

Package ‘ggridges’

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Type Package

Title Ridgeline Plots in 'ggplot2'

Version 0.5.1

Description Ridgeline plots provide a convenient way of visualizing changes in distributions over time or space. This package enables the creation of such plots in 'ggplot2'.

URL <https://github.com/lauswilke/ggridges>

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Catalan_elections *Results from Catalan regional elections (1980-2015)*

Description

Data from Catalan regional elections for 949 municipalities, from 11 elections spanning the years 1980-2015. The data was obtained and processed from Idescat.cat by Marc Belzunces (Twitter: @marcbeldata).

Usage

Catalan_elections

Format

A tibble with 20764 rows and 4 variables:

Municipality

Year

Option The voter option; either "Indy" or "Unionist"

Percent The percentage of the voters choosing the given option

geom_density_line	<i>Smoothed density estimates drawn with a ridgeline rather than area</i>
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Description

This function is a drop-in replacement for ggplot2's `geom_density()`. The only difference is that the geom draws a ridgeline (line with filled area underneath) rather than a polygon.

Usage

```
geom_density_line(mapping = NULL, data = NULL, stat = "density",  
  position = "identity", ..., na.rm = FALSE, show.legend = NA,  
  inherit.aes = TRUE)
```

Arguments

mapping	Set of aesthetic mappings created by <code>aes()</code> or <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	The data to be displayed in this layer. There are three options: If <code>NULL</code> , the default, the data is inherited from the plot data as specified in the call to <code>ggplot()</code> . 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. 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.
stat	The statistical transformation to use on the data for this layer, as a string.
position	Position adjustment, either as a string, or the result of a call to a position adjustment function.
...	Other arguments passed on to <code>layer()</code> . These are often aesthetics, used to set an aesthetic to a fixed value, like <code>colour = "red"</code> or <code>size = 3</code> . They may also be parameters to the paired geom/stat.
na.rm	If <code>FALSE</code> , the default, missing values are removed with a warning. If <code>TRUE</code> , missing values are silently removed.
show.legend	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.
inherit.aes	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>borders()</code> .

See Also

See `geom_density()`.

Examples

```
library(ggplot2)
ggplot(diamonds, aes(carat)) +
  geom_density_line()

ggplot(diamonds, aes(carat)) +
  geom_density_line(adjust = 1/5)
ggplot(diamonds, aes(carat)) +
  geom_density_line(adjust = 5)

ggplot(diamonds, aes(depth, colour = cut)) +
  geom_density_line(alpha = 0.5) +
  xlim(55, 70)
ggplot(diamonds, aes(depth, fill = cut, colour = cut)) +
  geom_density_line(alpha = 0.1) +
  xlim(55, 70)
```

geom_density_ridges *Create ridgeline plot*

Description

geom_density_ridges arranges multiple density plots in a staggered fashion, as in the cover of the famous Joy Division album Unknown Pleasures.

Usage

```
geom_density_ridges(mapping = NULL, data = NULL,
  stat = "density_ridges", position = "points_sina",
  panel_scaling = TRUE, na.rm = FALSE, show.legend = NA,
  inherit.aes = TRUE, ...)

geom_density_ridges2(mapping = NULL, data = NULL,
  stat = "density_ridges", position = "points_sina",
  panel_scaling = TRUE, na.rm = FALSE, show.legend = NA,
  inherit.aes = TRUE, ...)
```

Arguments

mapping	Set of aesthetic mappings created by <code>aes()</code> or <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	The data to be displayed in this layer. There are three options: If <code>NULL</code> , the default, the data is inherited from the plot data as specified in the call to <code>ggplot()</code> . A <code>data.frame</code> , or other object, will override the plot data. 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.

<code>stat</code>	The statistical transformation to use on the data for this layer, as a string.
<code>position</code>	Position adjustment, either as a string, or the result of a call to a position adjustment function.
<code>panel_scaling</code>	If TRUE, the default, relative scaling is calculated separately for each panel. If FALSE, relative scaling is calculated globally.
<code>na.rm</code>	If FALSE, the default, missing values are removed with a warning. If TRUE, missing values are silently removed.
<code>show.legend</code>	logical. Should this layer be included in the legends? NA, the default, includes if any aesthetics are mapped. FALSE never includes, and TRUE always includes.
<code>inherit.aes</code>	If FALSE, overrides the default aesthetics, rather than combining with them.
<code>...</code>	other arguments passed on to <code>layer()</code> . These are often aesthetics, used to set an aesthetic to a fixed value, like <code>color = "red"</code> or <code>size = 3</code> . They may also be parameters to the paired geom/stat.

Details

By default, this geom calculates densities from the point data mapped onto the x axis. If density calculation is not wanted, use `stat="identity"` or use `geom_ridgeline`. The difference between `geom_density_ridges` and `geom_ridgeline` is that `geom_density_ridges` will provide automatic scaling of the ridgelines (controlled by the `scale` aesthetic), whereas `geom_ridgeline` will plot the data as is. Note that when you set `stat="identity"`, the `height` aesthetic must be provided.

Note that the default `stat_density_ridges` makes joint density estimation across all datasets. This may not generate the desired result when using faceted plots. As an alternative, you can set `stat = "density"` to use `stat_density`. In this case, it is required to add the aesthetic mapping `height = ..density..` (see examples).

Aesthetics

Required aesthetics are in bold.

- `x`
- `y`
- `group` Defines the grouping. Not needed if a categorical variable is mapped onto `y`, but needed otherwise. Will typically be the same variable as is mapped to `y`.
- `height` The height of each ridgeline at the respective `x` value. Automatically calculated and provided by `stat_density_ridges` if the default `stat` is not changed.
- `scale` A scaling factor to scale the height of the ridgelines relative to the spacing between them. A value of 1 indicates that the maximum point of any ridgeline touches the baseline right above, assuming even spacing between baselines.
- `rel_min_height` Lines with heights below this cutoff will be removed. The cutoff is measured relative to the overall maximum, so `rel_min_height=0.01` would remove everything that is 1% or less than the highest point among all ridgelines. Default is 0, so nothing is removed.
- `alpha`
- `colour`, `fill`, `group`, `alpha`, `linetype`, `size`, as in `geom_ridgeline`.
- `point_shape`, `point_colour`, `point_size`, `point_fill`, `point_alpha`, `point_stroke`, as in `geom_ridgeline`.

Examples

```

library(ggplot2)

# set the `rel_min_height` argument to remove tails
ggplot(iris, aes(x = Sepal.Length, y = Species)) +
  geom_density_ridges(rel_min_height = 0.005) +
  scale_y_discrete(expand = c(0.01, 0)) +
  scale_x_continuous(expand = c(0.01, 0)) +
  theme_ridges()

# set the `scale` to determine how much overlap there is among the plots
ggplot(diamonds, aes(x = price, y = cut)) +
  geom_density_ridges(scale = 4) +
  scale_y_discrete(expand = c(0.01, 0)) +
  scale_x_continuous(expand = c(0.01, 0)) +
  theme_ridges()

# the same figure with colors, and using the ggplot2 density stat
ggplot(diamonds, aes(x = price, y = cut, fill = cut, height = ..density..)) +
  geom_density_ridges(scale = 4, stat = "density") +
  scale_y_discrete(expand = c(0.01, 0)) +
  scale_x_continuous(expand = c(0.01, 0)) +
  scale_fill_brewer(palette = 4) +
  theme_ridges() + theme(legend.position = "none")

# use geom_density_ridges2() instead of geom_density_ridges() for solid polygons
ggplot(iris, aes(x = Sepal.Length, y = Species)) +
  geom_density_ridges2() +
  scale_y_discrete(expand = c(0.01, 0)) +
  scale_x_continuous(expand = c(0.01, 0)) +
  theme_ridges()

```

geom_ridgeline

Plot a ridgeline (line with filled area underneath)

Description

Plots the sum of the y and height aesthetics versus x, filling the area between y and y + height with a color. Thus, the data mapped onto y and onto height must be in the same units. If you want relative scaling of the heights, you can use [geom_density_ridges](#) with stat = "identity".

Usage

```

geom_ridgeline(mapping = NULL, data = NULL, stat = "identity",
  position = "identity", na.rm = FALSE, show.legend = NA,
  inherit.aes = TRUE, ...)

```

Arguments

mapping	Set of aesthetic mappings created by <code>aes()</code> or <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	The data to be displayed in this layer. There are three options: If <code>NULL</code> , the default, the data is inherited from the plot data as specified in the call to <code>ggplot()</code> . A <code>data.frame</code> , or other object, will override the plot data. 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.
stat	The statistical transformation to use on the data for this layer, as a string.
position	Position adjustment, either as a string, or the result of a call to a position adjustment function.
na.rm	If <code>FALSE</code> , the default, missing values are removed with a warning. If <code>TRUE</code> , missing values are silently removed.
show.legend	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.
inherit.aes	If <code>FALSE</code> , overrides the default aesthetics, rather than combining with them.
...	other arguments passed on to <code>layer()</code> . These are often aesthetics, used to set an aesthetic to a fixed value, like <code>color = "red"</code> or <code>size = 3</code> . They may also be parameters to the paired geom/stat.

Details

In addition to drawing ridgelines, this geom can also draw points if they are provided as part of the dataset. The stat `stat_density_ridges()` takes advantage of this option to generate ridgeline plots with overlaid jittered points.

Aesthetics

Required aesthetics are in bold.

- **x**
- **y**
- **height** Height of the ridgeline, measured from the respective y value. Assumed to be positive, though this is not required.
- **group** Defines the grouping. Required when the dataset contains multiple distinct ridgelines. Will typically be the same variable as is mapped to y.
- **scale** A scaling factor to scale the height of the ridgelines. A value of 1 indicates that the heights are taken as is. This aesthetic can be used to convert height units into y units.
- **min_height** A height cutoff on the drawn ridgelines. All values that fall below this cutoff will be removed. The main purpose of this cutoff is to remove long tails right at the baseline level, but other uses are possible. The cutoff is applied before any height scaling is applied via the `scale` aesthetic. Default is 0, so negative values are removed.

- `colour` Color of the ridgeline
- `fill` Fill color of the area under the ridgeline
- `alpha` Transparency level of fill. Not applied to color. If you want transparent lines, you can set their color as RGBA value, e.g. #FF0000A0 for partially transparent red.
- `group` Grouping, to draw multiple ridgelines from one dataset
- `linetype` Linetype of the ridgeline
- `size` Line thickness
- `point_shape`, `point_colour`, `point_size`, `point_fill`, `point_alpha`, `point_stroke` Aesthetics applied to points drawn in addition to ridgelines.

Examples

```
library(ggplot2)

d <- data.frame(x = rep(1:5, 3), y = c(rep(0, 5), rep(1, 5), rep(3, 5)),
               height = c(0, 1, 3, 4, 0, 1, 2, 3, 5, 4, 0, 5, 4, 4, 1))
ggplot(d, aes(x, y, height = height, group = y)) + geom_ridgeline(fill="lightblue")
```

```
geom_ridgeline_gradient
```

Plot ridgelines and ridgeline plots with fill gradients along the x axis

Description

The geoms `geom_ridgeline_gradient` and `geom_density_ridges_gradient` work just like `geom_ridgeline` and `geom_density_ridges` except that the fill aesthetic can vary along the x axis. Because filling with color gradients is fraught with issues, these geoms should be considered experimental. Don't use them unless you really need to. Note that due to limitations in R's graphics system, transparency (`alpha`) has to be disabled for gradient fills.

Usage

```
geom_ridgeline_gradient(mapping = NULL, data = NULL,
  stat = "identity", position = "identity", na.rm = FALSE,
  gradient_lwd = 0.5, show.legend = NA, inherit.aes = TRUE, ...)
```

```
geom_density_ridges_gradient(mapping = NULL, data = NULL,
  stat = "density_ridges", position = "points_sina",
  panel_scaling = TRUE, na.rm = TRUE, gradient_lwd = 0.5,
  show.legend = NA, inherit.aes = TRUE, ...)
```


Arguments

mapping	Set of aesthetic mappings created by <code>aes()</code> or <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	The data to be displayed in this layer. There are three options: If <code>NULL</code> , the default, the data is inherited from the plot data as specified in the call to <code>ggplot()</code> . A <code>data.frame</code> , or other object, will override the plot data. 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.
stat	The statistical transformation to use on the data for this layer, as a string.
position	Position adjustment, either as a string, or the result of a call to a position adjustment function.
na.rm	If <code>FALSE</code> , the default, missing values are removed with a warning. If <code>TRUE</code> , missing values are silently removed.
gradient_lwd	A parameter to needed to remove rendering artifacts inside the rendered gradients. Should ideally be 0, but often needs to be around 0.5 or higher.
show.legend	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.
inherit.aes	If <code>FALSE</code> , overrides the default aesthetics, rather than combining with them.
...	other arguments passed on to <code>layer()</code> . These are often aesthetics, used to set an aesthetic to a fixed value, like <code>color = "red"</code> or <code>size = 3</code> . They may also be parameters to the paired geom/stat.
panel_scaling	Argument only to <code>geom_density_ridges_gradient</code> . If <code>TRUE</code> , the default, relative scaling is calculated separately for each panel. If <code>FALSE</code> , relative scaling is calculated globally.

Examples

```
library(ggplot2)

# Example for `geom_ridgeline_gradient()`
library(viridis)
d <- data.frame(x = rep(1:5, 3) + c(rep(0, 5), rep(0.3, 5), rep(0.6, 5)),
               y = c(rep(0, 5), rep(1, 5), rep(3, 5)),
               height = c(0, 1, 3, 4, 0, 1, 2, 3, 5, 4, 0, 5, 4, 4, 1))
ggplot(d, aes(x, y, height = height, group = y, fill = factor(x+y))) +
  geom_ridgeline_gradient() +
  scale_fill_viridis(discrete = TRUE, direction = -1) +
  theme(legend.position = 'none')

# Example for `geom_density_ridges_gradient()`
ggplot(lincoln_weather, aes(x = `Mean Temperature [F]`, y = `Month`, fill = ..x..)) +
  geom_density_ridges_gradient(scale = 3, rel_min_height = 0.01) +
  scale_x_continuous(expand = c(0.01, 0)) +
  scale_y_discrete(expand = c(0.01, 0)) +
```

```
scale_fill_viridis(name = "Temp. [F]", option = "C") +
labs(title = 'Temperatures in Lincoln NE in 2016') +
theme_ridges(font_size = 13, grid = TRUE) + theme(axis.title.y = element_blank())
```

geom_vridgeline *Plot a vertical ridgeline (ridgeline rotated 90 degrees)*

Description

Plots the sum of the x and width aesthetics versus y, filling the area between x and x + width with a color. Just like `geom_ridgeline()`, but with y and x replaced.

Usage

```
geom_vridgeline(mapping = NULL, data = NULL, stat = "identity",
  position = "identity", na.rm = FALSE, show.legend = NA,
  inherit.aes = TRUE, ...)
```

Arguments

mapping	Set of aesthetic mappings created by <code>aes()</code> or <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	The data to be displayed in this layer. There are three options: If NULL, the default, the data is inherited from the plot data as specified in the call to <code>ggplot()</code> . A data.frame, or other object, will override the plot data. A function will be called with a single argument, the plot data. The return value must be a data.frame., and will be used as the layer data.
stat	The statistical transformation to use on the data for this layer, as a string.
position	Position adjustment, either as a string, or the result of a call to a position adjustment function.
na.rm	If FALSE, the default, missing values are removed with a warning. If TRUE, missing values are silently removed.
show.legend	logical. Should this layer be included in the legends? NA, the default, includes if any aesthetics are mapped. FALSE never includes, and TRUE always includes.
inherit.aes	If FALSE, overrides the default aesthetics, rather than combining with them.
...	other arguments passed on to <code>layer()</code> . These are often aesthetics, used to set an aesthetic to a fixed value, like <code>color = "red"</code> or <code>size = 3</code> . They may also be parameters to the paired geom/stat.

Aesthetics

Required aesthetics are in bold.

- **x**
- **y**
- **width** Width of the ridgeline, measured from the respective **x** value. Assumed to be positive, though this is not required.
- **group** Defines the grouping. Required when the dataset contains multiple distinct ridgelines. Will typically be the same variable as is mapped to **x**.
- **scale** A scaling factor to scale the widths of the ridgelines. A value of 1 indicates that the widths are taken as is. This aesthetic can be used to convert width units into **x** units.
- **min_width** A width cutoff on the drawn ridgelines. All values that fall below this cutoff will be removed. The main purpose of this cutoff is to remove long tails right at the baseline level, but other uses are possible. The cutoff is applied before any width scaling is applied via the **scale** aesthetic. Default is 0, so negative values are removed.
- **color** Color of the ridgeline
- **fill** Fill color of the area under the ridgeline
- **alpha** Transparency level of **fill**. Not applied to **color**. If you want transparent lines, you can set their color as RGBA value, e.g. #FF0000A0 for partially transparent red.
- **group** Grouping, to draw multiple ridgelines from one dataset
- **linetype** Linetype of the ridgeline
- **size** Line thickness

Examples

```
library(ggplot2)

d <- data.frame(y = rep(1:5, 3), x = c(rep(0, 5), rep(1, 5), rep(3, 5)),
              width = c(0, 1, 3, 4, 0, 1, 2, 3, 5, 4, 0, 5, 4, 4, 1))
ggplot(d, aes(x, y, width = width, group = x)) + geom_vridgeline(fill="lightblue")

ggplot(iris, aes(x=Species, y=Sepal.Width, width = ..density.., fill=Species)) +
  geom_vridgeline(stat="ydensity", trim=FALSE, alpha = 0.85, scale = 2)
```

ggridges

Ridgeline plots with ggplot2

Description

Please see the package vignettes for usage instructions. For a quick start, check out the examples for [geom_density_ridges\(\)](#).

lincoln_weather	<i>Weather in Lincoln, Nebraska in 2016.</i>
-----------------	--

Description

A dataset containing weather information from Lincoln, Nebraska, from 2016. Originally downloaded from Weather Underground by Austin Wehrwein, <http://austinwehrwein.com/>. The variables are listed below. Most are self-explanatory. Max, mean, and min measurements are calculated relative to the specific day of measurement.

Usage

```
lincoln_weather
```

Format

A tibble with 366 rows and 24 variables:

```
CST Day of the measurement
Max Temperature [F]
Mean Temperature [F]
Min Temperature [F]
Max Dew Point [F]
Mean Dew Point [F]
Min Dewpoint [F]
Max Humidity
Mean Humidity
Min Humidity
Max Sea Level Pressure [In]
Mean Sea Level Pressure [In]
Min Sea Level Pressure [In]
Max Visibility [Miles]
Mean Visibility [Miles]
Min Visibility [Miles]
Max Wind Speed [MPH]
Mean Wind Speed [MPH]
Max Gust Speed [MPH]
Precipitation [In]
CloudCover
Events Specific weather events, such as rain, snow, or fog
WindDir [Degrees]
Month The month in which the measurement was taken
```

`position_points_jitter`*Randomly jitter the points in a ridgeline plot*

Description

This is a position adjustment specifically for `geom_density_ridges()` and related geoms. It only jitters the points drawn by these geoms, if any. If no points are present, the plot remains unchanged. The effect is similar to `position_jitter()`: points are randomly shifted up and down and/or left and right.

Usage

```
position_points_jitter(width = 0, height = 0.2, yoffset = 0,
  adjust_vlines = FALSE, seed = NULL)
```

Arguments

<code>width</code>	Width for horizontal jittering. By default set to 0.
<code>height</code>	Height for vertical jittering, applied in both directions (up and down). By default 0.2.
<code>yoffset</code>	Vertical offset applied in addition to jittering.
<code>adjust_vlines</code>	If TRUE, adjusts vertical lines (as are drawn for quantile lines, for example) to align with the point cloud.
<code>seed</code>	Random seed. If set to NULL, the current random number generator is used. If set to NA, a new random random seed is generated. If set to a number, this number is used as seed for jittering only.

See Also

Other position adjustments for ridgeline plots: [position_points_sina](#), [position_raincloud](#)

Examples

```
library(ggplot2)

# default jittered points
ggplot(iris, aes(x = Sepal.Length, y = Species)) +
  geom_density_ridges(jittered_points = TRUE, position = "points_jitter", alpha = 0.7)

# simulating a rug
ggplot(iris, aes(x = Sepal.Length, y = Species)) +
  geom_density_ridges(jittered_points = TRUE, point_shape = '|', alpha = 0.7, point_size = 2,
    position = position_points_jitter(width = 0.02, height = 0))
```

position_points_sina *Randomly distribute points in a ridgeline plot between baseline and ridgeline*

Description

This is a position adjustment specifically for `geom_density_ridges()` and related geoms. It only jitters the points drawn by these geoms, if any. If no points are present, the plot remains unchanged. The effect is similar to a sina plot: Points are randomly distributed to fill the entire shaded area representing the data density.

Usage

```
position_points_sina(rel_min = 0.02, rel_max = 0.98, seed = NULL)
```

Arguments

`rel_min` The relative minimum value at which a point can be placed.
`rel_max` The relative maximum value at which a point can be placed.
`seed` See [position_points_jitter](#).

See Also

Other position adjustments for ridgeline plots: [position_points_jitter](#), [position_raincloud](#)

Examples

```
library(ggplot2)

ggplot(iris, aes(x = Sepal.Length, y = Species)) +
  geom_density_ridges(jittered_points = TRUE, position = "points_sina", alpha = 0.7)
```

position_raincloud *Create a cloud of randomly jittered points below a ridgeline plot*

Description

This is a position adjustment specifically for `geom_density_ridges()` and related geoms. It only jitters the points drawn by these geoms, if any. If no points are present, the plot remains unchanged. The effect is similar to [position_points_jitter\(\)](#), only that by default the points lie all underneath the baseline of each individual ridgeline.

Usage

```
position_raincloud(width = 0, height = 0.4, ygap = 0.05,
  adjust_vlines = FALSE, seed = NULL)
```

Arguments

width	Width for horizontal jittering. By default set to 0.
height	Total height of point cloud. By default 0.4.
ygap	Vertical gap between ridgeline baseline and point cloud.
adjust_vlines	If TRUE, adjusts vertical lines (as are drawn for quantile lines, for example) to align with the point cloud.
seed	Random seed. See position_points_jitter .

Details

The idea for this position adjustment comes from Micah Allen, who proposed this type of plot in a [blog post](#) on March 15, 2018.

See Also

Other position adjustments for ridgeline plots: [position_points_jitter](#), [position_points_sina](#)

Examples

```
library(ggplot2)

ggplot(iris, aes(x = Sepal.Length, y = Species)) +
  geom_density_ridges(jittered_points = TRUE, position = "raincloud", alpha = 0.7)
```

reduce	<i>Reduce a list to a single value by iteratively applying a binary function</i>
--------	--

Description

Inspired by `reduce()` from the `purrr` package

Usage

```
reduce(.x, .f, ..., .init)
```

Arguments

.x	A list or atomic vector.
.f	A 2-argument function. The function will be passed the accumulated value as the first argument and the "next" value as the second argument.
...	Additional arguments passed on to .f.
.init	If supplied, will be used as the first value to start the accumulation, rather than using <code>x[[1]]</code> . This is useful if you want to ensure that <code>reduce</code> returns a correct value when <code>.x</code> is empty. If missing, and <code>x</code> is empty, will throw an error.

Author(s)

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```
# Cyclical scales are also available for the various other aesthetics
ggplot(diamonds, aes(x = price, y = cut, fill = cut,
                    color = cut, size = cut,
                    alpha = cut, linetype = cut)) +
  geom_density_ridges(scale = 4, fill = "blue") +
  scale_fill_cyclical(values = c("blue", "green")) +
  scale_color_cyclical(values = c("black", "white")) +
  scale_size_cyclical(values = c(2, 1)) +
  scale_alpha_cyclical(values = c(0.4, 0.8)) +
  scale_linetype_cyclical(values = c(1, 2))
```

scale_discrete_manual *Generic discrete manual scale*

Description

Generic discrete manual scale. This scale can be used to manually set the values for any aesthetics, and it is equivalent to [scale_colour_manual\(\)](#), [scale_fill_manual\(\)](#), etc. For example, instead of writing `scale_colour_manual(values = c(...))`, we can write `scale_discrete_manual("colour", values = c(...))`.

Usage

```
scale_discrete_manual(aesthetics, ..., values)
```

Arguments

aesthetics	The aesthetics for which this scale should be used
...	Other parameters handed off to discrete_scale
values	List of values to be used as palette

See Also

See [scale_point_color_hue\(\)](#) for specific scales for point aesthetics and [scale_vline_color_hue\(\)](#) for specific scales for vline aesthetics.

Examples

```
library(ggplot2)

ggplot(iris, aes(x=Sepal.Length, y=Species, fill = Species)) +
  geom_density_ridges(aes(point_color = Species, point_fill = Species,
                        point_shape = Species),
                    alpha = .2, jittered_points = TRUE) +
  scale_fill_manual(values = c("#0072b2", "#D55E00", "#009e73")) +
  scale_discrete_manual("point_color", values = c("#0072b2", "#D55E00", "#009e73")) +
  scale_discrete_manual("point_fill", values = c("#0072b280", "#D55E0080", "#009e7380")) +
  scale_discrete_manual("point_shape", values = c(21, 22, 23)) +
  theme_ridges()
```

`scale_point`*Scales for point aesthetics*

Description

These are various scales that can be applied to point aesthetics, such as `point_color`, `point_fill`, `point_size`. The individual scales all have the same usage as existing standard ggplot2 scales, only the name differs.

See Also

See [scale_vline_color_hue\(\)](#) for specific scales for vline aesthetics and [scale_discrete_manual\(\)](#) for a general discrete scale.

Examples

```
library(ggplot2)

# default scales
ggplot(iris, aes(x=Sepal.Length, y=Species, fill = Species)) +
  geom_density_ridges(
    aes(
      point_color = Species, point_fill = Species,
      point_shape = Species
    ),
    alpha = .4, jittered_points = TRUE
  ) +
  theme_ridges()

# modified scales
ggplot(iris, aes(x=Sepal.Length, y=Species, fill = Species)) +
  geom_density_ridges(
    aes(
      point_color = Species, point_fill = Species,
      point_shape = Species
    ),
    alpha = .4, point_alpha = 1,
    jittered_points = TRUE
  ) +
  scale_fill_hue(l = 50) +
  scale_point_color_hue(l = 20) +
  scale_point_fill_hue(l = 70) +
  scale_discrete_manual("point_shape", values = c(21, 22, 23)) +
  theme_ridges()
```

Description

These are various scales that can be applied to vline aesthetics, such as `vline_color`, `vline_size`, `vline_linetype`. The individual scales all have the same usage as existing standard ggplot2 scales, only the name differs.

See Also

See [scale_point_color_hue\(\)](#) for specific scales for point aesthetics and [scale_discrete_manual\(\)](#) for a general discrete scale.

Examples

```
library(ggplot2)

# default scales
ggplot(iris, aes(x=Sepal.Length, y=Species, fill = Species, color = Species)) +
  geom_density_ridges(
    aes(vline_color = Species, vline_linetype = Species),
    alpha = .4, quantile_lines = TRUE
  ) +
  theme_ridges()

# modified scales
ggplot(iris, aes(x=Sepal.Length, y=Species, fill = Species, color = Species)) +
  geom_density_ridges(
    aes(vline_color = Species),
    alpha = .4, quantile_lines = TRUE
  ) +
  scale_fill_hue(l = 50) +
  scale_vline_color_hue(l = 30) +
  theme_ridges()
```

Description

Works like `stat_bin` except that the output is a ridgeline describing the histogram rather than a set of counts.

Usage

```
stat_binline(mapping = NULL, data = NULL, geom = "density_ridges",
  position = "identity", ..., binwidth = NULL, bins = NULL,
  center = NULL, boundary = NULL, breaks = NULL,
  closed = c("right", "left"), pad = TRUE, draw_baseline = TRUE,
  na.rm = FALSE, show.legend = NA, inherit.aes = TRUE)
```

Arguments

mapping	Set of aesthetic mappings created by <code>aes()</code> or <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	The data to be displayed in this layer. There are three options: If <code>NULL</code> , the default, the data is inherited from the plot data as specified in the call to <code>ggplot()</code> . 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. 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.
geom	Use to override the default connection between <code>geom_histogram()/geom_freqpoly()</code> and <code>stat_bin()</code> .
position	Position adjustment, either as a string, or the result of a call to a position adjustment function.
...	Other arguments passed on to <code>layer()</code> . These are often aesthetics, used to set an aesthetic to a fixed value, like <code>colour = "red"</code> or <code>size = 3</code> . They may also be parameters to the paired <code>geom/stat</code> .
binwidth	The width of the bins. Can be specified as a numeric value, or a function that calculates width from <code>x</code> . The default is to use <code>bins</code> bins that cover the range of the data. You should always override this value, exploring multiple widths to find the best to illustrate the stories in your data. The bin width of a date variable is the number of days in each time; the bin width of a time variable is the number of seconds.
bins	Number of bins. Overridden by <code>binwidth</code> . Defaults to 30.
center	bin position specifiers. Only one, <code>center</code> or <code>boundary</code> , may be specified for a single plot. <code>center</code> specifies the center of one of the bins. <code>boundary</code> specifies the boundary between two bins. Note that if either is above or below the range of the data, things will be shifted by the appropriate integer multiple of width. For example, to center on integers use <code>width = 1</code> and <code>center = 0</code> , even if <code>0</code> is outside the range of the data. Alternatively, this same alignment can be specified with <code>width = 1</code> and <code>boundary = 0.5</code> , even if <code>0.5</code> is outside the range of the data.
boundary	bin position specifiers. Only one, <code>center</code> or <code>boundary</code> , may be specified for a single plot. <code>center</code> specifies the center of one of the bins. <code>boundary</code> specifies the boundary between two bins. Note that if either is above or below the range

of the data, things will be shifted by the appropriate integer multiple of width. For example, to center on integers use `width = 1` and `center = 0`, even if `0` is outside the range of the data. Alternatively, this same alignment can be specified with `width = 1` and `boundary = 0.5`, even if `0.5` is outside the range of the data.

<code>breaks</code>	Alternatively, you can supply a numeric vector giving the bin boundaries. Overrides <code>binwidth</code> , <code>bins</code> , <code>center</code> , and <code>boundary</code> .
<code>closed</code>	One of "right" or "left" indicating whether right or left edges of bins are included in the bin.
<code>pad</code>	If TRUE, adds empty bins at either end of <code>x</code> . This ensures that the binline always goes back down to 0. Defaults to TRUE.
<code>draw_baseline</code>	If FALSE, removes lines along 0 counts. Defaults to TRUE.
<code>na.rm</code>	If FALSE, the default, missing values are removed with a warning. If TRUE, missing values are silently removed.
<code>show.legend</code>	logical. Should this layer be included in the legends? NA, the default, includes if any aesthetics are mapped. FALSE never includes, and TRUE always includes. It can also be a named logical vector to finely select the aesthetics to display.
<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. <code>borders()</code> .

Examples

```
library(ggplot2)

ggplot(iris, aes(x = Sepal.Length, y = Species, group = Species, fill = Species)) +
  geom_density_ridges(stat = "binline", bins = 20, scale = 2.2) +
  scale_y_discrete(expand = c(0.01, 0)) +
  scale_x_continuous(expand = c(0.01, 0)) +
  theme_ridges()

ggplot(iris, aes(x = Sepal.Length, y = Species, group = Species, fill = Species)) +
  stat_binline(bins = 20, scale = 2.2, draw_baseline = FALSE) +
  scale_y_discrete(expand = c(0.01, 0)) +
  scale_x_continuous(expand = c(0.01, 0)) +
  scale_fill_grey() +
  theme_ridges() + theme(legend.position = 'none')

require(ggplot2movies)
require(viridis)
ggplot(movies[movies$year>1989,], aes(x = length, y = year, fill = factor(year))) +
  stat_binline(scale = 1.9, bins = 40) +
  theme_ridges() + theme(legend.position = "none") +
  scale_x_continuous(limits = c(1, 180), expand = c(0.01, 0)) +
  scale_y_reverse(expand = c(0.01, 0)) +
  scale_fill_viridis(begin = 0.3, discrete = TRUE, option = "B") +
  labs(title = "Movie lengths 1990 - 2005")

count_data <- data.frame(group = rep(letters[1:5], each = 10),
```

```

      mean = rep(1:5, each = 10))
count_data$group <- factor(count_data$group, levels = letters[5:1])
count_data$count <- rpois(nrow(count_data), count_data$mean)
ggplot(count_data, aes(x = count, y = group, group = group)) +
  geom_density_ridges2(stat = "binline", aes(fill = group), binwidth = 1, scale = 0.95) +
  geom_text(stat = "bin",
    aes(y = group+0.9*..count../max(..count..),
      label = ifelse(..count..>0, ..count.., ""),
      vjust = 1.2, size = 3, color = "white", binwidth = 1) +
  theme_ridges(grid = FALSE) +
  scale_x_continuous(breaks = c(0:12), limits = c(-.5, 13), expand = c(0, 0)) +
  scale_y_discrete(expand = c(0.01, 0)) +
  scale_fill_cyclical(values = c("#0000B0", "#7070D0")) +
  guides(y = "none")

```

stat_density_ridges *Stat for density ridgeline plots*

Description

This stat is the default stat used by [geom_density_ridges](#). It is very similar to [stat_density](#), however there are a few differences. Most importantly, the density bandwidth is chosen across the entire dataset.

Usage

```

stat_density_ridges(mapping = NULL, data = NULL,
  geom = "density_ridges", position = "identity", na.rm = FALSE,
  show.legend = NA, inherit.aes = TRUE, bandwidth = NULL,
  from = NULL, to = NULL, jittered_points = FALSE,
  quantile_lines = FALSE, calc_ecdf = FALSE, quantiles = 4,
  quantile_fun = quantile, ...)

```

Arguments

mapping	Set of aesthetic mappings created by aes() or aes_() . 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	The data to be displayed in this layer. There are three options: If <code>NULL</code> , the default, the data is inherited from the plot data as specified in the call to ggplot() . A <code>data.frame</code> , or other object, will override the plot data. 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.
geom	The geometric object to use to display the data.
position	Position adjustment, either as a string, or the result of a call to a position adjustment function.

na.rm	If FALSE, the default, missing values are removed with a warning. If TRUE, missing values are silently removed.
show.legend	logical. Should this layer be included in the legends? NA, the default, includes if any aesthetics are mapped. FALSE never includes, and TRUE always includes.
inherit.aes	If FALSE, overrides the default aesthetics, rather than combining with them.
bandwidth	Bandwidth used for density calculation. If not provided, is estimated from the data.
from, to	The left and right-most points of the grid at which the density is to be estimated, as in density() . If not provided, there are estimated from the data range and the bandwidth.
jittered_points	If TRUE, carries the original point data over to the processed data frame, so that individual points can be drawn by the various ridgeline geoms. The specific position of these points is controlled by various position objects, e.g. position_points_sina() or position_raincloud() .
quantile_lines	If TRUE, enables the drawing of quantile lines. Overrides the <code>calc_ecdf</code> setting and sets it to TRUE.
calc_ecdf	If TRUE, <code>stat_density_ridges</code> calculates an empirical cumulative distribution function (ecdf) and returns a variable <code>ecdf</code> and a variable <code>quantile</code> . Both can be mapped onto aesthetics via <code>..ecdf..</code> and <code>..quantile..</code> , respectively.
quantiles	Sets the number of quantiles the data should be broken into. Used if either <code>calc_ecdf = TRUE</code> or <code>quantile_lines = TRUE</code> . If <code>quantiles</code> is an integer then the data will be cut into that many equal quantiles. If it is a vector of probabilities then the data will cut by them.
quantile_fun	Function that calculates quantiles. The function needs to accept two parameters, a vector <code>x</code> holding the raw data values and a vector <code>probs</code> providing the probabilities that define the quantiles. Default is <code>quantile</code> .
...	other arguments passed on to layer() . These are often aesthetics, used to set an aesthetic to a fixed value, like <code>color = "red"</code> or <code>size = 3</code> . They may also be parameters to the paired geom/stat.

Examples

```
library(ggplot2)

# Examples of coloring by ecdf or quantiles
library(viridis)
ggplot(iris, aes(x=Sepal.Length, y=Species, fill=factor(..quantile..))) +
  stat_density_ridges(geom = "density_ridges_gradient", calc_ecdf = TRUE,
                    quantiles = 5) +
  scale_fill_viridis(discrete = TRUE, name = "Quintiles") + theme_ridges() +
  scale_y_discrete(expand = c(0.01, 0))

ggplot(iris, aes(x=Sepal.Length, y=Species, fill=0.5 - abs(0.5-..ecdf..))) +
  stat_density_ridges(geom = "density_ridges_gradient", calc_ecdf = TRUE) +
  scale_fill_viridis(name = "Tail probability", direction = -1) + theme_ridges() +
  scale_y_discrete(expand = c(0.01, 0))
```

```
ggplot(iris, aes(x=Sepal.Length, y=Species, fill=factor(..quantile..))) +
  stat_density_ridges(geom = "density_ridges_gradient",
    calc_ecdf = TRUE, quantiles = c(0.025, 0.975)) +
  scale_fill_manual(name = "Probability",
    values = c("#FF0000A0", "#A0A0A0A0", "#0000FFA0"),
    labels = c("(0, 0.025]", "(0.025, 0.975]", "(0.975, 1]")) +
  theme_ridges() + scale_y_discrete(expand = c(0.01, 0))
```

 theme_ridges

A custom theme specifically for use with ridgeline plots

Description

This theme has some special modifications that make ridgeline plots look better, such as properly aligned y axis labels. It can draw plots with and without background grids (see examples).

Usage

```
theme_ridges(font_size = 14, font_family = "", line_size = 0.5,
  grid = TRUE, center_axis_labels = FALSE)
```

Arguments

font_size	Overall font size. Default is 14.
font_family	Default font family.
line_size	Default line size.
grid	If TRUE (default), a background grid is drawn. If FALSE, background is left empty.
center_axis_labels	If TRUE, axis labels are drawn centered. If FALSE (default), axis labels are drawn right/top-aligned.

Value

The theme.

Examples

```
library(ggplot2)

# Example with background grid
ggplot(iris, aes(x = Sepal.Length, y = Species, group = Species)) +
  geom_density_ridges(rel_min_height = 0.005) +
  scale_y_discrete(expand = c(0.01, 0)) +
  scale_x_continuous(expand = c(0.01, 0)) +
  theme_ridges()
```



```
# Example without background grid
ggplot(iris, aes(x = Sepal.Length, y = Species, group = Species)) +
  geom_density_ridges() +
  scale_y_discrete(expand = c(0.01, 0)) +
  scale_x_continuous(expand = c(0.01, 0)) +
  theme_ridges(grid = FALSE)
```

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