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osmdata

why?

complitr
ArcGIS 2016 User Conference
ArcGIS Pro Map:

First Place

Population analysis over time using space cubes and emerging hotspot analysis in ArcGIS Pro

Rie Rose Møller Pederson
ArcGIS 2016 User Conference
Large format printed map: Second Place
Walkability - City of Manhattan
Jared Tremblay
ArcGIS 2016 User Conference
Large format printed map:  Second Place
Walkability - City of Manhattan
Jared Tremblay
1 osmdata
2 Basic Maps
3 Data Maps
osmdata: OpenStreetMap data

> opq("anju north korea")
osmdata: OpenStreetMap data

```bash
> opq ("anju north korea")

$bbox
[1] "39.5399586,125.5188365,39.6938799,125.8474349"

$suffix
[1] "[out:xml][timeout:25];\n(\n"

$prefix
[1] "[\n(\n"

$suffix
[1] "]);\n(_;>);\nout body;"

(features
NULL

attr("class")
[1] "list" "overpass_query"
```
osmdata: OpenStreetMap data

1 > opq ("anju north korea") %>%
2 > add_feature (key = "building")
osmdata: OpenStreetMap data

```r
> opq("anju north korea") %>%
>   add_feature(key = "building")

$bbox
[1] "39.5399586,125.5188365,39.6938799,125.8474349"

$prefix
[1] "[out:xml][timeout:25];\n(\n"

$suffix
[1] ");\n(._;>);\nout body;"

$features
[1] "["building"]"

attr(,"class")
[1] "list" "overpass_query"
```
osmdta: OpenStreetMap data

1 > opq("anju north korea") %>%
2 > add_feature(key = "building") %>%
3 > osmdata_sf()
osmdata: OpenStreetMap data

```r
> opq("anju north korea") %>%
>   add_feature(key = "building") %>%
>   osmdata_sf()
Object of class 'osmdata' with:
$bbox: 39.5399586,125.5188365,39.6938799,125.8474349
$overpass_call: The call submitted to the overpass API
$timestamp: [ Tue 4 Jul 2017 10:56:28 ]
$osm_points: 'sf' Simple Features Collection with 2462 point
$osm_lines: 'sf' Simple Features Collection with 0 linestring
$osm_polygons: 'sf' Simple Features Collection with 565 polygon
$osm_multilines: 'sf' Simple Features Collection with 0 multiline
$osm_multipolygons: 'sf' Simple Features Collection with 0 multipolygon
```
1 > opq("anju north korea") %>%
2 > add_feature(key = "building") %>%
3 > osmdata_sf()
osmdata: OpenStreetMap data

```r
1 > dat_B <- opq("anju north korea") %>%
2 > add_feature(key = "building") %>%
3 > osmdata_sf()
```
osmdata: OpenStreetMap data

```r
> dat_B <- opq("anju north korea") %>%
>   add_feature(key = "building") %>%
>   osmdata_sf()
> nrow(dat_B$osm_polygons)
[1] 565
```
osmdata: OpenStreetMap data

```r
dat_B <- opq("anju north korea") %>%
  add_feature(key = "building") %>%
osmdata_sf()

nrow(dat_B$osm_polygons)

[1] 565

dat_H <- opq("anju north korea") %>%
  add_feature(key = "highway") %>%
osmdata_sf()

nrow(dat_H$osm_lines)

[1] 412
```
### osmdata: OpenStreetMap data

```r
> names(dat_B$osm_polygons)
[1] "osm_id" "name" "building" "man_made" "tourism" "geometry"

> names(dat_H$osm_lines)
[1] "osm_id" "name" "FIXME"
[4] "bridge" "construction" "embankment"
[7] "highway" "junction" "lanes"
[10] "layer" "motorroad" "name.en"
[13] "name.ko" "name.ko_hanja" "oneway"
[16] "source" "start_date" "surface"
[19] "tunnel" "geometry"
```
### osmdata: OpenStreetMap data

```r
> names(dat_B$osm_polygons)
[1] "osm_id"  "name"      "building"  "man_made"  "tourism"
     "geometry"

> names(dat_H$osm_lines)
[1] "osm_id"  "name"    "FIXME"
[4] "bridge"  "construction" "embankment"
[7] "highway"  "junction"    "lanes"
[10] "layer"    "motorroad"    "name.en"
[13] "name.ko"  "name.ko_hanja" "oneway"
[16] "source"    "start_date"    "surface"
[19] "tunnel"  "geometry"

> table(dat_B$osm_polygons$tourism)
   museum viewpoint
       1         1
```

---

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data maps
osmdata: OpenStreetMap data

```r
> dat_B <- opq("anju north korea") %>%
> add_feature(key = "building") %>%
> osmdata_sf()
> dat_H <- opq("anju north korea") %>%
> add_feature(key = "highway") %>%
> osmdata_sf()
> dat_B <- dat_B$osm_polygons
> dat_H <- dat_H$osm_lines
```
```r
> dat_B <- opq("anju north korea") %>%
>   add_feature(key = "building") %>%
>   osmdata_sf()
>
> dat_H <- opq("anju north korea") %>%
>   add_feature(key = "highway") %>%
>   osmdata_sf()
>
> dat_B <- dat_B$osm_polygons
> dat_H <- dat_H$osm_lines
```

```r
> dat_B <- osmdata::getbb("anju north korea") %>%
>   osmplotr::extract_osm_objects(key = "building")
>>
> dat_H <- osmdata::getbb("anju north korea") %>%
>   osmplotr::extract_osm_objects(key = "highway")
```
osmplotr: Basic Maps

1. `bb <- osmdata::getbb("anju north korea")`
2. `map <- osmplotr::osm_basemap(bbox = bb, bg = "gray20") %>%`
   - `osmplotr::add_osm_objects(dat_H, col = "gray40") %>%`
   - `osmplotr::add_osm_objects(dat_B, col = "yellow")`
```r
> bb <- osmdata::getbb("anju north korea")
> map <- osmplotr::osm_basemap(bbox = bb, bg = "gray20") %>%
  osmplotr::add_osm_objects(dat_H, col = "gray40") %>%
  osmplotr::add_osm_objects(dat_B, col = "yellow")
> osmplotr::print_osm_map(map)
```
```r
> bb <- osmdata::getbb("anju north korea")
> map <- osmplotr::osm_basemap(bbox = bb, bg = "gray20") %>%
  osmplotr::add_osm_objects(dat_H, col = "gray40") %>%
  osmplotr::add_osm_objects(dat_B, col = "yellow")
> osmplotr::print_osm_map(map)
```
osmplotr: Basic Maps

```r
> bb <- osmplotr::get_bbox(c(125.64, 39.60, 125.69, 39.63))
> map <- osmplotr::osm_basemap(bbox = bb, bg = "gray20") %>%
  osmplotr::add_osm_objects(dat_H, col = "gray40") %>%
  osmplotr::add_osm_objects(dat_B, col = "yellow")
> osmplotr::print_osm_map(map)
```
osmplotr: Basic Maps:

```r
> bb <- get_bbox(c(4.30, 50.805, 4.34, 50.835)) # here!
```
osmplotr: Basic Maps:

```r
> bb <- get_bbox(c(4.30, 50.805, 4.34, 50.835)) # here!
> dat_B <- extract_osm_objects(bbox = bb, key = "building")
> dat_H <- extract_osm_objects(bbox = bb, key = "highway")
> dat_R <- extract_osm_objects(bbox = bb, key = "railway")
> dat_P <- extract_osm_objects(bbox = bb, key = "park")
> dat_W <- extract_osm_objects(bbox = bb, key = "natural", value = "water")
```
osmplotr: Basic Maps:

```r
> bb <- get_bbox(c(4.30, 50.805, 4.34, 50.835)) # here!
> dat_B <- extract_osm_objects(bbox = bb, key = "building")
> dat_H <- extract_osm_objects(bbox = bb, key = "highway")
> dat_R <- extract_osm_objects(bbox = bb, key = "railway")
> dat_P <- extract_osm_objects(bbox = bb, key = "park")
> dat_W <- extract_osm_objects(bbox = bb, key = "natural", value = "water")

> col_p <- "#C8FFC8FF"
> col_w <- "#C8C8DCFF"
> col_wb <- adjust_colours(col_w, -0.2)
> col_r <- "gray60"
> col_b <- "#C8C8C8FF"
> col_bb <- adjust_colours(col_b, -0.2)
> col_h <- "#969696FF"
```
osmplotr: Basic Maps:

```r
> map <- osm_basemap (bbox = bb)
```
```r
> map <- osm_basemap (bbox = bb) %>%
  add_osm_objects (map, dat_P, col = col_p)
  add_osm_objects (map, dat_W, col = col_w,
                   border = col_wb, size = 1) %>%
  add_osm_objects (dat_R, col = col_r) %>%
  add_osm_objects (map, dat_B, col = col_b,
                   border = col_bb, size = 0.1) %>%
  add_osm_objects (map, dat_H, col = col_h) %>%
  add_axes ()
> print_osm_map (map)
```
**osmplotr**: Basic Maps:

```r
> bb <- get_bbox(c(4.30, 50.805, 4.34, 50.835)) # here!
> dat_B <- extract_osm_objects(bbox = bb, key = "building")
> dat_H <- extract_osm_objects(bbox = bb, key = "highway")
> dat_R <- extract_osm_objects(bbox = bb, key = "railway")
> dat_P <- extract_osm_objects(bbox = bb, key = "park")
> dat_W <- extract_osm_objects(bbox = bb, key = "natural",
   value = "water")
```

```r
> # osmdata functions:
> wg <- opq(bbox = bb) %>%
  add_feature(key = "building") %>%
  add_feature(key = "addr:street",
              value = "Avenue du Pont de Luttre",
              value_exact = FALSE) %>%
  add_feature(key = "addr:housenumber",
              value = 74)
```
osmplotr: Basic Maps:

```r
> map <- osm_basemap (bbox = bb) %>
add_osm_objects (map, dat_P, col = col_p)
add_osm_objects (map, dat_W, col = col_w,
    border = col_wb, size = 1) %>
add_osm_objects (dat_R, col = col_r) %>
add_osm_objects (map, dat_B, col = col_b,
    border = col_bb, size = 0.1) %>
add_osm_objects (map, dat_H, col = col_h) %>
add_osm_objects (map, wg, col = "orange",
    border = "red", size = 1) %>
add_axes ()
> print_osm_map (map)
```
osmplotr: Data Maps
osmploitr: Data Maps

```r
> map <- osm_basemap (bbox = bbox, bg="gray95")
```
osmplot: Data Maps:

```r
> map <- osm_basemap (bbox = bbox, bg="gray95") %>%
  add_osm_objects (map, dat_W, col = col_w,
  border = col_wb, size = 1)
```
osmplotr: Data Maps:

```r
map <- osm_basemap (bbox = bbox, bg="gray95") %>%
  add_osm_objects (map, dat_W, col = col_w,
                  border = col_wb, size = 1) %>%
  add_osm_objects (map, dat_P, col = col_p)
```
osmploetr: Data Maps:

```r
map <- osm_basemap (bbox = bbox, bg="gray95") %>%
  add_osm_objects (map, dat_W, col = col, border = col_wb, size = 1) %>%
  add_osm_objects (map, dat_P, col = col_p) %>%
  add_osm_objects (map, dat_R, col = "gray30")
```
```r
> map <- osm_basemap (bbox = bbox, bg="gray95") %>%
    add_osm_objects (map, dat_W, col = col_w, border = col_wb, size = 1) %>%
    add_osm_objects (map, dat_P, col = col_p) %>%
    add_osm_objects (map, dat_R, col = "gray30") %>%
    add_axes (map)
```

**osmplotr**: Data Maps:
osmplotr: Data Maps:

```r
> map <- osm_basemap (bbox = bbox, bg="gray95") %>%
  add_osm_objects (map, dat_W, col = col_w,
                   border = col_wb, size = 1) %>%
  add_osm_objects (map, dat_P, col = col_p) %>%
  add_osm_objects (map, dat_R, col = "gray30") %>%
  add_axes (map)

> surf <- get_surface_data (bbox)
```
```r
> map <- osm_basemap (bbox = bbox, bg="gray95") %>%
    add_osm_objects (map, dat_W, col = col_w, 
                     border = col_wb, size = 1) %>%
    add_osm_objects (map, dat_P, col = col_p) %>%
    add_osm_objects (map, dat_R, col = "gray30") %>%
    add_axes (map)

> surf <- get_surface_data (bbox)
> head (surf)

   x      y      z
1 4.30 50.81 0.2471138
2 4.30 50.81 0.2741496
3 4.30 50.81 0.2665862
4 4.30 50.81 0.2863539
```
```
> map <- osm_basemap (bbox = bbox, bg="gray95")
> add_osm_objects (map, dat_W, col = col_w, border = col_wb, size = 1)
> add_osm_objects (map, dat_P, col = col_p)
> add_osm_objects (map, dat_R, col = "gray30")
> add_axes (map)

> surf <- get_surface_data (bbox)
```
```r
> map <- osm_basemap (bbox = bbox, bg="gray95") %>%
  add_osm_objects (map, dat_W, col = col_w, border = col_wb, size = 1) %>%
  add_osm_objects (map, dat_P, col = col_p) %>%
  add_osm_objects (map, dat_R, col = "gray30") %>%
  add_axes (map)

> surf <- get_surface_data (bbox)
> cols <- RColorBrewer::brewer.pal (9, "RdYlBu")
```
osmplootr: Data Maps:

```r
> map <- osm_basemap (bbox = bbox, bg="gray95") %>%
  add_osm_objects (map, dat_W, col = col_w, border = col_wb, size = 1) %>%
  add_osm_objects (map, dat_P, col = col_p) %>%
  add_osm_objects (map, dat_R, col = "gray30") %>%
  add_axes (map)

> surf <- get_surface_data (bbox)
```
```r
> map <- osm_basemap (bbox = bbox, bg = "gray95") %>%
  add_osm_objects (map, dat_W, col = col_w, 
  border = col_wb, size = 1) %>%
  add_osm_objects (map, dat_P, col = col_p) %>%
  add_osm_objects (map, dat_R, col = "gray30") %>%
  add_axes (map)

> surf <- get_surface_data (bbox)
> map <- add_osm_surface (map, dat_B, dat = surf, 
  cols = cols)
```
osmplotr: Data Maps:

```r
> map <- osm_basemap (bbox = bbox, bg="gray95") %>%
  add_osm_objects (map, dat_W, col = col_w, 
    border = col_wb, size = 1) %>%
  add_osm_objects (map, dat_P, col = col_p) %>%
  add_osm_objects (map, dat_R, col = "gray30") %>%
  add_axes (map)

> surf <- get_surface_data (bbox)
> map <- add_osm_surface (map, dat_B, dat = surf, 
    cols = cols) %>%
  add_colourbar (map, cols = cols, 
    zlims = range (surf$z))
```
**osmplotr**: Data Maps:

```r
> map <- osm_basemap (bbox = bbox, bg="gray95") %>%
  add_osm_objects (map, dat_W, col = col_w, border = col_wb, size = 1) %>%
  add_osm_objects (map, dat_P, col = col_p) %>%
  add_osm_objects (map, dat_R, col = "gray30") %>%
  add_axes (map) %>%
  add_osm_surface (map, dat_B, dat = surf, cols = cols) %>%
  add_colourbar (map, cols = cols, zlims = range (surf$z)) %>%
  add_osm_surface (map, dat_H, dat = surf, cols = cols_h)
```
osmplotr: Data Maps:

```r
> map <- osm_basemap (bbox = bbox, bg="gray95") %>%
  add_osm_objects (map, dat_W, col = col_w, border = col_wb, size = 1) %>%
  add_osm_objects (map, dat_P, col = col_p) %>%
  add_osm_objects (map, dat_R, col = "gray30") %>%
  add_osm_surface (map, dat_B, dat = surf, cols = cols) %>%
  add_osm_surface (map, dat_H, dat = surf, cols = cols_h) %>%
  add_axes (map) %>%
  add_colourbar (map, cols = cols, zlims = range (surf$z))
```
add_osm_groups (map, dat_B, groups = groups, cols = cols)
add_osm_groups (map, dat_B, groups = groups, cols = cols
colmat = TRUE)
add_osm_groups (map, dat_B, groups = groups, cols = cols, colmat = TRUE, rotate = 90)
Gratitude to co-authors of **osmdata**: Bob Rudis, Robin Lovelace, Maëlle Salmon and all others who’ve git-assisted along the way.

Gratitude to Austrian Science Fund for funding; and to ROpenSci for hosting repos.

CRAN and github: **osmdata** + **osmplotr**.