

Package ‘ggautomap’

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Type Package

Title Create Maps from a Column of Place Names

Version 0.3.3

Description Mapping tools that convert place names to coordinates on the fly.

These 'ggplot2' extensions make maps from a data frame where one of the columns contains place names, without having to directly work with the underlying geospatial data and tools. The corresponding map data must be registered with 'cartographer' either by the user or by another package.

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'choropleth.R' 'configure_inset.R' 'coord_automap.R' 'crs.R'
'geom_boundaries.R' 'geom_centroids.R' 'geoscatter.R'
'ggautomap-package.R' 'position_circle_repel.R'

URL <https://github.com/cidm-ph/ggautomap>,
<https://cidm-ph.github.io/ggautomap/>

BugReports <https://github.com/cidm-ph/ggautomap/issues>

Suggests ggrepel, knitr, nswgeo, rmarkdown

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ggautomap-package	<i>Create Maps From a Column of Place Names</i>
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Description

Mapping geometries based on {ggplot2} for turning a spreadsheet into maps. This package provides ggplot geoms that make maps from a data frame where one of the columns contains place names. The map data must be registered with {cartographer}.

Author(s)

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See Also

Useful links:

- <https://github.com/cidm-ph/ggautomap>
- <https://cidm-ph.github.io/ggautomap/>
- Report bugs at <https://github.com/cidm-ph/ggautomap/issues>

configure_inset	<i>Configure transformations underpinning a map inset</i>
-----------------	---

Description

This specialises `ggmapinset::configure_inset()` to allow the centre to be specified as a location. The centroid of that location is used as the inset's centre.

Usage

```
configure_inset(  
  centre = NULL,  
  scale = NULL,  
  translation = NULL,  
  radius = NULL,  
  units = "km",  
  feature_type = NA  
)
```

Arguments

centre	Coordinates of the inset centre. Can instead be the name of a geographic feature if <code>feature_type</code> is also provided.
scale	Zoom scale: values larger than one will make the circle bigger.
translation	Translate (shift) the inset. This can be an <code>st_point</code> or simply a vector of length 2 containing the x and y offsets respectively.
radius	Radius of the inset circle.
units	Base length unit (e.g. "km" or "mi"). See <code>ggmapinset::configure_inset()</code> for supported values.
feature_type	Type of map feature. See <code>feature_types()</code> for a list of registered types. If NA, the type is guessed based on the values in <code>feature_names</code> .

Value

An inset configuration object.

See Also

`ggmapinset::configure_inset`

Examples

```
cfg <- configure_inset(  
  centre = "Yancey",  
  feature_type = "sf.nc",  
  scale = 2,
```

```

translation = c(70, -180),
radius = 50,
units = "mi"
)

```

coord_automap

Specify an inset configuration for the whole plot

Description

This allows a default inset configuration to be provided to avoid having to repeat it for each layer. Any layer that is inset-aware can use this as the default configuration if none is specifically provided to that layer. This coord also expands the axis limits to include the inset area.

Usage

```
coord_automap(feature_type = NA, inset = NULL, ...)
```

Arguments

feature_type	Type of map feature. See feature_types() for a list of registered types. If NA, the type is guessed based on the values in feature_names.
inset	Inset configuration; see configure_inset() .
...	Arguments passed to ggmapinset::coord_sf_inset()

Value

A ggplot coordinate

Examples

```

library(ggplot2)
library(cartographer)

ggplot(nc_type_example_2, aes(location = county)) +
  geom_choropleth(aes(colour = type), size = 0.5) +
  geom_sf_label_inset(aes(label = county), stat = "automap_coords", size = 3) +
  coord_automap(feature_type = "sf.nc")

```

crs_eqc

*Coordinate reference system for spatial computations***Description**

`crs_eqc()` gives a CRS that can be used for e.g. computing centroids or distances. It is an equidistant cylindrical system that by does not distort latitudes near latitude. The CRS is in units of kilometres by default.

Usage

```
crs_eqc(latitude = 0, units = "km")
```

Arguments

latitude	The latitude of true scale (the proj parameter <code>lat_ts</code>). This is the latitude where the scale is not distorted by the projection.
units	Base length unit (e.g. "km" or "mi"). See ggmapinset::configure_inset() for supported values.

Value

CRS object from `sf`.

Examples

```
# Sydney, Australia has a latitude of 33.87 S so this CRS will be suitable
# for computations close to there:
crs_eqc(latitude = -33.87)
```

geom_boundaries

*Map feature boundaries***Description**

Retrieves the full map data from `{cartographer}` and plots the boundaries. As well as the chosen feature boundaries, the outline of the map is drawn separately if one has been registered with the map data, with the possibility to override its aesthetics.

Usage

```
geom_boundaries(
  mapping = ggplot2::aes(),
  data = NULL,
  stat = "sf_inset",
  position = "identity",
  ...,
  feature_type = NULL,
  inset = NA,
  map_base = "normal",
  map_inset = "auto",
  na.rm = FALSE,
  outline.aes = list(colour = "#666666"),
  show.legend = NA,
  inherit.aes = FALSE
)
```

Arguments

mapping, stat, position, na.rm, show.legend, inherit.aes, ...	See ggplot2::geom_sf() .
data	Ignored (this geometry always uses the registered geographic data).
feature_type	Type of map feature. See feature_types() for a list of registered types. If NA, the type is guessed based on the values in <code>feature_names</code> .
inset	Inset configuration; see configure_inset() . If NA (the default), this is inherited from the coord (see coord_sf_inset()).
map_base	Controls the layer with the base map. Possible values are "normal" to create a layer as though the inset were not specified, "clip" to create a layer with the inset viewport cut out, and "none" to prevent the insertion of a layer for the base map.
map_inset	Controls the layer with the inset map. Possible values are "auto" to choose the behaviour based on whether inset is specified, "normal" to create a layer with the viewport cut out and transformed, and "none" to prevent the insertion of a layer for the viewport map.
outline.aes	A list to override the aesthetics for the outline of the map. This has no effect if the map wasn't registered with a separate outline.

Value

A ggplot layer.

Examples

```
library(ggplot2)

ggplot() +
  geom_boundaries(feature_type = "sf.nc")
```

geom_centroids

Geographic centroid of locations

Description

Assigns each point a longitude and latitude corresponding to the geographic centre of its administrative area. This means that all points in the same area will overlap. The default position uses [position_circle_repel\(\)](#) to repel the points outwards with an amount controllable with its scale parameter.

Usage

```
geom_centroids(
  mapping = ggplot2::aes(),
  data = NULL,
  stat = "automap_coords",
  position = "circle_repel_sf",
  ...,
  fun.geometry = NULL,
  feature_type = NA,
  inset = NA,
  map_base = "clip",
  map_inset = "auto",
  na.rm = TRUE,
  show.legend = "point",
  inherit.aes = TRUE
)
```

Arguments

mapping, data, stat, position, na.rm, show.legend, inherit.aes,
fun.geometry, ...

See [ggplot2::stat_sf_coordinates\(\)](#).

- | | |
|--------------|---|
| feature_type | Type of map feature. See feature_types() for a list of registered types. If NA, the type is guessed based on the values in feature_names. |
| inset | Inset configuration; see configure_inset() . If NA (the default), this is inherited from the coord (see coord_sf_inset()). |
| map_base | Controls the layer with the base map. Possible values are "normal" to create a layer as though the inset were not specified, "clip" to create a layer with the inset viewport cut out, and "none" to prevent the insertion of a layer for the base map. |
| map_inset | Controls the layer with the inset map. Possible values are "auto" to choose the behaviour based on whether inset is specified, "normal" to create a layer with the viewport cut out and transformed, and "none" to prevent the insertion of a layer for the viewport map. |

Value

A ggplot layer.

Aesthetics

The location aesthetic is required. `geom_centroids()` understands the same aesthetics as `ggplot2::geom_point()`.

Examples

```
library(ggplot2)

cartographer::nc_type_example_2 |>
  head(n = 100) |>
  ggplot(aes(location = county)) +
  geom_boundaries(feature_type = "sf.nc") +
  geom_centroids(aes(colour = type), position = position_circle_repel_sf(scale = 6), size = 0.5) +
  coord_automap(feature_type = "sf.nc")
```

geom_choropleth	<i>Associate regions with counts</i>
-----------------	--------------------------------------

Description

Counts the number of occurrences of each location, then by default maps the count to the fill aesthetic. If your data has only one row per location and some other field that you'd like to map to aesthetics, use `geom_sf()` or `geom_sf_inset()` with `stat = "automap"` instead.

Usage

```
geom_choropleth(
  mapping = ggplot2::aes(),
  data = NULL,
  stat = "choropleth",
  position = "identity",
  ...,
  feature_type = NA,
  inset = NA,
  map_base = "normal",
  map_inset = "auto",
  na.rm = TRUE,
  show.legend = NA,
  inherit.aes = TRUE
)

stat_choropleth(
  mapping = NULL,
  data = NULL,
```

```

    geom = "sf",
    position = "identity",
    ...,
    feature_type = NA,
    na.rm = TRUE,
    show.legend = NA,
    inherit.aes = TRUE
  )

```

Arguments

mapping, data, stat, geom, position, na.rm, show.legend, inherit.aes, ...
 See [ggplot2::geom_sf\(\)](#).

feature_type Type of map feature. See [feature_types\(\)](#) for a list of registered types. If NA, the type is guessed based on the values in `feature_names`.

inset Inset configuration; see [configure_inset\(\)](#). If NA (the default), this is inherited from the coord (see [coord_sf_inset\(\)](#)).

map_base Controls the layer with the base map. Possible values are "normal" to create a layer as though the inset were not specified, "clip" to create a layer with the inset viewport cut out, and "none" to prevent the insertion of a layer for the base map.

map_inset Controls the layer with the inset map. Possible values are "auto" to choose the behaviour based on whether inset is specified, "normal" to create a layer with the viewport cut out and transformed, and "none" to prevent the insertion of a layer for the viewport map.

Details

Note that choropleths have a tendency to be misleading by emphasising geographically larger areas.

Value

A ggplot layer.

Aesthetics

The location aesthetic is required. `geom_choropleth()` understands the same aesthetics as [ggplot2::geom_sf\(\)](#).

Computed variables

count rows matching the region

geometry sf geometry column

... limits as computed by [ggplot2::stat_sf\(\)](#)

Examples

```
library(ggplot2)

cartographer::nc_type_example_2 |>
  ggplot(aes(location = county)) +
  geom_choropleth() +
  geom_boundaries(feature_type = "sf.nc") +
  scale_fill_steps(low = "#e6f9ff", high = "#00394d") +
  coord_automap(feature_type = "sf.nc")
```

geom_geoscatter

Place points randomly or in a grid within locations

Description

Each row of data is drawn as a single point inside the geographic area. This has similar strengths to a standard scatter plot, but has the potential to be misleading by implying that there is significance to the exact placement of the points.

Usage

```
geom_geoscatter(
  mapping = ggplot2::aes(),
  data = NULL,
  stat = "geoscatter",
  position = "identity",
  ...,
  feature_type = NA,
  sample_type = "random",
  inset = NA,
  map_base = "clip",
  map_inset = "auto",
  na.rm = TRUE,
  show.legend = "point",
  inherit.aes = TRUE
)

stat_geoscatter(
  mapping = NULL,
  data = NULL,
  geom = "sf_inset",
  position = "identity",
  ...,
  feature_type = NA,
  sample_type = "random",
  show.legend = NA,
  inherit.aes = TRUE
)
```

Arguments

mapping, data, stat, geom, position, na.rm, show.legend, inherit.aes, ...	See ggplot2::geom_sf() .
feature_type	Type of map feature. See feature_types() for a list of registered types. If NA, the type is guessed based on the values in feature_names.
sample_type	sampling type (see the type argument of sf::st_sample()). "random" will place points randomly inside the boundaries, whereas "regular" and "hexagonal" will evenly space points, leaving a small margin close to the boundaries.
inset	Inset configuration; see configure_inset() . If NA (the default), this is inherited from the coord (see coord_sf_inset()).
map_base	Controls the layer with the base map. Possible values are "normal" to create a layer as though the inset were not specified, "clip" to create a layer with the inset viewport cut out, and "none" to prevent the insertion of a layer for the base map.
map_inset	Controls the layer with the inset map. Possible values are "auto" to choose the behaviour based on whether inset is specified, "normal" to create a layer with the viewport cut out and transformed, and "none" to prevent the insertion of a layer for the viewport map.

Value

A ggplot layer.

Aesthetics

The location aesthetic is required. `geom_geoscatter()` understands the same aesthetics as [ggplot2::geom_point\(\)](#).

Computed variables

x longitude
y latitude

Examples

```
library(ggplot2)

cartographer::nc_type_example_2 |>
  ggplot(aes(location = county)) +
  geom_boundaries(feature_type = "sf.nc") +
  geom_geoscatter(aes(colour = type), size = 0.5) +
  coord_automap(feature_type = "sf.nc")
```

position_circle_repel *Pack overlapping points into a circle*

Description

This position looks for any points with identical x and y positions and packs them in a circle around the original point. The `_sf` version applies the position adjustment in projected coordinates.

Usage

```
position_circle_repel(scale = 1/4)

position_circle_repel_sf(scale = 10)
```

Arguments

scale	Scale of packing around the central point. This is in data units, so for the <code>_sf</code> variant it will depend on the units specified by the coordinate reference system.
-------	---

Details

Note that extreme choices of scale may cause errors.

The scale parameter can instead be specified as an aesthetic for geoms that support it (`geom_centroids()`). This allows different locations to have different scales, which is especially useful when combined with map insets.

Value

A ggplot position object.

Examples

```
library(ggplot2)

points <- data.frame(
  x = c(rep(1, 10), 1:3),
  y = c(rep(2, 10), 3:5),
  s = 0.05
)
ggplot(points, aes(x, y)) +
  geom_point(size = 3, colour = "red") +
  geom_point(position = position_circle_repel(0.05), size = 3, alpha = 0.5)

cartographer::nc_type_example_2 |>
  dplyr::filter(!county %in% c("HENDERSON", "GASTON", "LINCOLN")) |>
  ggplot(aes(location = county)) +
  geom_boundaries(feature_type = "sf.nc") +
  geom_centroids(aes(colour = type), position = position_circle_repel_sf(scale = 4), size = 0.2) +
  coord_automap(feature_type = "sf.nc")
```

stat_automap	<i>Attach spatial data with 'cartographer'</i>
--------------	--

Description

Use 'cartographer' to attach a spatial column to the data based on place names in another column. The result can then be used by `ggplot2::geom_sf()` or `ggmapinset::geom_sf_inset()`.

Usage

```
stat_automap(
  mapping = NULL,
  data = NULL,
  geom = "sf",
  position = "identity",
  ...,
  feature_type = NA,
  na.rm = TRUE,
  show.legend = NA,
  inherit.aes = TRUE
)
```

Arguments

`mapping`, `data`, `geom`, `position`, `na.rm`, `show.legend`, `inherit.aes`, ...
 See `ggplot2::geom_sf()`.

`feature_type` Type of map feature. See `feature_types()` for a list of registered types. If NA, the type is guessed based on the values in `feature_names`.

Value

A ggplot layer

Computed variables

geometry sf geometry column

... limits as computed by `ggplot2::stat_sf()`

Examples

```
library(ggplot2)

events <- data.frame(
  county = c("Mecklenburg", "Carteret", "Moore", "Caldwell"),
  proportion_A = c(0.1, 0.8, 0.0, 0.6)
)

ggplot(events, aes(location = county)) +
```

```
geom_sf(aes(fill = proportion_A), stat = "automap")

ggplot(events, aes(location = county)) +
  stat_automap(aes(fill = proportion_A)) +
  coord_automap(feature_type = "sf.nc")
```

stat_automap_coords *Attach coordinates with 'cartographer'*

Description

Use 'cartographer' to attach a spatial column to the data based on place names in another column. The spatial data is then reduced to coordinates in the same way as [stat_sf_coordinates\(\)](#).

Usage

```
stat_automap_coords(
  mapping = NULL,
  data = NULL,
  geom = "sf_inset",
  position = "identity",
  ...,
  feature_type = NA,
  na.rm = TRUE,
  inset = NA,
  fun.geometry = NULL,
  show.legend = NA,
  inherit.aes = TRUE
)
```

Arguments

mapping, data, geom, position, na.rm, show.legend, inherit.aes, fun.geometry, ...

See [ggplot2::stat_sf_coordinates\(\)](#).

feature_type Type of map feature. See [feature_types\(\)](#) for a list of registered types. If NA, the type is guessed based on the values in feature_names.

inset Inset configuration; see [configure_inset\(\)](#). If NA (the default), this is inherited from the coord (see [coord_sf_inset\(\)](#)).

Value

A plot layer

Computed variables

geometry sf geometry column representing the points
x X dimension of the simple feature
y Y dimension of the simple feature
x_inset X dimension of the simple feature after inset transformation
y_inset Y dimension of the simple feature after inset transformation
inside_inset logical indicating points inside the inset viewport
inset_scale 1 for points outside the inset, otherwise the configured inset scale parameter

See Also

[ggmapinset::stat_sf_coordinates_inset\(\)](#)

Examples

```
library(ggplot2)

events <- data.frame(
  county = c("Mecklenburg", "Carteret", "Moore", "Caldwell"),
  proportion_A = c(0.1, 0.8, 0.0, 0.6)
)

ggplot(events, aes(location = county)) +
  geom_sf(aes(fill = proportion_A), stat = "automap") +
  geom_label(aes(label = county), stat = "automap_coords") +
  coord_automap(feature_type = "sf.nc")
```

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