The Journal of Open Source Software

PostcodesioR: An R package for UK geocoding

Eryk J. Walczak[1]

1 University College London

DOI:

Software

- Review
- Repository
- Archive

Submitted:
Published:

Summary

`PostcodesioR` is an API wrapper around `postcodes.io`, free UK postcode look-up and geocoder. This package helps to find and transform information about UK administrative geography like postcodes, LSOA, MSOA, constituencies, counties, wards, districts, CCG or NUTS. Here, we present a new geocoding package designed specifically for the UK context, which addresses these challenges and provides accurate and reliable geocoding results for a wide range of applications.

Statement of need

Geocoding is the process of converting location-based information such as addresses into corresponding geographic coordinates. It is a crucial step in many analytic tasks involving geographic data. However, matching UK administrative borders with corresponding postcodes has long been a challenge for researchers and practitioners alike due to the complex and ever-changing nature of the UK's administrative geography.

The package is based exclusively on open data provided by `postcodes.io` using open ONS data. `PostcodesioR` can be used by data scientists or social scientists working with geocoded UK data. A common task when working with such data is aggregating geocoded data on different administrative levels, e.g. turning postcode-level data into counties or regions. This package can help in achieving this and in many other cases when changing the aggregation of geographic data is required.

Examples

Installation

This package can be installed from GitHub (developmental version) or CRAN (stable version).

In order to install `PostcodesioR` use one of the following commands:

```
# stable version
install.packages("PostcodesioR")
```

or

```
# developmental version
if(!require("devtools")) {
  install.packages("devtools")
}
devtools::install_github("ropensci/PostcodesioR")
```

Loading

Load the package by typing

```
library(PostcodesioR)
```

Geocoding

Where possible, I tried to return a data frame. Unfortunately, a lot of API calls return more complex data and in those cases it is safer to use lists. The API limits the number of returned calls. Check functions' documentation for more details.

For additional information about the returned data and the function calls see the original documentation.

The main function of this package provides information related to a given postcode

```
lookup_result <- postcode_lookup("EC1Y8LX")

#overview
names(lookup_result)
```

```
##  [1] "postcode"                  "quality"
##  [3] "eastings"                  "northings"
##  [5] "country"                   "nhs_ha"
##  [7] "longitude"                 "latitude"
##  [9] "european_electoral_region" "primary_care_trust"
## [11] "region"                    "lsoa"
## [13] "msoa"                      "incode"
## [15] "outcode"                   "parliamentary_constituency"
## [17] "admin_district"            "parish"
## [19] "admin_county"              "date_of_introduction"
## [21] "admin_ward"                "ced"
## [23] "ccg"                       "nuts"
## [25] "pfa"                       "admin_district_code"
## [27] "admin_county_code"         "admin_ward_code"
## [29] "parish_code"               "parliamentary_constituency_code"
## [31] "ccg_code"                  "ccg_id_code"
## [33] "ced_code"                  "nuts_code"
## [35] "lsoa_code"                 "msoa_code"
## [37] "lau2_code"                 "pfa_code"
```

Read the package's vignette to extensive documentation of all functions used in the package.

The remaining functions are

- `bulk_postcode_lookup()` # Bulk postcode lookup
- bulk_reverse_geocoding # Bulk reverse geocoding nearest_outcode # Find the nearest outcode nearest_outcode_lonlat # Find the nearest outcodes given longitude and latitude nearest_postcode # Find the nearest postcode outcode_reverse_geocoding # Outcode reverse geocoding outward_code_lookup # Outward code lookup place_lookup # Place lookup place_query # Place query postcode_autocomplete # Postcode autocomplete postcode_lookup # Postcode lookup postcode_query # Postcode query postcode_validation # Postcode validation random_place # Generate a random place random_postcode # Generate a random postcode reverse_geocoding # Reverse geocoding scottish_postcode_lookup # Scottish postcode lookup terminated_postcode # Terminated postcode lookup

Acknowledgements

We acknowledge rOpenSci reviewers and package contributors (listed on the package's GitHub page).

References