

How to Visualize London Borough Data

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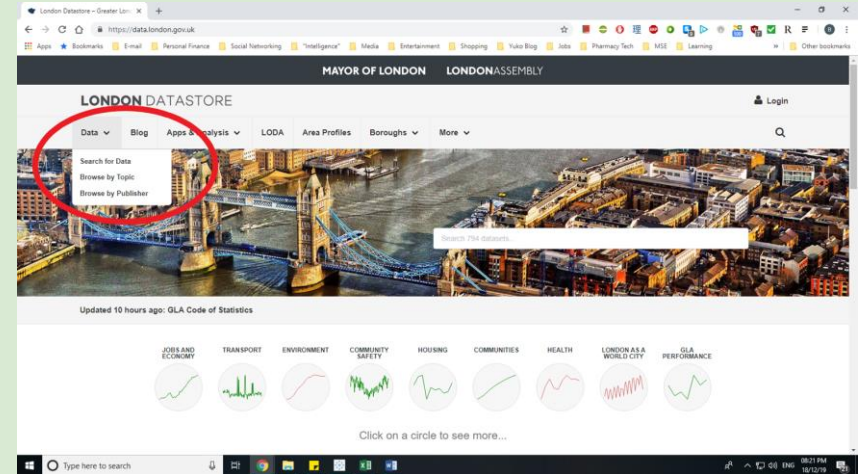
554 Information Presentation and Visualization

Project Objective

- A how-to guide to visualizing data on the various boroughs of London as well as City of London
- Showcase how to acquire, organize, and visualize data, as well as interpret a visualization
- Mention any potentially useful tips to help make the overall task easier
- Offer suggestions on what to do after interpreting a visualization
- **Note:** Software applications utilized for this project:
 - Microsoft Excel 2016
 - Tableau Version 2018.2.2. 64-bit

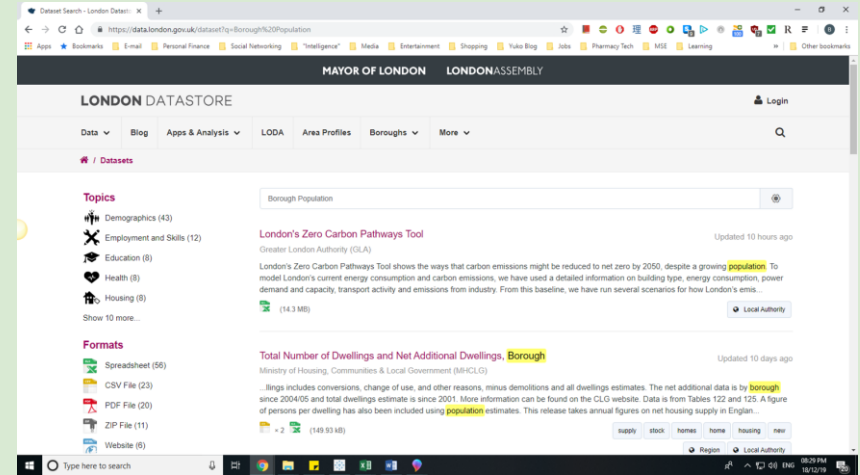
Step 1 - Acquiring Data

- Go to the London Datastore website ([www.https://data.london.gov.uk/](https://data.london.gov.uk/))
- Click on Data in navigation bar to see a drop-down menu
 - Search for Data
 - Browse by Topic
 - Browse by Publisher
- *For this project, Search for Data was used to acquire data*



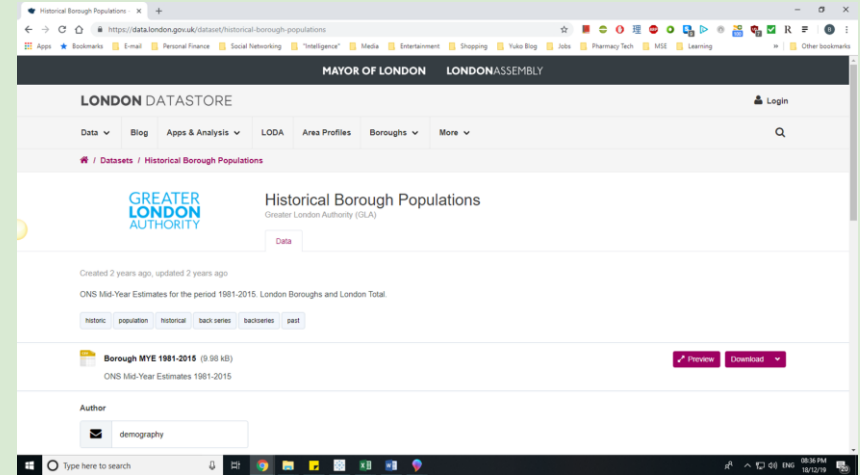
Step 1 - Acquiring Data (continued)

- After selecting Search for Data, a list of surrogate records for the data sets appears
- Filters along the left sidebar can refine the list using tags sorted by one of the following categories
 - Topics
 - Formats
 - Publishers
 - Smallest Geography
- Keywords can be typed into the search bar to look for data sets
- *For this project, “Borough Population” were some of the keywords utilized in the search bar to acquire data*



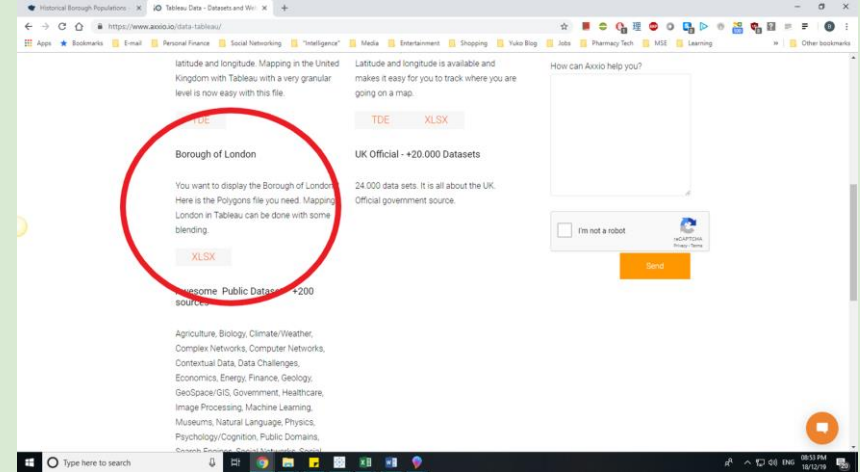
Step 1 - Acquiring Data (continued)

- Read the title and description of the surrogate record to gain an idea of what the data set includes
- Click on the title of the surrogate record to view the full surrogate record
- *For this project, Historical Borough Populations was selected*
- Consider how long ago the data has been updated
- Preview the data to determine if the data is worth downloading
- Download the data
- *For this project, “Borough MYE 1981-2015.csv” was downloaded*



Step 1 - Acquiring Data (continued)

- Go to <https://www.axxio.io/data-tableau/>
- Scroll down to “Borough of London”
- Download the .xlsx file
- This Excel file will have only one sheet titled “Borough”
- *This file will be important for generating maps of the London Boroughs*



Step 2 - Organizing the Data

- The data will need to be organized in a particular way in order to be visualized using Tableau
 - Data field names along the top
 - Each record organized in their own row
- Make sure one field is specified with the names for the London boroughs (this field will be important for generating maps of the London boroughs in Tableau)
- *For this project, this field is titled “Borough”*

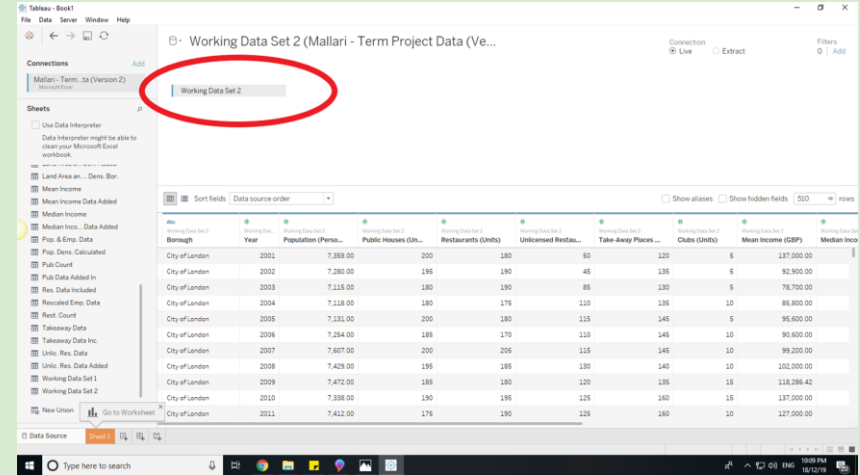
Borough	Year	Population (Persons)	Public Hse Restaurant	Unlicensed Restaurants (Units)	Take-Away Places (Units)	Clubs (Units)	Mean Income (GBP)	Median Income (GBP)	Inland Area (hectares)	Inland Area (Square Kilometers)
1 City of London	2001	7359	200	180	50	120	5	127000	65000	290.4
2 City of London	2002	7280	195	180	45	135	5	92900	38300	290.4
4 City of London	2003	7113	180	190	65	130	5	78700	17000	290.4
5 City of London	2004	7138	180	175	110	135	10	85800	39200	290.4
6 City of London	2005	7131	200	180	115	145	5	95600	44400	290.4
7 City of London	2006	7254	185	170	110	140	10	90600	49300	290.4
8 City of London	2007	7807	200	205	115	145	10	99200	49000	290.4
9 City of London	2008	7429	195	185	130	140	10	102000	58500	290.4
10 City of London	2009	7472	185	180	130	135	15	118264-423	53813.57752	290.4
11 City of London	2010	7338	190	195	125	160	15	117000	61900	290.4
12 City of London	2011	7412	175	190	125	160	10	127000	61300	290.4
13 City of London	2012	7284	185	205	140	160	10	117000	51600	290.4
14 City of London	2013	6848	155	230	135	160	10	111000	58300	290.4
15 City of London	2014	6472	160	235	160	155	10	101000	65300	290.4
16 City of London	2015	7340	150	270	180	150	10	144000	61100	290.4
17 Barking and Dagenham	2001	165654	45	30	25	90	20	18100	15600	3610.8
18 Barking and Dagenham	2002	166357	40	30	25	95	20	18600	16200	3610.8
19 Barking and Dagenham	2003	166320	45	30	25	95	20	15100	17000	3610.8
20 Barking and Dagenham	2004	165630	40	35	35	90	20	18800	17400	3610.8
21 Barking and Dagenham	2005	164275	40	35	40	90	20	19400	16600	3610.8
22 Barking and Dagenham	2006	167517	40	35	40	90	20	20600	16100	3610.8
23 Barking and Dagenham	2007	169031	30	35	35	85	20	20600	17600	3610.8
24 Barking and Dagenham	2008	172452	30	35	35	95	15	21300	18600	3610.8
25 Barking and Dagenham	2009	177580	25	30	35	95	20	21872.84195	18822.4991	3610.8
26 Barking and Dagenham	2010	182838	25	30	30	95	15	23100	19400	3610.8
27 Barking and Dagenham	2011	187629	25	30	30	95	10	22500	19400	3610.8
28 Barking and Dagenham	2012	197461.5356	30	40	35	95	10	22800	19600	3610.8
29 Barking and Dagenham	2013	194740.5356	20	40	45	95	10	23700	20100	3610.8

Step 2 - Organizing the Data (continued)

- Expect to do a *lot* copy-and-pasting into Excel
- Some tips to help make organizing easier
 - Look up keyboard shortcuts for Excel
 - Look up formulas for calculating values
 - Develop a method for keeping track of how organize the data (*very* useful in the event that there may have been a mistake made when organizing or calculating data)

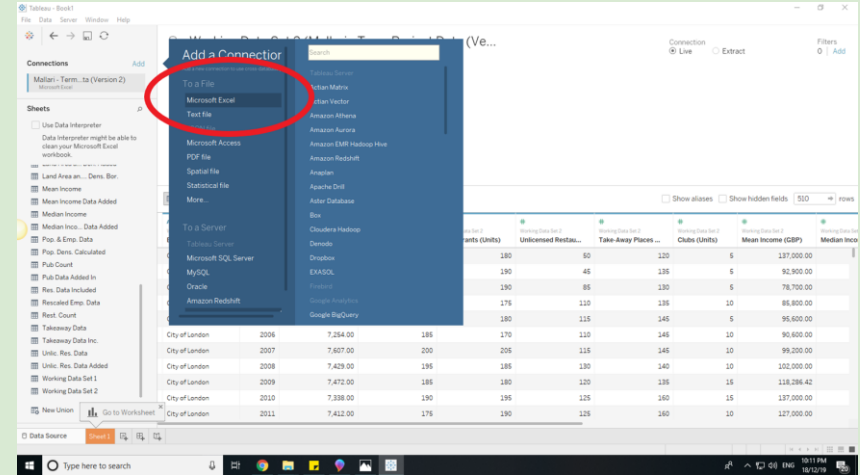
Step 3 - Uploading the Data to Tableau

- Start up the Tableau software application
- On the starting page, click “Microsoft Excel” under Connect > To a File
- Select the Excel file with the organized data and click “Open”
- Drag-and-drop the sheet with the organized data into the blank space at the top of the Data Source screen
- *For this project, the Excel with the organized data is titled “Working Data Set 2”*



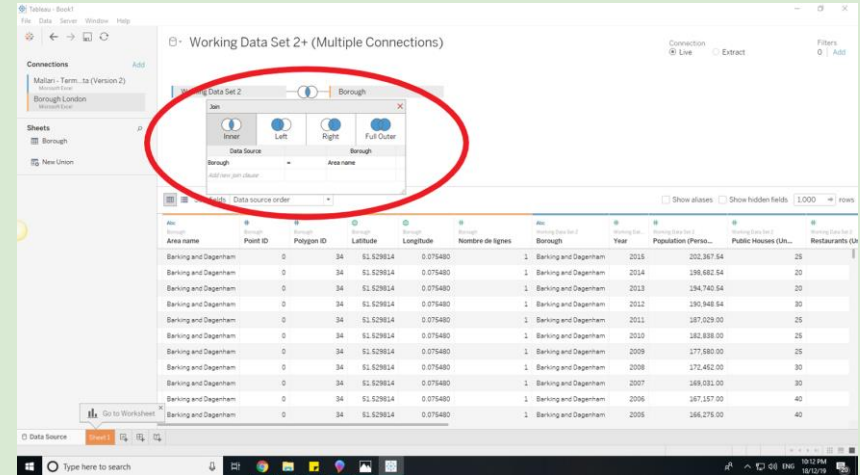
Step 3 - Uploading the Data to Tableau (continued)

- Click on “Add” in the sidebar to the left
- In the pop-up window “Add a Connection”, select Microsoft Excel under “To a File”
- Select the Excel file with the polygon data of the London boroughs and click “Open”
- The “Borough” sheet for this Excel file will automatically appear in the space at the top of the Data Source screen



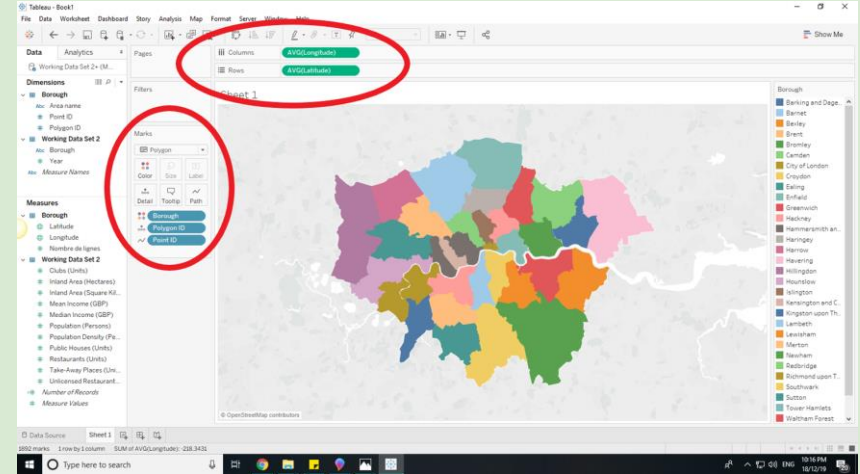
Step 3 - Uploading the Data to Tableau (continued)

- When prompted to join the two sheets of data, select “Inner Join”
- Under “Data source”, select the field name with the names of the different London boroughs
- *For this project, this field is titled “Borough”*
- Under “Borough”, select “Area name”
- The area at the bottom of the Data Source screen will populate with a combination of the two data sets



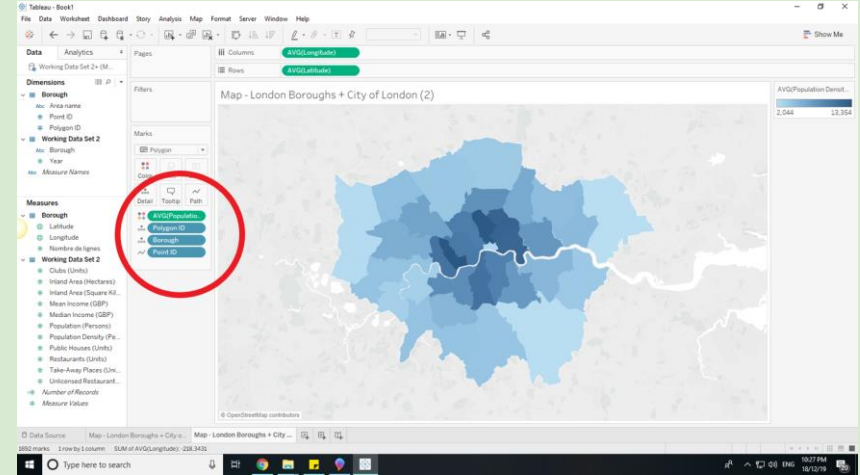
Step 4 - Visualizing Data - Simple Map

- Start a new worksheet in Tableau
- Drag-and-drop data from the Data panel on the left sidebar
 - Drag the Latitude from Measures > Borough to Rows
 - Drag the Longitude data from Measures > Borough to Columns
 - Under Marks, select Polygon
 - Drag Point ID from Dimensions > Borough to Path
 - Drag Polygon ID from Dimensions > Borough to Detail
 - Drag the field with the London borough names under Dimensions > (the appropriate Excel sheet) to Color
 - *For this project the Excel sheet with the London borough data is titled "Working Data Set 2"*
 - Rename the worksheet to something meaningful
 - *For this project, the sheet was renamed "Map - London Boroughs + City of London"*



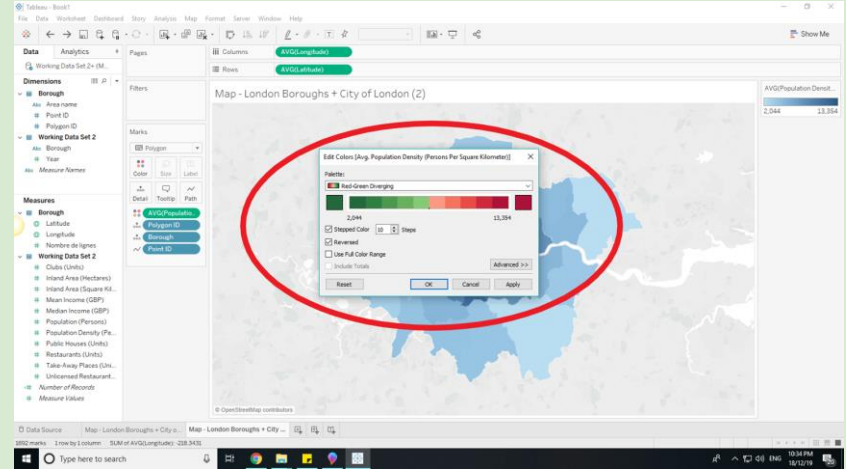
Step 5 - Visualizing Data - Two-Color Map

- Duplicate the sheet with the simple map
- Under Marks, drag the Borough field up to Detail
- Drag the Population Density (Population per Square Kilometer) field from Measures > Working Data Set 2 to Color under Marks
- Click on down arrow for the Population field under Marks, and change Measure(Sum) to Measure(Average)



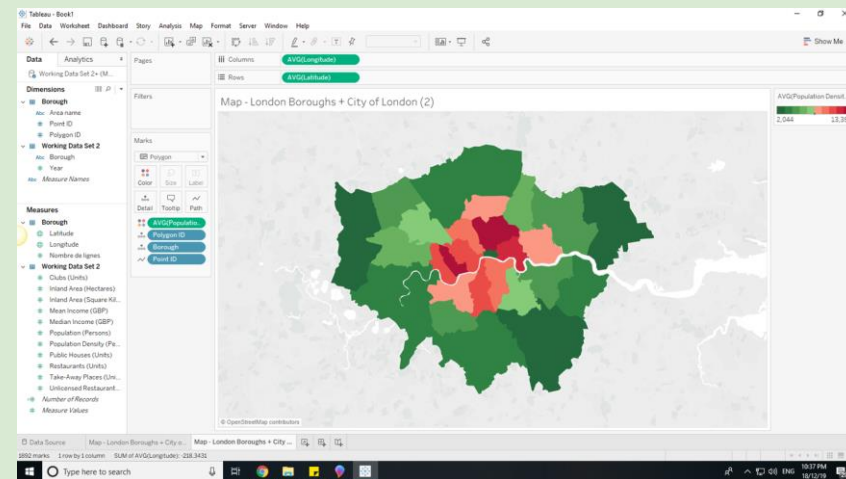
Step 5 - Visualizing Data (cont'd)

- Right-click the rectangle with color gradient in the upper-right hand section of the worksheet, and select “Edit Colors...”
- Under Palette, select Red-Green Diverging
- Select Stepped Color, and set the step count to 10
- Select reversed to set the red to the right
- Click Okay.



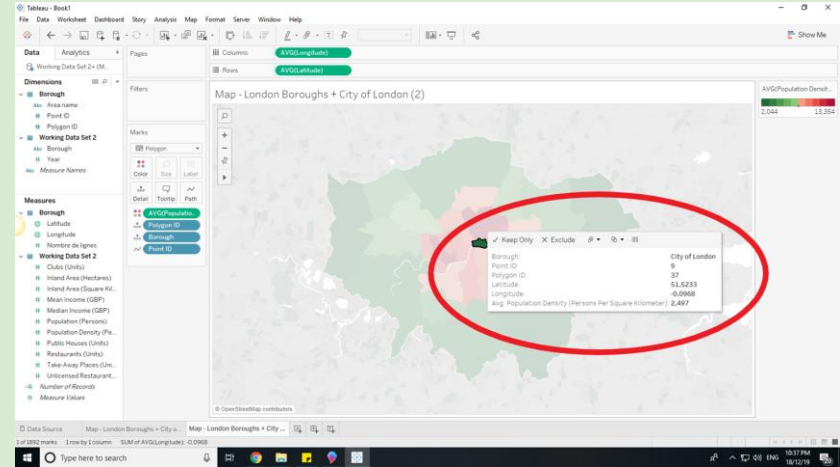
Step 6 - Interpreting a Visualization

- The shades of red indicate higher population density, while the shades of green represent lower population density
- Much of the higher-density boroughs are located towards the center of the city
- Much of the lower-density boroughs are located towards the outer edges of the city



Step 6 - Interpreting a Visualization (cont'd)

- City of London has a low population density compared to the boroughs surrounding it
- **Note:** City of London technically does *not* count as a borough of London
- Perhaps this designation correlates with the low population density



Step 7 - Going Forward

- Add more features to the current visualization
- Create a new visualization with other data in the data set
- Search for more data to add to the data set for visualization
- Export visualizations as stand-alone items
- Combine visualizations into a Dashboard
- Generate a DataStory using what visualizations have been created with the data