Tools for Data Visualisation Python and R

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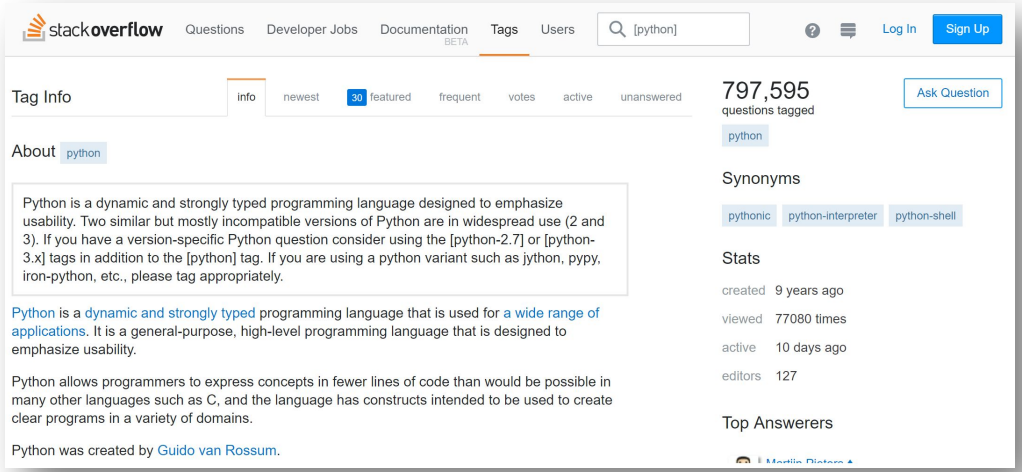
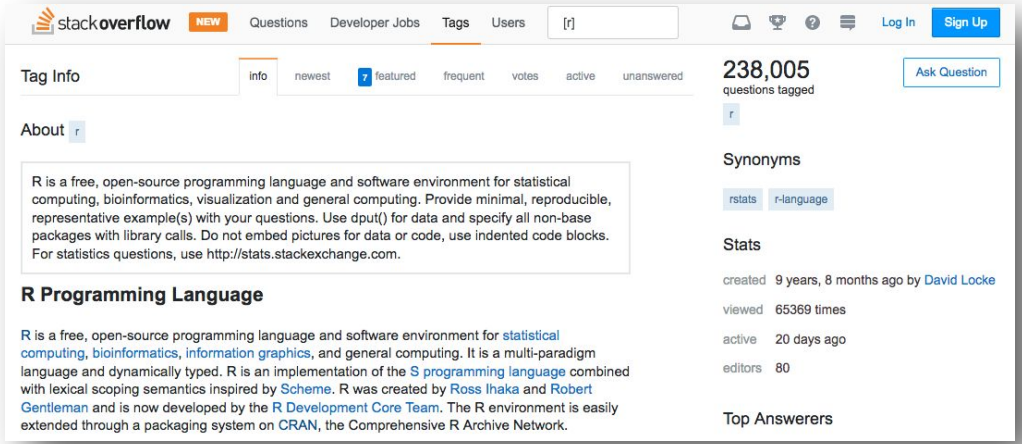
Why use R or Python?

Python and R are supported by a large open source community





Python and R are free

- No paywalls
- No subscription costs
- Open source software is free (as in freedom)

➡ everyone can afford their vegetables this week!

The code is readable

JAVA

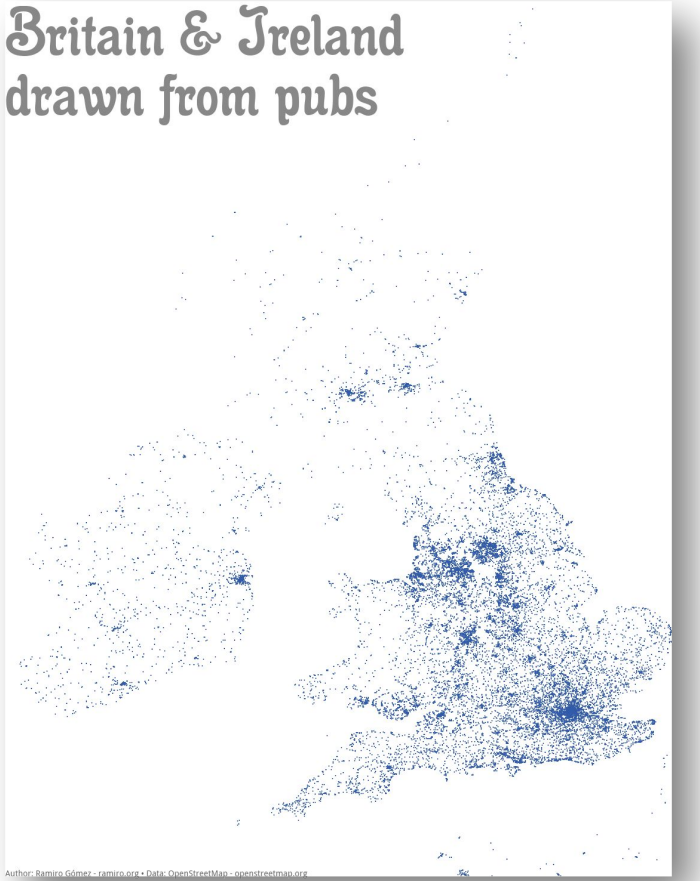
```java
public class Main {
  public static void main(String[] args) {
     System.out.println("hello world");
   }
}
```

PYTHON

```python
print('hello world')
```

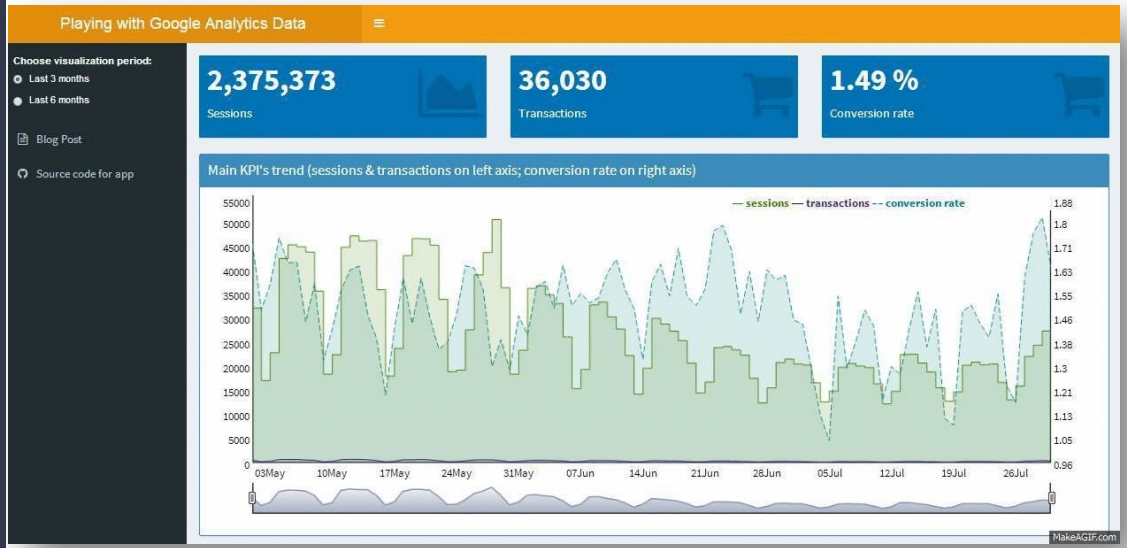
Analysis is scalable

```
fig = plt.figure(figsize=(20, 30))
markersize = 1
markertype = ','  # pixel
markercolor = '#325CA9'  # blue
markeralpha = .8 #  a bit of transparency

m = Basemap(
    projection='mill', lon_0=bbox['lon'], lat_0=bbox['lat'],
    llcrnrlon=bbox['ll_lon'], llcrnrlat=bbox['ll_lat'],
    urcrnrlon=bbox['ur_lon'], urcrnrlat=bbox['ur_lat'])

# Avoid border around map.
m.drawmapboundary(fill_color='#ffffff', linewidth=.0)

# Convert locations to x/y coordinates and plot them as dots.
lons, lats = zip(*locations)
x, y = m(lons, lats)
m.scatter(x, y, markersize, marker=markertype, color=markercolor, alpha=markeralpha)

# Set the map title.
plt.annotate('Britain & Ireland\ndrawn from pubs',
             xy=(0, .87),
             size=120,
             xycoords='axes fraction',
             color='#888888',
             family='Gloria')

# Set the map footer.
plt.annotate('Author: Ramiro Gómez - ramiro.org • Data: OpenStreetMap - openstreetmap.org',
             xy=(0, 0),
             size=14,
             xycoords='axes fraction',
             color='#666666',
             family='Droid Sans')

plt.savefig('img/britain-ireland-drawn-from-pubs.png', bbox_inches='tight')
```



http://ramiro.org/notebook/mapping-pubs/

Results are shareable



https://www.r-bloggers.com/playing-with-r-shiny-dashboard-and-google-analytics-data/

Visualisation examples

Visualisation Examples

The **type of variable** determines the **kind of visual**, e.g.:

- Diagrams
  - barcharts, histograms, boxplots
- Plots
  - simple plots, trend plots, scatter plots
- Figures
  - photos, drawing, schematic

Visualisation Examples

Live coding visualisation examples
Python (seaborn) - https://github.com/CurtinIC/GRASP_workshop/blob/master/Python%20Vis%20Examples.ipynb
R (ggplot2) - https://github.com/CurtinIC/GRASP_workshop/blob/master/R%20Vis%20Examples.ipynb

Interactive plots examples
Python (Bokeh) - https://demo.bokeh.org/gapminder
R (ggplot2 + googlevis) - http://remi-daigle.github.io/2016-04-15-UCSB/viz/#14_interactive:_motion_plot

3D plotting examples
Python (matplotlib) - https://jakevdp.github.io/PythonDataScienceHandbook/04.12-three-dimensional-plotting.html
R (plotly) - https://plot.ly/r/3d-scatter-plots/

Support from the CIC!

- **CIC drop-in session**
  - Every Tuesday 3pm-4pm, CIC office, B216:202
- **ResBaz**
  - ResBaz is a worldwide festival promoting the digital literacy emerging at the center of modern research
  - 2 - 4 July @ Curtin Medical school
  - https://resbaz.github.io/resbaz2019/perth/
- **CIC Workshops**
  - We teach Carpentries workshops and introduction to ML/DL
  - Sign up to our newsletter

ResBaz
RESEARCH BAZAAR

THE CARPENTRIES

git BASH python R

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