Package ‘ggnormalviolin’

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Title  A 'ggplot2' Extension to Make Normal Violin Plots
Version 0.1.2
Description Uses ‘ggplot2’ to create normally distributed violin plots with specified means and standard deviations. This function can be useful in showing hypothetically normal distributions and confidence intervals.
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BugReports https://github.com/wjschne/ggnormalviolin/issues
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**geom_normalviolin**  
Creates normal violins with specified means and standard deviations

**Description**

Creates normal violins with specified means and standard deviations

**Usage**

```r
gemm_normalviolin(mapping = NULL, data = NULL, nsigma = 4,
                  p_tail = 0, p_lower_tail = p_tail/2, p_upper_tail = p_tail/2,
                  tail_fill = "black", tail_alpha = 0.4, width = 0.6,
                  upper_limit = NA, lower_limit = NA, face_left = TRUE,
                  face_right = TRUE, na.rm = FALSE, show.legend = NA,
                  inherit.aes = TRUE, ...)
```

**Arguments**

- `mapping`: Set of aesthetic mappings created by `aes()` or `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)`).

- `nsigma`: The number of standard deviations each violin should extend

- `p_tail`: The 2-tailed proportion that should be highlighted. Can be overridden with `p_lower_tail` and/or `p_upper_tail`

- `p_lower_tail`: The proportion of the distribution that should be highlighted in the lower tail. Defaults to half of `p_tail`.

- `p_upper_tail`: The proportion of the distribution that should be highlighted in the upper tail. Defaults to half of `p_tail`.

- `tail_fill`: fill color for tails

- `tail_alpha`: alpha value for tails

- `width`: Width of normal violin

- `upper_limit`: upper limit for polygons. Needed in case setting limits in `scale_y_continuous` or `ylim` distorts the polygons.

- `lower_limit`: lower limit for polygons. Needed in case setting limits in `scale_y_continuous` or `ylim` distorts the polygons.
geom_normalviolin

- face_left: Display left half of violins. Defaults to ‘TRUE’
- face_right: Display right half of violins. Defaults to ‘TRUE’
- 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.
- 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. borders().
- ...: Other arguments passed on to layer(). These are often aesthetics, used to set an aesthetic to a fixed value, like colour = "red" or size = 3. They may also be parameters to the paired geom/stat.

Aesthetics

geom_normalviolin understands the following aesthetics (required aesthetics are in bold):

- **x**
- **mu** (mean of the normal distribution)
- **sigma** (standard deviation of the normal distribution)
- **width** (width of violin)
- **nsigma** (number of standard deviations to which the violins extend)
- **p_tail** (2-tailed proportion of tails highlighted)
- **p_upper_tail** (proportion of upper tails highlighted)
- **p_lower_tail** (proportion of lower tails highlighted)
- **face_left** (display left half of violin?)
- **face_right** (display right half of violin?)
- **color**
- **fill**
- **alpha** (of fills)
- **group**
- **linetype**
- **size** (of lines)

Examples

```r
library(ggplot2)
library(ggnormalviolin)

d <- data.frame(
  Distribution = c("A", "B"),
  Distribution_mean = c(80, 90),
  Distribution_sd = c(15, 10)
```
ggplot(data = d, aes(x = Distribution)) +
  geom_normalviolin(aes(mu = Distribution_mean,
                      sigma = Distribution_sd))
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