

Package ‘geofacet’

October 13, 2022

Title 'ggplot2' Faceting Utilities for Geographical Data

Version 0.2.0

Description Provides geofaceting functionality for 'ggplot2'. Geofaceting arranges a sequence of plots of data for different geographical entities into a grid that preserves some of the geographical orientation.

Depends R (>= 3.2)

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Encoding UTF-8

LazyData true

Imports ggplot2 (>= 3.2.1), gtable, graphics, rnatuarearth, sp, sf, ggrepel, imguR, gridExtra, geogrid, methods

Suggests testthat, covr, lintr, knitr, rmarkdown

URL <https://github.com/hafen/geofacet>

BugReports <https://github.com/hafen/geofacet/issues>

RoxygenNote 7.1.0

VignetteBuilder knitr

NeedsCompilation no

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attach_spdf	<i>Attach a SpatialPolygonsDataFrame object to a grid</i>
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Description

Attach a SpatialPolygonsDataFrame object to a grid

Usage

```
attach_spdf(x, spdf)
```

Arguments

x	object to attach SpatialPolygonsDataFrame object to
spdf	a SpatialPolygonsDataFrame object to attach

aus_pop	<i>aus_pop</i>
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Description

March 2017 population data for Australian states and territories by age group. Source: <http://lmip.gov.au/default.aspx?LMIP/Downloads/ABSLabourForceRegion>.

Usage

aus_pop

auto_states	<i>auto_states</i>
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Description

List of valid values for countries for fetching rnatuarearth data when used with [grid_auto](#) to create a grid of states.

List of valid values for continents for fetching rnatuarearth data when used with [grid_auto](#) to create a grid of countries.

election	<i>election</i>
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Description

2016 US presidential election results, obtained from <http://bit.ly/2016votecount>.

Usage

election

eu_gdp	<i>eu_gdp</i>
--------	---------------

Description

GDP per capita in PPS - Index (EU28 = 100). "Gross domestic product (GDP) is a measure for the economic activity. It is defined as the value of all goods and services produced less the value of any goods or services used in their creation. The volume index of GDP per capita in Purchasing Power Standards (PPS) is expressed in relation to the European Union (EU28) average set to equal 100. If the index of a country is higher than 100, this country's level of GDP per head is higher than the EU average and vice versa. Basic figures are expressed in PPS, i.e. a common currency that eliminates the differences in price levels between countries allowing meaningful volume comparisons of GDP between countries. Please note that the index, calculated from PPS figures and expressed with respect to EU28 = 100, is intended for cross-country comparisons rather than for temporal comparisons." Source: <http://ec.europa.eu/eurostat/web/national-accounts/data/main-tables>. Dataset ID: tec00114.

Usage

eu_gdp

eu_imm	<i>eu_imm</i>
--------	---------------

Description

Annual number of resettled persons for each EU country. "Resettled refugees means persons who have been granted an authorization to reside in a Member State within the framework of a national or Community resettlement scheme.". Source: http://ec.europa.eu/eurostat/cache/metadata/en/migr_asydec_esms.htm. Dataset ID: tps00195.

Usage

eu_imm

facet_geo	<i>Arrange a sequence of geographical panels into a grid that preserves some geographical orientation</i>
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Description

Arrange a sequence of geographical panels into a grid that preserves some geographical orientation

Usage

```
facet_geo(facets, ..., grid = "us_state_grid1", label = NULL, move_axes = TRUE)
```

Arguments

facets	passed to facet_wrap
grid	character vector of the grid layout to use (currently only "us_state_grid1" and "us_state_grid2" are available)
label	an optional string denoting the name of a column in grid to use for facet labels. If NULL, the variable that best matches that in the data specified with facets will be used for the facet labels.
move_axes	should axis labels and ticks be moved to the closest panel along the margins?
...	additional parameters passed to facet_wrap

Examples

```
## Not run:
library(ggplot2)

# barchart of state rankings in various categories
ggplot(state_ranks, aes(variable, rank, fill = variable)) +
  geom_col() +
  coord_flip() +
  facet_geo(~ state) +
  theme_bw()

# use an alternative US state grid and place
ggplot(state_ranks, aes(variable, rank, fill = variable)) +
  geom_col() +
  coord_flip() +
  facet_geo(~ state, grid = "us_state_grid2") +
  theme(panel.spacing = unit(0.1, "lines"))

# custom grid (move Wisconsin above Michigan)
my_grid <- us_state_grid1
my_grid$col[my_grid$code == "WI"] <- 7

ggplot(state_ranks, aes(variable, rank, fill = variable)) +
  geom_col() +
```

```

coord_flip() +
facet_geo(~ state, grid = my_grid)

# plot unemployment rate time series for each state
ggplot(state_unemp, aes(year, rate)) +
  geom_line() +
  facet_geo(~ state) +
  scale_x_continuous(labels = function(x) paste0("'", substr(x, 3, 4))) +
  ylab("Unemployment Rate (%)") +
  theme_bw()

# plot the 2016 unemployment rate
ggplot(subset(state_unemp, year == 2016), aes(factor(year), rate)) +
  geom_col(fill = "steelblue") +
  facet_geo(~ state) +
  theme(
    axis.title.x = element_blank(),
    axis.text.x = element_blank(),
    axis.ticks.x = element_blank()) +
  ylab("Unemployment Rate (%)") +
  xlab("Year")

# plot European Union GDP
ggplot(eu_gdp, aes(year, gdp_pc)) +
  geom_line(color = "steelblue") +
  geom_hline(yintercept = 100, linetype = 2) +
  facet_geo(~ name, grid = "eu_grid1") +
  scale_x_continuous(labels = function(x) paste0("'", substr(x, 3, 4))) +
  ylab("GDP Per Capita") +
  theme_bw()

# use a free x-axis to look at just change
ggplot(eu_gdp, aes(year, gdp_pc)) +
  geom_line(color = "steelblue") +
  facet_geo(~ name, grid = "eu_grid1", scales = "free_y") +
  scale_x_continuous(labels = function(x) paste0("'", substr(x, 3, 4))) +
  ylab("GDP Per Capita in Relation to EU Index (100)") +
  theme_bw()

# would be nice if ggplot2 had a "sliced" option...
# (for example, there's not much going on with Denmark but it looks like there is)

# plot European Union annual # of resettled persons
ggplot(eu_imm, aes(year, persons)) +
  geom_line() +
  facet_geo(~ name, grid = "eu_grid1") +
  scale_x_continuous(labels = function(x) paste0("'", substr(x, 3, 4))) +
  scale_y_sqrt(minor_breaks = NULL) +
  ylab("# Resettled Persons") +
  theme_bw()

# plot just for 2016
ggplot(subset(eu_imm, year == 2016), aes(factor(year), persons)) +
  geom_col(fill = "steelblue") +

```

```

geom_text(aes(factor(year), 3000, label = persons), color = "gray") +
facet_geo(~ name, grid = "eu_grid1") +
theme(
  axis.title.x = element_blank(),
  axis.text.x = element_blank(),
  axis.ticks.x = element_blank()) +
ylab("# Resettled Persons in 2016") +
xlab("Year") +
theme_bw()

# plot Australian population
ggplot(aus_pop, aes(age_group, pop / 1e6, fill = age_group)) +
  geom_col() +
  facet_geo(~ code, grid = "aus_grid1") +
  coord_flip() +
  labs(
    title = "Australian Population Breakdown",
    caption = "Data Source: ABS Labour Force Survey, 12 month average",
    y = "Population [Millions]") +
  theme_bw()

# South Africa population density by province
ggplot(sa_pop_dens, aes(factor(year), density, fill = factor(year))) +
  geom_col() +
  facet_geo(~ province, grid = "sa_prov_grid1") +
  labs(title = "South Africa population density by province",
    caption = "Data Source: Statistics SA Census",
    y = "Population density per square km") +
  theme_bw()

# use the Afrikaans name stored in the grid, "name_af", as facet labels
ggplot(sa_pop_dens, aes(factor(year), density, fill = factor(year))) +
  geom_col() +
  facet_geo(~ code, grid = "sa_prov_grid1", label = "name_af") +
  labs(title = "South Africa population density by province",
    caption = "Data Source: Statistics SA Census",
    y = "Population density per square km") +
  theme_bw()

# affordable housing starts by year for boroughs in London
ggplot(london_afford, aes(x = year, y = starts, fill = year)) +
  geom_col(position = position_dodge()) +
  facet_geo(~ code, grid = "london_boroughs_grid", label = "name") +
  labs(title = "Affordable Housing Starts in London",
    subtitle = "Each Borough, 2015-16 to 2016-17",
    caption = "Source: London Datastore", x = "", y = "")

# dental health in Scotland
ggplot(nhs_scot_dental, aes(x = year, y = percent)) +
  geom_line() +
  facet_geo(~ name, grid = "nhs_scot_grid") +
  scale_x_continuous(breaks = c(2004, 2007, 2010, 2013)) +
  scale_y_continuous(breaks = c(40, 60, 80)) +

```

```

labs(title = "Child Dental Health in Scotland",
      subtitle = "Percentage of P1 children in Scotland with no obvious decay experience.",
      caption = "Source: statistics.gov.scot", x = "", y = "")

# India population breakdown
ggplot(subset(india_pop, type == "state"),
       aes(pop_type, value / 1e6, fill = pop_type)) +
  geom_col() +
  facet_geo(~ name, grid = "india_grid1", label = "code") +
  labs(title = "Indian Population Breakdown",
       caption = "Data Source: Wikipedia",
       x = "",
       y = "Population [Millions]") +
  theme_bw() +
  theme(axis.text.x = element_text(angle = 40, hjust = 1))

ggplot(subset(india_pop, type == "state"),
       aes(pop_type, value / 1e6, fill = pop_type)) +
  geom_col() +
  facet_geo(~ name, grid = "india_grid2", label = "name") +
  labs(title = "Indian Population Breakdown",
       caption = "Data Source: Wikipedia",
       x = "",
       y = "Population [Millions]") +
  theme_bw() +
  theme(axis.text.x = element_text(angle = 40, hjust = 1),
        strip.text.x = element_text(size = 6))

# A few ways to look at the 2016 election results
ggplot(election, aes("", pct, fill = candidate)) +
  geom_col(alpha = 0.8, width = 1) +
  scale_fill_manual(values = c("#4e79a7", "#e15759", "#59a14f")) +
  facet_geo(~ state, grid = "us_state_grid2") +
  scale_y_continuous(expand = c(0, 0)) +
  labs(title = "2016 Election Results",
       caption = "Data Source: http://bit.ly/2016votecount",
       x = NULL,
       y = "Percentage of Voters") +
  theme(axis.title.x = element_blank(),
        axis.text.x = element_blank(),
        axis.ticks.x = element_blank(),
        strip.text.x = element_text(size = 6))

ggplot(election, aes(candidate, pct, fill = candidate)) +
  geom_col() +
  scale_fill_manual(values = c("#4e79a7", "#e15759", "#59a14f")) +
  facet_geo(~ state, grid = "us_state_grid2") +
  theme_bw() +
  coord_flip() +
  labs(title = "2016 Election Results",
       caption = "Data Source: http://bit.ly/2016votecount",
       x = NULL,
       y = "Percentage of Voters") +

```



```

  theme(strip.text.x = element_text(size = 6))

  ggplot(election, aes(candidate, votes / 1000000, fill = candidate)) +
    geom_col() +
    scale_fill_manual(values = c("#4e79a7", "#e15759", "#59a14f")) +
    facet_geo(~ state, grid = "us_state_grid2") +
    coord_flip() +
    labs(title = "2016 Election Results",
         caption = "Data Source: http://bit.ly/2016votecount",
         x = NULL,
         y = "Votes (millions)") +
    theme(strip.text.x = element_text(size = 6))

## End(Not run)

```

geofacet

geofacet

Description

For examples, see [facet_geo](#).

get_geofacet_grob

Perform post-processing on a facet_geo ggplot object

Description

Perform post-processing on a facet_geo ggplot object

Usage

```
get_geofacet_grob(x)
```

Arguments

x object of class 'facet_geo'

get_grid_names

Get a list of valid grid names

Description

Get a list of valid grid names

Usage

```
get_grid_names()
```

get_ne_data	<i>Get rnatuarearth data</i>
-------------	------------------------------

Description

Get rnatuarearth data

Usage

```
get_ne_data(code)
```

Arguments

code A country/continent name to get rnatuarearth data from (see [auto_countries](#) or [auto_states](#)).

Examples

```
## Not run:
dat <- get_ne_data("brazil")

## End(Not run)
```

grids	<i>Geo Grids</i>
-------	------------------

Description

There are now 141 grids available in this package and more online. To view a full list of available grids, see [here](#). To create and submit your own grid, see [here](#). To see several examples of grids being used to visualize data, see [facet_geo](#).

- **us_state_grid1:** Grid layout for US states (including DC) Image reference [here](#).
- **us_state_grid2:** Grid layout for US states (including DC) Image reference [here](#).
- **eu_grid1:** Grid layout for the 28 EU Countries Image reference [here](#).
- **aus_grid1:** Grid layout for the Australian States and Territories. Image reference [here](#). Thanks to [jonocarroll](#).
- **sa_prov_grid1:** Grid layout for the provinces of South Africa Image reference [here](#). Thanks to [jonmcalder](#).
- **gb_london_boroughs_grid:** Grid layout for the boroughs of London. Note that the column code_ons contains the [codes](#) used by UK Office for National Statistics. Image reference [here](#). Thanks to [eldenvo](#).

- **nhs_scot_grid**: Grid layout for a grid of NHS Scotland Health Boards. Note that the column code contains the **codes** used by UK Office for National Statistics. Image reference [here](#). Thanks to [jsphdms](#).
- **india_grid1**: Grid layout for India states (not including union territories). Image reference [here](#). Thanks to [meysubb](#).
- **india_grid2**: Grid layout for India states (not including union territories). Image reference [here](#).
- **argentina_grid1**: Grid for the 23 provinces of Argentina. It includes the Malvinas/Falkland Islands and the Antarctic Territories (these are disputed, but they are included since many researchers might use data from these locations). Image reference [here](#). Thanks to [eliocamp](#).
- **br_states_grid1**: Grid for the 27 states of Brazil. Image reference [here](#). Thanks to [italocegatta](#).
- **sea_grid1**: Grid for South East Asian countries. Image reference [here](#). Thanks to [jasonjb82](#).
- **mys_grid1**: Grid for Malaysian states and territories. Image reference [here](#). Thanks to [jasonjb82](#).
- **fr_regions_grid1**: Land and overseas regions of France. Codes are INSEE codes. Image reference [here](#). Thanks to [mtmx](#).
- **de_states_grid1**: Grid for the German states ('Länder') Image reference [here](#). Thanks to [DominikVogel](#).
- **us_or_counties_grid1**: Grid for Oregon counties. Image reference [here](#). Thanks to [ao-smith16](#).
- **us_wa_counties_grid1**: Grid for Washington counties. Image reference [here](#).
- **us_in_counties_grid1**: Grid for Indiana counties. Image reference [here](#). Thanks to [nateapathy](#).
- **us_in_central_counties_grid1**: Grid for central Indiana counties. Image reference [here](#). Thanks to [nateapathy](#).
- **se_counties_grid1**: Grid for counties of Sweden. Image reference [here](#). Thanks to [duleise](#).
- **sf_bay_area_counties_grid1**: Grid of the 9 San Francisco Bay Area counties. Image reference [here](#). Thanks to [Eunoia](#).
- **ua_region_grid1**: Grid of administrative divisions of Ukraine (24 oblasts, one autonomous region, and two cities). Image reference [here](#). Thanks to [woldemarg](#).
- **mx_state_grid1**: Grid layout for the states of Mexico. Image reference [here](#). Thanks to [ikashnitsky](#).
- **mx_state_grid2**: Grid layout for the states of Mexico. Image reference [here](#). Thanks to [diegovalle](#).

- **scotland_local_authority_grid1:** Grid layout for the local authorities of Scotland. Image reference [here](#). Thanks to [davidhen](#).
- **us_state_without_DC_grid1:** Grid layout for US states (excluding DC) Image reference [here](#). Thanks to [ejr248](#).
- **italy_grid1:** Grid layout for regions of Italy (in collaboration with Stella Cangelosi and Luciana Dalla Valle). Image reference [here](#). Thanks to [JulianStander](#).
- **italy_grid2:** Grid layout for regions of Italy (in collaboration with Stella Cangelosi and Luciana Dalla Valle). Image reference [here](#). Thanks to [JulianStander](#).
- **be_province_grid1:** Grid layout for provinces of Belgium plus Brussels, including names in three languages (French, Dutch, English) and Belgium internal codes (NIS). Image reference [here](#). Thanks to [ericlecoutre](#).
- **us_state_grid3:** Grid layout for US states (including DC). Image reference [here](#). Thanks to [kanishkamisra](#).
- **jp_prefs_grid1:** Grid layout for the prefectures of Japan. Image reference [here](#). Thanks to [uribo](#).
- **ng_state_grid1:** Grid layout for the 37 Federal States of Nigeria. Image reference [here](#). Thanks to [ghosthedirewolf](#).
- **bd_upazila_grid1:** Grid layout for Bangladesh 64 Upazilas. Image reference [here](#). Thanks to [ghosthedirewolf](#).
- **spain_prov_grid1:** Grid layout for Provinces of Spain. Image reference [here](#). Thanks to [kintero](#).
- **ch_cantons_grid1:** Grid layout for Cantons of Switzerland. Image reference [here](#). Thanks to [tinu-schneider](#).
- **ch_cantons_grid2:** Grid layout for Cantons of Switzerland. Image reference [here](#). Thanks to [rastrau](#).
- **china_prov_grid1:** Grid layout for Provinces of China. Image reference [here](#). Thanks to [weiyunna](#).
- **world_86countries_grid:** Grid layout for 86 countries in the world. Image reference [here](#). Thanks to [akangsha](#).
- **se_counties_grid2:** Grid for counties of Sweden. Image reference [here](#). Thanks to [richardohrvall](#).
- **uk_regions1:** Grid for regions of the UK (aka EU standard NUTS 1 areas). Image reference [here](#). Thanks to [paulb20](#).
- **us_state_contiguous_grid1:** Grid layout for the contiguous US states (including DC). Image reference [here](#). Thanks to [andrewsr](#).

- **sk_province_grid1:** Grid layout for South Korean sis and dos (metropolitan/special/autonomous cities and provinces). Image reference [here](#). Thanks to [heon131](#).
- **ch_aargau_districts_grid1:** Grid layout for Districts of the Canton of Aargau, Switzerland. Image reference [here](#). Thanks to [zumbov2](#).
- **jo_gov_grid1:** Grid layout for Governorates of Jordan. Image reference [here](#). Thanks to [ghosthedirewolf](#).
- **spain_ccaa_grid1:** Grid layout for Spanish 'Comunidades Autónomas'. Image reference [here](#). Thanks to [JoseAntonioOrtega](#).
- **spain_prov_grid2:** Grid layout for Provinces of Spain. Image reference [here](#). Thanks to [JoseAntonioOrtega](#).
- **world_countries_grid1:** Grid layout for countries of the world, with a few exclusions. See . Image reference [here](#). Thanks to [JoseAntonioOrtega](#).
- **br_states_grid2:** Grid for the 27 states of Brazil. Image reference [here](#). Thanks to [hafen](#).
- **china_city_grid1:** Grid layout of cities in China. Image reference [here](#). Thanks to [Charlene-Deng1](#).
- **kr_seoul_district_grid1:** Grid layout of Seoul's 25 districts. Image reference [here](#). Thanks to [yonghah](#).
- **nz_regions_grid1:** Grid layout for regions of New Zealand. Image reference [here](#). Thanks to [pierreroudier](#).
- **sl_regions_grid1:** Grid layout of Slovenian regions. Image reference [here](#). Thanks to [SR1986](#).
- **us_census_div_grid1:** Grid layout of US Census divisions. Image reference [here](#). Thanks to [mkiang](#).
- **ar_tucuman_province_grid1:** Grid layout for Argentina Tucumán Province political divisions (departments) Image reference [here](#). Thanks to [TuQmano](#).
- **us_nh_counties_grid1:** Grid layout for the 10 counties in New Hampshire. Image reference [here](#). Thanks to [sounjl](#).
- **china_prov_grid2:** Grid layout for Provinces of China. Image reference [here](#). Thanks to [jw2531](#).
- **pl_voivodeships_grid1:** Grid layout for Polish voivodeships (provinces) Image reference [here](#). Thanks to [erzk](#).
- **us_ia_counties_grid1:** Grid layout for counties in Iowa Image reference [here](#). Thanks to [jrennyb](#).
- **us_id_counties_grid1:** Grid layout for counties in Idaho Image reference [here](#). Thanks to [hathawayj](#).

- **ar_cordoba_dep_grid1:** Grid layout for departments of Cordoba province in Argentina. Image reference [here](#). Thanks to [TuQmano](#).
- **us_fl_counties_grid1:** Grid for Florida counties. Image reference [here](#). Thanks to [ejr248](#).
- **ar_buenosaires_communes_grid1:** Grid for communes of Buenos Aires, Argentina. Image reference [here](#). Thanks to [TuQmano](#).
- **nz_regions_grid2:** Grid layout for regions of New Zealand. Image reference [here](#). Thanks to [pierrerroudier](#).
- **oecd_grid1:** Grid layout for OECD member countries. Image reference [here](#). Thanks to [arcruz0](#).
- **ec_prov_grid1:** Grid layout for provinces of Ecuador Image reference [here](#). Thanks to [Ricardo95RM](#).
- **nl_prov_grid1:** Grid layout for provinces of Netherlands Image reference [here](#). Thanks to [ruditurksema](#).
- **ca_prov_grid1:** Grid layout for provinces of Canada Image reference [here](#). Thanks to [michaelchong](#).
- **us_nc_counties_grid1:** Grid layout for Counties of North Carolina, United States Image reference [here](#). Thanks to [mtdukes](#).
- **mx_ciudad_prov_grid1:** Grid layout for Districts of Mexico City, Mexico Image reference [here](#). Thanks to [Ivangea](#).
- **bg_prov_grid1:** Grid layout for provinces of Bulgaria Image reference [here](#). Thanks to [savinastoitsova](#).
- **us_hhs_regions_grid1:** This grid approximates the U.S. Health and Human Services Region map Image reference [here](#). Thanks to [akitepowell](#).
- **tw_counties_grid1:** Grid layout for Counties of Taiwan Image reference [here](#). Thanks to [csh484912274](#).
- **tw_counties_grid2:** Grid layout for Counties of Taiwan including Lienchiang County Image reference [here](#). Thanks to [csh484912274](#).
- **af_prov_grid1:** Grid layout for Provinces of Afghanistan Image reference [here](#). Thanks to [jrennyb](#).
- **us_mi_counties_grid1:** Grid layout for Counties of Michigan, United States Image reference [here](#). Thanks to [jrennyb](#).
- **pe_prov_grid1:** Grid layout for Provinces of Peru Image reference [here](#). Thanks to [jmcastagnetto](#).
- **sa_prov_grid2:** Grid layout for Provinces of South Africa Image reference [here](#). Thanks to [kamermanpr](#).

- **mx_state_grid3:** Grid layout for States of Mexico Image reference [here](#). Thanks to [ikashnit-sky](#).
- **cn_bj_districts_grid1:** Grids for Administrative Districts of Beijing, China Image reference [here](#). Thanks to [shiedelweiss](#).
- **us_va_counties_grid1:** Grids for Counties of Virginia, United States Image reference [here](#). Thanks to [joshiyazman](#).
- **us_mo_counties_grid1:** Grids for Counties of Missouri, United States Image reference [here](#). Thanks to [Yanqi-Xu](#).
- **cl_santiago_prov_grid1:** Communes of Santiago Province, Chile Image reference [here](#). Thanks to [robsalasco](#).
- **us_tx_capcog_counties_grid1:** This is a grid of a 10 county planning region around Austin, Texas, United States Image reference [here](#). Thanks to [mth444](#).
- **sg_planning_area_grid1:** Grids for Planning Areas of Singapore Image reference [here](#). Thanks to [Elenafuyi](#).
- **in_state_ut_grid1:** Grid of Indian States and Union Territories Image reference [here](#). Thanks to [seanangio](#).
- **cn_fujian_prov_grid1:** Grid of counties of Fujian Province, China Image reference [here](#). Thanks to [nannanchen333](#).
- **ca_quebec_electoral_districts_grid1:** Grid of Electoral Districts of Québec, Canada Image reference [here](#). Thanks to [jhroy](#).
- **nl_prov_grid2:** Grid with the provinces of The Netherlands with codes that are used by the statistical institute of NL Image reference [here](#). Thanks to [edwindj](#).
- **cn_bj_districts_grid2:** Grid with districts of Beijing, China Image reference [here](#). Thanks to [zouhx11](#).
- **ar_santiago_del_estero_prov_grid1:** Grid with districts of Santiago del Estero Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_formosa_prov_grid1:** Grid with districts of Formosa Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_chaco_prov_grid1:** Grid with districts of Chaco Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_catamarca_prov_grid1:** Grid with districts of Catamarca Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_jujuy_prov_grid1:** Grid with districts of Jujuy Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).

- **ar_neuquen_prov_grid1:** Grid with districts of Neuquen Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_san_luis_prov_grid1:** Grid with districts of San Luis Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_san_juan_prov_grid1:** Grid with districts of San Juan Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_santa_fe_prov_grid1:** Grid with districts of Santa Fe Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_la_rioja_prov_grid1:** Grid with districts of La Rioja Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_mendoza_prov_grid1:** Grid with districts of Mendoza Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_salta_prov_grid1:** Grid with districts of Salta Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **ar_rio_negro_prov_grid1:** Grid with districts of Rio Negro Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **uy_departamentos_grid1:** Grid with Departamentos of Uruguay Image reference [here](#). Thanks to [TuQmano](#).
- **ar_buenos_aires_prov_electoral_dist_grid1:** Grid with Electoral Districts of Buenos Aires Province, Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **europa_countries_grid1:** Grid layout for all European countries except Vatican City, Monaco, San Marino and Liechtenstein Image reference [here](#). Thanks to [THargreaves](#).
- **argentina_grid2:** Grid layout for Argentina without Islas Malvinas and Antártida Argentina Image reference [here](#). Thanks to [TuQmano](#).
- **us_state_without_DC_grid2:** Grid layout for United States with AK and HI flush with CA Image reference [here](#). Thanks to [christophercannon](#).
- **jp_prefs_grid2:** Grid layout for Prefectures of Japan Image reference [here](#). Thanks to [Ryo-N7](#).
- **na_regions_grid1:** Regions of Namibia Image reference [here](#). Thanks to [steddy](#).
- **mm_state_grid1:** States of Myanmar Image reference [here](#). Thanks to [htinkyawaye](#).
- **us_state_with_DC_PR_grid1:** United States of America including Washington, D.C. and Puerto Rico Image reference [here](#). Thanks to [krothkin](#).
- **fr_departements_grid1:** Grid for France's departements, the second levels of administrative boundaries after the regions Image reference [here](#). Thanks to [tvroylandt](#).

- **ar_salta_prov_grid2:** Grids for Salta Province Argentina Image reference [here](#). Thanks to [tartagalensis](#).
- **ie_counties_grid1:** Ireland counties. Code is the car number plate abbreviation for Republic counties, similar for the six counties of Northern Ireland. Tipperary is split North / South for historical reasons Image reference [here](#). Thanks to [eugene100hickey](#).
- **sg_regions_grid1:** Urban planning regions of Singapore Image reference [here](#). Thanks to [erhuttk](#).
- **us_ny_counties_grid1:** Counties of New York State, United States Image reference [here](#). Thanks to [jjdfsny](#).
- **ru_federal_subjects_grid1:** Federal Subjects of Russia Image reference [here](#). Thanks to [ParanoidAndroid18](#).
- **us_ca_counties_grid1:** Counties of the State of California, United States Image reference [here](#). Thanks to [MartinLe5](#).
- **lk_districts_grid1:** Second level administrative divisions of Sri Lanka Image reference [here](#). Thanks to [thiyangt](#).
- **us_state_without_DC_grid3:** United States grid without Washington, D.C Image reference [here](#). Thanks to [truongduongvn2](#).
- **co_cali_subdivisions_grid1:** Corregimientos of Cali, Columbia Image reference [here](#). Thanks to [Carolina101](#).
- **us_in_northern_counties_grid1:** Northern Counties of Indiana, United States Image reference [here](#). Thanks to [robertoge](#).
- **italy_grid3:** Autonomous Provinces of Italy Image reference [here](#). Thanks to [danilolofaro](#).
- **us_state_with_DC_PR_grid2:** Grid of 50 states, DC, and Puerto Rico Image reference [here](#). Thanks to [krmaas](#).
- **us_state_grid7:** United States grid with Washington, D.C Image reference [here](#). Thanks to [yichenqin](#).
- **sg_planning_area_grid2:** Singapore Planning Areas Image reference [here](#). Thanks to [Zhi-maoElliott](#).
- **ch_cantons_fl_grid1:** Grid layout for Cantons of Switzerland and the neighbouring Principality of Liechtenstein Image reference [here](#). Thanks to [rastrau](#).
- **europa_countries_grid2:** Grid layout for European countries (minus micro nations) Image reference [here](#). Thanks to [rastrau](#).
- **us_states_territories_grid1:** Grid layout for U.S. states and territories Image reference [here](#). Thanks to [rastrau](#).

- **us_tn_counties_grid1:** Grid layout for counties of Tennessee, United States Image reference [here](#). Thanks to [binkley](#).
- **us_il_chicago_community_areas_grid1:** Grid layout for the Community Areas of Chicago Image reference [here](#). Thanks to [leungkp](#).
- **us_state_with_DC_PR_grid3:** United States grid with Washington, D.C. and Puerto Rico Image reference [here](#). Thanks to [klittle314](#).
- **in_state_ut_grid2:** Grid of Indian States and Union Territories Image reference [here](#). Thanks to [dnyansagar](#).
- **at_states_grid1:** Grid layout for States of Austria Image reference [here](#). Thanks to [werkstattcodes](#).
- **us_pa_counties_grid1:** Grid layout of Counties of Pennsylvania, United States Image reference [here](#). Thanks to [urbanSpatial](#).
- **us_oh_counties_grid1:** Grid layout of Counties of Ohio, United States Image reference [here](#). Thanks to [taylorokonek](#).
- **fr_departements_grid2:** Grid layout of Departements of France Image reference [here](#). Thanks to [jerbou](#).
- **us_wi_counties_grid1:** Grid layout for counties of Wisconsin, United States Image reference [here](#). Thanks to [aravamu2](#).
- **africa_countries_grid1:** Grid for all countries in Africa. Namibia added as 'NAM' to avoid NA collisions Image reference [here](#). Thanks to [ntncmch](#).
- **no_counties_grid1:** Grid of counties of Norway Image reference [here](#). Thanks to [NanAmalie1](#).
- **tr_provinces_grid1:** Grid of Provinces of Turkey Image reference [here](#). Thanks to [sadettindemirel](#).

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us_state_grid2

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no_counties_grid1
tr_provinces_grid1

```

grid_auto	<i>Generate a grid automatically from a country/continent name or a SpatialPolygonsDataFrame or 'sf' polygons</i>
-----------	---

Description

Generate a grid automatically from a country/continent name or a SpatialPolygonsDataFrame or 'sf' polygons

Usage

```
grid_auto(x, names = NULL, codes = NULL, seed = NULL)
```

Arguments

x	A country/continent name, a SpatialPolygonsDataFrame or 'sf' polygons to build a grid for.
---	--

names	An optional vector of variable names in x@data to use as "name_" columns in the resulting grid.
codes	An optional vector of variable names in x@data to use as "code_" columns in the resulting grid.
seed	An optional random seed sent to calculate_grid .

Details

If a country or continent name is specified for x, it can be any of the strings found in [auto_countries](#) or [auto_states](#). In this case, the rnatuarearth package will be searched for the corresponding shapefiles. You can use [get_ne_data](#) to see what these shapefiles look like.

The columns of the @data component of resulting shapefile (either user-specified or fetched from rnatuarearth) are those that will be available to names and codes.

Examples

```
## Not run:
# auto grid using a name to identify the country
grd <- grid_auto("brazil", seed = 1234)
grid_preview(grd, label = "name")
# open the result up in the grid designer for further refinement
grid_design(grd, label = "name")

# using a custom file (can be GeoJSON or shapefile)
ff <- system.file("extdata", "bay_counties.geojson", package = "geogrid")
bay_shp <- sf::st_read(ff)
grd <- grid_auto(bay_shp, seed = 1) # names are inferred
grid_preview(grd, label = "name_county")
grid_design(grd, label = "code_fipsstco")

# explicitly specify the names and codes variables to use
grd <- grid_auto(bay_shp, seed = 1, names = "county", codes = "fipsstco")
grid_preview(grd, label = "name_county")
grid_preview(grd, label = "code_fipsstco")

## End(Not run)
```

grid_design

Interactively design a grid

Description

Interactively design a grid

Usage

```
grid_design(data = NULL, img = NULL, label = "code", auto_img = TRUE)
```

Arguments

data	A data frame containing a grid to start from or NULL if starting from scratch.
img	An optional URL pointing to a reference image containing a geographic map of the entities in the grid.
label	An optional column name to use as the label for plotting the original geography, if attached to data.
auto_img	If the original geography is attached to data, should a plot of that be created and uploaded to the viewer?

Examples

```
# edit aus_grid1
grid_design(data = aus_grid1, img = "http://www.john.chapman.name/Austral4.gif")
# start with a clean slate
grid_design()
# arrange the alphabet
grid_design(data.frame(code = letters))
```

grid_preview	<i>Plot a preview of a grid</i>
--------------	---------------------------------

Description

Plot a preview of a grid

Usage

```
grid_preview(x, label = NULL, label_raw = NULL)
```

Arguments

x	a data frame containing a grid
label	the column name in x that should be used for text labels in the grid plot
label_raw	the column name in the optional SpatialPolygonsDataFrame attached to x that should be used for text labels in the raw geography plot

Examples

```
grid_preview(us_state_grid2)
grid_preview(eu_grid1, label = "name")
```

grid_submit	<i>Submit a grid to be included in the package</i>
-------------	--

Description

Submit a grid to be included in the package

Usage

```
grid_submit(x, name = NULL, desc = NULL)
```

Arguments

x	a data frame containing a grid
name	proposed name of the grid (if not supplied, will be asked for interactively)
desc	a description of the grid (if not supplied, will be asked for interactively)

Details

This opens up a github issue for this package in the web browser with pre-populated content for adding a grid to the package.

Examples

```
## Not run:  
my_grid <- us_state_grid1  
my_grid$col[my_grid$label == "WI"] <- 7  
grid_submit(my_grid, name = "us_grid_tweak_wi",  
  desc = "Modified us_state_grid1 to move WI over")  
  
## End(Not run)
```

india_pop	<i>india_pop</i>
-----------	------------------

Description

2011 population data for India, broken down by urban and rural. Source: https://en.wikipedia.org/wiki/List_of_states_and_union_territories_of_India_by_population.

Usage

```
india_pop
```

london_afford	<i>london_afford</i>
---------------	----------------------

Description

Total affordable housing completions by financial year in each London borough since 2015/16.
 Source: <https://data.london.gov.uk/dataset/dclg-affordable-housing-supply-borough>

Usage

london_afford

nhs_scot_dental	<i>nhs_scot_dental</i>
-----------------	------------------------

Description

Child dental health data in Scotland. Source: <http://statistics.gov.scot/data/child-dental-health>

Usage

nhs_scot_dental

plot.facet_geo	<i>Plot geofaceted ggplot2 object</i>
----------------	---------------------------------------

Description

Plot geofaceted ggplot2 object

Usage

```
## S3 method for class 'facet_geo'
plot(x, ...)
```

Arguments

x	plot object
...	ignored

print.facet_geo	<i>Print geofaceted ggplot2 object</i>
-----------------	--

Description

Print geofaceted ggplot2 object

Usage

```
## S3 method for class 'facet_geo'  
print(x, newpage = is.null(vp), vp = NULL, ...)
```

Arguments

x	plot object
newpage	draw new (empty) page first?
vp	viewport to draw plot in
...	other arguments not used by this method

sa_pop_dens	<i>sa_pop_dens</i>
-------------	--------------------

Description

Population density for each province in South Africa for 1996, 2001, and 2011. Source: https://en.wikipedia.org/wiki/List_of_South_African_provinces_by_population_density

Usage

```
sa_pop_dens
```

state_ranks	<i>state_ranks</i>
-------------	--------------------

Description

State rankings in the following categories with the variable upon which ranking is based in parentheses: education (adults over 25 with a bachelor's degree in 2015), employment (March 2017 unemployment rate - Bureau of Labor Statistics), health (obesity rate from 2015 - Centers for Disease Control), insured (uninsured rate in 2015 - US Census), sleep (share of adults that report at least 7 hours of sleep each night from 2016 - Disease Control), wealth (poverty rate 2014/15 - US Census). In each category, the lower the ranking, the more favorable. This data is based on data presented here: <https://www.axios.com/an-emoji-built-from-data-for-every-state-2408885674.html>

Usage

state_ranks

state_unemp	<i>state_unemp</i>
-------------	--------------------

Description

Seasonally-adjusted December unemployment rate for each state (including DC) from 2000 to 2017. Obtained from bls.gov.

Usage

state_unemp

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