**Exploring urban growth, 1851-1911: the example of Liverpool**

***What is population density?***

*Population density is the number of people per acre (one acre is 4047 square metres (m2): you could fit 1 and a half full size football pitches into that space).*

***What is urbanisation?*** *Urbanisation means an increase in the proportion of people living in urban areas compared to rural areas.*

If, for the purposes of this worksheet, we define a ‘rural area’ as a place that holds fewer than 2 people per acre, then in 1851 59% of the population of England and Wales lived in rural areas. By 1911, the proportion of people living in ‘rural areas’ had fallen to 32% as more and more people lived in more densely populated urban areas. (Note: under the ‘<2 persons per acre’ definition all of the AGRICULTURAL places and also some of the less densely populated SEMI-RURAL places shown in the *PopulationsPast* website are classified as ‘rural’.)

Although the rural population fell, this did not necessarily mean that urban areas became increasingly congested between 1851 and 1911. While many people migrated from rural areas into urban areas during this period, towns and cities also grew by expanding into the surrounding countryside, a process known as **urban sprawl**, with moderate population densities spreading across wider areas. This meant that ‘urban authorities’ took on responsibility for increasingly large areas. Sometimes the numbers of people and the services they needed became too large for one authority to deal with efficiently and the areas were divided so that they could be more easily administered.

In this worksheet, we will examine the process of urban sprawl using the example of the city of Liverpool and its surrounding area, and data taken from the *PopulationsPast* website. We will also consider some of the reasons for urban growth in the period 1851-1911.

**The Jigsaw of Urban Growth**

1. Open [www.populationspast.org](http://www.populationspast.org)
2. Move to the black panel on the right of the screen and on the ‘Year selection’ tool move the pointer to 1851, by dragging it with the cursor.
3. Move the cursor to the map screen. See how it changes to a hand? Use the hand to move the map so you are looking at the North West of England and the city of Liverpool, which is marked on the map. If you prefer you could type ‘Liverpool’ into the ‘Search locations box’ at the top left of the map screen.
4. Now use your mouse-wheel, touch pad or the zoom button  at the top left of the map screen to zoom in a little on the map. Can you see Liverpool Registration District (RD) completely surrounded by the Registration District (RD) of West Derby? We will concentrate on the area covered by these two districts.
5. Click the ‘Population Density’ button on the black panel. Hover your mouse over Liverpool RD. The ‘population density box’ at the top right of the map screen shows there were 167.25 people per acre living in this area. Now hover over West Derby: population density in this RD is only 3.99 persons per acre.
6. Use the scroll button to zoom in further. The Registration Sub-Districts (RSDs) which make up the RDs of Liverpool and West Derby appear.
7. Click on an RSD and a white ‘fact box’ will open telling you the name of the RSD and RD that you have clicked on.
   1. Find the names of all the RSDs in Liverpool RD and enter them in the table below (here’s a clue: there are 7 of them!):
   2. Go around the RSDs again and enter the population, the acreage and population density figures given in the ‘fact box’.

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| --- | --- | --- | --- |
| Name | Population | Acreage | Population Density (persons per acre) |
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|  |  |  |  |
| Total: |  |  |  |

* 1. Which of Liverpool’s RSDs had the highest population density in 1851? ………………………..
  2. Which had the lowest? ………………………..
  3. Now add up the populations and the acreages and put the answers in the ‘Total’ row. Divide the total population by the total acreage to calculate the population density of Liverpool RD; the average number of people living in each acre of the RD. Enter this figure in the table.
  4. Does the figure you calculated agree with the RD population density figure you saw earlier? ………………………..

1. Look at the RSDs in the RD of West Derby which completely surround the RD of Liverpool. There are 5 of them. Collect their names, populations, acreages and population densities and enter them in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Population | Acreage | Population Density (persons per acre) |
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|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Total: |  |  |  |

1. What do you notice about the population densities in West Derby RD compared to those in Liverpool RD?

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1. Which RSDs would you consider to be rural, using the definition of a population density of less than 2 persons per acre?

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1. Click on the ‘compare side by side’ button  at the top right of the screen. A second map will appear beside the first. Make sure the ‘keep map positions in sync’ button  is ticked and then the two maps will move together.
2. Keep the left-hand map at 1851. On the right-hand map move slowly through the years using the Year selection tool. *Make sure that both maps are showing population density*!
3. Look carefully at the RSD boundaries; think of them as the pieces of a jigsaw. In which year do you first see an RSD being divided into two (the outer boundary stays the same, but there are two RSDs within it) in either Liverpool RD or West Derby RD? ………………………………………………………
4. Name two of the new RSDs: …………………………… and …………………………….
5. What was the name of the old RSD from which they were divided? ...........................
6. Why do you think the original RSD might have been split up?

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1. How has population density been affected by the split?

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1. Compare the map of 1851 with that of 1911.

Find St Martin RSD in 1851. Virtually the same area appears as an RSD in 1911.

What is it called? …………………………….

How many acres does it cover in both 1851 and 1911?.................

How many people lived in the RSD in 1851?............ And in 1911?................

Has the population density gone up or down? ............ By how much………………….?

1. In 1851, the central RSDs of Liverpool were the most densely populated, but by 1911 they hold fewer people per acre than many of the RSDs in West Derby. Can you think why this might be?

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1. Switch off ‘side-by side’ mapping  by un-checking the tick box at the top right of the screen. Click on the ‘view full screen’ button at the top left of the map screen.

Zoom in and look closely at the street map underlying the RSD map. Find Baltic Triangle and Edge Hill.

1. Click on the ‘map layer’ button  at the bottom right of the map screen and change the underlying map to NLS – OS One Inch, 1885-1900.

Look carefully at Baltic Triangle and Edgehill, especially at the pattern made by the streets. Now click back to the NLS – Bartholomew Half Inch, 1897-1907 map using the ‘map layer’ button again.

1. What changes can you see in the street pattern, the size and the shape of the buildings?

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1. If you find it difficult to compare the two street patterns, try using the ‘side-by-side’ function  to show the 1885-1900 map and the 1897-1907 map next to one another.
2. What do you think has happened between the time of the first map and that of the second? Do these agree with the reasons you gave for the depopulation of Liverpool RD above?

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**By working through this worksheet you have learnt about:**

**Urban growth**; this did not always mean that populations became more and more crowded; there could be **depopulation** in the city centres while the urban area spread outwards. You have considered some of the reasons for this.

You have seen how **administrative units** (in this case Registration Sub-Districts) could be altered in order to make populations more manageable and, hopefully, local government and the provision of services more effective.

You have gathered **population statistics** and you have calculated **population densities** for yourself, noting how these changed over time and comparing them across space.

Finally, you have learnt how to navigate the *PopulationsPast* website.

If you have enjoyed this worksheet, why not use the website to explore a different large town or city, somewhere else in England or Wales, and compare it with Liverpool?

**A challenge! Do you like doing jigsaws?**

*Complete your answers to these next questions on a separate piece of paper.*

You have seen how the area covered by Liverpool and West Derby RDs in 1851 remained the same until 1911, although the new RD of Toxteth Park came into being.

1. Use the *PopulationsPast* website to draw up a list of all the RSDs into which this area was divided across the period 1851-1911. Note which RSDs were divided and the names of the new RSDs – the shape of the RSDs on the map can help, as can the acreages. You could even take a screen shot of the maps at each census and cut out the RSDs to help you see how they fit into one another together.
2. Note the acreages and the populations of each of the RSDs at each census. Can you recreate the 1851 RSDs using those from 1901, 1891, 1881, 1871 and 1861? It is rather more difficult to do this using the RSDs from 1911 but give it a go!
3. Using the population and acreages from *PopulationsPast* calculate the population density (people/acres) of each of the 1851 RSDs right across the next six decades. Can you draw a graph showing how population density rose or fell in the various RSDs? Which RSD saw the greatest growth in population density, and which saw the greatest decline?
4. You might like to explore some other changes happening in Liverpool between 1851 and 1911. Contrast the differences in ‘% of unskilled workers’, ‘% of upper and middle class’, ‘% of single women working’ and the ‘% of Irish born’. Consider the data shown by the ‘type of place’ variable. Write a few sentences about your discoveries.

**To set you thinking:**

At the beginning of this worksheet we defined ‘rural’ areas as places with a population of less than 2 persons per acre. Can you suggest what other definitions we might have used? How might you define an ‘urban’ area, using the information contained in the *PopulationsPast* website? Would you keep this definition the same at each census? Explain your reasons for your answer.