# Package 'ggside'

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**Type** Package

**Title** Side Grammar Graphics

**Version** 0.4.1

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**Description** The grammar of graphics as shown in 'ggplot2' has provided an expressive API for users to build plots. 'ggside' extends 'ggplot2' by allowing users to add graphical information about one of the main panel's axis using a familiar 'ggplot2' style API with tidy data. This package is particularly useful for visualizing metadata on a discrete axis, or summary graphics on a continuous axis such as a boxplot or a density distribution.

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**URL** https://github.com/jtlandis/ggside

**BugReports** https://github.com/jtlandis/ggside/issues

**Encoding** UTF-8

**RoxygenNote** 7.3.3

**VignetteBuilder** knitr

**Depends** R (>= 4.1), ggplot2 (>= 4.0.0)

**Imports** grid, gtable, rlang, scales (>= 1.3.0), cli, glue, stats, tibble, vctrs, S7, lifecycle

**Suggests** tidyr, dplyr, testthat (>= 3.0.3), knitr, rmarkdown, vdiffr (>= 1.0.0), ggdendro, viridis, waldo

**Config/testthat/edition** 3

**Config/testthat/parallel** true

**Config/testthat/start-first** all_ggside_layers, *themes

**Collate** 'utils-ggproto.R' 'utils-calls.R' 'utils-ggplot2-reimpl-.R' 'utils-constructors.R' 'side-layer.R' 'constructor-.R' 'utils-.R' 'ggside.R' 'utils-side-facet.R' 'side-facet_.R' 'utils-side-coord.R' 'side-coord-cartesian.R' 'add_gg.R' 'ggplot_add.R' 'side-layout-.r' 'all_classes.r' 'geom-sideabline.r' 'geom-sidebar.r' 'geom-sideboxplot.r'

'geom-sidecol.r' 'geom-sidedensity.r' 'geom-sidefreqpoly.r'
'geom-sidefunction.r' 'geom-sidehistogram.r' 'geom-sidehline.r'
'geom-sidelabel.r' 'geom-sideline.r' 'geom-sidepath.r'
'geom-sidepoint.r' 'geom-sidesegment.r' 'geom-sidetext.r'
'geom-sidetile.r' 'geom-sideviolin.r' 'geom-sidevline.r'
'ggside-ggproto.r' 'ggside-package.r' 'ggside-themes.R'
'plot-construction.R' 'position_rescale.r' 'scales-sides-.R'
'scales-xycolour.R' 'scales-xyfill.R'
'utils-ggplot2-reimpl-facet.R' 'side-facet-wrap.R'
'side-facet-grid.R' 'side-facet-null.R' 'stats.r'
'update_ggplot.R' 'z-depricated.R' 'zzz.R'

**NeedsCompilation** no

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**Repository** CRAN

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`as_ggside` *Explicit conversion to ggside object*

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## Description

Function is only exported for possible extensions to ggside. ggplot2 objects are implicitly converted to ggside objects by 'adding' a ggside object such as a `ggside_layer` object.

## Usage

```
as_ggside(x, ...)

## Default S3 method:
as_ggside(x, ...)

## S3 method for class 'ggplot'
as_ggside(x, ggside = NULL, ...)

## S3 method for class '`ggside::ggside`'
as_ggside(x, ggside = NULL, ...)

## S3 method for class 'ggside'
as_ggside(x, ggside = NULL, ...)
```

## Arguments

| | |
|---|---|
| `x` | an object to convert |
| `...` | unused argument |
| `ggside` | new ggside object to add |

`check_scales_collapse` *Extending base ggproto classes for ggside*

## Description

`check_scales_collapse` is a helper function that is meant to be called after the inherited Facet's compute_layout method

`sidePanelLayout` is a helper function that is meant to be called after the inherited Facet's compute_layout method and after `check_scales_collapse`

S3 class that converts old Facet into one that is compatible with ggside. Can also update ggside on the object. Typically, the new ggproto will inherit from the object being replaced.

## Usage

```
check_scales_collapse(data, params)

sidePanelLayout(layout, ggside)

ggside_facet(facet, ggside)
```

## Arguments

| | |
|---|---|
| `data` | data passed through ggproto object |
| `params` | parameters passed through ggproto object |
| `layout` | layout computed by inherited ggproto Facet compute_layout method |
| `ggside` | ggside object to update |
| `facet` | Facet ggproto Object to replace |

## Value

ggproto object that can be added to a ggplot object

## Extended Facets

The following is a list ggplot2 facets that are available to use by ggside base.

- FacetNull -> FacetSideNull
- FacetGrid -> FacetSideGrid
- FacetWrap -> FacetSideWrap

## class_definitions *Class Definitions*

### Description

This documentation provides an overview of the S7 and ggproto classes used in the ggside package.

### ggproto classes

- class_ggside_opt is a subclass of class_ggproto and is more described in the ggside-options documentation.
- class_ggside_layer is a subclass of class_ggproto and is more described in the ggside-layers documentation.
- class_ggside_scale is a subclass of class_ggproto and is more described in the ggside-scales documentation.

### S7 classes

- class_ggside is a subclass of ggplot2's class_ggplot and is used to represent a ggplot object with ggside options.

## geom_xsideabline *Side Reference lines*

### Description

The xside and yside variants of geom_abline, geom_hline and geom_vline are geom_*abline, geom_*hline, and geom_*vline.

### Usage

```
geom_xsideabline(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  ...,
  slope,
  intercept,
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = FALSE
)

geom_ysideabline(
```

```
  mapping = NULL,
  data = NULL,
  stat = "identity",
  ...,
  slope,
  intercept,
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = FALSE
)

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

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

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

geom_ysidevline(
```

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

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). |
| data | The data to be displayed in this layer. There are three options:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount.<br>• A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".<br>• For more information and other ways to specify the stat, see the layer stat documentation. |
| ... | Other arguments passed on to layer()'s params argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the position argument, or aesthetics that are required can *not* be passed through .... Unknown arguments that are not part of the 4 categories below are ignored.<br>• Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, colour = "red" or linewidth = 3. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the params. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.<br>• When constructing a layer using a stat_*() function, the ... argument can be used to pass on parameters to the geom part of the layer. An example |

of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.

- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `....` This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes` 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. `annotation_borders()`.

`position` 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 `position` argument accepts the following:

- The result of calling a position function, such as `position_jitter()`. This method allows for passing extra arguments to the position.
- A string naming the position adjustment. To give the position as a string, strip the function name of the `position_` prefix. For example, to use `position_jitter()`, give the position as `"jitter"`.
- For more information and other ways to specify the position, see the layer position documentation.

`xintercept`, `yintercept`, `slope`, `intercept`
Parameters that control the position of the line specifically for the xside or yside variants. If these are set, `data`, `mapping` and `show.legend` are overridden.

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`geom_xsidebar` *Side bar Charts*

---

## Description

The xside and yside variants of geom_bar is geom_xsidebar and geom_ysidebar. These variants both inherit from geom_bar and only differ on where they plot data relative to main panels.

The xside and yside variants of geom_col is geom_xsidecol and geom_ysidecol. These variants both inherit from geom_col and only differ on where they plot data relative to main panels.

## Usage

```
geom_xsidebar(
  mapping = NULL,
  data = NULL,
  stat = "count",
  position = "stack",
  ...,
  just = 0.5,
  lineend = "butt",
  linejoin = "mitre",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  orientation = "x"
)

geom_ysidebar(
  mapping = NULL,
  data = NULL,
  stat = "count",
  position = "stack",
  ...,
  just = 0.5,
  lineend = "butt",
  linejoin = "mitre",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  orientation = "y"
)

geom_xsidecol(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "stack",
  ...,
  just = 0.5,
  lineend = "butt",
  linejoin = "mitre",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

geom_ysidecol(
  mapping = NULL,
  data = NULL,
```

```
  stat = "identity",
  position = "stack",
  ...,
  just = 0.5,
  lineend = "butt",
  linejoin = "mitre",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  orientation = "y"
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by `aes()`. If specified and `inherit.aes = TRUE` (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:<br>If `NULL`, the default, the data is inherited from the plot data as specified in the call to `ggplot()`.<br>A `data.frame`, or other object, will override the plot data. All objects will be fortified to produce a data frame. See `fortify()` for which variables will be created.<br>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. A `function` can be created from a `formula` (e.g. `~ head(.x, 10)`). |
| stat | The statistical transformation to use on the data for this layer. When using a `geom_*()` function to construct a layer, the `stat` argument can be used to override the default coupling between geoms and stats. The `stat` argument accepts the following:<br>• A `Stat` ggproto subclass, for example `StatCount`.<br>• A string naming the stat. To give the stat as a string, strip the function name of the `stat_` prefix. For example, to use `stat_count()`, give the stat as `"count"`.<br>• For more information and other ways to specify the stat, see the layer stat documentation. |
| position | 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 `position` argument accepts the following:<br>• The result of calling a position function, such as `position_jitter()`. This method allows for passing extra arguments to the position.<br>• A string naming the position adjustment. To give the position as a string, strip the function name of the `position_` prefix. For example, to use `position_jitter()`, give the position as `"jitter"`.<br>• For more information and other ways to specify the position, see the layer position documentation. |

`...` Other arguments passed on to `layer()`'s `params` argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the `position` argument, or aesthetics that are required can *not* be passed through `...`. Unknown arguments that are not part of the 4 categories below are ignored.

- Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, `colour = "red"` or `linewidth = 3`. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the `params`. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.
- When constructing a layer using a `stat_*()` function, the `...` argument can be used to pass on parameters to the `geom` part of the layer. An example of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `...`. This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`just` Adjustment for column placement. Set to `0.5` by default, meaning that columns will be centered about axis breaks. Set to `0` or `1` to place columns to the left/right of axis breaks. Note that this argument may have unintended behaviour when used with alternative positions, e.g. `position_dodge()`.

`lineend` Line end style (round, butt, square).

`linejoin` Line join style (round, mitre, bevel).

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes` 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. `annotation_borders()`.

`orientation` The orientation of the layer. The default (`NA`) automatically determines the orientation from the aesthetic mapping. In the rare event that this fails it can be given explicitly by setting `orientation` to either `"x"` or `"y"`. See the *Orientation* section for more detail.

## Value

XLayer or YLayer object to be added to a ggplot object

## Aesthetics

Required aesthetics are in bold.

- x
- y
- fill *or* xfill Fill color of the xsidebar
- fill *or* yfill Fill color of the ysidebar
- width specifies the width of each bar
- height specifies the height of each bar
- alpha Transparency level of xfill or yfill
- size size of the border line.

## See Also

geom_xsidehistogram, geom_ysidehistogram

## Examples

```
p <-ggplot(iris, aes(Sepal.Width, Sepal.Length, color = Species, fill = Species)) +
geom_point()

#sidebar - uses StatCount
p +
geom_xsidebar() +
geom_ysidebar()

#sidecol - uses Global mapping
p +
  geom_xsidecol() +
  geom_ysidecol()
```

---

# geom_xsideboxplot *Side boxplots*

---

## Description

The xside and yside variants of geom_boxplot is geom_xsideboxplot and geom_ysideboxplot.

## Usage

```
geom_xsideboxplot(
  mapping = NULL,
  data = NULL,
  stat = "boxplot",
  position = "dodge2",
```

```
  ...,
  outliers = TRUE,
  outlier.colour = NULL,
  outlier.color = NULL,
  outlier.fill = NULL,
  outlier.shape = NULL,
  outlier.size = NULL,
  outlier.stroke = 0.5,
  outlier.alpha = NULL,
  whisker.colour = NULL,
  whisker.color = NULL,
  whisker.linetype = NULL,
  whisker.linewidth = NULL,
  staple.colour = NULL,
  staple.color = NULL,
  staple.linetype = NULL,
  staple.linewidth = NULL,
  median.colour = NULL,
  median.color = NULL,
  median.linetype = NULL,
  median.linewidth = NULL,
  box.colour = NULL,
  box.color = NULL,
  box.linetype = NULL,
  box.linewidth = NULL,
  notch = FALSE,
  notchwidth = 0.5,
  staplewidth = 0,
  varwidth = FALSE,
  na.rm = FALSE,
  orientation = "x",
  show.legend = NA,
  inherit.aes = TRUE
)

geom_ysideboxplot(
  mapping = NULL,
  data = NULL,
  stat = "boxplot",
  position = "dodge2",
  ...,
  outliers = TRUE,
  outlier.colour = NULL,
  outlier.color = NULL,
  outlier.fill = NULL,
  outlier.shape = NULL,
  outlier.size = NULL,
  outlier.stroke = 0.5,
```

```
  outlier.alpha = NULL,
  whisker.colour = NULL,
  whisker.color = NULL,
  whisker.linetype = NULL,
  whisker.linewidth = NULL,
  staple.colour = NULL,
  staple.color = NULL,
  staple.linetype = NULL,
  staple.linewidth = NULL,
  median.colour = NULL,
  median.color = NULL,
  median.linetype = NULL,
  median.linewidth = NULL,
  box.colour = NULL,
  box.color = NULL,
  box.linetype = NULL,
  box.linewidth = NULL,
  notch = FALSE,
  notchwidth = 0.5,
  staplewidth = 0,
  varwidth = FALSE,
  na.rm = FALSE,
  orientation = "y",
  show.legend = NA,
  inherit.aes = TRUE
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount. |

- A string naming the stat. To give the stat as a string, strip the function name of the `stat_` prefix. For example, to use `stat_count()`, give the stat as `"count"`.
- For more information and other ways to specify the stat, see the layer stat documentation.

`position` 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 `position` argument accepts the following:

- The result of calling a position function, such as `position_jitter()`. This method allows for passing extra arguments to the position.
- A string naming the position adjustment. To give the position as a string, strip the function name of the `position_` prefix. For example, to use `position_jitter()`, give the position as `"jitter"`.
- For more information and other ways to specify the position, see the layer position documentation.

`...` Other arguments passed on to `layer()`'s `params` argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the `position` argument, or aesthetics that are required can *not* be passed through `...`. Unknown arguments that are not part of the 4 categories below are ignored.

- Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, `colour = "red"` or `linewidth = 3`. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the `params`. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.
- When constructing a layer using a `stat_*()` function, the `...` argument can be used to pass on parameters to the `geom` part of the layer. An example of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `...`. This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`outliers` Whether to display (`TRUE`) or discard (`FALSE`) outliers from the plot. Hiding or discarding outliers can be useful when, for example, raw data points need to be displayed on top of the boxplot. By discarding outliers, the axis limits will adapt to the box and whiskers only, not the full data range. If outliers need to be hidden and the axes needs to show the full data range, please use `outlier.shape = NA` instead.

`outlier.colour`, `outlier.color`, `outlier.fill`, `outlier.shape`, `outlier.size`, `outlier.stroke`, `outlier.alpha`

Default aesthetics for outliers. Set to `NULL` to inherit from the data's aesthetics.

`whisker.colour`, `whisker.color`, `whisker.linetype`, `whisker.linewidth`
: Default aesthetics for the whiskers. Set to `NULL` to inherit from the data's aesthetics.

`staple.colour`, `staple.color`, `staple.linetype`, `staple.linewidth`
: Default aesthetics for the staples. Set to `NULL` to inherit from the data's aesthetics. Note that staples don't appear unless the `staplewidth` argument is set to a non-zero size.

`median.colour`, `median.color`, `median.linetype`, `median.linewidth`
: Default aesthetics for the median line. Set to `NULL` to inherit from the data's aesthetics.

`box.colour`, `box.color`, `box.linetype`, `box.linewidth`
: Default aesthetics for the boxes. Set to `NULL` to inherit from the data's aesthetics.

`notch`
: If `FALSE` (default) make a standard box plot. If `TRUE`, make a notched box plot. Notches are used to compare groups; if the notches of two boxes do not overlap, this suggests that the medians are significantly different.

`notchwidth`
: For a notched box plot, width of the notch relative to the body (defaults to `notchwidth = 0.5`).

`staplewidth`
: The relative width of staples to the width of the box. Staples mark the ends of the whiskers with a line.

`varwidth`
: If `FALSE` (default) make a standard box plot. If `TRUE`, boxes are drawn with widths proportional to the square-roots of the number of observations in the groups (possibly weighted, using the `weight` aesthetic).

`na.rm`
: If `FALSE`, the default, missing values are removed with a warning. If `TRUE`, missing values are silently removed.

`orientation`
: The orientation of the layer. The default (`NA`) automatically determines the orientation from the aesthetic mapping. In the rare event that this fails it can be given explicitly by setting `orientation` to either `"x"` or `"y"`. See the *Orientation* section for more detail.

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes`
: 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. `annotation_borders()`.

## Value

XLayer or YLayer object to be added to a ggplot object

## See Also

geom_*sideviolin

## Examples

```
df <- expand.grid(UpperCase = LETTERS, LowerCase = letters)
df$Combo_Index <- as.integer(df$UpperCase)*as.integer(df$LowerCase)

p1 <- ggplot(df, aes(UpperCase, LowerCase)) +
geom_tile(aes(fill = Combo_Index))

#sideboxplots

p1 + geom_xsideboxplot(aes(y = Combo_Index)) +
   geom_ysideboxplot(aes(x = Combo_Index)) +
   #when mixing continuous/discrete scales
   #use the following helper functions
   scale_xsidey_continuous() +
   scale_ysidex_continuous()

#sideboxplots with swapped orientation
#Note: They order of the layers are affects the default
# scale type. If you were to omit the last two scales, the
# data labels may be affected
ggplot(iris, aes(Sepal.Width, Sepal.Length, color = Species)) +
    geom_xsideboxplot(aes(y = Species), orientation = "y") +
    geom_point() +
    scale_y_continuous() + scale_xsidey_discrete()

#If using the scale_(xsidey|ysidex)_* functions are a bit cumbersome,
# Take extra care to recast your data types.
ggplot(iris, aes(Sepal.Width, Sepal.Length, color = Species))+
  geom_point() +
  geom_xsideboxplot(aes(y = as.numeric(Species)), orientation = "y") +
  geom_ysideboxplot(aes(x = as.numeric(Species)), orientation = "x")
```

---

# geom_xsidedensity *Side density distributions*

---

## Description

The xside and yside variants of geom_density is geom_xsidedensity and geom_ysidedensity.

## Usage

```
geom_xsidedensity(
  mapping = NULL,
  data = NULL,
  stat = "density",
  position = "identity",
  ...,
  outline.type = "upper",
```

```
  lineend = "butt",
  linejoin = "round",
  linemitre = 10,
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  orientation = "x"
)

geom_ysidedensity(
  mapping = NULL,
  data = NULL,
  stat = "density",
  position = "identity",
  ...,
  outline.type = "upper",
  lineend = "butt",
  linejoin = "round",
  linemitre = 10,
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  orientation = "y"
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | Use to override the default connection between geom_density() and stat_density(). |
| position | 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 position argument accepts the following:<br>• The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.<br>• A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter". |

- For more information and other ways to specify the position, see the layer position documentation.

`...` Other arguments passed on to `layer()`'s `params` argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the `position` argument, or aesthetics that are required can *not* be passed through `...`. Unknown arguments that are not part of the 4 categories below are ignored.

- Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, `colour = "red"` or `linewidth = 3`. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the `params`. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.
- When constructing a layer using a `stat_*()` function, the `...` argument can be used to pass on parameters to the `geom` part of the layer. An example of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `...`. This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`outline.type` Type of the outline of the area; `"both"` draws both the upper and lower lines, `"upper"`/`"lower"` draws the respective lines only. `"full"` draws a closed polygon around the area.

`lineend` Line end style (round, butt, square).

`linejoin` Line join style (round, mitre, bevel).

`linemitre` Line mitre limit (number greater than 1).

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes` 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. `annotation_borders()`.

`orientation` The orientation of the layer. The default (`NA`) automatically determines the orientation from the aesthetic mapping. In the rare event that this fails it can be given explicitly by setting `orientation` to either `"x"` or `"y"`. See the *Orientation* section for more detail.

## Value

XLayer or YLayer object to be added to a ggplot object

## Examples

```
ggplot(mpg, aes(displ, hwy, colour = class)) +
 geom_point(size = 2) +
 geom_xsidedensity() +
 geom_ysidedensity() +
 theme(axis.text.x = element_text(angle = 90, vjust = .5))

ggplot(mpg, aes(displ, hwy, colour = class)) +
 geom_point(size = 2) +
 geom_xsidedensity(aes(y = after_stat(count)),position = "stack") +
 geom_ysidedensity(aes(x = after_stat(scaled))) +
 theme(axis.text.x = element_text(angle = 90, vjust = .5))
```

---

# geom_xsidefreqpoly *Side Frequency Polygons*

---

## Description

The xside and yside variants of geom_freqpoly is geom_xsidefreqpoly and geom_ysidefreqpoly.

## Usage

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

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

```
  orientation = "y"
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount.<br>• A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".<br>• For more information and other ways to specify the stat, see the layer stat documentation. |
| position | 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 position argument accepts the following:<br>• The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.<br>• A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter".<br>• For more information and other ways to specify the position, see the layer position documentation. |
| ... | Other arguments passed on to layer()'s params argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the position argument, or aesthetics that are required can *not* be passed through .... Unknown arguments that are not part of the 4 categories below are ignored.<br>• Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, colour = "red" or linewidth = 3. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the params. Please note that while passing unmapped aesthetics as vectors is |

technically possible, the order and required length is not guaranteed to be parallel to the input data.

- When constructing a layer using a `stat_*()` function, the `...` argument can be used to pass on parameters to the geom part of the layer. An example of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `....` This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes` 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. `annotation_borders()`.

`orientation` The orientation of the layer. The default (`NA`) automatically determines the orientation from the aesthetic mapping. In the rare event that this fails it can be given explicitly by setting `orientation` to either `"x"` or `"y"`. See the *Orientation* section for more detail.

## Value

XLayer or YLayer object to be added to a ggplot object

## Examples

```
ggplot(diamonds, aes(price, carat, colour = cut)) +
  geom_point() +
  geom_xsidefreqpoly(aes(y=after_stat(count)),binwidth = 500) +
  geom_ysidefreqpoly(aes(x=after_stat(count)),binwidth = .2)
```

---

# geom_xsidefunction *Side function plot*

---

## Description

The xside and yside variants of geom_function

## Usage

```
geom_xsidefunction(
  mapping = NULL,
  data = NULL,
  stat = "function",
  position = "identity",
  ...,
  arrow = NULL,
  arrow.fill = NULL,
  lineend = "butt",
  linejoin = "round",
  linemitre = 10,
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

stat_xsidefunction(
  mapping = NULL,
  data = NULL,
  geom = "function",
  position = "identity",
  ...,
  fun,
  xlim = NULL,
  n = 101,
  args = list(),
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

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

stat_ysidefunction(
  mapping = NULL,
  data = NULL,
  geom = "ysidefunction",
  position = "identity",
```

```
  ...,
  fun,
  ylim = NULL,
  n = 101,
  args = list(),
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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 | Ignored by stat_function(), do not use. |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount.<br>• A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".<br>• For more information and other ways to specify the stat, see the layer stat documentation. |
| position | 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 position argument accepts the following:<br>• The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.<br>• A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter".<br>• For more information and other ways to specify the position, see the layer position documentation. |
| ... | Other arguments passed on to layer()'s params argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the position argument, or aesthetics that are required can *not* be passed through .... Unknown arguments that are not part of the 4 categories below are ignored.<br>• Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, colour = "red" or linewidth = 3. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the params. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data. |

- When constructing a layer using a `stat_*()` function, the `...` argument can be used to pass on parameters to the geom part of the layer. An example of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `....` This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`arrow` Arrow specification, as created by `grid::arrow()`.

`arrow.fill` fill colour to use for the arrow head (if closed). `NULL` means use `colour` aesthetic.

`lineend` Line end style (round, butt, square).

`linejoin` Line join style (round, mitre, bevel).

`linemitre` Line mitre limit (number greater than 1).

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes` 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. `annotation_borders()`.

`geom` The geometric object to use to display the data for this layer. When using a `stat_*()` function to construct a layer, the `geom` argument can be used to override the default coupling between stats and geoms. The `geom` argument accepts the following:

- A `Geom` ggproto subclass, for example `GeomPoint`.
- A string naming the geom. To give the geom as a string, strip the function name of the `geom_` prefix. For example, to use `geom_point()`, give the geom as `"point"`.
- For more information and other ways to specify the geom, see the layer geom documentation.

`fun` Function to use. Either 1) an anonymous function in the base or rlang formula syntax (see `rlang::as_function()`) or 2) a quoted or character name referencing a function; see examples. Must be vectorised.

`xlim` Optionally, specify the range of the function.

`n` Number of points to interpolate along the x axis.

`args` List of additional arguments passed on to the function defined by `fun`.

`ylim` Optionally, restrict the range of the function to this range (y-axis)

## Value

XLayer or YLayer object to be added to a ggplot object

## Examples

```
x<- rweibull(100, 2.6, 3)
y<- rweibull(100, 1.8, 3)
xy.df<- data.frame(cbind(x,y))
p <- ggplot(xy.df, aes(x, y)) +
  geom_point(colour = "blue", size = 0.25) +
  geom_density2d() +
  geom_xsidedensity(fill = "blue", alpha = .3) +
  geom_ysidedensity(fill = "blue", alpha = .3) +
 stat_xsidefunction(fun = dweibull, args = list(shape = 1.8, scale = 3), colour = "red") +
 stat_ysidefunction(fun = dweibull, args = list(shape = 2.6, scale = 3), colour = "red") +
  theme_classic()
p
```

---

# geom_xsidehistogram *Side Histograms*

---

## Description

The xside and yside variants of geom_histogram is geom_xsidehistogram and geom_ysidehistogram. These variants both inherit from geom_histogram and only differ on where they plot data relative to main panels.

## Usage

```
geom_xsidehistogram(
  mapping = NULL,
  data = NULL,
  stat = "bin",
  position = "stack",
  ...,
  binwidth = NULL,
  bins = NULL,
  orientation = "x",
  lineend = "butt",
  linejoin = "mitre",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

geom_ysidehistogram(
  mapping = NULL,
  data = NULL,
```

```
  stat = "bin",
  position = "stack",
  ...,
  binwidth = NULL,
  bins = NULL,
  orientation = "y",
  lineend = "butt",
  linejoin = "mitre",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount.<br>• A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".<br>• For more information and other ways to specify the stat, see the layer stat documentation. |
| position | 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 position argument accepts the following:<br>• The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.<br>• A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter".<br>• For more information and other ways to specify the position, see the layer position documentation. |

`...` Other arguments passed on to `layer()`'s `params` argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the `position` argument, or aesthetics that are required can *not* be passed through `...`. Unknown arguments that are not part of the 4 categories below are ignored.

- Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, `colour = "red"` or `linewidth = 3`. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the `params`. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.
- When constructing a layer using a `stat_*()` function, the `...` argument can be used to pass on parameters to the `geom` part of the layer. An example of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `...`. This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`binwidth` The width of the bins. Can be specified as a numeric value or as a function that takes x after scale transformation as input and returns a single numeric value. When specifying a function along with a grouping structure, the function will be called once per group. The default is to use the number of bins in `bins`, covering 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 `binwidth`. Defaults to 30.

`orientation` The orientation of the layer. The default (`NA`) automatically determines the orientation from the aesthetic mapping. In the rare event that this fails it can be given explicitly by setting `orientation` to either `"x"` or `"y"`. See the *Orientation* section for more detail.

`lineend` Line end style (round, butt, square).

`linejoin` Line join style (round, mitre, bevel).

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes` 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. `annotation_borders()`.

### Value

XLayer or YLayer object to be added to a ggplot object

### Aesthetics

`geom_*sidehistogram` uses the same aesthetics as `geom_*sidebar()`

### Examples

```
p <-ggplot(iris, aes(Sepal.Width, Sepal.Length, color = Species, fill = Species)) +
geom_point()

#sidehistogram
p +
geom_xsidehistogram(binwidth = 0.1) +
geom_ysidehistogram(binwidth = 0.1)
p +
geom_xsidehistogram(aes(y = after_stat(density)), binwidth = 0.1) +
geom_ysidehistogram(aes(x = after_stat(density)), binwidth = 0.1)
```

---

## `geom_xsidelabel` *Side label*

---

### Description

The xside and yside variants of geom_label.

### Usage

```
geom_xsidelabel(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "nudge",
  ...,
  parse = FALSE,
  label.padding = unit(0.25, "lines"),
  label.r = unit(0.15, "lines"),
  border.colour = NULL,
  border.color = NULL,
  text.colour = NULL,
  text.color = NULL,
  size.unit = "mm",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  label.size = lifecycle::deprecated()
)
```

```
geom_ysidelabel(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "nudge",
  ...,
  parse = FALSE,
  label.padding = unit(0.25, "lines"),
  label.r = unit(0.15, "lines"),
  border.colour = NULL,
  border.color = NULL,
  text.colour = NULL,
  text.color = NULL,
  size.unit = "mm",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  label.size = lifecycle::deprecated()
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount.<br>• A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".<br>• For more information and other ways to specify the stat, see the layer stat documentation. |
| position | 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 position argument accepts the following: |

- The result of calling a position function, such as `position_jitter()`. This method allows for passing extra arguments to the position.
- A string naming the position adjustment. To give the position as a string, strip the function name of the `position_` prefix. For example, to use `position_jitter()`, give the position as `"jitter"`.
- For more information and other ways to specify the position, see the layer position documentation.

`...` Other arguments passed on to `layer()`'s `params` argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the `position` argument, or aesthetics that are required can *not* be passed through `...`. Unknown arguments that are not part of the 4 categories below are ignored.

- Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, `colour = "red"` or `linewidth = 3`. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the `params`. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.
- When constructing a layer using a `stat_*()` function, the `...` argument can be used to pass on parameters to the `geom` part of the layer. An example of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `...`. This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`parse` If `TRUE`, the labels will be parsed into expressions and displayed as described in `?plotmath`.

`label.padding` Amount of padding around label. Defaults to 0.25 lines.

`label.r` Radius of rounded corners. Defaults to 0.15 lines.

`border.colour`, `border.color`
Colour of label border. When `NULL` (default), the `colour` aesthetic determines the colour of the label border. `border.color` is an alias for `border.colour`.

`text.colour`, `text.color`
Colour of the text. When `NULL` (default), the `colour` aesthetic determines the colour of the text. `text.color` is an alias for `text.colour`.

`size.unit` How the `size` aesthetic is interpreted: as millimetres (`"mm"`, default), points (`"pt"`), centimetres (`"cm"`), inches (`"in"`), or picas (`"pc"`).

`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. 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 TRUE. If NA, all levels are shown in legend, but unobserved levels are omitted.

inherit.aes — 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. annotation_borders().

label.size — **[Deprecated]** Replaced by the linewidth aesthetic. Size of label border, in mm.

## Value

XLayer or YLayer object to be added to a ggplot object

---

# geom_xsideline *Side line plot*

---

## Description

The xside and yside of geom_line. The xside and yside variants of geom_path

## Usage

```
geom_xsideline(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  ...,
  orientation = "x",
  arrow = NULL,
  arrow.fill = NULL,
  lineend = "butt",
  linejoin = "round",
  linemitre = 10,
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

geom_ysideline(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  ...,
  orientation = "y",
```

```
  arrow = NULL,
  arrow.fill = NULL,
  lineend = "butt",
  linejoin = "round",
  linemitre = 10,
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

geom_xsidepath(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  ...,
  arrow = NULL,
  arrow.fill = NULL,
  lineend = "butt",
  linejoin = "round",
  linemitre = 10,
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

geom_ysidepath(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  ...,
  arrow = NULL,
  arrow.fill = NULL,
  lineend = "butt",
  linejoin = "round",
  linemitre = 10,
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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 ggplot().

A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.

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. A function can be created from a formula (e.g. ~ head(.x, 10)).

stat

The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:

- A Stat ggproto subclass, for example StatCount.
- A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".
- For more information and other ways to specify the stat, see the layer stat documentation.

position

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 position argument accepts the following:

- The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.
- A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter".
- For more information and other ways to specify the position, see the layer position documentation.

...

Other arguments passed on to layer()'s params argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the position argument, or aesthetics that are required can *not* be passed through .... Unknown arguments that are not part of the 4 categories below are ignored.

- Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, colour = "red" or linewidth = 3. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the params. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.
- When constructing a layer using a stat_*() function, the ... argument can be used to pass on parameters to the geom part of the layer. An example of this is stat_density(geom = "area", outline.type = "both"). The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a geom_*() function, the ... argument can be used to pass on parameters to the stat part of the layer.

An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.

- The `key_glyph` argument of `layer()` may also be passed on through `...`. This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`orientation` The orientation of the layer. The default (`NA`) automatically determines the orientation from the aesthetic mapping. In the rare event that this fails it can be given explicitly by setting `orientation` to either `"x"` or `"y"`. See the *Orientation* section for more detail.

`arrow` Arrow specification, as created by `grid::arrow()`.

`arrow.fill` fill colour to use for the arrow head (if closed). `NULL` means use `colour` aesthetic.

`lineend` Line end style (round, butt, square).

`linejoin` Line join style (round, mitre, bevel).

`linemitre` Line mitre limit (number greater than 1).

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes` 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. `annotation_borders()`.

## Value

XLayer or YLayer object to be added to a ggplot object

## Examples

```
#sideline
ggplot(economics, aes(date, pop)) +
  geom_xsideline(aes(y = unemploy)) +
  geom_col()
```

---

`geom_xsidepoint` *Side Points*

---

## Description

The ggside variants of geom_point is `geom_xsidepoint()` and `geom_ysidepoint()`. Both variants inherit from geom_point, thus the only difference is where the data is plotted. The `xside` variant will plot data along the x-axis, while the `yside` variant will plot data along the y-axis.

## Usage

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

geom_ysidepoint(
  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 aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount.<br>• A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".<br>• For more information and other ways to specify the stat, see the layer stat documentation. |

position — 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 position argument accepts the following:

- The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.
- A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter".
- For more information and other ways to specify the position, see the layer position documentation.

... — Other arguments passed on to layer()'s params argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the position argument, or aesthetics that are required can *not* be passed through .... Unknown arguments that are not part of the 4 categories below are ignored.

- Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, colour = "red" or linewidth = 3. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the params. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.
- When constructing a layer using a stat_*() function, the ... argument can be used to pass on parameters to the geom part of the layer. An example of this is stat_density(geom = "area", outline.type = "both"). The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a geom_*() function, the ... argument can be used to pass on parameters to the stat part of the layer. An example of this is geom_area(stat = "density", adjust = 0.5). The stat's documentation lists which parameters it can accept.
- The key_glyph argument of layer() may also be passed on through .... This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

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. 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 TRUE. If NA, all levels are shown in legend, but unobserved levels are omitted.

inherit.aes — 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. annotation_borders().

## Value

XLayer or YLayer object to be added to a ggplot object

## Examples

```
ggplot(diamonds, aes(depth, table, alpha = .2)) +
  geom_point() +
  geom_ysidepoint(aes(x = price)) +
  geom_xsidepoint(aes(y = price)) +
  theme(
        ggside.panel.scale = .3
    )
```

---

geom_xsidesegment *Side line Segments*

---

## Description

The xside and yside of geom_segment.

## Usage

```
geom_xsidesegment(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  ...,
  arrow = NULL,
  arrow.fill = NULL,
  lineend = "butt",
  linejoin = "round",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

geom_ysidesegment(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  ...,
  arrow = NULL,
  arrow.fill = NULL,
  lineend = "butt",
  linejoin = "round",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount.<br>• A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".<br>• For more information and other ways to specify the stat, see the layer stat documentation. |
| position | 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 position argument accepts the following:<br>• The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.<br>• A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter".<br>• For more information and other ways to specify the position, see the layer position documentation. |
| ... | Other arguments passed on to layer()'s params argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the position argument, or aesthetics that are required can *not* be passed through .... Unknown arguments that are not part of the 4 categories below are ignored.<br>• Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, colour = "red" or linewidth = 3. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the params. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data. |

- When constructing a layer using a `stat_*()` function, the `...` argument can be used to pass on parameters to the geom part of the layer. An example of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `....` This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`arrow` specification for arrow heads, as created by `grid::arrow()`.

`arrow.fill` fill colour to use for the arrow head (if closed). `NULL` means use `colour` aesthetic.

`lineend` Line end style (round, butt, square).

`linejoin` Line join style (round, mitre, bevel).

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes` 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. `annotation_borders()`.

## Value

XLayer or YLayer object to be added to a ggplot object

## Examples

```
library(dplyr)
library(tidyr)
library(ggdendro)
#dendrogram with geom_*sidesegment
df0 <- mutate(diamonds,
colclar = interaction(color, clarity,
                      sep = "_", drop = TRUE))
df1 <- df0 %>%
  group_by(color, clarity, colclar, cut) %>%
  summarise(m_price = mean(price))
df <- df1 %>%
  pivot_wider(id_cols = colclar,
              names_from = cut,
              values_from = m_price,
              values_fill = 0L)
```

```
mat <- as.matrix(df[,2:6])
rownames(mat) <- df[["colclar"]]
dst <- dist(mat)
hc_x <- hclust(dst)
lvls <- rownames(mat)[hc_x$order]
df1[["colclar"]] <- factor(df1[["colclar"]], levels = lvls)
dendrox <- dendro_data(hc_x)

p <- ggplot(df1, aes(x = colclar, cut)) +
  geom_tile(aes(fill = m_price)) +
  viridis::scale_fill_viridis(option = "magma") +
  theme(axis.text.x = element_text(angle = 90, vjust = .5))
p +
  geom_xsidesegment(data = dendrox$segments,aes(x = x, y = y, xend = xend, yend = yend))
```

---

geom_xsidetext *Side text*

---

## Description

The xside and yside variants of geom_text.

## Usage

```
geom_xsidetext(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "nudge",
  ...,
  parse = FALSE,
  check_overlap = FALSE,
  size.unit = "mm",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

geom_ysidetext(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "nudge",
  ...,
  parse = FALSE,
  check_overlap = FALSE,
  size.unit = "mm",
```

```
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount.<br>• A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".<br>• For more information and other ways to specify the stat, see the layer stat documentation. |
| position | 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 position argument accepts the following:<br>• The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.<br>• A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter".<br>• For more information and other ways to specify the position, see the layer position documentation. |
| ... | Other arguments passed on to layer()'s params argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the position argument, or aesthetics that are required can *not* be passed through .... Unknown arguments that are not part of the 4 categories below are ignored.<br>• Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, colour = "red" or linewidth = 3. The geom's documentation has an **Aesthetics** section that lists the |

available options. The 'required' aesthetics cannot be passed on to the params. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.

- When constructing a layer using a stat_*() function, the ... argument can be used to pass on parameters to the geom part of the layer. An example of this is stat_density(geom = "area", outline.type = "both"). The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a geom_*() function, the ... argument can be used to pass on parameters to the stat part of the layer. An example of this is geom_area(stat = "density", adjust = 0.5). The stat's documentation lists which parameters it can accept.
- The key_glyph argument of layer() may also be passed on through .... This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

parse — If TRUE, the labels will be parsed into expressions and displayed as described in ?plotmath.

check_overlap — If TRUE, text that overlaps previous text in the same layer will not be plotted. check_overlap happens at draw time and in the order of the data. Therefore data should be arranged by the label column before calling geom_text(). Note that this argument is not supported by geom_label().

size.unit — How the size aesthetic is interpreted: as millimetres ("mm", default), points ("pt"), centimetres ("cm"), inches ("in"), or picas ("pc").

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. 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 TRUE. If NA, all levels are shown in legend, but unobserved levels are omitted.

inherit.aes — 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. annotation_borders().

## Value

XLayer or YLayer object to be added to a ggplot object

---

# geom_xsidetile *Side tile plot*

---

## Description

The xside and yside variants of geom_tile

## Usage

```
geom_xsidetile(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  ...,
  lineend = "butt",
  linejoin = "mitre",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)

geom_ysidetile(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  ...,
  lineend = "butt",
  linejoin = "mitre",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:<br>• A Stat ggproto subclass, for example StatCount. |

- A string naming the stat. To give the stat as a string, strip the function name of the `stat_` prefix. For example, to use `stat_count()`, give the stat as `"count"`.
- For more information and other ways to specify the stat, see the layer stat documentation.

`position` 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 `position` argument accepts the following:

- The result of calling a position function, such as `position_jitter()`. This method allows for passing extra arguments to the position.
- A string naming the position adjustment. To give the position as a string, strip the function name of the `position_` prefix. For example, to use `position_jitter()`, give the position as `"jitter"`.
- For more information and other ways to specify the position, see the layer position documentation.

`...` Other arguments passed on to `layer()`'s `params` argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the `position` argument, or aesthetics that are required can *not* be passed through `....` Unknown arguments that are not part of the 4 categories below are ignored.

- Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, `colour = "red"` or `linewidth = 3`. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the `params`. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.
- When constructing a layer using a `stat_*()` function, the `...` argument can be used to pass on parameters to the `geom` part of the layer. An example of this is `stat_density(geom = "area", outline.type = "both")`. The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a `geom_*()` function, the `...` argument can be used to pass on parameters to the `stat` part of the layer. An example of this is `geom_area(stat = "density", adjust = 0.5)`. The stat's documentation lists which parameters it can accept.
- The `key_glyph` argument of `layer()` may also be passed on through `....` This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

`lineend` Line end style (round, butt, square).

`linejoin` Line join style (round, mitre, bevel).

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

inherit.aes — 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. annotation_borders().

## Value

XLayer or YLayer object to be added to a ggplot object

## Examples

```
library(dplyr)
library(tidyr)
df <- mutate(diamonds,
             colclar = interaction(color, clarity, sep = "_", drop = TRUE)) %>%
      group_by(color, clarity, colclar, cut) %>%
      summarise(m_price = mean(price))

xside_data <- df %>%
  ungroup() %>%
  select(colclar, clarity, color) %>%
  mutate_all(~factor(as.character(.x), levels = levels(.x))) %>%
  pivot_longer(cols = c(clarity, color)) %>% distinct()


p <- ggplot(df, aes(x = colclar, cut)) +
  geom_tile(aes(fill = m_price)) +
  viridis::scale_fill_viridis(option = "magma") +
  theme(axis.text.x = element_blank())

p + geom_xsidetile(data = xside_data, aes(y = name, xfill = value)) +
   guides(xfill = guide_legend(nrow = 8))
```

---

# geom_xsideviolin *Side Violin plots*

---

## Description

The xside and yside variants of geom_violin

## Usage

```
geom_xsideviolin(
  mapping = NULL,
  data = NULL,
  stat = "ydensity",
  position = "dodge",
  ...,
  trim = TRUE,
  bounds = c(-Inf, Inf),
```

```
  quantile.colour = NULL,
  quantile.color = NULL,
  quantile.linetype = 0L,
  quantile.linewidth = NULL,
  scale = "area",
  na.rm = FALSE,
  orientation = "x",
  show.legend = NA,
  inherit.aes = TRUE,
  draw_quantiles = lifecycle::deprecated()
)

geom_ysideviolin(
  mapping = NULL,
  data = NULL,
  stat = "ydensity",
  position = "dodge",
  ...,
  trim = TRUE,
  bounds = c(-Inf, Inf),
  quantile.colour = NULL,
  quantile.color = NULL,
  quantile.linetype = 0L,
  quantile.linewidth = NULL,
  scale = "area",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  orientation = "y",
  draw_quantiles = lifecycle::deprecated()
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| stat | Use to override the default connection between geom_violin() and stat_ydensity(). |

position — 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 position argument accepts the following:

- The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.
- A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter".
- For more information and other ways to specify the position, see the layer position documentation.

... — Other arguments passed on to layer()'s params argument. These arguments broadly fall into one of 4 categories below. Notably, further arguments to the position argument, or aesthetics that are required can *not* be passed through .... Unknown arguments that are not part of the 4 categories below are ignored.

- Static aesthetics that are not mapped to a scale, but are at a fixed value and apply to the layer as a whole. For example, colour = "red" or linewidth = 3. The geom's documentation has an **Aesthetics** section that lists the available options. The 'required' aesthetics cannot be passed on to the params. Please note that while passing unmapped aesthetics as vectors is technically possible, the order and required length is not guaranteed to be parallel to the input data.
- When constructing a layer using a stat_*() function, the ... argument can be used to pass on parameters to the geom part of the layer. An example of this is stat_density(geom = "area", outline.type = "both"). The geom's documentation lists which parameters it can accept.
- Inversely, when constructing a layer using a geom_*() function, the ... argument can be used to pass on parameters to the stat part of the layer. An example of this is geom_area(stat = "density", adjust = 0.5). The stat's documentation lists which parameters it can accept.
- The key_glyph argument of layer() may also be passed on through .... This can be one of the functions described as key glyphs, to change the display of the layer in the legend.

trim — If TRUE (default), trim the tails of the violins to the range of the data. If FALSE, don't trim the tails.

bounds — Known lower and upper bounds for estimated data. Default c(-Inf, Inf) means that there are no (finite) bounds. If any bound is finite, boundary effect of default density estimation will be corrected by reflecting tails outside bounds around their closest edge. Data points outside of bounds are removed with a warning

quantile.colour, quantile.color, quantile.linewidth, quantile.linetype — Default aesthetics for the quantile lines. Set to NULL to inherit from the data's aesthetics. By default, quantile lines are hidden and can be turned on by changing quantile.linetype.

scale — if "area" (default), all violins have the same area (before trimming the tails). If "count", areas are scaled proportionally to the number of observations. If "width", all violins have the same maximum width.

| | |
|---|---|
| na.rm | If FALSE, the default, missing values are removed with a warning. If TRUE, missing values are silently removed. |
| orientation | The orientation of the layer. The default (NA) automatically determines the orientation from the aesthetic mapping. In the rare event that this fails it can be given explicitly by setting orientation to either "x" or "y". See the *Orientation* section for more detail. |
| 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. 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 TRUE. If NA, all levels are shown in legend, but unobserved levels are omitted. |
| inherit.aes | 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. annotation_borders(). |
| draw_quantiles | **[Deprecated]** Previous specification of drawing quantiles. |

## Value

XLayer or YLayer object to be added to a ggplot object

## See Also

geom_*sideboxplot

## Examples

```
df <- expand.grid(UpperCase = LETTERS, LowerCase = letters)
df$Combo_Index <- as.integer(df$UpperCase) * as.integer(df$LowerCase)

p1 <- ggplot(df, aes(UpperCase, LowerCase)) +
  geom_tile(aes(fill = Combo_Index))

# sideviolins
# Note - Mixing discrete and continuous axis scales
# using xsideviolins when the y aesthetic was previously
# mapped with a continuous varialbe will prevent
# any labels from being plotted. This is a feature that
# will hopefully be added to ggside in the future.

p1 + geom_xsideviolin(aes(y = Combo_Index)) +
  geom_ysideviolin(aes(x = Combo_Index))

# sideviolins with swapped orientation
# Note - Discrete before Continuous
# If you are to mix Discrete and Continuous variables on
# one axis, ggplot2 prefers the discrete variable to be mapped
# BEFORE the continuous.
ggplot(iris, aes(Sepal.Width, Sepal.Length, color = Species)) +
  geom_xsideviolin(aes(y = Species), orientation = "y") +
  geom_point()
```

```
# Alternatively, you can recast the value as a factor and then
# a numeric

ggplot(iris, aes(Sepal.Width, Sepal.Length, color = Species)) +
  geom_point() +
  geom_xsideviolin(aes(y = as.numeric(Species)), orientation = "y") +
  geom_ysideviolin(aes(x = as.numeric(Species)), orientation = "x")
```

---

`ggside` *ggside options*

---

## Description

Set characteristics of side panels

## Usage

```
ggside(
  x.pos = NULL,
  y.pos = NULL,
  scales = NULL,
  collapse = NULL,
  draw_x_on = NULL,
  draw_y_on = NULL,
  strip = NULL,
  respect_side_labels = NULL
)
```

## Arguments

| | |
|---|---|
| `x.pos` | x side panel can either take "top" or "bottom" |
| `y.pos` | y side panel can either take "right" or "left" |
| `scales` | Determines side panel's unaligned axis scale. Inputs are similar to facet_* scales function. Default is set to "fixed", but "free_x", "free_y" and "free" are acceptable inputs. For example, xside panels are aligned to the x axis of the main panel. Setting "free" or "free_y" will cause all y scales of the x side Panels to be independent. |
| `collapse` | Determines if side panels should be collapsed into a single panel. Set "x" to collapse all x side panels, set "y" to collapse all y side panels, set "all" to collapse both x and y side panels. |
| `draw_x_on, draw_y_on` | Determines where the axis is rendered. For example: By default, the bottom x-axis is rendered on the bottom most panel per column. If set to "main", then the axis is rendered on the bottom of the bottom most main panel. If set to "side", then the x-axis is rendered on the bottom of the bottom most side panel(s). You may apply this logic to all axis positions. |

`strip` Determines if the strip should be rendered on the main plot or on their default locations. Only has an effect on `facet_grid`.

`respect_side_labels`
Valid arguments are "default", "x", "y", "all", and "none" Indicates if panel spacing should respect the axis labels. The default is to respect side panel labels except when xside labels are on the same side as the yside panel. Note: setting this parameter to "x" is to "respect the labels of the xside panel" and consequently the yside labels, if present, are not respected.

## Value

a object of class 'ggside_options' or to be added to a ggplot

## See Also

For more information regarding the ggside api: see xside or yside

---

`ggside-deprecated` *Deprecated Functions*

---

## Description

The following functions have been deprecated.

as_ggsideFacet <- ggside_facet as_ggsideCoord <- ggside_coord is.ggside <- is_ggside is.ggside_layer <- is_ggside_layer is.ggside_options <- is_ggside_options is.ggside_scale <- is_ggside_scale

---

`ggside-scales` *Specifying side scales*

---

## Description

The xside and yside variants of geoms are plotted along the x-axis and y-axis respectively of their main panel's data mapping. The positional scale here is shared between the main panel and the side panel. The related positional scale type of the side panel, i.e. the y axis of the xside panel (xsidey) or the x axis of the yside panel (ysidex), is determined automatically by `ggplot2` default scales. However, you can override this by using the continuous or discrete variants within `ggside`. This allows the user to select the scale type or transform most appropriate for their side panels.

ggside-scales-binned *Position scales for binning continuous data ggside scales*

## Description

The xside and yside variants of scale_x_binned/scale_y_binned. scale_xsidey_binned enables better control on how the y-axis is rendered on the xside panel and scale_ysidex_binned enables better control on how the x-axis is rendered on the yside panel.

## Usage

```
scale_xsidey_binned(
  name = waiver(),
  n.breaks = 10,
  nice.breaks = TRUE,
  breaks = waiver(),
  labels = waiver(),
  limits = NULL,
  expand = waiver(),
  oob = squish,
  na.value = NA_real_,
  right = TRUE,
  show.limits = FALSE,
  transform = "identity",
  guide = waiver(),
  position = "left"
)

scale_ysidex_binned(
  name = waiver(),
  n.breaks = 10,
  nice.breaks = TRUE,
  breaks = waiver(),
  labels = waiver(),
  limits = NULL,
  expand = waiver(),
  oob = squish,
  na.value = NA_real_,
  right = TRUE,
  show.limits = FALSE,
  transform = "identity",
  guide = waiver(),
  position = "bottom"
)
```

## Arguments

| | |
|---|---|
| name | The name of the scale. Used as the axis or legend title. If `waiver()`, the default, the name of the scale is taken from the first mapping used for that aesthetic. If `NULL`, the legend title will be omitted. |
| n.breaks | The number of break points to create if breaks are not given directly. |
| nice.breaks | Logical. Should breaks be attempted placed at nice values instead of exactly evenly spaced between the limits. If `TRUE` (default) the scale will ask the transformation object to create breaks, and this may result in a different number of breaks than requested. Ignored if breaks are given explicitly. |
| breaks | One of:<br>• `NULL` for no breaks<br>• `waiver()` for the default breaks computed by the transformation object<br>• A numeric vector of positions<br>• A function that takes the limits as input and returns breaks as output (e.g., a function returned by `scales::extended_breaks()`). Note that for position scales, limits are provided after scale expansion. Also accepts rlang lambda function notation. |
| labels | One of the options below. Please note that when `labels` is a vector, it is highly recommended to also set the `breaks` argument as a vector to protect against unintended mismatches.<br>• `NULL` for no labels<br>• `waiver()` for the default labels computed by the transformation object<br>• A character vector giving labels (must be same length as `breaks`)<br>• An expression vector (must be the same length as breaks). See ?plotmath for details.<br>• A function that takes the breaks as input and returns labels as output. Also accepts rlang lambda function notation. |
| limits | One of:<br>• `NULL` to use the default scale range<br>• A numeric vector of length two providing limits of the scale. Use `NA` to refer to the existing minimum or maximum<br>• A function that accepts the existing (automatic) limits and returns new limits. Also accepts rlang lambda function notation. Note that setting limits on positional scales will **remove** data outside of the limits. If the purpose is to zoom, use the limit argument in the coordinate system (see `coord_cartesian()`). |
| expand | For position scales, a vector of range expansion constants used to add some padding around the data to ensure that they are placed some distance away from the axes. Use the convenience function `expansion()` to generate the values for the `expand` argument. The defaults are to expand the scale by 5% on each side for continuous variables, and by 0.6 units on each side for discrete variables. |
| oob | One of:<br>• Function that handles limits outside of the scale limits (out of bounds). Also accepts rlang lambda function notation. |

- The default (scales::squish()) squishes out of bounds values into range.
- scales::censor for replacing out of bounds values with NA.
- scales::squish_infinite() for squishing infinite values into range.

| | |
|---|---|
| na.value | Missing values will be replaced with this value. |
| right | Should the intervals be closed on the right (TRUE, default) or should the intervals be closed on the left (FALSE)? 'Closed on the right' means that values at break positions are part of the lower bin (open on the left), whereas they are part of the upper bin when intervals are closed on the left (open on the right). |
| show.limits | should the limits of the scale appear as ticks |
| transform | For continuous scales, the name of a transformation object or the object itself. Built-in transformations include "asn", "atanh", "boxcox", "date", "exp", "hms", "identity", "log", "log10", "log1p", "log2", "logit", "modulus", "probability", "probit", "pseudo_log", "reciprocal", "reverse", "sqrt" and "time".<br>A transformation object bundles together a transform, its inverse, and methods for generating breaks and labels. Transformation objects are defined in the scales package, and are called transform_<name>. If transformations require arguments, you can call them from the scales package, e.g. scales::transform_boxcox(p = 2). You can create your own transformation with scales::new_transform(). |
| guide | A function used to create a guide or its name. See guides() for more information. |
| position | For position scales, The position of the axis. left or right for y axes, top or bottom for x axes. |

## Value

ggside_scale object inheriting from ggplot2::ScaleBinnedPosition

## Examples

```
ggplot(iris, aes(Sepal.Width, Sepal.Length)) +
  geom_point() +
  geom_xsidepoint(aes(y = Petal.Width, xcolour = Petal.Length)) +
  scale_xsidey_binned(n.breaks = 4) +
 scale_colour_steps(aesthetics = "xcolour", guide = guide_colorbar(available_aes = "xcolour")) +
  theme(ggside.panel.scale.x = .3)
```

---

# ggside-scales-continuous

*Position scales for continuous data ggside scales*

---

## Description

The xside and yside variants of scale_x_continuous/ scale_y_continuous. scale_xsidey_continuous enables better control on how the y-axis is rendered on the xside panel and scale_ysidex_continuous enables better control on how the x-axis is rendered on the yside panel.

## Usage

```
scale_xsidey_continuous(
  name = waiver(),
  breaks = waiver(),
  minor_breaks = waiver(),
  n.breaks = NULL,
  labels = waiver(),
  limits = NULL,
  expand = waiver(),
  oob = scales::censor,
  na.value = NA_real_,
  transform = "identity",
  guide = waiver(),
  position = "left",
  sec.axis = waiver()
)

scale_xsidey_log10(...)

scale_xsidey_reverse(...)

scale_xsidey_sqrt(...)

scale_ysidex_log10(...)

scale_ysidex_reverse(...)

scale_ysidex_sqrt(...)

scale_ysidex_log10(...)

scale_ysidex_reverse(...)

scale_ysidex_sqrt(...)
```

## Arguments

| | |
|---|---|
| name | The name of the scale. Used as the axis or legend title. If `waiver()`, the default, the name of the scale is taken from the first mapping used for that aesthetic. If `NULL`, the legend title will be omitted. |
| breaks | One of:<br>• `NULL` for no breaks<br>• `waiver()` for the default breaks computed by the transformation object<br>• A numeric vector of positions<br>• A function that takes the limits as input and returns breaks as output (e.g., a function returned by `scales::extended_breaks()`). Note that for position scales, limits are provided after scale expansion. Also accepts rlang |

lambda function notation.

`minor_breaks` One of:

- `NULL` for no minor breaks
- `waiver()` for the default breaks (none for discrete, one minor break between each major break for continuous)
- A numeric vector of positions
- A function that given the limits returns a vector of minor breaks. Also accepts rlang lambda function notation. When the function has two arguments, it will be given the limits and major break positions.

`n.breaks` An integer guiding the number of major breaks. The algorithm may choose a slightly different number to ensure nice break labels. Will only have an effect if `breaks = waiver()`. Use `NULL` to use the default number of breaks given by the transformation.

`labels` One of the options below. Please note that when `labels` is a vector, it is highly recommended to also set the `breaks` argument as a vector to protect against unintended mismatches.

- `NULL` for no labels
- `waiver()` for the default labels computed by the transformation object
- A character vector giving labels (must be same length as `breaks`)
- An expression vector (must be the same length as breaks). See ?plotmath for details.
- A function that takes the breaks as input and returns labels as output. Also accepts rlang lambda function notation.

`limits` One of:

- `NULL` to use the default scale range
- A numeric vector of length two providing limits of the scale. Use `NA` to refer to the existing minimum or maximum
- A function that accepts the existing (automatic) limits and returns new limits. Also accepts rlang lambda function notation. Note that setting limits on positional scales will **remove** data outside of the limits. If the purpose is to zoom, use the limit argument in the coordinate system (see `coord_cartesian()`).

`expand` For position scales, a vector of range expansion constants used to add some padding around the data to ensure that they are placed some distance away from the axes. Use the convenience function `expansion()` to generate the values for the `expand` argument. The defaults are to expand the scale by 5% on each side for continuous variables, and by 0.6 units on each side for discrete variables.

`oob` One of:

- Function that handles limits outside of the scale limits (out of bounds). Also accepts rlang lambda function notation.
- The default (`scales::censor()`) replaces out of bounds values with `NA`.
- `scales::squish()` for squishing out of bounds values into range.
- `scales::squish_infinite()` for squishing infinite values into range.

| | |
|---|---|
| na.value | Missing values will be replaced with this value. |
| transform | For continuous scales, the name of a transformation object or the object itself. Built-in transformations include "asn", "atanh", "boxcox", "date", "exp", "hms", "identity", "log", "log10", "log1p", "log2", "logit", "modulus", "probability", "probit", "pseudo_log", "reciprocal", "reverse", "sqrt" and "time".<br>A transformation object bundles together a transform, its inverse, and methods for generating breaks and labels. Transformation objects are defined in the scales package, and are called transform_<name>. If transformations require arguments, you can call them from the scales package, e.g. scales::transform_boxcox(p = 2). You can create your own transformation with scales::new_transform(). |
| guide | A function used to create a guide or its name. See guides() for more information. |
| position | For position scales, The position of the axis. left or right for y axes, top or bottom for x axes. |
| sec.axis | sec_axis() is used to specify a secondary axis. |
| ... | Other arguments passed on to scale_(y\|x)side(x\|y)_continuous() |

## Value

ggside_scale object inheriting from ggplot2::ScaleContinuousPosition

## Examples

```
library(ggside)
library(ggplot2)
# adding continuous y-scale to the x-side panel, when main panel mapped to discrete data
ggplot(mpg, aes(hwy, class, colour = class)) +
  geom_boxplot() +
  geom_xsidedensity(position = "stack") +
  theme(ggside.panel.scale = .3) +
  scale_xsidey_continuous(minor_breaks = NULL, limits = c(NA, 1))

# If you need to specify the main scale, but need to prevent this from
# affecting the side scale. Simply add the appropriate `scale_*side*_*()` function.
ggplot(mtcars, aes(wt, mpg)) +
  geom_point() +
  geom_xsidehistogram() +
  geom_ysidehistogram() +
  scale_x_continuous(
    breaks = seq(1, 6, 1),
    # would otherwise remove the histogram
    # as they have a lower value of 0.
    limits = (c(1, 6))
  ) +
  scale_ysidex_continuous() # ensures the x-axis of the y-side panel has its own scale.
```

`ggside-scales-discrete` *Position scales for discrete data ggside scales*

## Description

The xside and yside variants of scale_x_discrete/scale_y_discrete. scale_xsidey_discrete enables better control on how the y-axis is rendered on the xside panel and scale_ysidex_discrete enables better control on how the x-axis is rendered on the yside panel.

## Arguments

`...` Arguments passed on to `discrete_scale`

`breaks` One of:

- `NULL` for no breaks
- `waiver()` for the default breaks (the scale limits)
- A character vector of breaks
- A function that takes the limits as input and returns breaks as output. Also accepts rlang lambda function notation.

`limits` One of:

- `NULL` to use the default scale values
- A character vector that defines possible values of the scale and their order
- A function that accepts the existing (automatic) values and returns new ones. Also accepts rlang lambda function notation.

`drop` Should unused factor levels be omitted from the scale? The default, `TRUE`, uses the levels that appear in the data; `FALSE` includes the levels in the factor. Please note that to display every level in a legend, the layer should use `show.legend = TRUE`.

`na.translate` Unlike continuous scales, discrete scales can easily show missing values, and do so by default. If you want to remove missing values from a discrete scale, specify `na.translate = FALSE`.

`na.value` If `na.translate = TRUE`, what aesthetic value should the missing values be displayed as? Does not apply to position scales where `NA` is always placed at the far right.

`aesthetics` The names of the aesthetics that this scale works with.

`minor_breaks` One of:

- `NULL` for no minor breaks
- `waiver()` for the default breaks (none for discrete, one minor break between each major break for continuous)
- A numeric vector of positions
- A function that given the limits returns a vector of minor breaks. Also accepts rlang lambda function notation. When the function has two arguments, it will be given the limits and major break positions.

`labels` One of the options below. Please note that when `labels` is a vector, it is highly recommended to also set the `breaks` argument as a vector to protect against unintended mismatches.

- `NULL` for no labels
- `waiver()` for the default labels computed by the transformation object
- A character vector giving labels (must be same length as `breaks`)
- An expression vector (must be the same length as breaks). See ?plotmath for details.
- A function that takes the breaks as input and returns labels as output. Also accepts rlang lambda function notation.

`call` The `call` used to construct the scale for reporting messages.

`super` The super class to use for the constructed scale

`expand` For position scales, a vector of range expansion constants used to add some padding around the data to ensure that they are placed some distance away from the axes. Use the convenience function `expansion()` to generate the values for the `expand` argument. The defaults are to expand the scale by 5% on each side for continuous variables, and by 0.6 units on each side for discrete variables.

`guide` A function used to create a guide or its name. See `guides()` for more information.

`position` For position scales, The position of the axis. `left` or `right` for y axes, `top` or `bottom` for x axes.

## Value

ggside_scale object inheriting from ggplot2::ScaleDiscretePosition

## Examples

```
library(ggside)
library(ggplot2)
# adding discrete y-scale to the x-side panel, when main panel mapped to continuous data
ggplot(mpg, aes(displ, hwy, colour = class)) +
  geom_point() +
  geom_xsideboxplot(aes(y = class), orientation = "y") +
  theme(ggside.panel.scale = .3) +
  scale_xsidey_discrete(guide = guide_axis(angle = 45))

# If you need to specify the main scale, but need to prevent this from
# affecting the side scale. Simply add the appropriate `scale_*side*_*()`
# function.
ggplot(mpg, aes(class, displ)) +
  geom_boxplot() +
  geom_ysideboxplot(aes(x = "all"), orientation = "x") +
  scale_x_discrete(guide = guide_axis(angle = 90)) + # rotate the main panel text
  scale_ysidex_discrete() # leave side panel as default
```

## ggside_coord *Coord Compatible with ggside*

### Description

S3 class that converts old Coord into one that is compatible with ggside. Can also update ggside on the object. Typically, the new ggproto will inherit from the object being replaced.

### Usage

```
ggside_coord(coord)

## Default S3 method:
ggside_coord(coord)

## S3 method for class 'CoordCartesian'
ggside_coord(coord)

## S3 method for class 'CoordSide'
ggside_coord(coord)

## S3 method for class 'CoordTrans'
ggside_coord(coord)

## S3 method for class 'CoordFixed'
ggside_coord(coord)
```

### Arguments

| | |
|---|---|
| coord | coord ggproto Object to replace |

## ggside_geom *ggside geom constructor*

### Description

utility function to make a ggside Geom

### Usage

```
ggside_geom(class_name = NULL, geom = NULL, side = NULL, ...)
```

### Arguments

| | |
|---|---|
| class_name | New class name for the ggproto object |
| geom | The Geom ggproto to inherit from |
| side | should the resulting object be configured for x or y |
| ... | additional members to add to the ggproto class. |

---

## ggside_layer *New ggside layer*

---

### Description

utility function to make a ggside layer compatible with ggside internals

### Usage

```
ggside_layer(
  geom = NULL,
  stat = NULL,
  data = NULL,
  mapping = NULL,
  position = NULL,
  params = list(),
  inherit.aes = TRUE,
  check.aes = TRUE,
  check.param = TRUE,
  show.legend = NA,
  key_glyph = NULL,
  side = NULL
)

as_ggside_layer(layer, side)
```

### Arguments

| | |
|---|---|
| geom | The geometric object to use to display the data for this layer. When using a stat_*() function to construct a layer, the geom argument can be used to override the default coupling between stats and geoms. The geom argument accepts the following:<br>• A Geom ggproto subclass, for example GeomPoint.<br>• A string naming the geom. To give the geom as a string, strip the function name of the geom_ prefix. For example, to use geom_point(), give the geom as "point".<br>• For more information and other ways to specify the geom, see the layer geom documentation. |

stat — The statistical transformation to use on the data for this layer. When using a geom_*() function to construct a layer, the stat argument can be used to override the default coupling between geoms and stats. The stat argument accepts the following:

- A Stat ggproto subclass, for example StatCount.
- A string naming the stat. To give the stat as a string, strip the function name of the stat_ prefix. For example, to use stat_count(), give the stat as "count".
- For more information and other ways to specify the stat, see the layer stat documentation.

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 ggplot().

A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.

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. A function can be created from a formula (e.g. ~ head(.x, 10)).

mapping — Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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.

position — 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 position argument accepts the following:

- The result of calling a position function, such as position_jitter(). This method allows for passing extra arguments to the position.
- A string naming the position adjustment. To give the position as a string, strip the function name of the position_ prefix. For example, to use position_jitter(), give the position as "jitter".
- For more information and other ways to specify the position, see the layer position documentation.

params — Additional parameters to the geom and stat.

inherit.aes — 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. annotation_borders().

check.aes, check.param — If TRUE, the default, will check that supplied parameters and aesthetics are understood by the geom or stat. Use FALSE to suppress the checks.

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. 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 TRUE. If NA, all levels are shown in legend, but unobserved levels are omitted.

| | |
|---|---|
| key_glyph | A legend key drawing function or a string providing the function name minus the draw_key_ prefix. See draw_key for details. |
| side | should the resulting ggplot2_layer be configured for x or y side |
| layer | a LayerInstance object made from layer |

---

## ggside_layout *Construct ggside layout*

---

### Description

Creates a new layout object required for ggside functionality

### Usage

```
ggside_layout(layout)
```

### Arguments

| | |
|---|---|
| layout | a ggproto Layout object |

---

## is_ggside *Check ggside objects*

---

### Description

Check ggside objects

### Usage

```
is_ggside(x)

is_ggside_layer(x)

is_ggside_options(x)

is_ggside_scale(x)
```

### Arguments

| | |
|---|---|
| x | Object to test |

### Value

A logical value

## parse_side_aes *Extending base ggproto classes for ggside*

### Description

These ggproto classes are slightly modified from their respective inherited ggproto class. The biggest difference is exposing 'x/yfill', 'x/ycolour', and 'x/ycolor' as viable aesthetic mappings.

### Usage

```
parse_side_aes(data, params)
```

### Arguments

| | |
|---|---|
| data | data passed internally |
| params | params available to ggproto object |

### Value

ggproto object that is usually passed to layer

## position_rescale *Rescale x or y onto new range in margin*

### Description

Take the range of the specified axis and rescale it to a new range about a midpoint. By default the range will be calculated from the associated main plot axis mapping. The range will either be the resolution or 5% of the axis range, depending if original data is discrete or continuous respectively. Each layer called with position_rescale will possess an instance value that indexes with axis rescale. By default, each position_rescale will dodge the previous call unless instance is specified to a previous layer.

### Usage

```
position_rescale(
  rescale = "y",
  midpoint = NULL,
  range = NULL,
  location = NULL,
  instance = NULL
)

position_yrescale(
  rescale = "y",
```

```
  midpoint = NULL,
  range = NULL,
  location = NULL,
  instance = NULL
)

position_xrescale(
  rescale = "x",
  midpoint = NULL,
  range = NULL,
  location = NULL,
  instance = NULL
)
```

## Arguments

| | |
|---|---|
| rescale | character value of "x" or "y". specifies which mapping data will be rescaled |
| midpoint | default set to NULL. Center point about which the rescaled x/y values will reside. |
| range | default set to NULL and auto generates from main mapping range. Specifies the size of the rescaled range. |
| location | specifies where position_rescale should try to place midpoint. If midpoint is specified, location is ignored and placed at the specified location. |
| instance | integer that indexes rescaled axis calls. instance may be specified and if a previous layer with the same instance exists, then the same midpoint and range are used for rescaling. x and y are indexed independently. |

## Format

An object of class `PositionRescale` (inherits from `Position`, `ggproto`, `gg`) of length 10.

## Value

a ggproto object inheriting from 'Position' and can be added to a ggplot

---

# scale_xcolour *Scales for the *colour aesthetics*

---

## Description

These are the various scales that can be applied to the xsidebar or ysidebar colour aesthetics, such as xcolour and ycolour. They have the same usage as existing standard ggplot2 scales.

## Value

returns a ggproto object to be added to a ggplot

### Related Functions

- scale_xcolour_hue
- scale_ycolour_hue
- scale_xcolour_discrete
- scale_ycolour_discrete
- scale_xcolour_continuous
- scale_ycolour_continuous
- scale_xcolour_manual
- scale_ycolour_manual
- scale_xcolour_gradient
- scale_ycolour_gradient
- scale_xcolour_gradientn
- scale_ycolour_gradientn

---

## scale_xfill *Scales for the *fill aesthetics*

---

### Description

These are the various scales that can be applied to the xsidebar or ysidebar fill aesthetics, such as xfill and yfill. They have the same usage as existing standard ggplot2 scales.

### Value

returns a ggproto object to be added to a ggplot

### Related Functions

- scale_xfill_hue
- scale_yfill_hue
- scale_xfill_discrete
- scale_yfill_discrete
- scale_xfill_continuous
- scale_yfill_continuous
- scale_xfill_manual
- scale_yfill_manual
- scale_xfill_gradient
- scale_yfill_gradient
- scale_xfill_gradientn
- scale_yfill_gradientn

## scale_ycolour_hue *scale_ycolour_hue*

### Description

scale_ycolour_hue

scale_ycolour_manual

scale_ycolour_gradient

scale_ycolour_discrete

scale_ycolour_discrete

scale_ycolour_continuous

scale_ycolour_continuous

## scale_yfill_hue *scale_yfill_hue*

### Description

scale_yfill_hue

scale_yfill_manual

scale_yfill_gradient

scale_yfill_discrete

scale_yfill_continuous

## stat_summarise *Summarise by grouping variable*

### Description

Applies a function to a specified grouping variable

## Usage

```
stat_summarise(
  mapping = NULL,
  data = NULL,
  geom = "bar",
  position = "identity",
  ...,
  fun = NULL,
  args = list(),
  show.legend = NA,
  inherit.aes = TRUE
)

stat_summarize(
  mapping = NULL,
  data = NULL,
  geom = "bar",
  position = "identity",
  ...,
  fun = NULL,
  args = list(),
  show.legend = NA,
  inherit.aes = TRUE
)
```

## Arguments

| | |
|---|---|
| mapping | Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (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:<br>If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().<br>A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.<br>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. A function can be created from a formula (e.g. ~ head(.x, 10)). |
| geom | The geometric object to use to display the data for this layer. When using a stat_*() function to construct a layer, the geom argument can be used to override the default coupling between stats and geoms. The geom argument accepts the following:<br>• A Geom ggproto subclass, for example GeomPoint.<br>• A string naming the geom. To give the geom as a string, strip the function name of the geom_ prefix. For example, to use geom_point(), give the geom as "point". |

- For more information and other ways to specify the geom, see the layer geom documentation.

`position` 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 `position` argument accepts the following:

- The result of calling a position function, such as `position_jitter()`. This method allows for passing extra arguments to the position.
- A string naming the position adjustment. To give the position as a string, strip the function name of the `position_` prefix. For example, to use `position_jitter()`, give the position as `"jitter"`.
- For more information and other ways to specify the position, see the layer position documentation.

`...` additional arguments to pass to layer.

`fun` Summarising function to use. If no function provided it will default to length.

`args` List of additional arguments passed to the function.

`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. 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 `TRUE`. If `NA`, all levels are shown in legend, but unobserved levels are omitted.

`inherit.aes` 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. `annotation_borders()`.

## Format

An object of class `StatSummarise` (inherits from `Stat`, `ggproto`, `gg`) of length 5.

An object of class `StatSummarize` (inherits from `Stat`, `ggproto`, `gg`) of length 5.

## Value

A Layer object to be added to a ggplot

## Aesthetics

Using stat_summarise requires that you use `domain` as an aesthetic mapping. This allows you to summarise other data instead of assuming that `x` is the function's `domain`.

## Examples

```
library(tidyr)
i <- gather(iris,"key","value",-Species)
ggplot(i, aes(Species, fill = key, domain = value)) +
   geom_bar(aes(y = after_stat(summarise)), stat = "summarise", fun = mean) +
   stat_summarise(aes(y = after_stat(summarise),
                  label = after_stat(summarise)),
                  position = position_stack(vjust = .5), geom = "text", fun = mean)
```

theme_ggside_grey *ggside custom themes*

## Description

Theme elements to help customize the look and feel of ggside's side panels.

## Usage

```
theme_ggside_grey(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22
)

theme_ggside_gray(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22
)

theme_ggside_bw(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22
)

theme_ggside_linedraw(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22
)

theme_ggside_light(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22
)

theme_ggside_dark(
  base_size = 11,
  base_family = "",
```

```
  base_line_size = base_size/22,
  base_rect_size = base_size/22
)

theme_ggside_minimal(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22
)

theme_ggside_classic(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22
)

theme_ggside_void(
  base_size = 11,
  base_family = "",
  base_line_size = base_size/22,
  base_rect_size = base_size/22
)
```

## Arguments

| | |
|---|---|
| `base_size` | base font size, given in pts. |
| `base_family` | base font family |
| `base_line_size` | base size for line elements |
| `base_rect_size` | base size for rect elements |

## Details

Incomplete themes:

Unlike the complete themes like theme_grey, `ggside`'s variants are not considered "complete". This is because the user may want to specify the side panels separately from the theme of the main panel. This means that `theme_ggside_*()` functions should be called after any of `ggplot2`'s complete themes.

## ggside theme elements

`ggside.panel.scale`, `ggside.panel.scale.x`, `ggside.panel.scale.y`

`ggside.panel.spacing`, `ggside.panel.spacing.x`, `ggside.panel.spacing.y`

`ggside.panel.background`

ggside.panel.grid, ggside.panel.grid.major, ggside.panel.grid.minor, ggside.panel.grid.major.x, ggside.

ggside.axis.text, ggside.axis.text.x, ggside.axis.text.y, ggside.axis.text.x.top, ggside.axis.text.x.bo

ggside.axis.line, ggside.axis.line.x, ggside.axis.line.y, ggside.axis.line.x.top, ggside.axis.line.x.bo

ggside.axis.ticks, ggside.axis.ticks.x, ggside.axis.ticks.y, ggside.axis.ticks.x.top, ggside.axis.ticks

ggside.axis.ticks.length, ggside.axis.ticks.length.x, ggside.axis.ticks.length.y, ggside.axis.ticks.len

ggside.axis.minor.ticks, ggside.axis.minor.ticks.x, ggside.axis.minor.ticks.y, ggside.axis.minor.ticks.

ggside.axis.minor.ticks.length, ggside.axis.minor.ticks.length.x, ggside.axis.minor.ticks.length.y, ggs

## Examples

```
library(ggplot2)
library(ggside)

p <- ggplot(iris, aes(Sepal.Width, Petal.Length, color = Species)) +
  geom_point() +
  geom_xsidedensity() +
  geom_ysidedensity() +
  theme_dark()

p

p + theme_ggside_classic()
p + theme_ggside_void()
p + theme_ggside_linedraw() +
  theme(ggside.panel.border = element_rect(colour = "red"))
```

---

# xside *The xside geometries*

---

## Description

xside refers to the api of ggside. Any geom_ with xside will plot its respective geometry along the x-axis per facet panel. By default the xside panel will plot above the main panel. This xside panel will always share the same scale as it's main panel, but is expected to have a separate y-axis scaling.

## Value

geom_xside* return a XLayer object to be added to a ggplot

### New Aesthetics

All `xside` Geometries have `xfill`, `xcolour`/`xcolor` available for aesthetic mappings. These mappings behave exactly like the default counterparts except that they are considered separate scales. All `xside` geometries will use `xfill` over `fill`, but will default to `fill` if `xfill` is not provided. The same goes for `xcolour` in respects to `colour`. This comes in handy if you wish to map both `fill` to one geometry as continuous, you can still map `xfill` for a separate `xside` geometry without conflicts. See more information in `vignette("ggside")`.

### Exported Geometries

The following are the `xside` variants of the ggplot2 Geometries

- geom_xsidebar
- geom_xsideboxplot
- geom_xsidecol
- geom_xsidedensity
- geom_xsidefreqpoly
- geom_xsidehistogram
- geom_xsideline
- geom_xsidepath
- geom_xsidepoint
- geom_xsidetext
- geom_xsidetile
- geom_xsideviolin

### See Also

yside

---

## `yside` *The yside geometries*

---

### Description

`yside` refers to the api of ggside. Any `geom_` with `yside` will plot its respective geometry along the y-axis per facet panel. The yside panel will plot to the right of the main panel by default. This yside panel will always share the same scale as it's main panel, but is expected to have a separate x-axis scaling.

### Value

geom_yside* return a YLayer object to be added to a ggplot

## New Aesthetics

All `yside` Geometries have `yfill`, `ycolour`/`ycolor` available for aesthetic mappings. These mappings behave exactly like the default counterparts except that they are considered separate scales. All `yside` geometries will use `yfill` over `fill`, but will default to `fill` if `yfill` is not provided. The same goes for `ycolour` in respects to `colour`. This comes in handy if you wish to map both `fill` to one geometry as continuous, you can still map `yfill` for a separate `yside` geometry without conflicts. See more information in `vignette("ggside")`.

#' @section Exported Geometries:

The following are the `yside` variants of the ggplot2 Geometries

- geom_ysidebar
- geom_ysideboxplot
- geom_ysidecol
- geom_ysidedensity
- geom_ysidefreqpoly
- geom_ysidehistogram
- geom_ysideline
- geom_ysidepath
- geom_ysidepoint
- geom_ysidetext
- geom_ysidetile
- geom_ysideviolin

## See Also

xside

# Index