

# Package ‘ggpop’

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**Type** Package

**Title** Icon-Based Population Charts and Plots for 'ggplot2'

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**Description** Create engaging population and point plots charts in R. 'ggpop' allows users to represent population data and points proportionally using customizable icons, facilitating the creation of circular representative population charts as well as any point-plots.

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**URL** <https://jurjoraa.github.io/ggpop/>

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|               |                                                  |
|---------------|--------------------------------------------------|
| ggpop-package | <i>ggpop: Icon-Based Population Charts for R</i> |
|---------------|--------------------------------------------------|

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Description

ggpop is a ggplot2 extension for creating icon-based population charts and pictogram plots. Use [geom\\_pop\(\)](#) and [geom\\_icon\\_point\(\)](#) to visualize proportion and population data with 2,000+ Font Awesome icons.

Main functions

- [geom\\_pop\(\)](#) – proportional icon grids
- [geom\\_icon\\_point\(\)](#) – icon scatter plots
- [process\\_data\(\)](#) – prepare count data for plotting
- [fa\\_icons\(\)](#) – search Font Awesome icon names
- [theme\\_pop\(\)](#), [theme\\_pop\\_dark\(\)](#), [theme\\_pop\\_minimal\(\)](#) – built-in themes

**process\_data()**

Converts count data to one row per icon. group\_var and sum\_var are unquoted; high\_group\_var takes a character string for faceted charts.

```
df_plot <- process_data(  
  data      = data.frame(sex = c("Female", "Male"), n = c(55, 45)),  
  group_var = sex,  
  sum_var   = n,  
  sample_size = 20  
)
```

**geom\_pop()**

Draws icon grids. Add an icon column, map icon and color in `aes()`. Do not map `x` or `y`.

```
ggplot() +
  geom_pop(data = df_plot, aes(icon = icon, color = type), size = 2) +
  scale_color_manual(values = c(Female = "#C0392B", Male = "#2980B9")) +
  theme_pop()
```

**geom\_icon\_point()**

Drop-in replacement for `geom_point()` using Font Awesome icons.

```
ggplot(iris, aes(x = Sepal.Length, y = Petal.Length, color = Species)) +
  geom_icon_point(icon = "seedling", size = 1)
```

**fa\_icons()**

Search the bundled Font Awesome icon list by keyword.

```
fa_icons(query = "person")
```

**Themes**

Three built-in themes optimized for icon charts: `theme_pop()`, `theme_pop_dark()`, `theme_pop_minimal()`.

**Author(s)**

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**See Also**

Useful links:

- <https://jurjoraa.github.io/ggpop/>
- Report bugs at <https://github.com/jurjoraa/ggpop/issues>

**Examples**

```
library(ggplot2)
library(dplyr)

## -----
## geom_pop(): population icon grid
## -----
```

```

df_plot <- process_data(
  data      = data.frame(sex = c("Female", "Male"), n = c(55, 45)),
  group_var = sex,
  sum_var   = n,
  sample_size = 20
) %>%
  mutate(icon = ifelse(type == "Female", "person-dress", "person"))

ggplot() +
  geom_pop(data = df_plot, aes(icon = icon, color = type), size = 2) +
  scale_color_manual(values = c(Female = "#C0392B", Male = "#2980B9")) +
  theme_pop() +
  labs(title = "Population by sex", color = NULL)

## -----
## geom_icon_point(): icon scatter plot
## -----
ggplot(iris, aes(x = Sepal.Length, y = Petal.Length, color = Species)) +
  geom_icon_point(icon = "seedling", size = 1) +
  scale_color_manual(values = c(
    setosa      = "#43A047",
    versicolor = "#1E88E5",
    virginica   = "#E53935"
  )) +
  labs(title = "Iris dataset", x = "Sepal Length", y = "Petal Length")

```

---

fa\_icons

*Search and list Font Awesome icons*


---

## Description

Retrieves Font Awesome icon names, optionally filtered by a search query or category. Results can be returned as a plain character vector or as a tibble with category classification.

## Usage

```

fa_icons(
  query = NULL,
  category = NULL,
  regex = FALSE,
  classify = TRUE,
  include_unclassified = TRUE,
  class_map = NULL,
  primary_only = TRUE,
  as_vector = FALSE
)

```

**Arguments**

|                      |                                                                                                                                                                                                         |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| query                | Character string. Filter icons whose names contain query. Set to NULL (default) to return all icons. If regex = TRUE, query is treated as a Perl-compatible regular expression.                         |
| category             | Character vector. One or more category names to filter by. Run fa_categories() to see valid options. Setting category implies classify = TRUE.                                                          |
| regex                | Logical. When TRUE, query is interpreted as a Perl-compatible regular expression. Default FALSE (fixed-string match).                                                                                   |
| classify             | Logical. When TRUE (default), each icon is classified into categories using class_map and a primary_class column is included in the returned tibble. Ignored when as_vector = TRUE and category = NULL. |
| include_unclassified | Logical. When FALSE, icons that do not match any category pattern are dropped. Default TRUE.                                                                                                            |
| class_map            | A named list mapping category names to regex patterns. Defaults to the internal .fa_default_class_map().                                                                                                |
| primary_only         | Logical. When TRUE (default), the tibble contains only the primary_class column and omits all_classes.                                                                                                  |
| as_vector            | Logical. When TRUE, return a plain sorted character vector of icon names instead of a tibble. If category = NULL, classification is skipped entirely. Default FALSE.                                    |

**Value**

When as\_vector = TRUE, a sorted character vector of icon names. Otherwise a [tibble](#) with columns:

**icon** Icon name (character).

**primary\_class** Primary category the icon belongs to, or NA when unclassified (character).

**all\_classes** All matching categories (list-column of character vectors). Only present when primary\_only = FALSE.

**Examples**

```
# All icons as a classified tibble
fa_icons()

# Quick lookup -- plain sorted vector
head(fa_icons(as_vector = TRUE), 10)

# Search for icons whose name contains "heart"
fa_icons(query = "heart")

# Filter by category
fa_icons(category = "animals")

# Regex search -- all icons starting with "arrow"
```

```
fa_icons(query = "^arrow", regex = TRUE)
```

---

|                      |                                                 |
|----------------------|-------------------------------------------------|
| fetch_df_coordinates | <i>Fetches the df_coordinates_final Dataset</i> |
|----------------------|-------------------------------------------------|

---

### Description

Downloads and caches the df\_coordinates\_final dataset if it is not already cached locally. This function ensures that the dataset is downloaded only once and loaded into memory without cluttering the global environment. The dataset is stored in a package-specific cache directory and retrieved efficiently for subsequent uses.

### Usage

```
fetch_df_coordinates()
```

### Details

The dataset is downloaded from GitHub. The file is cached in a directory specific to the package, which is determined using [R\\_user\\_dir](#). If the dataset is already cached, it will be loaded directly from the cache instead of downloading again.

### Value

A data frame containing the df\_coordinates\_final dataset.

### Examples

```
df <- fetch_df_coordinates()
head(df)
```

---

|                 |                                                                        |
|-----------------|------------------------------------------------------------------------|
| geom_icon_point | <i>Create a scatter plot with Font Awesome icons instead of points</i> |
|-----------------|------------------------------------------------------------------------|

---

### Description

Works exactly like geom\_point(), but renders Font Awesome icons instead of dots. Pass any data with x and y variables - no special formatting required.

**Usage**

```
geom_icon_point(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  icon = NULL,
  size = 1,
  dpi = 50,
  legend_icons = TRUE,
  stroke_width = NULL,
  ...
)
```

**Arguments**

- |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mapping  | Set of aesthetic mappings created by <a href="#">aes()</a> . If specified and <code>inherit.aes = TRUE</code> (the default), it is combined with the default mapping at the top level of the plot. You must supply mapping if there is no plot mapping.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| data     | <p>The data to be displayed in this layer. There are three options:</p> <p>If <code>NULL</code>, the default, the data is inherited from the plot data as specified in the call to <a href="#">ggplot()</a>.</p> <p>A <code>data.frame</code>, or other object, will override the plot data. All objects will be fortified to produce a data frame. See <a href="#">fortify()</a> for which variables will be created.</p> <p>A function will be called with a single argument, the plot data. The return value must be a <code>data.frame</code>, and will be used as the layer data. A function can be created from a formula (e.g. <code>~ head(.x, 10)</code>).</p>                                                                                                      |
| stat     | <p>The statistical transformation to use on the data for this layer. When using a <code>geom_*()</code> function to construct a layer, the <code>stat</code> argument can be used to override the default coupling between geoms and stats. The <code>stat</code> argument accepts the following:</p> <ul style="list-style-type: none"> <li>• A <code>Stat</code> ggproto subclass, for example <code>StatCount</code>.</li> <li>• A string naming the stat. To give the stat as a string, strip the function name of the <code>stat_</code> prefix. For example, to use <code>stat_count()</code>, give the stat as <code>"count"</code>.</li> <li>• For more information and other ways to specify the stat, see the <a href="#">layer stat</a> documentation.</li> </ul> |
| position | <p>A position adjustment to use on the data for this layer. This can be used in various ways, including to prevent overplotting and improving the display. The <code>position</code> argument accepts the following:</p> <ul style="list-style-type: none"> <li>• The result of calling a position function, such as <code>position_jitter()</code>. This method allows for passing extra arguments to the position.</li> </ul>                                                                                                                                                                                                                                                                                                                                              |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | <ul style="list-style-type: none"> <li>• A string naming the position adjustment. To give the position as a string, strip the function name of the <code>position_</code> prefix. For example, to use <code>position_jitter()</code>, give the position as "jitter".</li> <li>• For more information and other ways to specify the position, see the <a href="#">layer position</a> documentation.</li> </ul> |
| <code>na.rm</code>        | logical, whether remove NA values                                                                                                                                                                                                                                                                                                                                                                             |
| <code>show.legend</code>  | Logical. Should this layer be included in the legends? NA (default) includes the layer if any aesthetics are mapped. FALSE suppresses the layer's legend entries entirely.                                                                                                                                                                                                                                    |
| <code>inherit.aes</code>  | If FALSE, overrides the default aesthetics, rather than combining with them. This is most useful for helper functions that define both data and aesthetics and shouldn't inherit behaviour from the default plot specification, e.g. <a href="#">annotation_borders()</a> .                                                                                                                                   |
| <code>icon</code>         | Default Font Awesome icon (default: NULL).                                                                                                                                                                                                                                                                                                                                                                    |
| <code>size</code>         | Default icon size (default: 1).                                                                                                                                                                                                                                                                                                                                                                               |
| <code>dpi</code>          | Icon resolution (default: 50).                                                                                                                                                                                                                                                                                                                                                                                |
| <code>legend_icons</code> | Show icons in legend (default: TRUE).                                                                                                                                                                                                                                                                                                                                                                         |
| <code>stroke_width</code> | Numeric. Width of the icon outline/stroke.                                                                                                                                                                                                                                                                                                                                                                    |
| <code>...</code>          | additional parameters                                                                                                                                                                                                                                                                                                                                                                                         |

### Value

A ggplot layer.

### Aesthetics

`geom_icon_point` uses standard ggplot2 scatter plot aesthetics:

- **x** - Numeric variable for x-axis
- **y** - Numeric variable for y-axis
- **icon** - Font Awesome icon name (optional, column or mapped)
- **color/colour** - Color grouping
- **alpha** - Transparency
- **size** - Icon size

### Examples

```
library(ggplot2)
data <- data.frame(
  x = rnorm(20),
  y = rnorm(20),
  category = sample(c("A", "B", "C"), 20, replace = TRUE),
  icon = sample(c("heart", "star", "circle"), 20, replace = TRUE)
)

# Map icon to a column
ggplot(data, aes(x = x, y = y, icon = icon, color = category)) +
```



```

geom_icon_point()

# Use a fixed icon
ggplot(data, aes(x = x, y = y, color = category)) +
  geom_icon_point(icon = "star")

```

geom\_pop

*Create a circular representative population chart***Description**

Draws a circular representative population chart based on group proportions, where each point (person) represents a fixed number of individuals. Each person is rendered as a Font Awesome icon.

**Usage**

```

geom_pop(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  icon = "ggmale",
  group_var = NULL,
  sample_size = NULL,
  arrange = FALSE,
  seed = NULL,
  sum_var = NULL,
  facet = NULL,
  size = 1,
  dpi = 50,
  legend_icons = TRUE,
  stroke_width = NULL,
  ...
)

```

**Arguments**

|         |                                                                                                                                                                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mapping | Set of aesthetic mappings created by <code>aes()</code> . If specified and <code>inherit.aes = TRUE</code> (the default), it is combined with the default mapping at the top level of the plot. You must supply mapping if there is no plot mapping. |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| data        | <p>The data to be displayed in this layer. There are three options:</p> <p>If <code>NULL</code>, the default, the data is inherited from the plot data as specified in the call to <code>ggplot()</code>.</p> <p>A <code>data.frame</code>, or other object, will override the plot data. All objects will be fortified to produce a data frame. See <code>fortify()</code> for which variables will be created.</p> <p>A function will be called with a single argument, the plot data. The return value must be a <code>data.frame</code>, and will be used as the layer data. A function can be created from a formula (e.g. <code>~ head(.x, 10)</code>).</p>                                                                                                                                                 |
| stat        | <p>The statistical transformation to use on the data for this layer. When using a <code>geom_*()</code> function to construct a layer, the <code>stat</code> argument can be used to override the default coupling between geoms and stats. The <code>stat</code> argument accepts the following:</p> <ul style="list-style-type: none"> <li>• A Stat ggproto subclass, for example <code>StatCount</code>.</li> <li>• A string naming the stat. To give the stat as a string, strip the function name of the <code>stat_</code> prefix. For example, to use <code>stat_count()</code>, give the stat as <code>"count"</code>.</li> <li>• For more information and other ways to specify the stat, see the <a href="#">layer stat</a> documentation.</li> </ul>                                                   |
| position    | <p>A position adjustment to use on the data for this layer. This can be used in various ways, including to prevent overplotting and improving the display. The <code>position</code> argument accepts the following:</p> <ul style="list-style-type: none"> <li>• The result of calling a position function, such as <code>position_jitter()</code>. This method allows for passing extra arguments to the position.</li> <li>• A string naming the position adjustment. To give the position as a string, strip the function name of the <code>position_</code> prefix. For example, to use <code>position_jitter()</code>, give the position as <code>"jitter"</code>.</li> <li>• For more information and other ways to specify the position, see the <a href="#">layer position</a> documentation.</li> </ul> |
| na.rm       | logical, whether remove NA values                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| show.legend | <p>logical. Should this layer be included in the legends? <code>NA</code>, the default, includes if any aesthetics are mapped. <code>FALSE</code> never includes, and <code>TRUE</code> always includes. It can also be a named logical vector to finely select the aesthetics to display. To include legend keys for all levels, even when no data exists, use <code>TRUE</code>. If <code>NA</code>, all levels are shown in legend, but unobserved levels are omitted.</p>                                                                                                                                                                                                                                                                                                                                     |
| inherit.aes | <p>If <code>FALSE</code>, overrides the default aesthetics, rather than combining with them. This is most useful for helper functions that define both data and aesthetics and shouldn't inherit behaviour from the default plot specification, e.g. <code>annotation_borders()</code>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| icon        | Default icon to use when no icon column is mapped.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| group_var   | (Deprecated) Use <code>aes(group = ...)</code> instead.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| sample_size | The total number of individuals (points) to draw.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| arrange     | Logical; if <code>TRUE</code> , output data is arranged by group.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| seed        | Optional numeric seed used only when <code>arrange = FALSE</code> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| sum_var     | Optional variable to sum over instead of counting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|              |                                                                                                                                                  |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| facet        | Optional faceting variable. If provided, final plot must be faceted with <code>ggplot2</code> (use <code>validate_geom_pop_faceting(p)</code> ). |
| size         | Icon size. If mapped in <code>aes(size = ...)</code> the parameter is ignored.                                                                   |
| dpi          | Height (in <b>pixels</b> ) of the rendered PNG when using <code>fontawesome::fa_png()</code> . Higher values produce sharper icons.              |
| legend_icons | Logical; if TRUE, legend displays the selected icons.                                                                                            |
| stroke_width | Numeric. Width of the icon outline in pixels (single value).                                                                                     |
| ...          | additional parameters                                                                                                                            |

### Value

A ggplot layer that renders a circular population chart with icons.

### Aesthetics

`geom_pop` understands the following aesthetics:

- **icon**: Font Awesome icon name (mapped column)
- **group**: grouping variable for raw data mode
- **color/colour**: icon color
- **alpha**: transparency (must be mapped)
- **size**: icon size (mapped or fixed)

### See Also

[geom\\_icon\\_point](#), [process\\_data](#), [geom\\_image](#)

### Examples

```
library(ggplot2)

df <- data.frame(
  sex = rep(c("F", "M"), each = 10),
  icon = rep(c("female", "male"), each = 10)
)

ggplot() +
  geom_pop(
    data = df,
    aes(icon = icon, group = sex, color = sex),
    size = 3,
    dpi = 80
  )
```

process\_data

*Process Population Data for Visualization***Description**

The `process_data` function processes a dataset to calculate group proportions and generates a sampled dataset based on specified parameters. This processed data is suitable for creating visual representations, such as population charts, where each sample represents a group with associated counts and proportions.

**Usage**

```
process_data(
  data,
  high_group_var = NULL,
  group_var,
  sum_var = NULL,
  sample_size = 100
)
```

**Arguments**

|                             |                                                                                                                                                                                                                        |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>data</code>           | A data frame containing the population data to be processed.                                                                                                                                                           |
| <code>high_group_var</code> | Character vector, optional. The variables used to group individuals hierarchically. This should be a categorical variable. If provided, the function samples individuals within each group defined by these variables. |
| <code>group_var</code>      | Quosure. The variable used to group individuals in the dataset. This should be a categorical variable.                                                                                                                 |
| <code>sum_var</code>        | Quosure, optional. The variable to sum over within each group. If NULL, the function counts the number of individuals per group.                                                                                       |
| <code>sample_size</code>    | Integer. The total number of individuals to sample based on group proportions. Must be a positive integer.                                                                                                             |

**Value**

A tibble (data frame) with the following columns:

**type** The sampled group type.

**group** The group identifier.

**n** The count of individuals in the group.

**prop** The proportion of the group relative to the total population.

---

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| scale_legend_icon | <i>Legend helper for geom_pop/geom_icon_point legends</i> |
|-------------------|-----------------------------------------------------------|

---

## Description

A convenience function to set appropriate legend key sizes for icon-based legends. This is equivalent to using `theme(legend.key.size = ...)` but provides sensible defaults for population icon plots.

## Usage

```
scale_legend_icon(  
  size = 10,  
  unit = "mm",  
  spacing = 0.2,  
  size_multiplier = 2,  
  ...  
)
```

## Arguments

|                 |                                                                                |
|-----------------|--------------------------------------------------------------------------------|
| size            | Numeric. Legend key size in specified units (default 10).                      |
| unit            | Character. Unit for legend key sizing (default "mm").                          |
| spacing         | Numeric. Spacing between legend items as fraction of size (default 0.2).       |
| size_multiplier | Numeric. Multiplier to apply to the size for spacing calculations (default 2). |
| ...             | Additional theme arguments.                                                    |

## Value

A ggplot2 theme object that can be added to a plot.

## Examples

```
library(ggplot2)  
df <- data.frame(  
  type = rep(c("A", "B"), each = 10),  
  icon = rep(c("circle", "square"), each = 10)  
)  
ggplot(df, aes(icon = icon, color = type)) +  
  geom_pop() +  
  scale_legend_icon(size = 20)
```

---

 theme\_pop

*Population Plot Theme*


---

## Description

A minimal theme optimized for icon-based population plots. Similar to `theme_void()` but with automatic legend key sizing, appropriate margins, and sensible defaults for population visualizations.

## Usage

```
theme_pop(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22,
  legend_icon_size = NULL,
  legend_spacing = NULL,
  plot_margin = NULL,
  legend_position = "right"
)
```

## Arguments

|                               |                                                                                                                                                        |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>base_size</code>        | Base font size in points (default: 11).                                                                                                                |
| <code>base_family</code>      | Base font family (default: "").                                                                                                                        |
| <code>base_line_size</code>   | Base size for line elements (default: <code>base_size/22</code> ).                                                                                     |
| <code>base_rect_size</code>   | Base size for rect elements (default: <code>base_size/22</code> ).                                                                                     |
| <code>legend_icon_size</code> | Size of legend icons in cm. If NULL (default), automatically calculated as <code>base_size/20</code> for proportional sizing.                          |
| <code>legend_spacing</code>   | Spacing between legend items in cm (default: <code>0.3 * legend_icon_size</code> ).                                                                    |
| <code>plot_margin</code>      | Plot margins. Default: <code>margin(5.5, 5.5, 5.5, 5.5, "pt")</code> . Can be a single numeric (applied to all sides) or <code>margin()</code> object. |
| <code>legend_position</code>  | Position of legend: "none", "left", "right", "bottom", "top" (default: "right").                                                                       |

## Value

A `ggplot2` theme object.

## Examples

```
library(ggplot2)
df <- data.frame(
  type = rep(c("A", "B"), each = 10),
  icon = rep(c("circle", "square"), each = 10)
```

```

)
ggplot(data = df, aes(icon = icon, color = type)) +
  geom_pop(size = 1) +
  theme_pop()

```

---

theme\_pop\_dark

*Dark Population Plot Theme*


---

## Description

A dark variant of theme\_pop() with white text on black background. Perfect for presentations or dark-mode visualizations.

## Usage

```

theme_pop_dark(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22,
  legend_icon_size = NULL,
  legend_spacing = NULL,
  plot_margin = NULL,
  legend_position = "right",
  bg_color = "black",
  text_color = "white"
)

```

## Arguments

|                  |                                                                                                                             |
|------------------|-----------------------------------------------------------------------------------------------------------------------------|
| base_size        | Base font size in points (default: 11).                                                                                     |
| base_family      | Base font family (default: "").                                                                                             |
| base_line_size   | Base size for line elements (default: base_size/22).                                                                        |
| base_rect_size   | Base size for rect elements (default: base_size/22).                                                                        |
| legend_icon_size | Size of legend icons in cm. If NULL (default), automatically calculated as base_size/20 for proportional sizing.            |
| legend_spacing   | Spacing between legend items in cm (default: 0.3 * legend_icon_size).                                                       |
| plot_margin      | Plot margins. Default: margin(5.5, 5.5, 5.5, 5.5, "pt"). Can be a single numeric (applied to all sides) or margin() object. |
| legend_position  | Position of legend: "none", "left", "right", "bottom", "top" (default: "right").                                            |
| bg_color         | Background color (default: "black").                                                                                        |
| text_color       | Text color (default: "white").                                                                                              |

**Value**

A ggplot2 theme object.

**Examples**

```
library(ggplot2)
df <- data.frame(
  type = rep(c("A", "B"), each = 10),
  icon = rep(c("circle", "square"), each = 10)
)
ggplot(data = df, aes(icon = icon, color = type)) +
  geom_pop(size = 1) +
  theme_pop_dark(base_size = 40)
```

---

|                   |                                      |
|-------------------|--------------------------------------|
| theme_pop_minimal | <i>Minimal Population Plot Theme</i> |
|-------------------|--------------------------------------|

---

**Description**

An ultra-minimal variant with no margins or legend, perfect for icon arrays without annotations.

**Usage**

```
theme_pop_minimal(base_size = 11, base_family = "")
```

**Arguments**

|             |                                         |
|-------------|-----------------------------------------|
| base_size   | Base font size in points (default: 11). |
| base_family | Base font family (default: "").         |

**Value**

A ggplot2 theme object.

**Examples**

```
library(ggplot2)
df <- data.frame(
  type = rep(c("A", "B"), each = 10),
  icon = rep(c("circle", "square"), each = 10)
)
ggplot(data = df, aes(icon = icon, color = type)) +
  geom_pop(size = 1) +
  theme_pop_minimal()
```



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