

[https://github.com/IBMDveloper  
UK/crime-data-workshop](https://github.com/IBMDveloperUK/crime-data-workshop)

1. go to the above link
2. download the repo

# Explore UK Crime Data with Pandas and GeoPandas

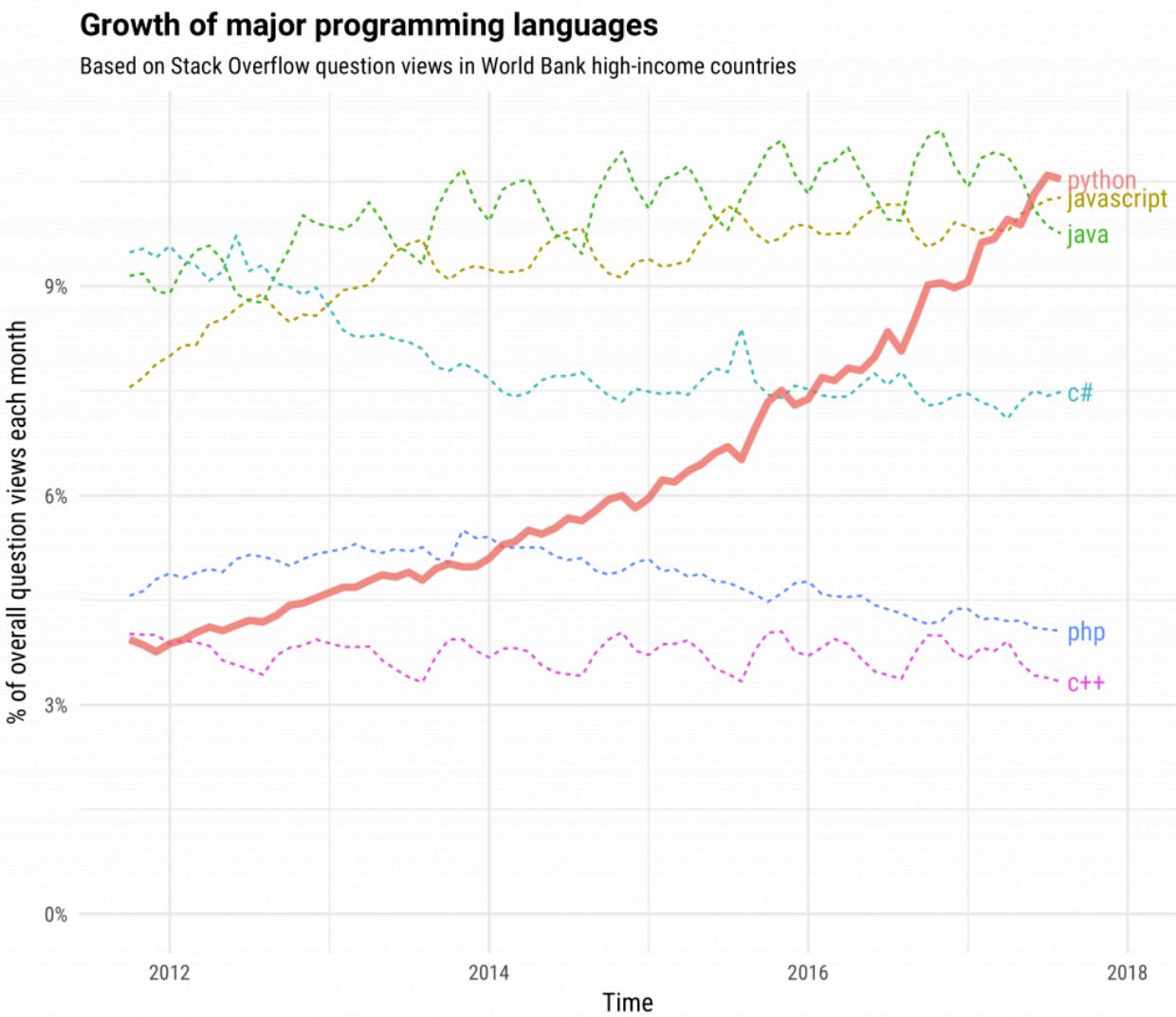
@MargrietGr

@yaminigrao

@IBMDeveloperUK

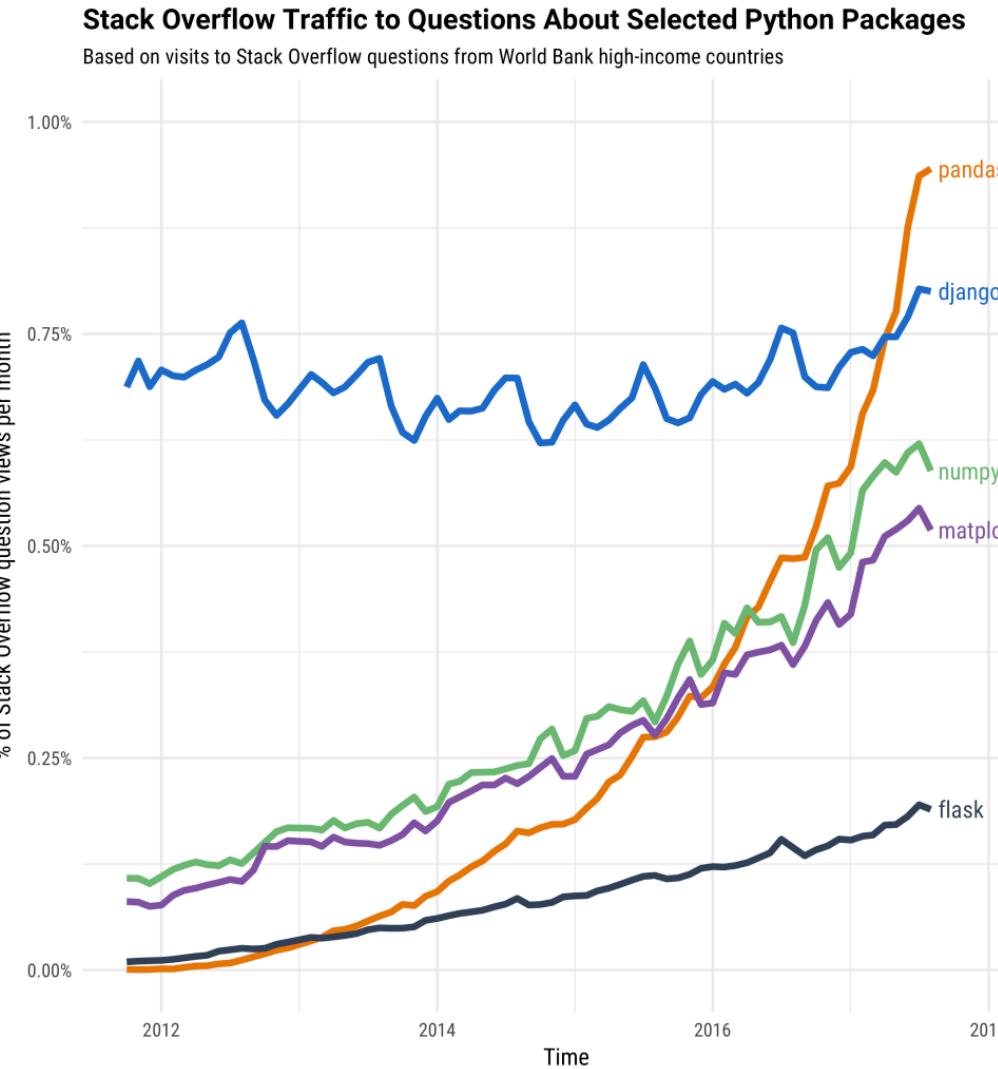
# Python

<https://stackoverflow.blog/2017/09/06/incredible-growth-python/>

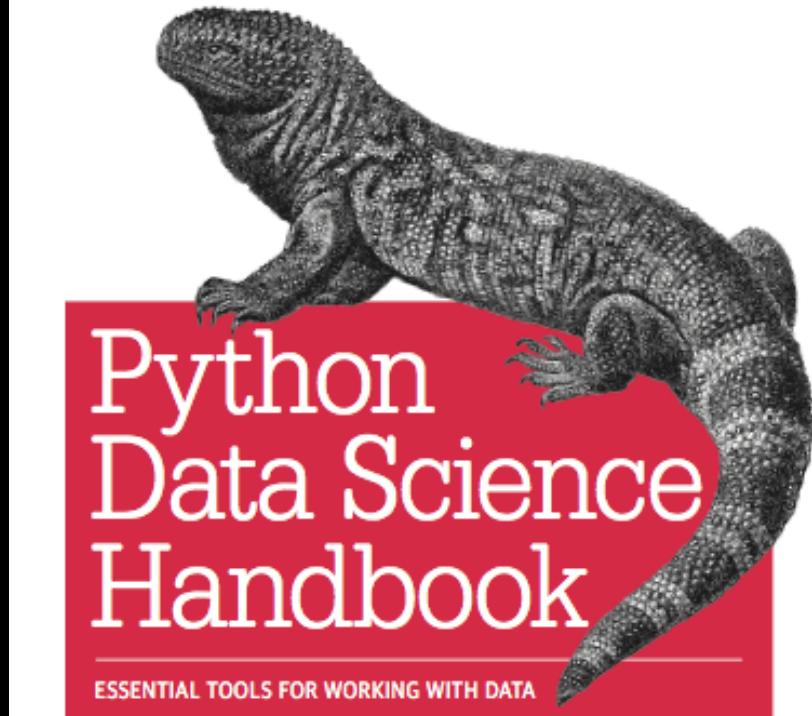


# Pandas

<https://ourcodingclub.github.io/2018/04/18/pandas-python-intro.html>



<https://jakevdp.github.io/PythonDataScienceHandbook/>



powered by



Jake VanderPlas

# Jupyter notebooks

Organize your:

Notes

Ideas

Python code

<http://jupyter.org/>

Install Python and Jupyter notebooks:

<https://www.anaconda.com/distribution/>

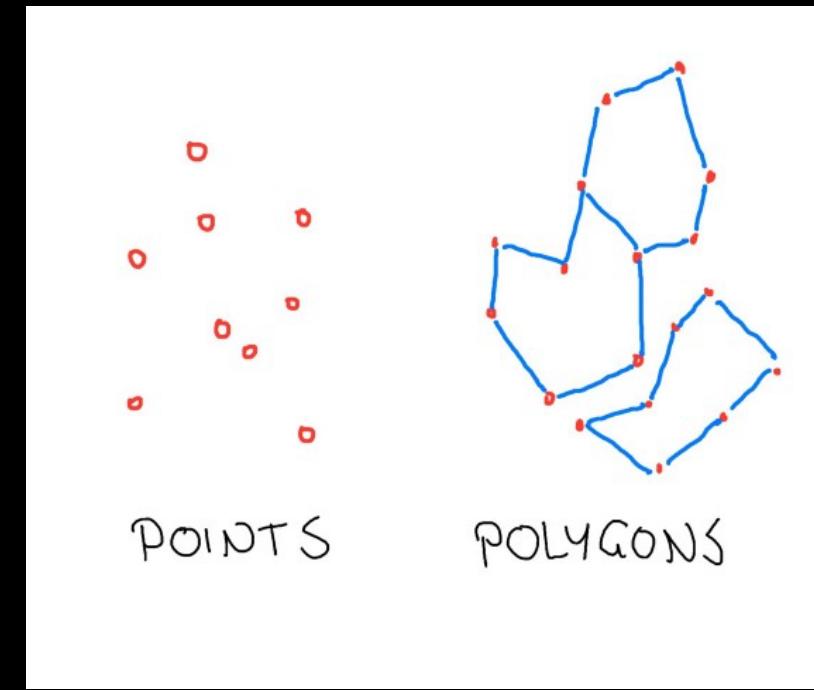
Or use the Cloud:

<https://dataplatform.cloud.ibm.com/>

The screenshot shows a Jupyter notebook interface within the IBM Watson environment. The top navigation bar includes 'IBM Watson' and links for 'Projects', 'Tools', 'Catalog', 'Community', and 'Services'. The left sidebar shows 'My Projects / PixelDust-Zurich-2018 / part-1-analyze-customer-data'. The main content area has a toolbar with 'File', 'Edit', 'View', 'Insert', 'Cell', 'Kernel', 'Help', and buttons for 'Run', 'Format', 'Markdown', and 'Edit'. A section titled 'Load data into the notebook' contains the code: 'In [ ]: raw\_df = pixiedust.sampleData('https://raw.githubusercontent.com/IBMCODELondon/localcart-workshop/master/data/customers\_orders1\_cpt.csv')'. Below it is a link 'Back to Table of Contents'. A section titled 'Part 1. Explore customer demographics' is shown with the sub-section 'Prepare the customer data set'. The code for preparing the data set is displayed in the 'In [ ]:' cell: '# Extract the customer information from the data set # CUSTNAME: string, GenderCode: string, ADDRESS1: string, CITY: string, STATE: string, COUNTRY\_CODE: string, POSTAL\_CODE: string, POSTAL\_CODE\_PLUS4: string customer\_df = raw\_df.select("CUST\_ID", "CUSTNAME", "ADDRESS1", "ADDRESS2", "CITY", "POSTAL\_CODE", "POSTAL\_CODE\_PLUS4", "STATE", "COUNTRY\_CODE", "EMAIL\_ADDRESS", "PHONE\_NUMBER", "AGE", "GenderCode", "GENERATION", "NATIONALITY", "NATIONAL\_ID', ...). The code continues with a long list of column names.

# Pandas

# GeoPandas



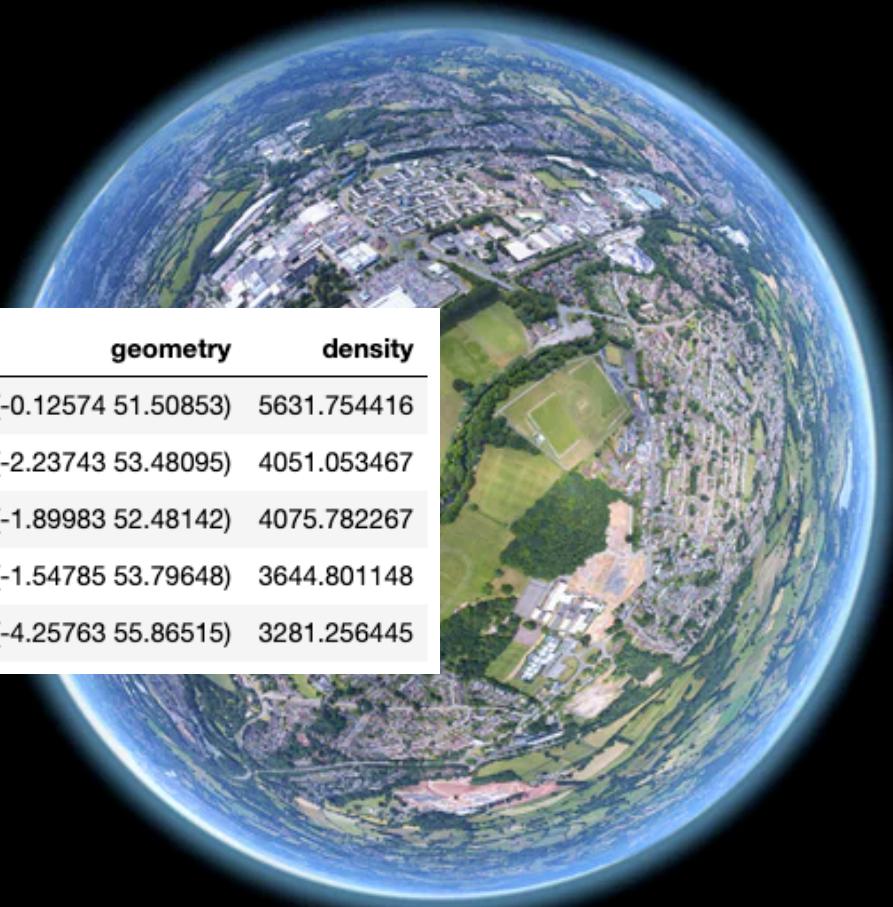
# Pandas

|   | A   | B          | C   | D | E     | F   |
|---|-----|------------|-----|---|-------|-----|
| 0 | 1.0 | 2013-01-02 | 1.0 | 3 | test  | foo |
| 1 | 1.0 | 2013-01-02 | 1.0 | 3 | train | foo |
| 2 | 1.0 | 2013-01-02 | 1.0 | 3 | test  | foo |
| 3 | 1.0 | 2013-01-02 | 1.0 | 3 | train | foo |



# GeoPandas

|   | city       | population | area   | latitude | longitude | geometry                  | density     |
|---|------------|------------|--------|----------|-----------|---------------------------|-------------|
| 0 | London     | 9787426    | 1737.9 | 51.50853 | -0.12574  | POINT (-0.12574 51.50853) | 5631.754416 |
| 1 | Manchester | 2553379    | 630.3  | 53.48095 | -2.23743  | POINT (-2.23743 53.48095) | 4051.053467 |
| 2 | Birmingham | 2440986    | 598.9  | 52.48142 | -1.89983  | POINT (-1.89983 52.48142) | 4075.782267 |
| 3 | Leeds      | 1777934    | 487.8  | 53.79648 | -1.54785  | POINT (-1.54785 53.79648) | 3644.801148 |
| 4 | Glasgow    | 1209143    | 368.5  | 55.86515 | -4.25763  | POINT (-4.25763 55.86515) | 3281.256445 |







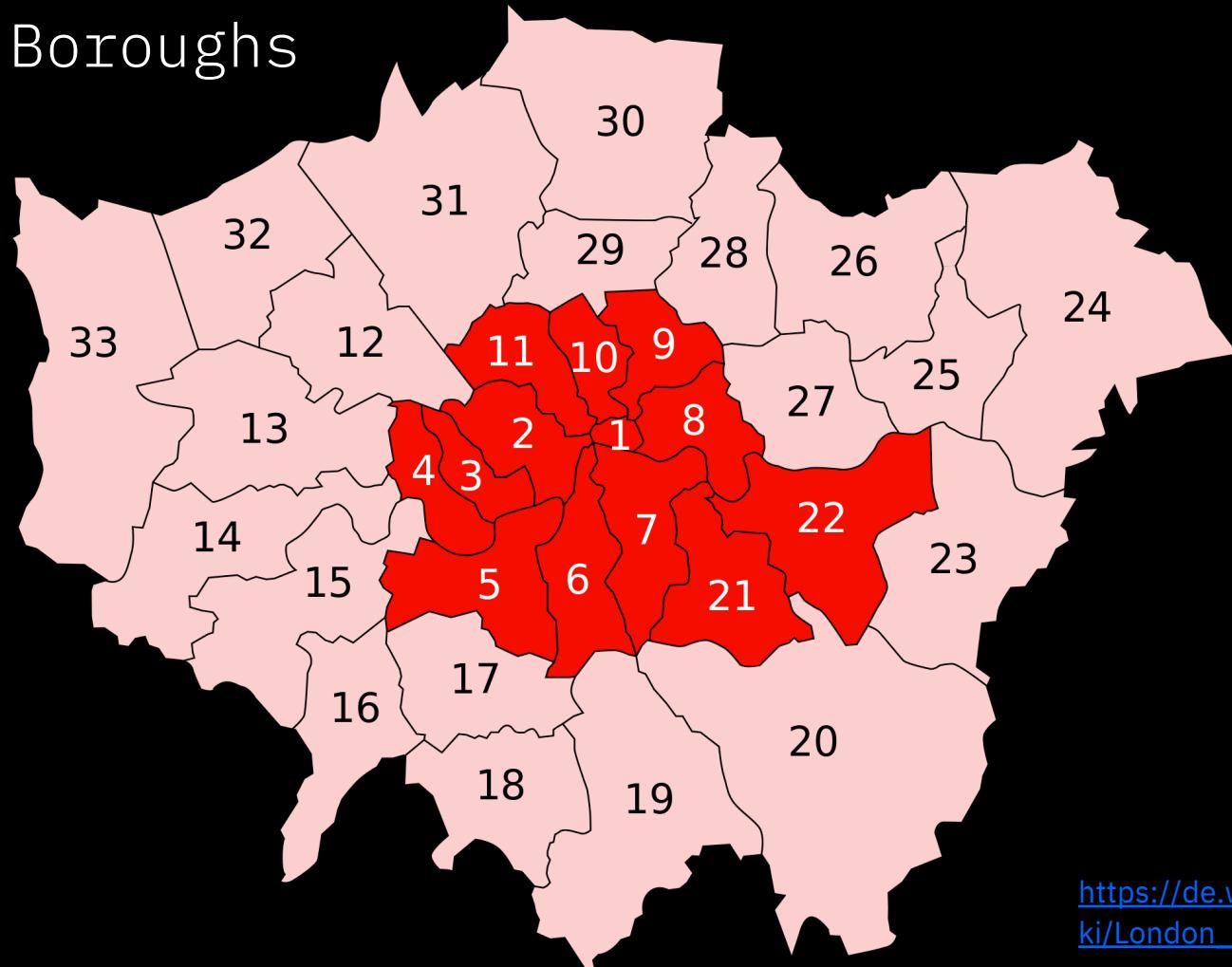
SAS

ZIP system

30 YEAR SYSTEM  
UNITED WARRANTY

PROMISE  
Advant

# London Boroughs

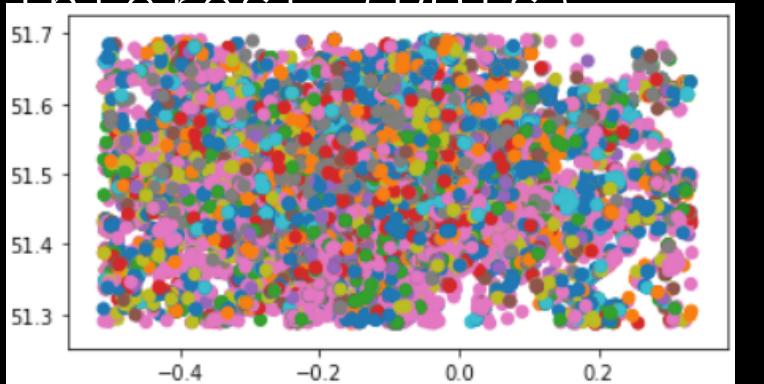


[https://de.wikipedia.org/wiki/London\\_Borough](https://de.wikipedia.org/wiki/London_Borough)

# london- borough- profiles.csv

```
[ 'Code',
  'Area_name',
  'Inner/_Outer_London',
  'GLA_Population_Estimate_2017',
  'GLA_Household_Estimate_2017',
  'Inland_Area_(Hectares)',
  'Population_density_(per_hectare)_2017',
  'Average_Age,_2017',
  'Proportion_of_population_aged_0-15,_2015',
  'Proportion_of_population_of_working-age,_2015',
  'Proportion_of_population_aged_65_and_over,_2015',
  'Net_internal_migration_(2015)',
  'Net_international_migration_(2015)',
  'Net_natural_change_(2015)',
  '%_of_resident_population_born_abroad_(2015)',
  'Largest_migrant_population_by_country_of_birth_(2011)',
  '%_of_largest_migrant_population_(2011)',
  'Second_largest_migrant_population_by_country_of_birth_(2011)',
  '%_of_second_largest_migrant_population_(2011)',
  'Third_largest_migrant_population_by_country_of_birth_(2011)',
  '%_of_third_largest_migrant_population_(2011)',
  '%_of_population_from_BAME_groups_(2016)',
  '%_people_aged_3+_whose_main_language_is_not_English_(2011_Census)',
  'Overseas_nationals_entering_the_UK_(NINO),_(2015/16)',
  'New_migrant_(NINO)_rates,_(2015/16)',
  'Largest_migrant_population_arrived_during_2015/16',
  'Second_largest_migrant_population_arrived_during_2015/16',
  'Third_largest_migrant_population_arrived_during_2015/16',
  'Employment_rate_(%)_2015',
  'Male_employment_rate_(2015)',
  'Female_employment_rate_(2015)',
  'Unemployment_rate_(2015)',
  'Youth_Unemployment_(claimant)_rate_18-24_(Dec-15)',
  'Proportion_of_16-18_year olds_who_are_NEET_(%)_2014',
  'Proportion_of_the_working-age_population_who_claim_out-of-work_benefits_(%)_(May-2016)'
```

# Open Street Map Data - Points of Interest (POIs)



```
['pub', 'bicycle_rental', 'park', 'restaurant', 'post_box',
 'post_office', 'library', 'memorial', 'telephone',
 'public_building', 'fountain', 'artwork', 'museum', 'poli',
 'toilet', 'cafe', 'pitch', 'recycling', 'bar', 'attractio',
 'swimming_pool', 'kindergarten', 'cinema', 'waste_basket',
 'monument', 'college', 'university', 'supermarket', 'grav',
 'hotel', 'laundry', 'courthouse', 'school', 'sports_centr',
 'pharmacy', 'convenience', 'bank', 'beverages', 'fast_foo',
 'fire_station', 'water_tower', 'doctors', 'department_sto',
 'theatre', 'viewpoint', 'playground', 'newsagent', 'gift_',
 'clothes', 'recycling_paper', 'veterinary', 'wastewater_p',
 'dentist', 'recycling_glass', 'chemist', 'hospital', 'tow',
 'tourist_info', 'bicycle_shop', 'car_rental', 'bakery',
 'travel_agent', 'doityourself', 'windmill', 'comms_tower',
 'car_sharing', 'camera_surveillance', 'garden_centre', 't',
 'recycling_clothes', 'ruins', 'nursing_home', 'embassy',
 'community_centre', 'computer_shop', 'water_works', 'arts',
 'butcher', 'car_dealership', 'nightclub', 'archaeological',
 'castle', 'bookshop', 'hairdresser', 'car_wash', 'vending',
 'drinking_water', 'prison', 'greengrocer', 'beauty_shop',
 'stationery', 'bench', 'florist', 'optician', 'motel',
 'mobile_phone_shop', 'kiosk', 'hostel', 'guesthouse',
 'picnic_site', 'outdoor_shop', 'furniture_shop', 'jewelle',
 'toy_shop', 'shoe_shop', 'video_shop', 'golf_course',
 'sports_shop', 'camp_site', 'shelter', 'wayside_shrine',
 'zoo', 'vending_parking', 'bed_and_breakfast', 'theme_par',
 'observation_tower', 'caravan_site', 'hunting_stand',
 'vending_machine', 'water_well', 'lighthouse', 'battlefiel
```

# Welcome to data.police.uk

This is the site for open data about crime and policing in England, Wales and Northern Ireland.

You can download [street-level crime, outcome, and stop and search data](#) in clear and simple CSV format and explore the [API](#) containing detailed crime data and information about individual police forces and neighbourhood teams.

You can also download data on police activity, and a range of data collected under the [police annual data requirement \(ADR\)](#) including arrests and 101 call handling.

All the data on this site is made available under the [Open Government Licence v3.0](#).



## DOWNLOADS

[Download Police.uk data in batches](#)



## API DOCS

[Access Police.uk data via an API](#)



## CHANGELOG

[See what's new, see what's coming soon](#)

# UK Crime Data - metropolitan

## Monthly csv files read and saved as annual files

### Street.csv

| Unnamed: 0 | Crime ID | Month | Longitude | Latitude | Location  | LSOA code                 | Crime type | Last outcome category | Context |     |
|------------|----------|-------|-----------|----------|-----------|---------------------------|------------|-----------------------|---------|-----|
| 0          | 0        | NaN   | 2018-01   | 0.136387 | 51.589215 | On or near Billet Road    | E01000027  | Anti-social behaviour | NaN     | NaN |
| 1          | 1        | NaN   | 2018-01   | 0.140634 | 51.583427 | On or near Rams Grove     | E01000027  | Anti-social behaviour | NaN     | NaN |
| 2          | 2        | NaN   | 2018-01   | 0.140192 | 51.582311 | On or near Hatch Grove    | E01000027  | Anti-social behaviour | NaN     | NaN |
| 3          | 3        | NaN   | 2018-01   | 0.137065 | 51.583672 | On or near Police Station | E01000027  | Anti-social behaviour | NaN     | NaN |
| 4          | 4        | NaN   | 2018-01   | 0.137065 | 51.583672 | On or near Police Station | E01000027  | Anti-social behaviour | NaN     | NaN |

# UK Crime Data - metropolitan

## Monthly csv files read and saved as annual files

### Stop-and-search.csv

|   |   | Unnamed: 0                | Type                      | Date | Part of a policing operation | Policing operation | Latitude  | Longitude | Gender | Age range | Legislation                           | Object of search | Outcome                      | Outcome linked to object of search |
|---|---|---------------------------|---------------------------|------|------------------------------|--------------------|-----------|-----------|--------|-----------|---------------------------------------|------------------|------------------------------|------------------------------------|
| 0 | 0 | Person search             | 2018-01-01T00:05:00+00:00 |      | False                        | NaN                | 51.425491 | -0.220473 | Male   | 18-24     | Misuse of Drugs Act 1971 (section 23) | Controlled drugs | Khat or Cannabis warning     | NaN                                |
| 1 | 1 | Person search             | 2018-01-01T00:15:00+00:00 |      | False                        | NaN                | 51.459996 | -0.116896 | Male   | over 34   | Misuse of Drugs Act 1971 (section 23) | Controlled drugs | Arrest                       | NaN                                |
| 2 | 2 | Person and Vehicle search | 2018-01-01T00:16:00+00:00 |      | False                        | NaN                | 51.542049 | -0.380529 | Male   | 25-34     | Misuse of Drugs Act 1971 (section 23) | Controlled drugs | A no further action disposal | NaN                                |
| 3 | 3 | Person and Vehicle search | 2018-01-01T00:17:00+00:00 |      | False                        | NaN                | 51.613286 | -0.065711 | Male   | 25-34     | Misuse of Drugs Act 1971 (section 23) | Controlled drugs | Arrest                       | NaN                                |
| 4 | 4 | Person search             | 2018-01-01T00:20:00+00:00 |      | False                        | NaN                | 51.461004 | -0.115876 | Male   | over 34   | Misuse of Drugs Act 1971 (section     | Controlled drugs | A no further action          | NaN                                |

# To do:

<https://github.com/IBMDveloperUK/foss4g-geopandas>

1. go to the above link
2. follow the instructions