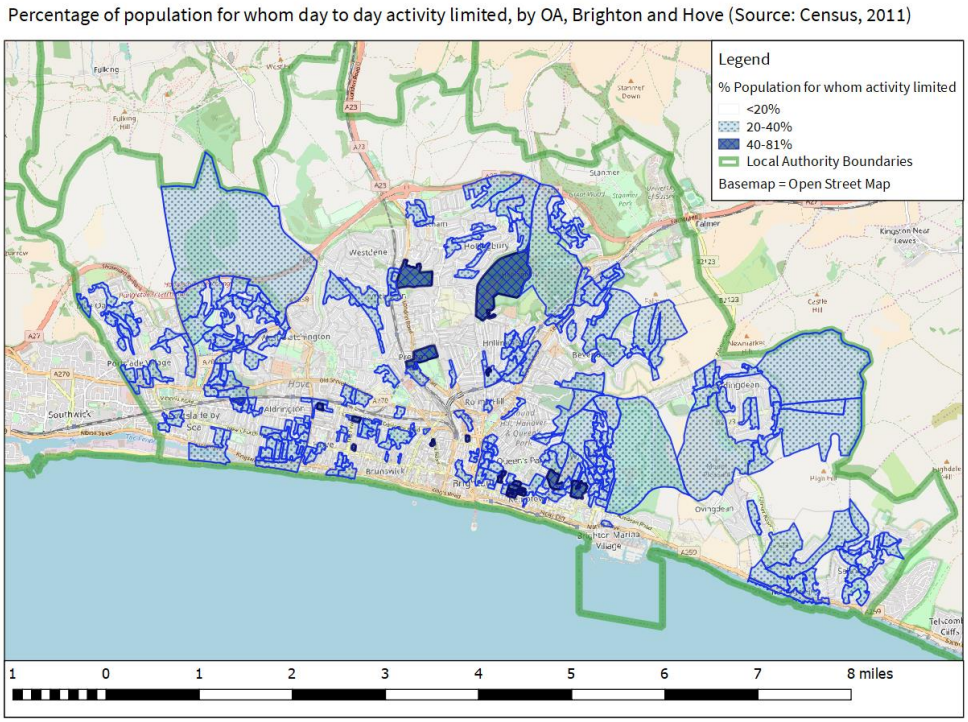
The Department for Work and Pensions (DWP) have a statistics portal called DWP StatXplore, which provides data on the distribution of claimants by OA and LSOA.

[1] This is an approximate estimate as the Census definition is slightly different to the Equality Act definition for disability used by the ONS. Further, the Census does not provide a compatible age breakdown for people whose day to day activity is limited (providing only a 16-64 option).

2. SOFTWARE REQUIREMENTS AND THE BASICS OF MAPPING DATA

Geographic Information System (GIS) mapping software allows data from spreadsheets to be represented visually, and layered on top of satellite images or street-maps. Addresses or postcodes can be linked to latitude and longitude in order to pinpoint locations on maps ('geocoding', see an example in figure 2 below). Data recorded by OA, LSOA or other geographic areas in a CSV spreadsheet can be linked to 'shapefiles' which tie the data to the polygonal boundaries of these geographic areas. Raw numbers and proportions can be displayed with varying colours and/or patterns and shades to identify particular areas where people whose activity is limited make up a greater proportion of the population - Figure 1 provides an example.

Figure 1: Proportion of population with limited activity, by Output Area



Areas highlighted in this way might form priority areas for Digital Champions, who might first examine whether potential partner

organisations were operating in these areas – and check that the Census data matched on-the-ground experience. They could be layered with data on provision of digital skills support or the locations of Digital Champions to get an understanding of the ability of a digital inclusion project to meet need.

Citizens Online uses the open source software QGIS (Quantum GIS) for our mapping. Popular alternatives include Mapinfo, and ArcGIS. To create maps of OA or LSOA data you will need shapefiles, which can be obtained for instance from the ONS Open Geography Portal.

3. HOW DATA CAN BE USED TO ASSIST THE DELIVERY, DEVELOPMENT, MONITORING AND EVALUATION OF PROJECT

DELIVERY

As mentioned previously, data regarding the distribution of people more likely to be digitally excluded, the locations of digital champions and/or the locations of free IT access points or digital skills support sessions can be mapped to help plan delivery of digital inclusion activity. Citizens Online uses maps as part of our analysis of detailed evidence which we use to form 'baseline' reports for our Switch projects (pdf sample report).

Maps can also be used during the development of a project, to monitor progress, and ultimately to evaluate the effectiveness of attempts to reach digitally excluded people.

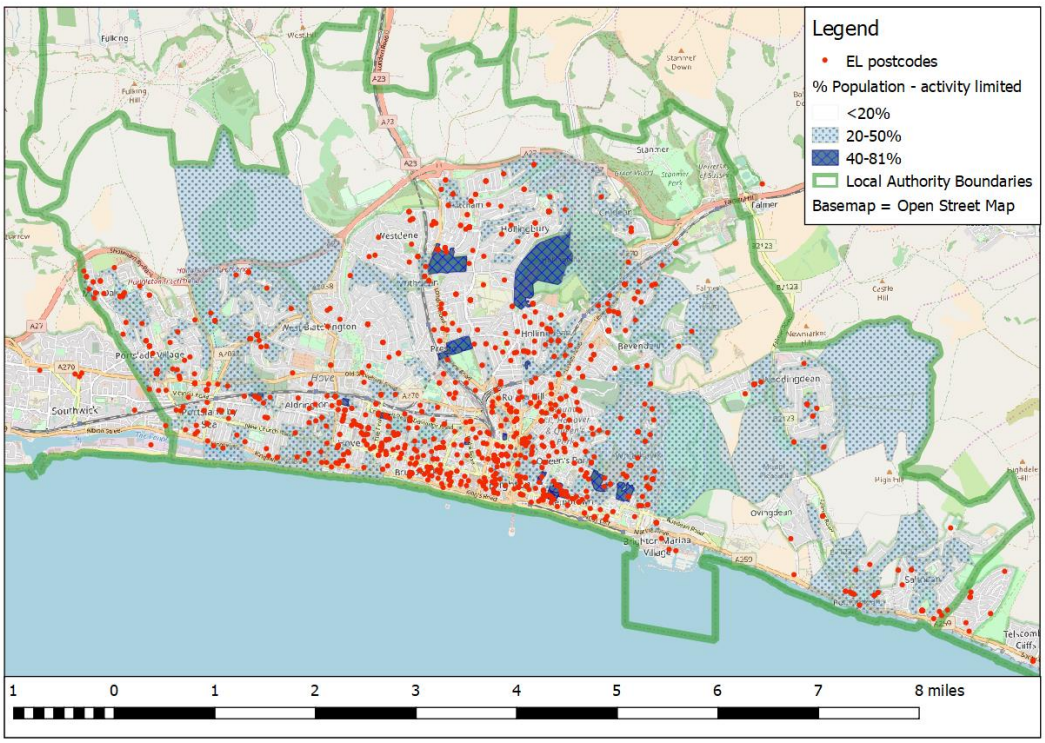
MONITORING

To help us monitor and evaluate the impact of our digital inclusion projects, Citizens Online utilises the Digital Champions Network (DCN). The DCN provides a platform, including a web-app, for Digital Champions to record their activity with the people they assist – 'End Learners'. At Citizens Online, we can map the home postcode data provided by End Learners in order to assess how well we are targeting marketing and training resources. Figure 2

shows an example from our Digital Brighton and Hove project - the home postcodes given at 2,103 of a total of 2,368 sessions where some End Learner data was recorded (in 265 cases home postcode data was not given, was incomplete or incorrectly entered), and gives one indication of how home postcode data can be compared against the distribution of expected need. The locations of Digital Champions and their activity can also be mapped in similar ways.

Figure 2: End Learner locations - actual (postcodes) VS target (percentage of population for whom activity is limited by OA).

End Learner Locations - actual VS target, Brighton and Hove (Source: Digital Champions Network records, Dec 2017)

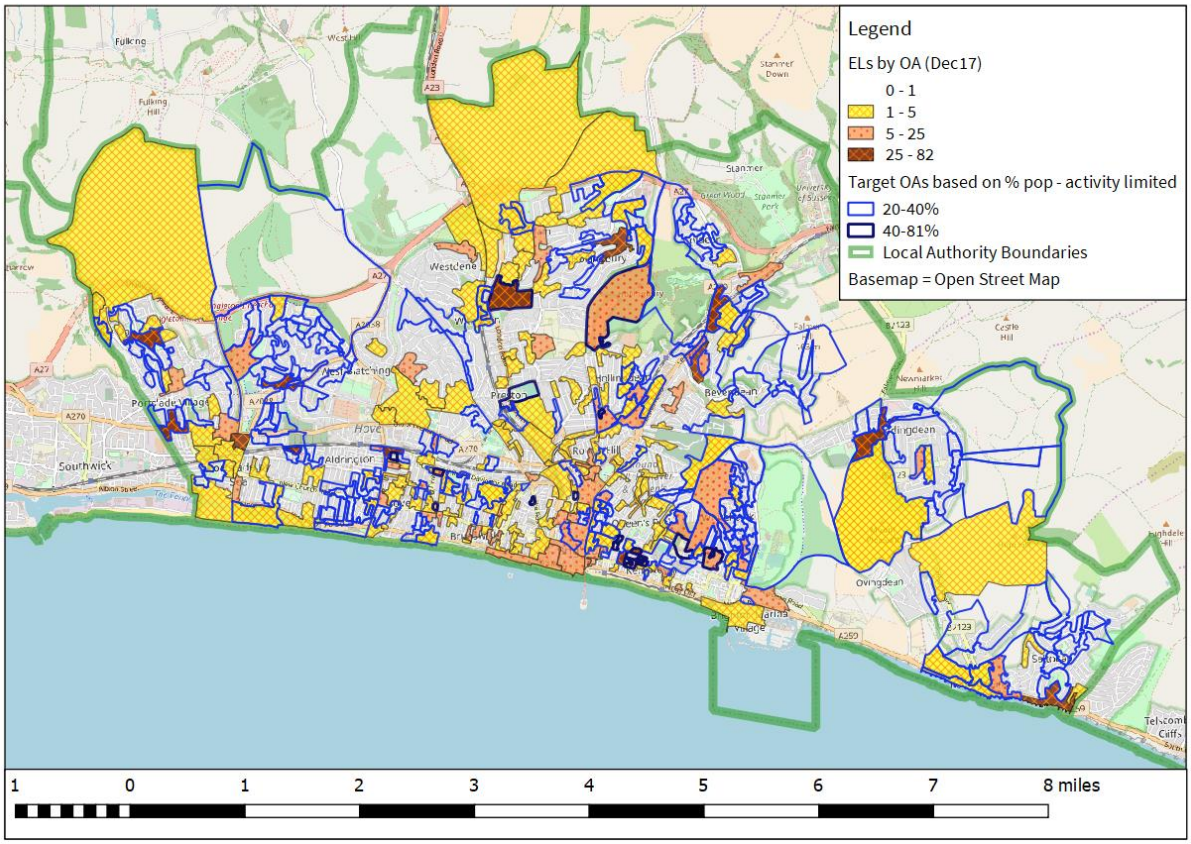


End Learner postcode data can also be allocated to OA and LSOA geographies, and thus comparisons made between the distribution of target populations and digital inclusion activity sessions. Figure 3 displays the distribution of End Learner postcodes by OA, contrasted against the target OAs. While Figure 3 shows there are some areas of the city from which no End Learners have come for assistance, coverage includes areas throughout the geographic boundary of the local authority area – with

some concentration in the city centre. Figure 3 shows that there is some overlap between the Output Areas where the largest numbers of End Learners are resident, and those that have been identified as targets on the basis of the proportion of population within them whose day-to-day activity is limited. However, there are some Output Areas that would be targeted on this basis – particularly the medium level, where no End Learners or fewer than effective targeting would suggest are resident.

Figure 3: End Learner Locations, by Output Area VS Target OAs based on percentage of population for whom day-to-day activity is limited.

End Learner Locations, by Output Area, Brighton and Hove (Source: Digital Champions Network records, Dec 2017)



DEVELOPMENT AND EVALUATION

In the previous three maps, seventeen Output Areas (OAs) where over 40% of the resident population reported their day to day activity was limited are highlighted. Together these OAs account for 7.2% of the population of

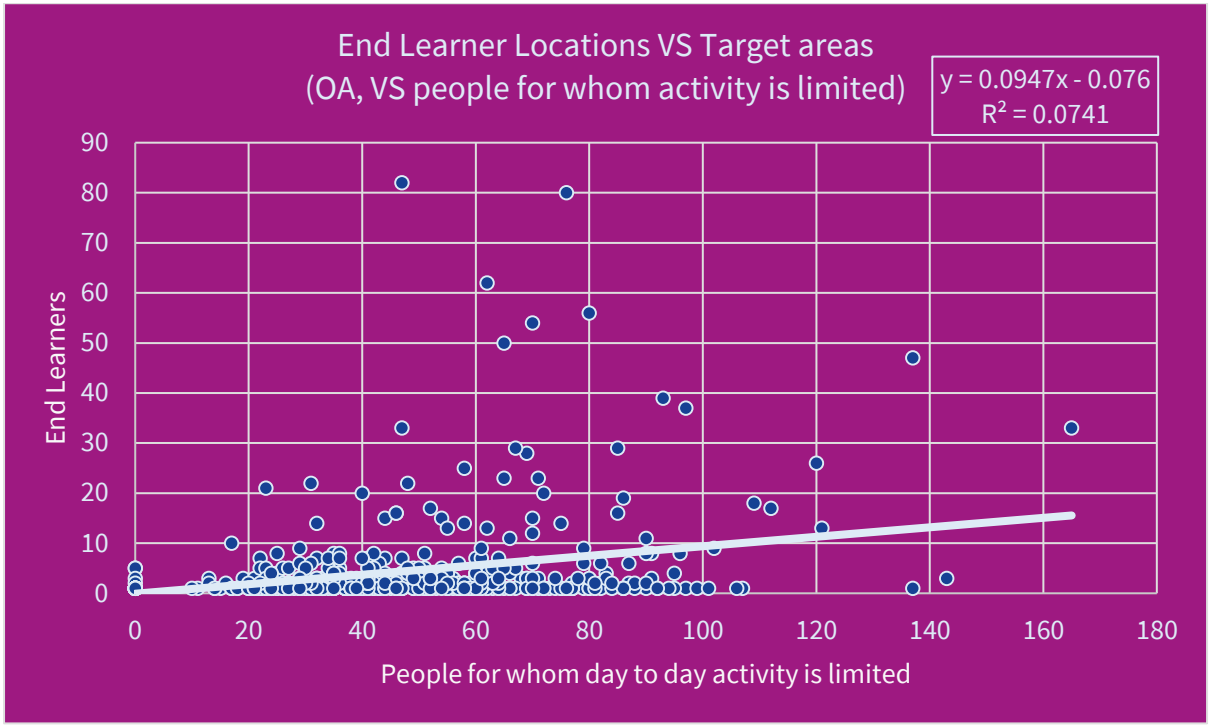
Brighton and Hove reporting limited activity. In a further 130 OAs over 20% of the population report limited activity – accounting for 40.9% of the total number of people with limited activity in the city. In terms of End Learners, these same OAs account for 11.6% and 35% of the total people assisted by the Digital Brighton and Hove project. Hence, under half (46.6%) of End Learners in the project area are residents of OAs identified to be targeted on the basis of the proportion of people for whom day to day activity is limited. These areas contain 48.1% of the people in Brighton and Hove reporting their day to day activity is limited.

It is important to stress that this is not the only measure by which the Digital Brighton and Hove project has identified digitally excluded people to target, and that not every instance where and End Learner is given assistance is recorded on the DCN. Engagement with Digital Champions and partners would be necessary to understand the extent to which the data provided an accurate reflection of experience. Nonetheless, we can use the above data and maps as an example to understand how such maps could be used as a prompt to develop the project to improve delivery for digitally excluded disabled people. This might involve setting up new training sessions or increasing marketing in areas where more of the population is disabled.

If, instead, we imagine the above data had been collected at the end of a project we can understand how it would be used as part of an evaluation of the project's effectiveness. Figure 4 provides a scatterplot that shows a weak relationship between the number of people in an Output Area for whom activity is limited and the number of people resident in the same Output Area who have been assisted by the Digital Brighton and Hove project. The statistical relationship indicates either that the project is failing to effectively reach target populations, that the Census data upon which targeting is based is failing to pick up the true distribution of people who are in need of digital assistance, or that the DCN data is failing to pick up the true distribution of people who are given assistance with digital skills. Additional information from a project would help to build an accurate picture of the contribution of each of these factors, and the effectiveness of

targeting other groups (older people or people on low incomes) that may have predominantly been resident in different OAs.

Figure 4: Scatterplot – End Learner Locations VS Target Areas (OA, people for whom activity is limited).



4. CONCLUSION

Citizens Online has found mapping of data to be useful when assessing the extent of digital exclusion risk in an area before a project, when designing action plans for digital inclusion activity, in our monitoring and development of projects and in evaluating our work. We hope this document provides a useful introduction to the process and potential benefits, and are happy to offer further advice. Contact us via: workwithus@citizensonline.org.uk.