

# Package ‘ggdiceplot’

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**Title** Dice Plot Visualization for 'ggplot2'

**Version** 0.1.1

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**Description** Provides 'ggplot2' extensions for creating dice-based visualizations where each dot position represents a specific categorical variable. The package includes `geom_dice()` for displaying presence/absence of categorical variables using traditional dice patterns. Each dice position (1-6) represents a different category, with dots shown only when that category is present. This allows intuitive visualization of up to 6 categorical variables simultaneously.

**License** MIT + file LICENSE

**Encoding** UTF-8

**RoxygenNote** 7.3.2

**URL** <https://github.com/maflot/ggdiceplot>

**BugReports** <https://github.com/maflot/ggdiceplot/issues>

**Imports** ggplot2 (>= 3.4.0), grid, legendry, scales

**LazyData** true

**Depends** R (>= 4.1.0), dplyr

**NeedsCompilation** no

**Repository** CRAN

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**Description**

`geom_dice()` creates a layer that displays dice-like symbols where each dot represents a specific category. Dots are only shown when that categorical variable is present in the data, allowing compact visual encoding.

**Usage**

```
geom_dice(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  ndots = NULL,
  x_length = NULL,
  y_length = NULL,
  na.rm = FALSE,
  show.legend = TRUE,
  inherit.aes = TRUE,
  ...
)
```

**Arguments**

|                          |                                                                                                                                                                                                                                                                     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>mapping</code>     | Set of aesthetic mappings created by <code>aes()</code> . Must include: <ul style="list-style-type: none"> <li><code>x</code>, <code>y</code>: Position of the dice.</li> <li><code>dots</code>: The categories present (usually as a string or factor).</li> </ul> |
| <code>data</code>        | A data frame. If <code>NULL</code> , inherits from the plot.                                                                                                                                                                                                        |
| <code>stat</code>        | The statistical transformation to use.                                                                                                                                                                                                                              |
| <code>position</code>    | Position adjustment.                                                                                                                                                                                                                                                |
| <code>ndots</code>       | Integer (1–6): number of positions shown per dice.                                                                                                                                                                                                                  |
| <code>x_length</code>    | <code>x_length</code> Numeric: used for aspect ratio.                                                                                                                                                                                                               |
| <code>y_length</code>    | <code>y_length</code> Numeric: used for aspect ratio.                                                                                                                                                                                                               |
| <code>na.rm</code>       | Remove missing values if <code>TRUE</code> .                                                                                                                                                                                                                        |
| <code>show.legend</code> | Whether to include in legend.                                                                                                                                                                                                                                       |
| <code>inherit.aes</code> | If <code>FALSE</code> , overrides the default aesthetics.                                                                                                                                                                                                           |
| <code>...</code>         | Additional arguments passed to <code>layer()</code> .                                                                                                                                                                                                               |

**Value**

A `ggplot2` layer that draws dice with categorical dot encodings.

Examples

```
library(ggplot2)

df <- data.frame(
  x = 1:3,
  y = 1,
  dots = c("A,B", "A,C,E", "F")
)

ggplot(df, aes(x, y, dots = dots)) +
  geom_dice(ndots = 6, x_length = 3, y_length = 1)
```

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|              |                                   |
|--------------|-----------------------------------|
| make_offsets | <i>Calculate Dice Dot Offsets</i> |
|--------------|-----------------------------------|

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Description

Computes the (x, y) offset positions for drawing dots on dice faces.

Usage

```
make_offsets(n, width = 0.5, height = 0.5, pad = 0.1)
```

Arguments

- n Integer from 1 to 6, indicating the number of dots on the die face.
- width Total width of the die face (default: 0.5).
- height Total height of the die face (default: 0.5).
- pad Padding to apply around the dot grid (default: 0.1).

Value

A data.frame with key, x, and y columns indicating dot positions.

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|                   |                                                    |
|-------------------|----------------------------------------------------|
| sample_dice_data1 | <i>Sample Dice Dataset for Basic Visualization</i> |
|-------------------|----------------------------------------------------|

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Description

A toy dataset for demonstrating the geom\_dice() function. It simulates log fold-change (LFC) and adjusted p-values (q-values) for oral taxa across disease types and specimen sites.

Usage

```
data("sample_dice_data1")
```

**Format**

A data frame with 48 rows and 5 variables:

taxon character. Microbial taxon name

disease character. Disease condition (Caries, Periodontitis, Healthy, Gingivitis)

specimen character. Body site specimen (Saliva, Plaque)

lfc numeric. Simulated log2 fold change value

q numeric. Simulated adjusted p-value (q-value)

**Details**

This dataset contains simulated microbiome data across different oral health conditions and specimen types. It is designed to demonstrate basic dice plot functionality with categorical mapping of diseases to dice positions.

**Source**

Simulated data for package demonstration purposes.

**Examples**

```
data(sample_dice_data1)
head(sample_dice_data1)

# Basic dice plot example
library(ggplot2)
ggplot(sample_dice_data1, aes(x = specimen, y = taxon)) +
  geom_dice(aes(dots = disease, fill = lfc, size = -log10(q)),
            ndots = 4, show.legend = TRUE)
```

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|                   |                                     |
|-------------------|-------------------------------------|
| sample_dice_data2 | <i>Extended Sample Dice Dataset</i> |
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**Description**

An extended toy dataset for demonstrating advanced geom\_dice() functionality with missing data handling and more complex scenarios.

**Usage**

```
data("sample_dice_data2")
```

**Format**

A data frame with variables:

taxon character. Microbial taxon name

disease character. Disease condition

specimen character. Body site specimen

replicate numeric. Replicate number

lfc numeric. Log2 fold change value (may contain NA)

q numeric. Adjusted p-value (q-value, may contain NA)

**Details**

This dataset extends sample\_dice\_data1 with additional complexity including missing values and edge cases. It is designed to demonstrate how dice plots handle missing data and various data preprocessing scenarios.

**Source**

Simulated data for package demonstration purposes.

**Examples**

```
data(sample_dice_data2)
head(sample_dice_data2)

# Example with missing data handling
library(ggplot2)
ggplot(sample_dice_data2, aes(x = specimen, y = taxon)) +
  geom_dice(aes(dots = disease, fill = lfc, size = -log10(q)),
            ndots = 4, na.rm = TRUE, show.legend = TRUE)
```

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|                   |                                                     |
|-------------------|-----------------------------------------------------|
| sample_dice_large | <i>Large Sample Dataset for Performance Testing</i> |
|-------------------|-----------------------------------------------------|

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**Description**

A larger toy dataset for testing geom\_dice() performance and demonstrating scalability with bigger datasets.

**Usage**

```
data("sample_dice_large")
```

**Format**

A data frame with variables:

taxon character. Microbial taxon name  
 disease character. Disease condition  
 specimen character. Body site specimen  
 replicate numeric. Replicate number  
 lfc numeric. Log2 fold change value  
 q numeric. Adjusted p-value (q-value)

**Details**

This dataset contains a larger number of observations than the basic sample datasets. It is designed to test performance and demonstrate how dice plots scale with larger data, including automatic sizing and boundary validation.

**Source**

Simulated data for package demonstration purposes.

**Examples**

```
data(sample_dice_large)
head(sample_dice_large)
dim(sample_dice_large)

# Example with larger dataset
library(ggplot2)
ggplot(sample_dice_large, aes(x = specimen, y = taxon)) +
  geom_dice(aes(dots = disease, fill = lfc, size = -log10(q)),
            ndots = 6, na.rm = TRUE, show.legend = TRUE) +
  theme_minimal() +
  theme(axis.text.y = element_text(size = 8))
```

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scale\_dots\_discrete     *Discrete Scale for Dice Dot Colors*

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**Description**

Creates a ggplot2 discrete scale for dice dot aesthetics.

**Usage**

```
scale_dots_discrete(..., aesthetics = "dots")
```

**Arguments**

- ... Passed to `ggplot2::discrete_scale()`
- aesthetics Character string of the target aesthetic (default: "dots")

**Value**

A ggplot2 scale

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|            |                               |
|------------|-------------------------------|
| theme_dice | <i>Dice Theme for ggplot2</i> |
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**Description**

A minimal ggplot2 theme for dice plots.

**Usage**

`theme_dice(x_length, y_length, ...)`

**Arguments**

- x\_length Width of the plotting area (kept for compatibility)
- y\_length Height of the plotting area (kept for compatibility)
- ... Additional arguments passed to `theme_grey()`

**Value**

A ggplot2 theme

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