# Interactive Spatial Data Visualization

## Exploring Two Different Options with Case Studies based on UK Crime Data
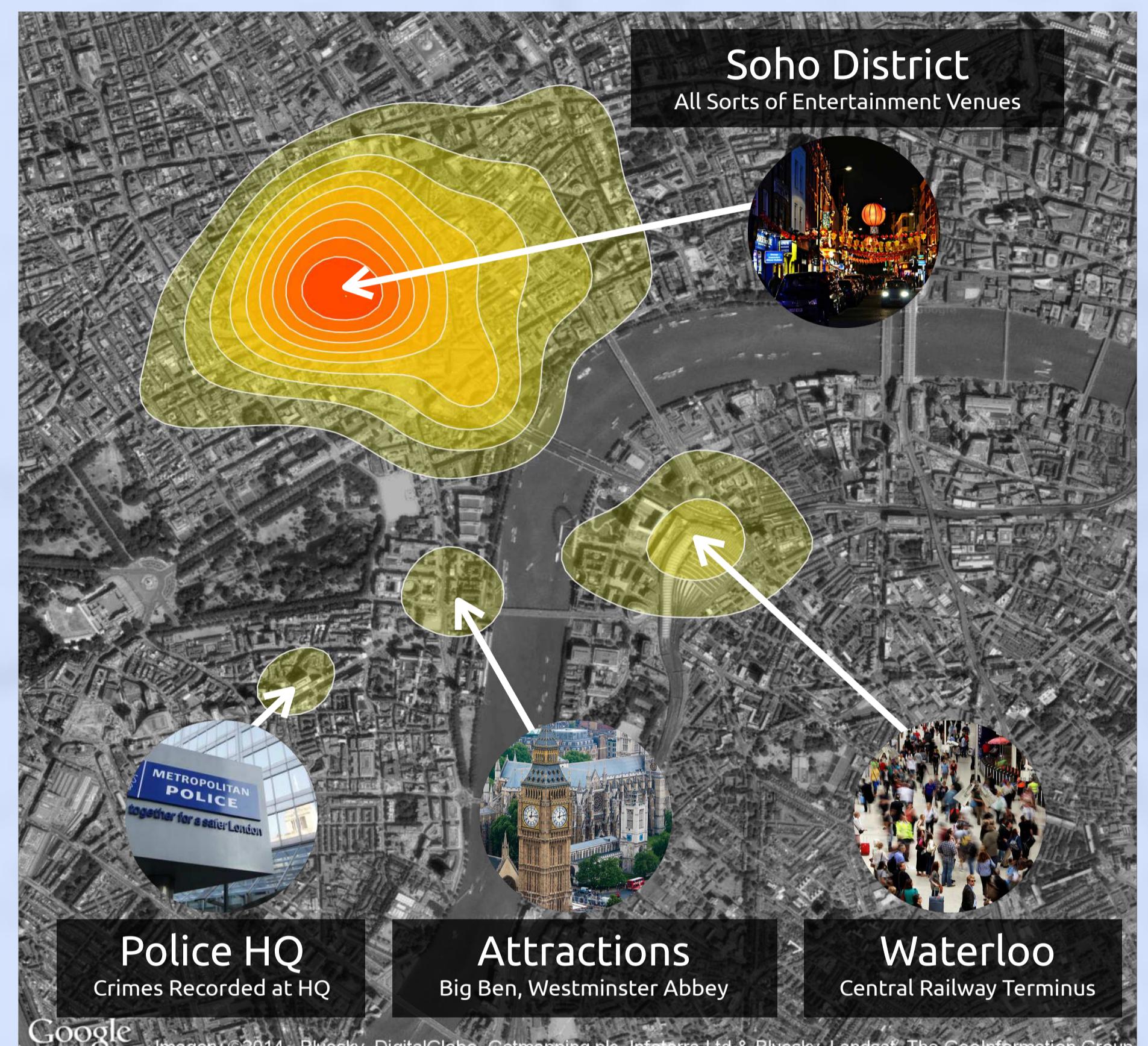
Jo–fai Chow, Hydroinformatics EngD Candidate, University of Exeter, UK

## CrimeMap (Web Application)
http://bit.ly/bib_crimemap
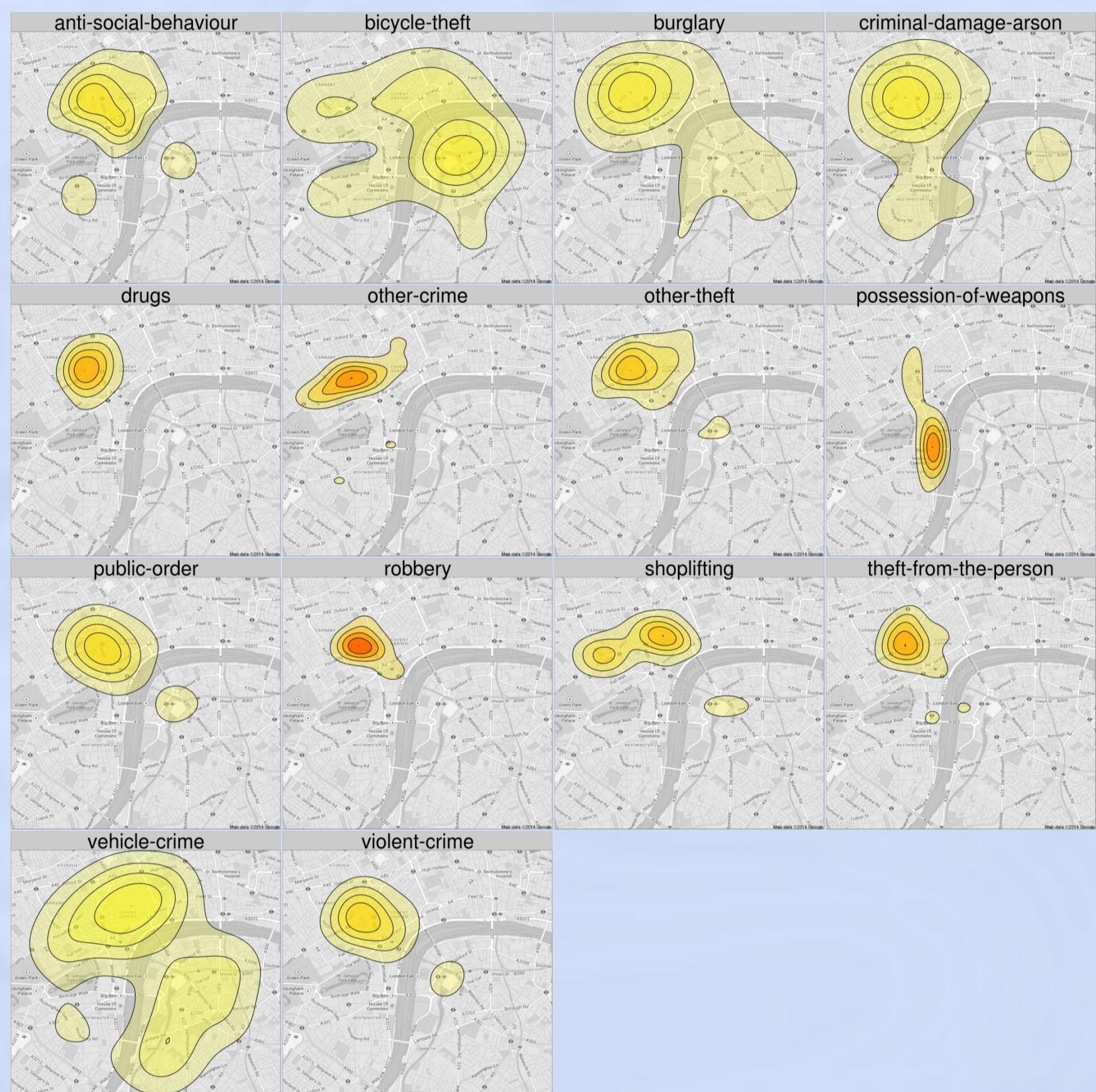
### Crime Hot Spots in Central London
January 2014 – 2,913 Records

Soho District
All Sorts of Entertainment Venues

Police HQ
Crimes Recorded at HQ

Attractions
Big Ben, Westminster Abbey

Waterloo
Central Railway Terminus

### Exploring Different Crime Categories
Faceting with ggplot2

anti-social-behaviour | bicycle-theft | burglary | criminal-damage-arson
drugs | other-crime | other-theft | possession-of-weapons
public-order | robbery | shoplifting | theft-from-the-person
vehicle-crime | violent-crime
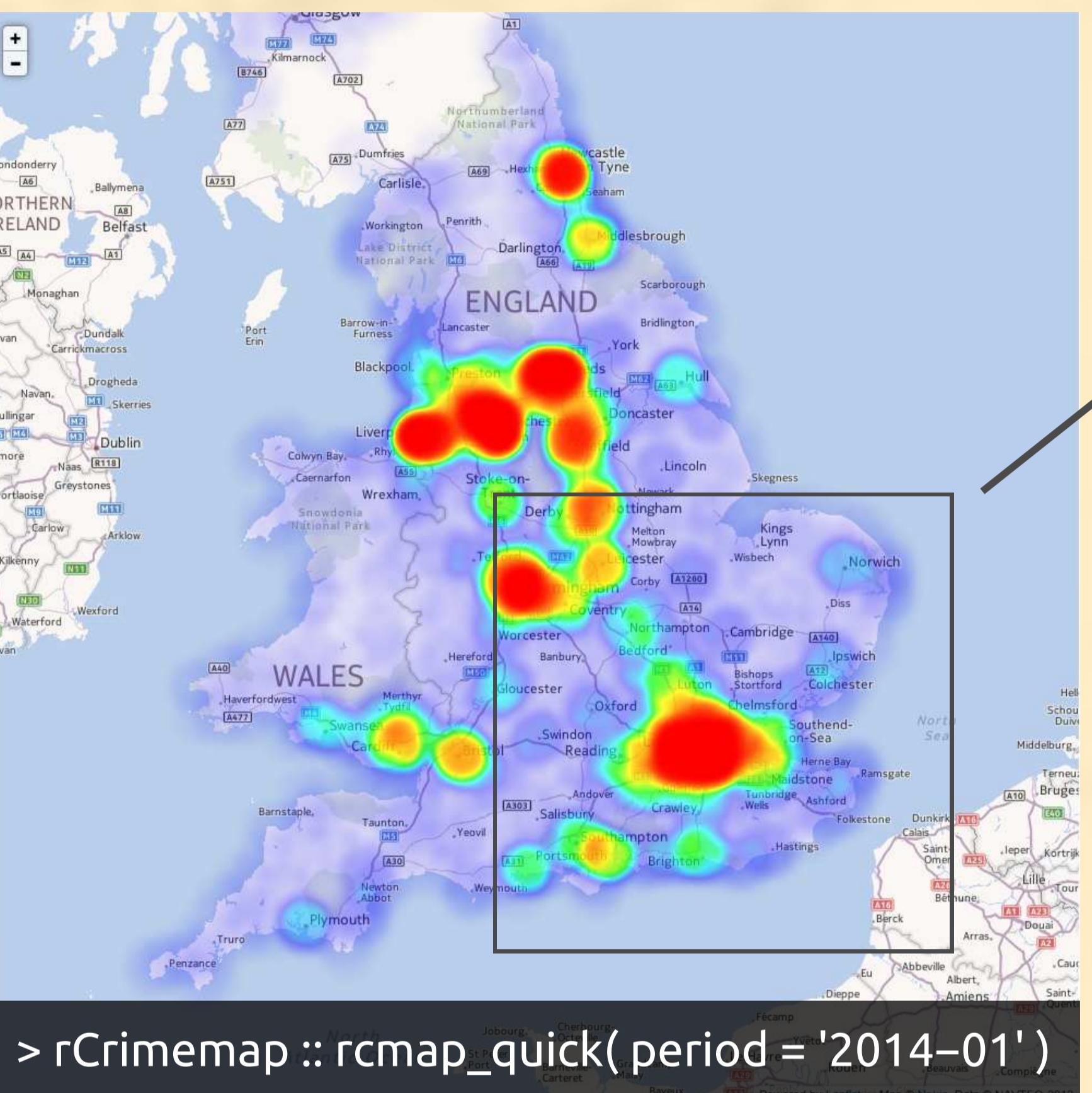
## rCrimemap (R Package)
http://bit.ly/rCrimemap
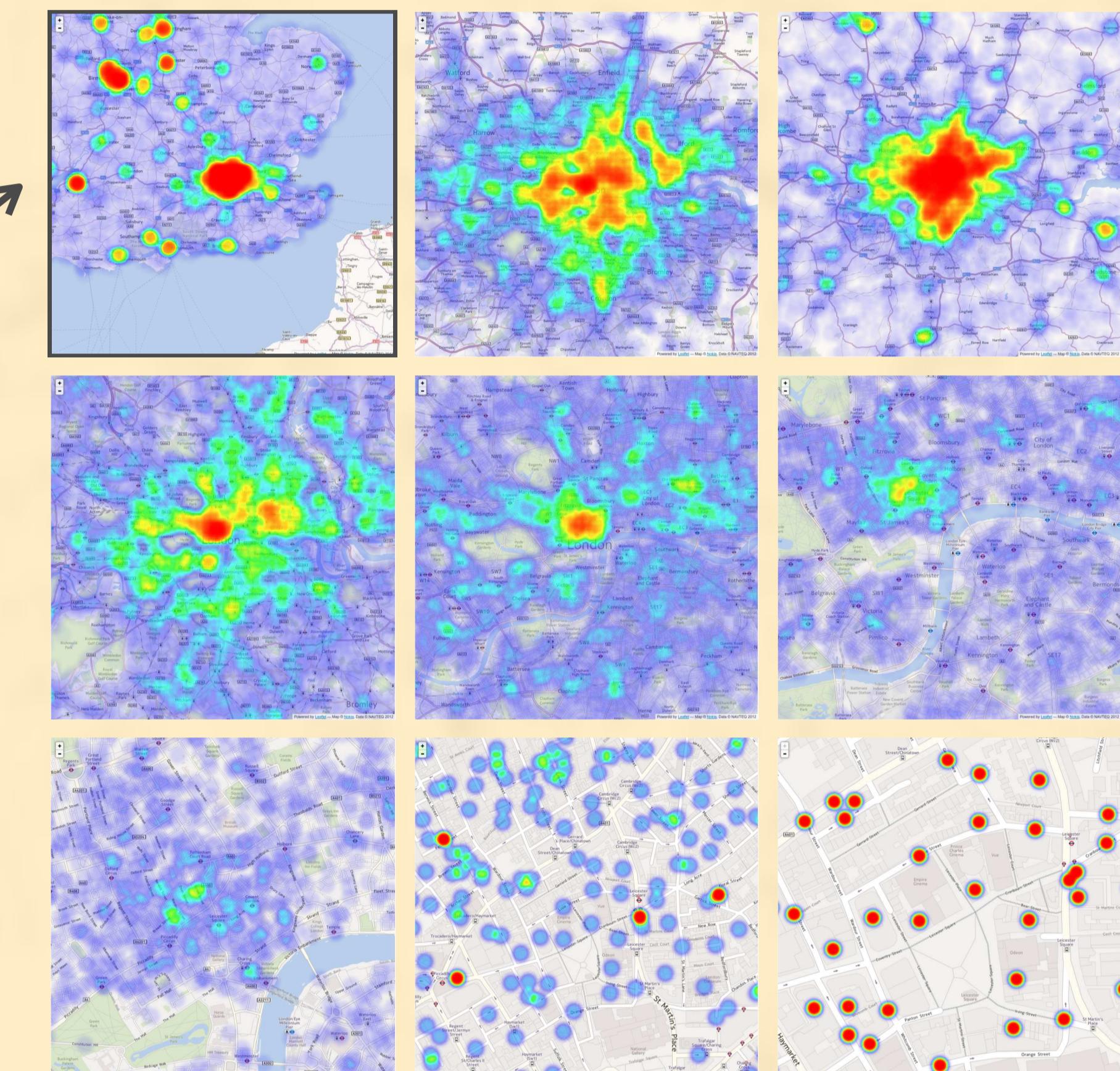
### All Crimes in UK (excl. Scotland)
January 2014 – 425,692 Records

```
> rCrimemap :: rcmap_quick( period = '2014-01' )
```
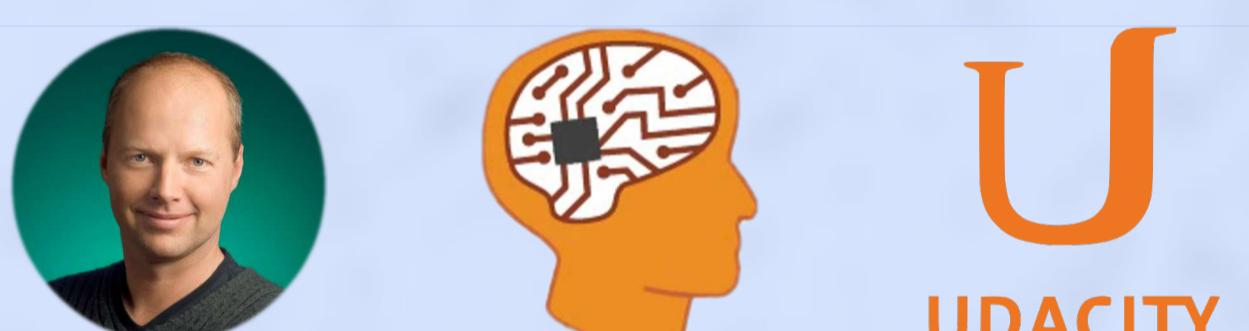
### Exploring Crimes in Central London
Navigating and Zooming with rMaps

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### Motivation

"If you want to learn sth new, find an intersting problem and dive into it!"

Sebastian Thrun – Intro to A.I.

### Dependencies

ggmap, ggplot2, grid, plyr, markdown, png, RCurl, jsonlite, shiny, shinyapps

D. Kahle, H. Wickham, RStudio …

### Crime Data

WEB | JSON | RDA
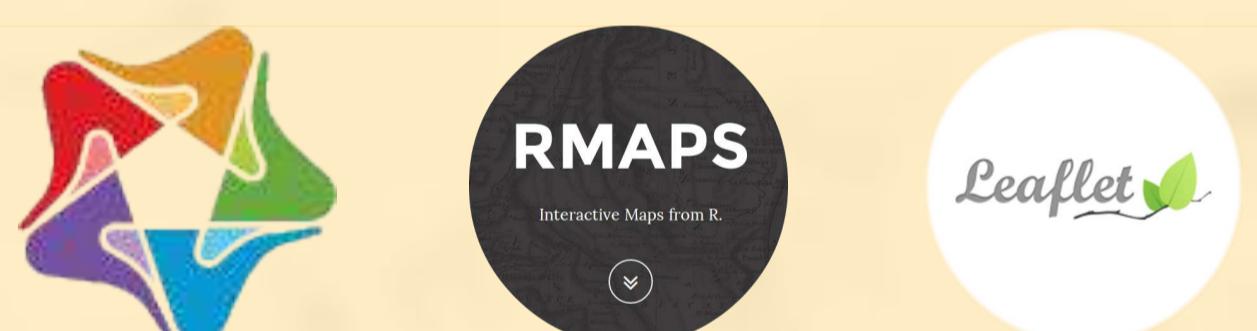
Street level crime data downloaded as JSON and converted into data frame.

Source: data.police.uk

### Motivation

"You can create interactive heatmaps using Leaflet JS with rMaps, interested?"

Ramnath Vaidyanathan

### Dependencies
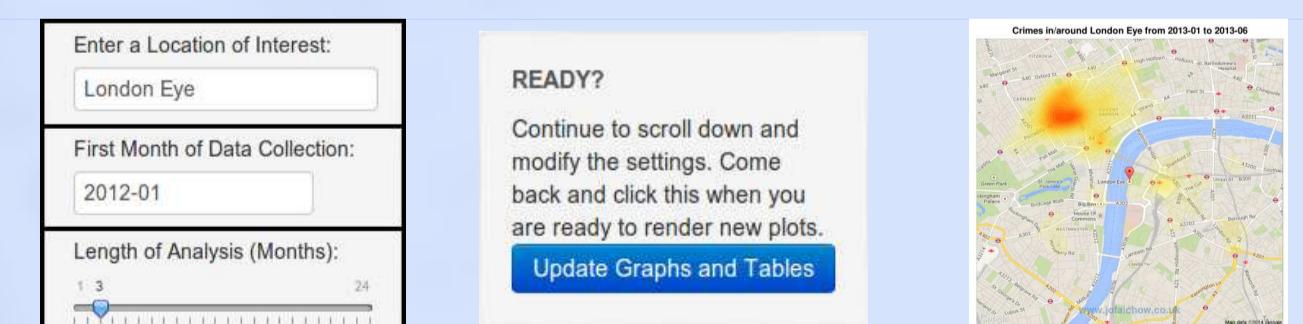
RMAPS | Leaflet

ggmap, dplyr, plyr, rCharts, rjson, rMaps, Leaflet (JavaScript)

R. Vaidyanathan, V. Agafonkin, …

### Crime Data

WEB | CSV | RDA
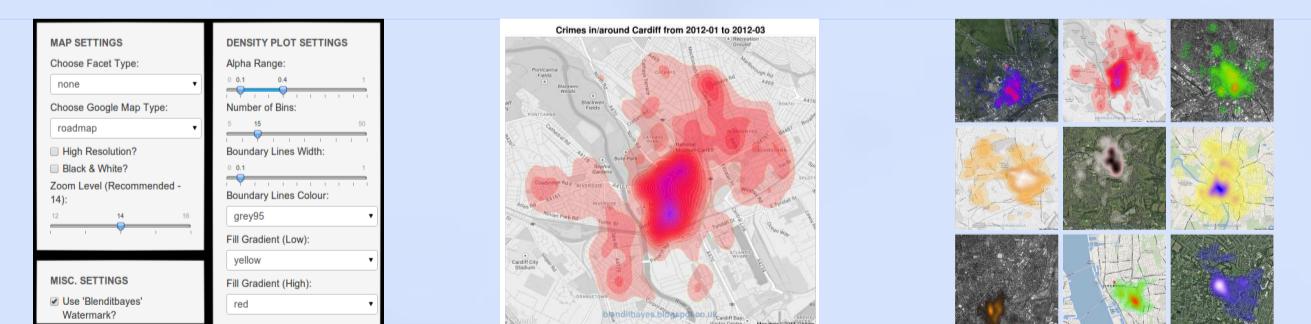
Data batch downloaded as CSV, converted and cached to streamline the process.

Source: data.police.uk

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### Simple

Enter a Location of Interest:
London Eye

First Month of Data Collection:
2012-01

Length of Analysis (Months):

READY?
Continue to scroll down and modify the settings. Come back and click this when you are ready to render new plots.
Update Graphs and Tables
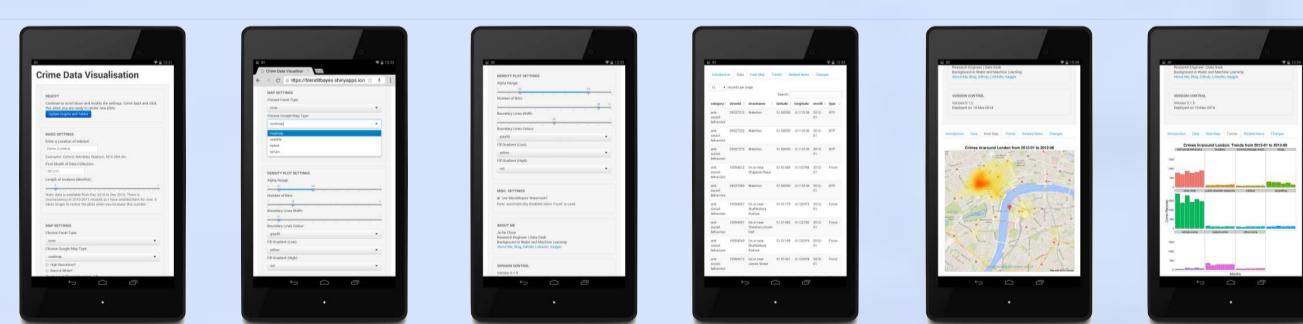
Only requires three inputs: (1) Location, (2) Start Date and (3) Length of Analysis.

Even my parents can do it!

### Customizable

Advanced settings are just a few clicks away. Tweak the heatmaps to your liking.

So, what is your favorite color?

### Mobile–Friendly
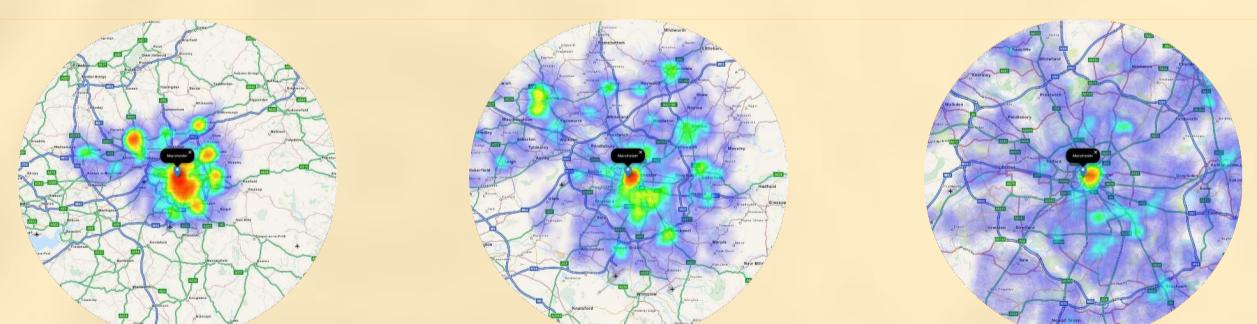
Shiny automatically adjusts display layout based on screen resolution.

You can also theme it up with CSS!

### Intuitive

Navigate and zoom in/out like using any digital map with mouse or touchscreen.

Explore large areas with ease!

### Reactive

Colors of 2D density plots automatically adjusted and updated after zooming.

Truly reactive visualization!

### Web–Ready

Heatmaps can be saved and viewed as HTML files. Easy to create, publish and share.

Awesome rCharts workflow!

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