



Numerical Data (IMD)

Topics in this session



Numerical data visualizations Scatter Plots Linear correlation

IMD Data Set



Load the data set: NorthEast_Domains_of_deprivation.xlsx

From the 2015 government survey of deprivation in England Deprivation is measured geographically for every LSOA in England: There are 32,844 LSOA regions in England. Each LSOA contain 1,500 people or 650 households.

The overall Index of Multiple Deprivation (IMD) is calculated from: Income Deprivation Employment Deprivation Education, Skills and Training Deprivation Health Deprivation and Disability Crime Barriers to Housing and Services Living Environment

IMD Data Set

Click on **Clustered Column Chart** to create an empty visual.



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The select **Index of Multiple Deprivation Decile** for the Axis and Value Finally be sure to set the aggregation type for the Value to **Count**

Visualizations Fields \mathcal{O} Search Sheet1 🔲 \Sigma Barriers to Housing and Servi... Barriers to Housing and Servi... Crime Decile (where 1 is mos... ଲ Crime Rank (where 1 is most ... E7 ••• -_ Education, Skills and Training... Count of Index of Multiple Deprivation (IMD) Decile (where 1 is most deprived 10% of LSOAs) by Ind., Index of Multiple Dep... Education, Skills and Training... 300 Employment Decile (where 1 ... 250 Employment Rank (where 1 i... Health Deprivation and Disa... 200 Health Deprivation and Disa... Income Decile (where 1 is m... Count of Index of Mul... 150 Income Rank (where 1 is mos... Index of Multiple Deprivation... $\checkmark \Sigma$ Color saturation 100 Index of Multiple Deprivation... Living Environment Decile (w... 50 Living Environment Rank (wh... Local Authority District code ... 0 5 6 7 8 9 10 2 3 4 Local Authority District name... LSOA code (2011) Filters

Visual level filters

LSOA name (2011)

IMD variation within a measure



We can use filtering to select out individual local authority districts to plot the distribution of LSOA by decile of deprivation for each district



Distribution of IMD Deciles for Newcastle LSOA

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Gateshead 126	
Hartlepool 58	
Middlesbrough 86	
Newcastie upo 175	

Northumberland 197

Redcar and Clev... 88

Relationships between measures



The **Scatter Graph** is the starting point for this exploration of the IMD data:



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Initialising the Scatter Graph

To make the Scatter Graph perform as we expect we need several fields.

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Two fields are the variables we wish to compare. The other two fields allow us to group the data and plot individual detail values

In **Details** put a unique identifier for each value LSAO name (2011)

In **Legend** a categorical field to colour the values Local Authority District Name

X Axis

Index of Multiple Deprivation (by Rank)

Y Axis

Income Rank

NB set the aggregation to Average for X and Y

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The resulting Scatter Chart



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An open circle should now be plotted for every LSOA in the North East.

The resulting Scatter Chart



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Add a **Slicer** and set it to use the **Local Authority District Name** (LAD) Can then show the pattern of correlation between the two variables in each LAD

Is there a message?





Average of Index of Multiple Deprivation (IMD) Rank (where 1 is most deprived) and Average of Income Rank (...

Add a **Trend Line** in the analytics tab, duplicate the graph and filter each for a single LAD

In **Sunderland** the least deprived areas also have the highest income, as we would expect.

But in **Newcastle** five LSOA's are ranked noticeably higher on income, this suggests some other variable(s) making up the IMD is/are worse than average for these LSOA. 10

The remaining sub domains



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Some measures are well correlated with the IMD – Education, Employment, Health Crime shows some possible correlation, but it is not clear.

Living Environment and Barriers to Housing and Services don't correlate well with the IMD

Sub domains in Sunderland



Average of Index of Multiple Deprivation (IMD) Rank (...



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In Sunderland there are fewer outliers for Health, Employment, Education and Income.

Our visual exploration suggests these IMD measures are better correlated to where you will live in Sunderland. 12