

# ggplot2 extensions

# Introduction to ggplot2 and Grammar of Graphics

# Classifying by construct:

GGPLOT2 GRAMMAR

# New Geoms

`ggforce` – arcs, bezier curves, splines, voronai, hulls, delaunay, and others

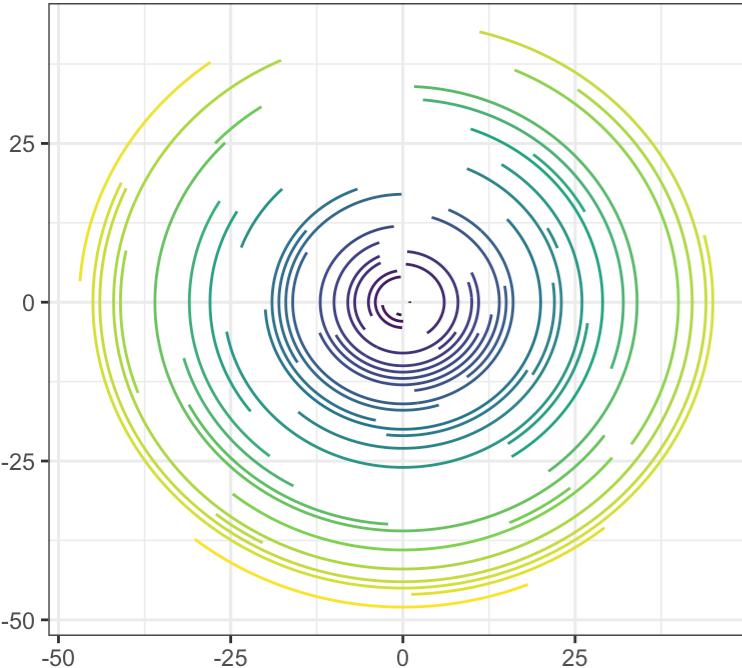
`ggalt` – splines, encircling points, dumbbell and lollipop charts, and others

`ggsignif` – significance brackets with p values

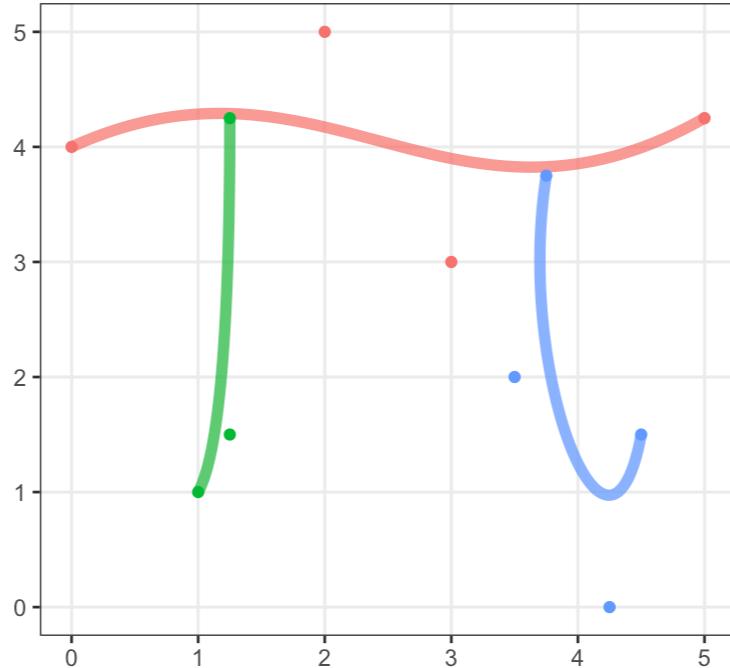
# ggforce

</>

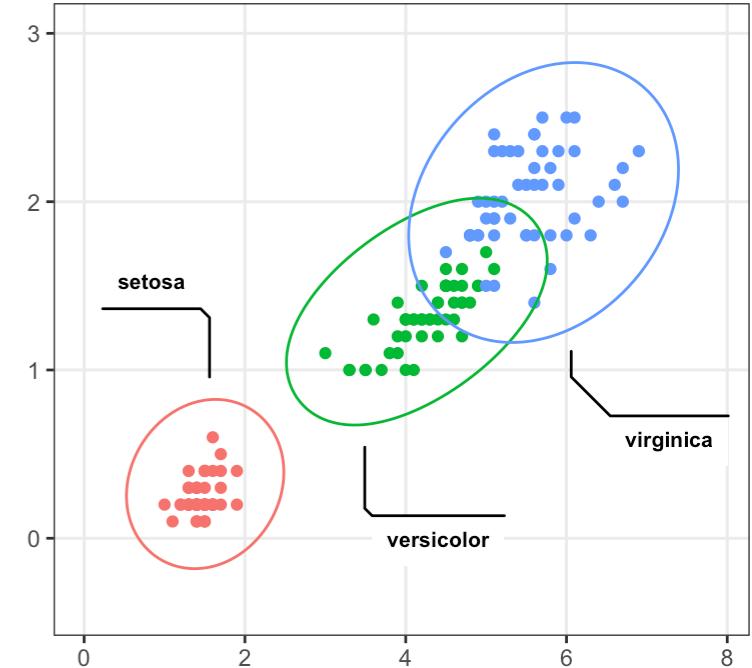
`geom_arc()`



`geom_bezier()`



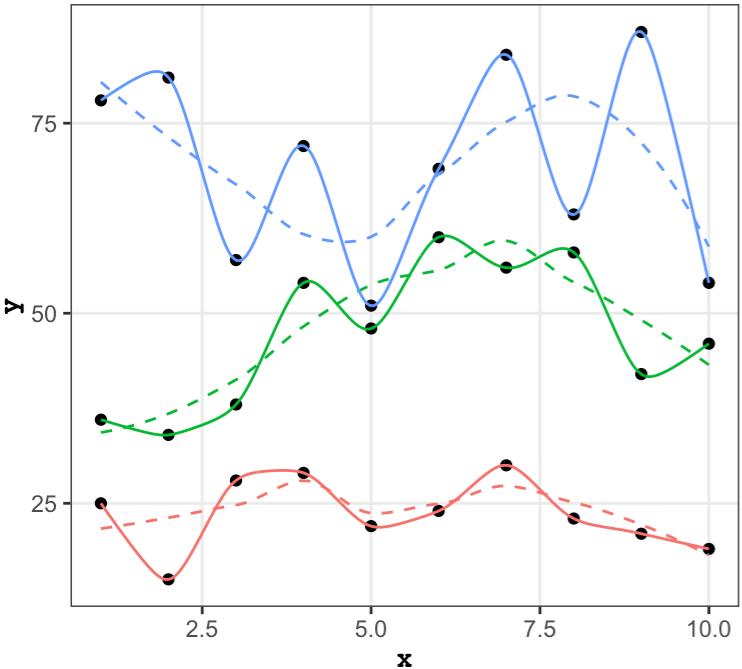
`geom_mark_ellipse()`



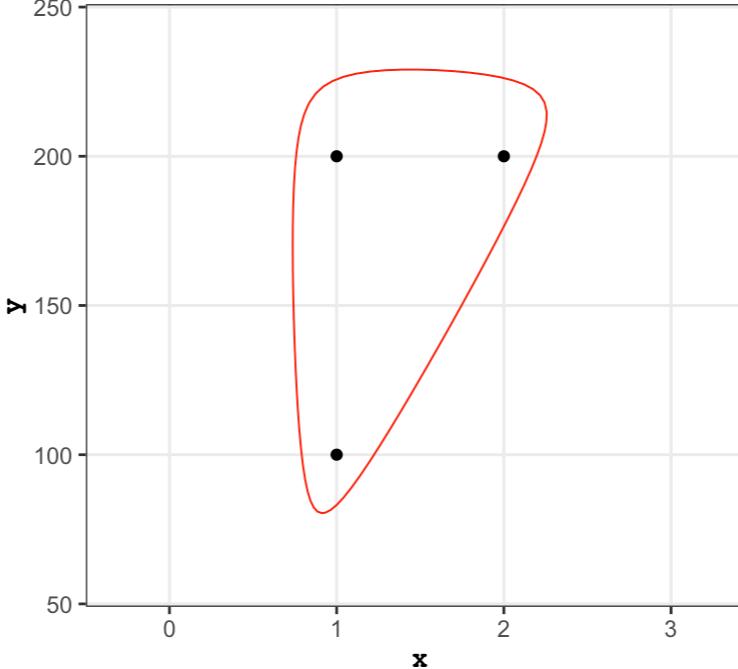
# ggalt

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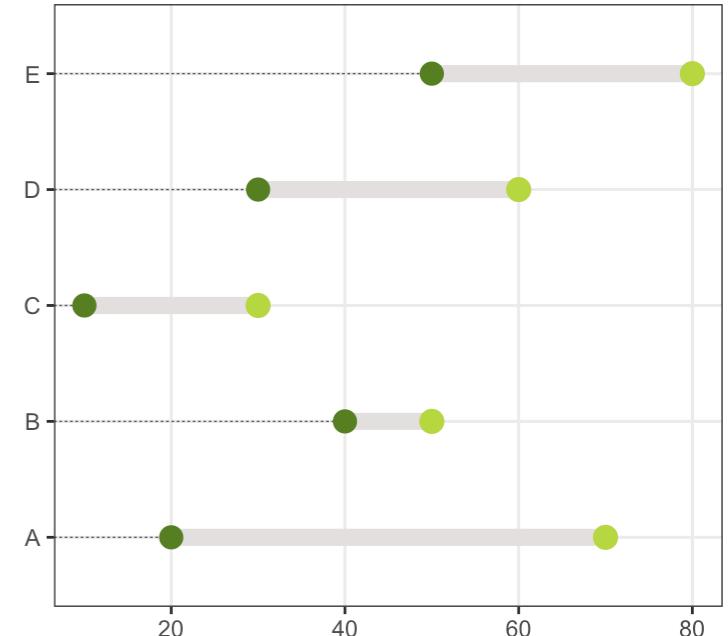
**geom\_xspline()**



**geom\_encircle()**



**geom\_dumbbell()**

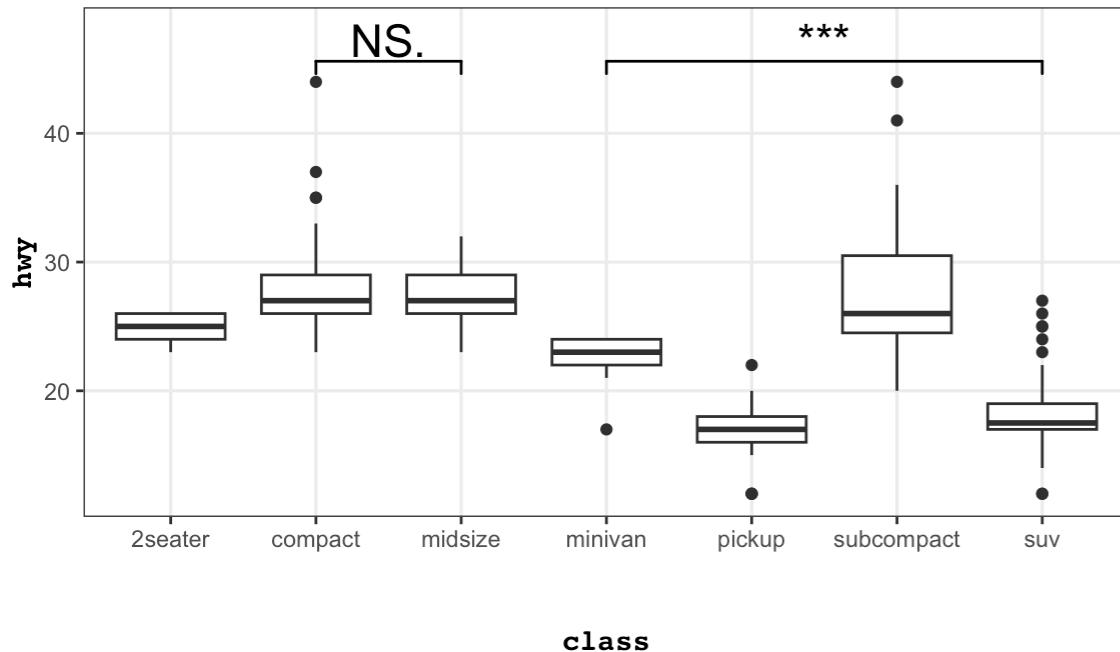


Code source: <https://github.com/hrbrmstr/ggalt>

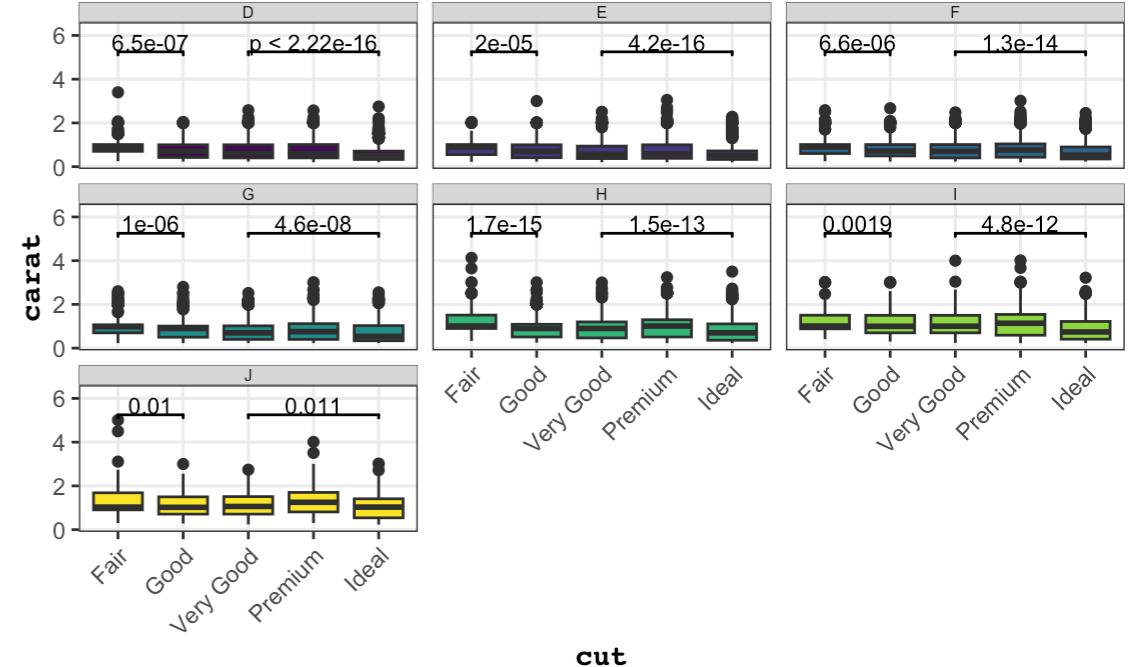
# ggsignif

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## geom\_signif()



## compatible with facets



Code source: <https://github.com/const-ae/ggsignif>

# New Geoms for Labels/Text

`ggrepel` – repel overlapping text labels

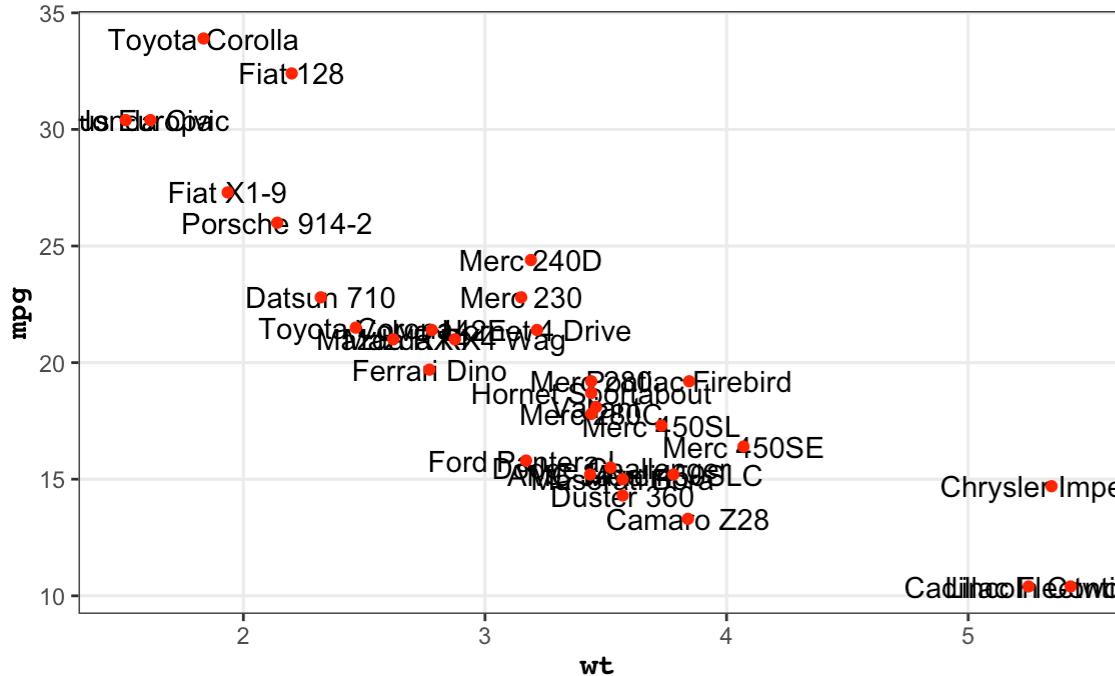
`ggtext` – fit text into boxes

`geomtextpath` – curved text

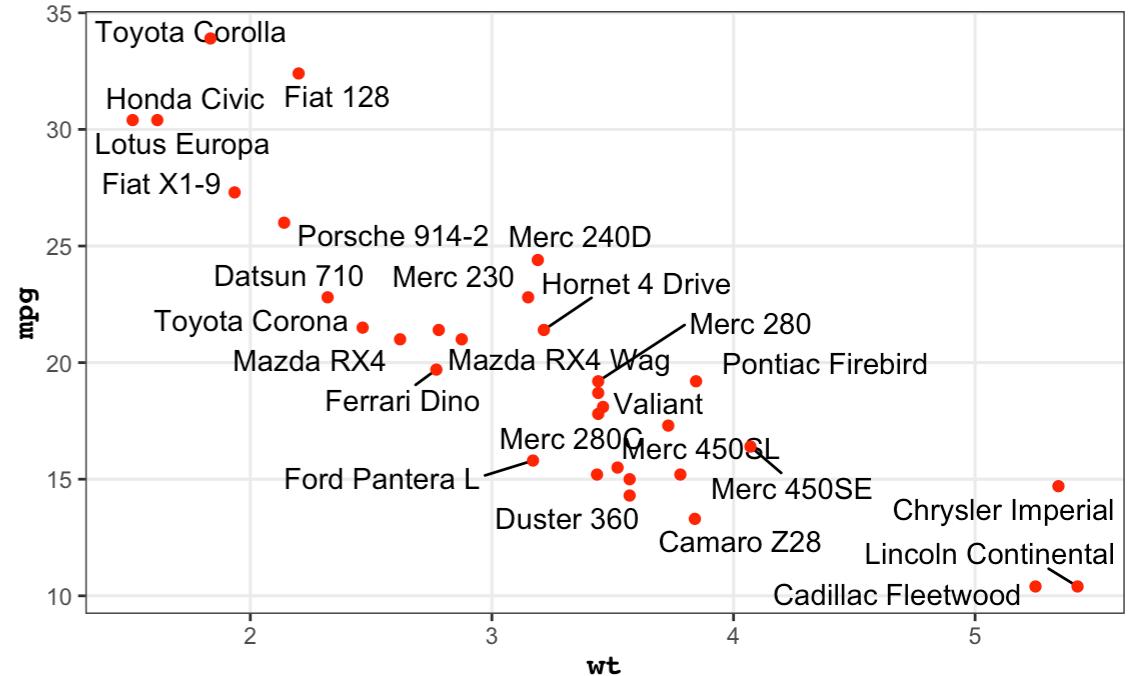
# ggrepel

</>

`geom_text()`



`geom_text_repel()`

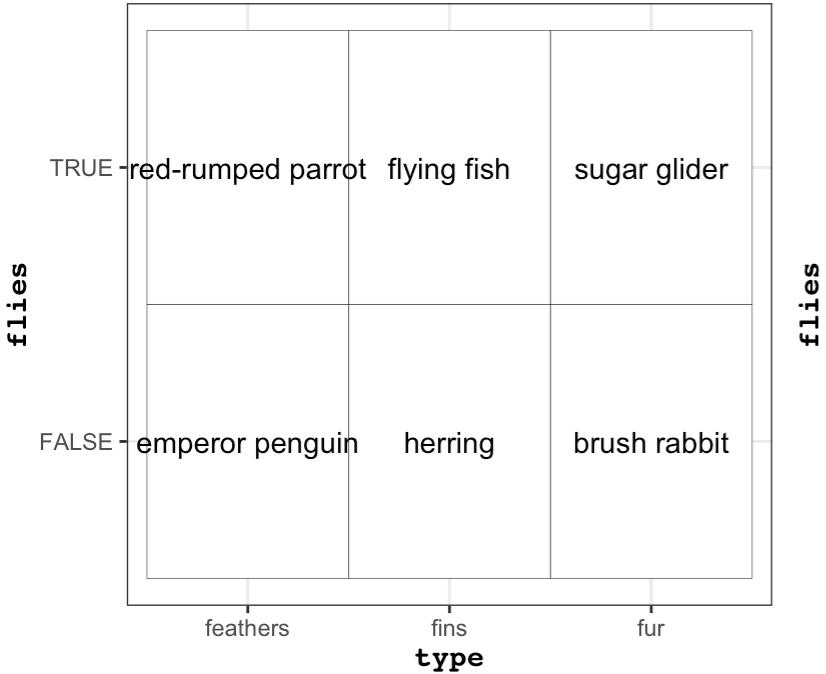


Code source: <https://ggrepel.slowkow.com/>

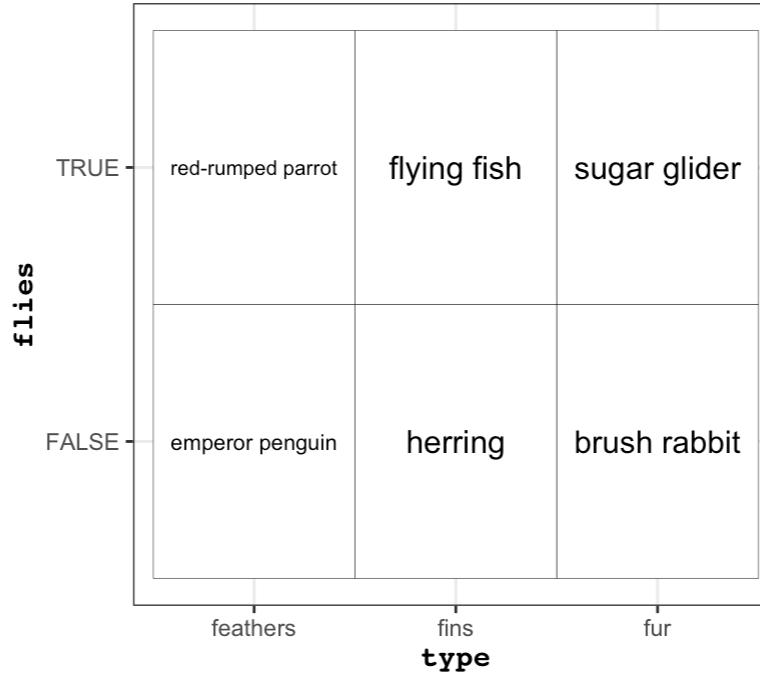
# ggfittext

</>

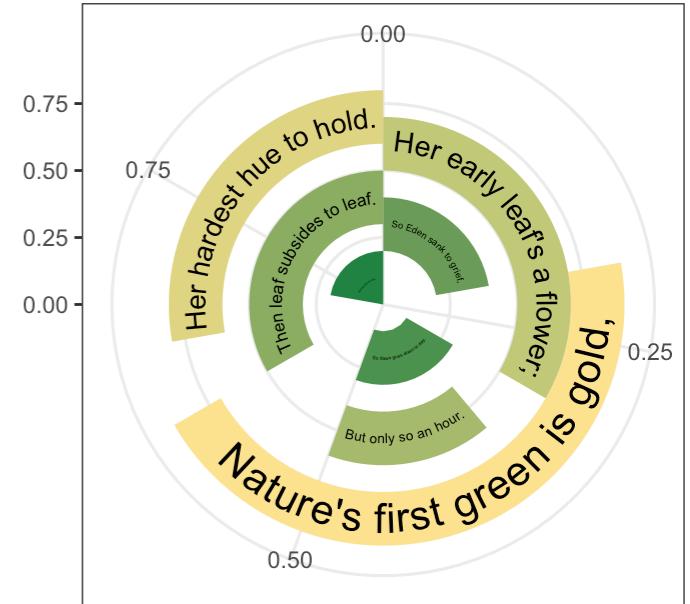
`geom_text()`



`geom_fit_text()`



`coord_polar(), geom_fit_text()`

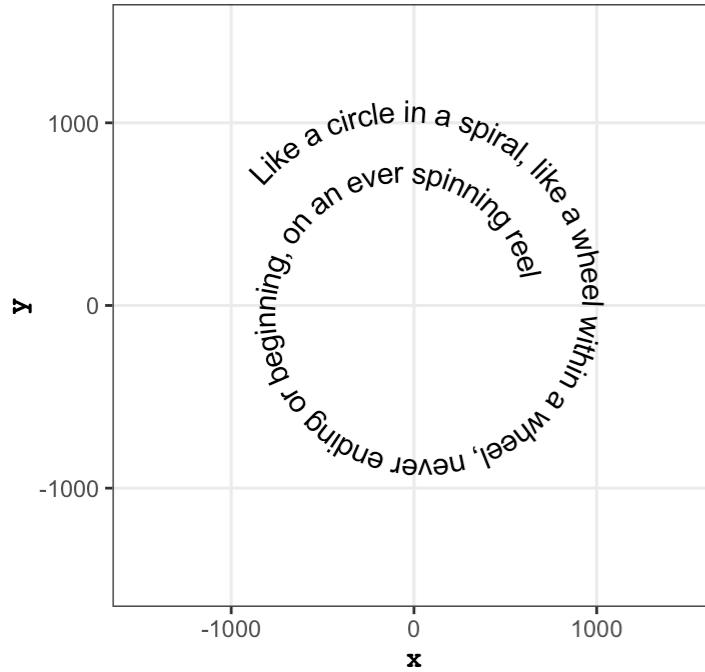


Code source: <https://github.com/wilcox/ggfittext>

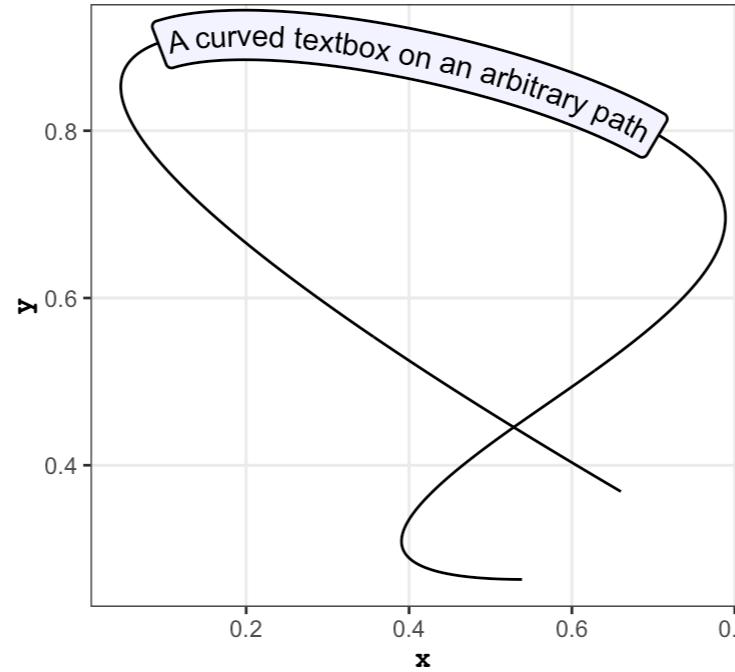
# geomtextpath

</>

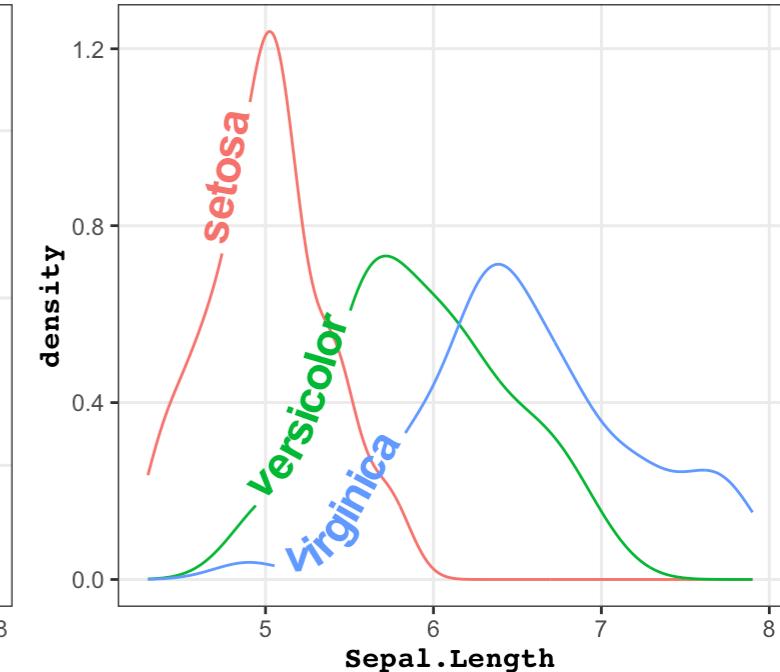
`geom_textpath()`



`geom_labelpath()`



`geom_textdensity()`



Code source: <https://allancameron.github.io/geomtextpath/>

# New Stats

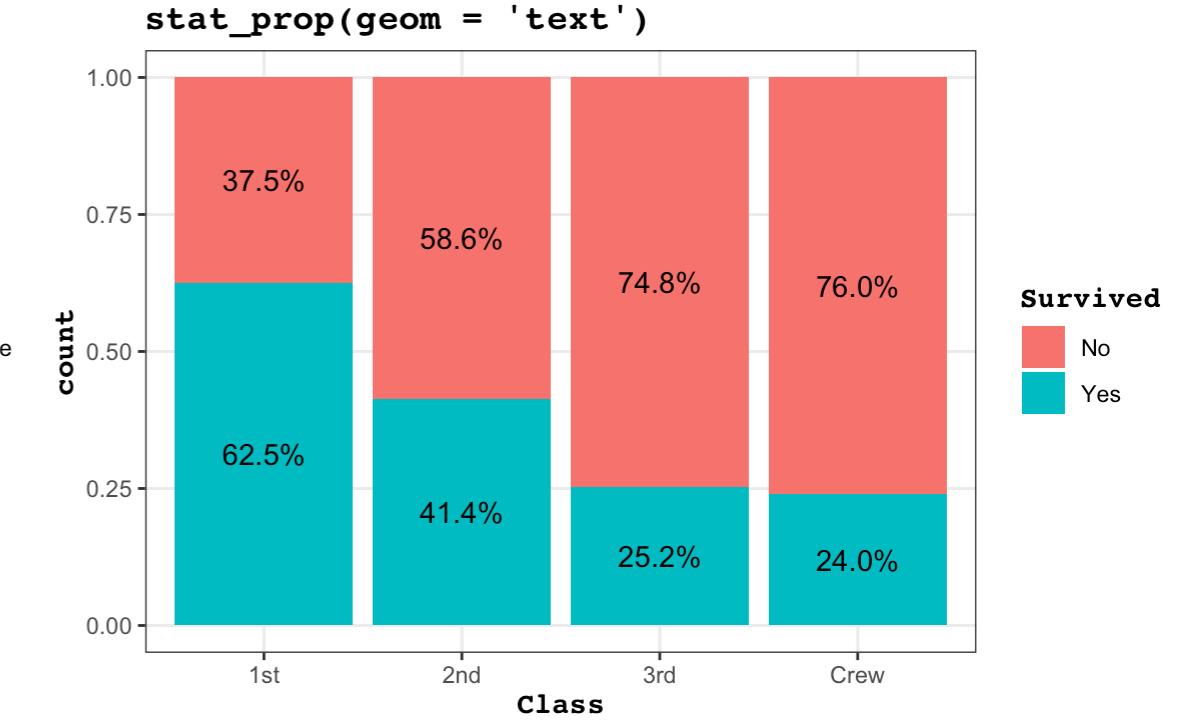
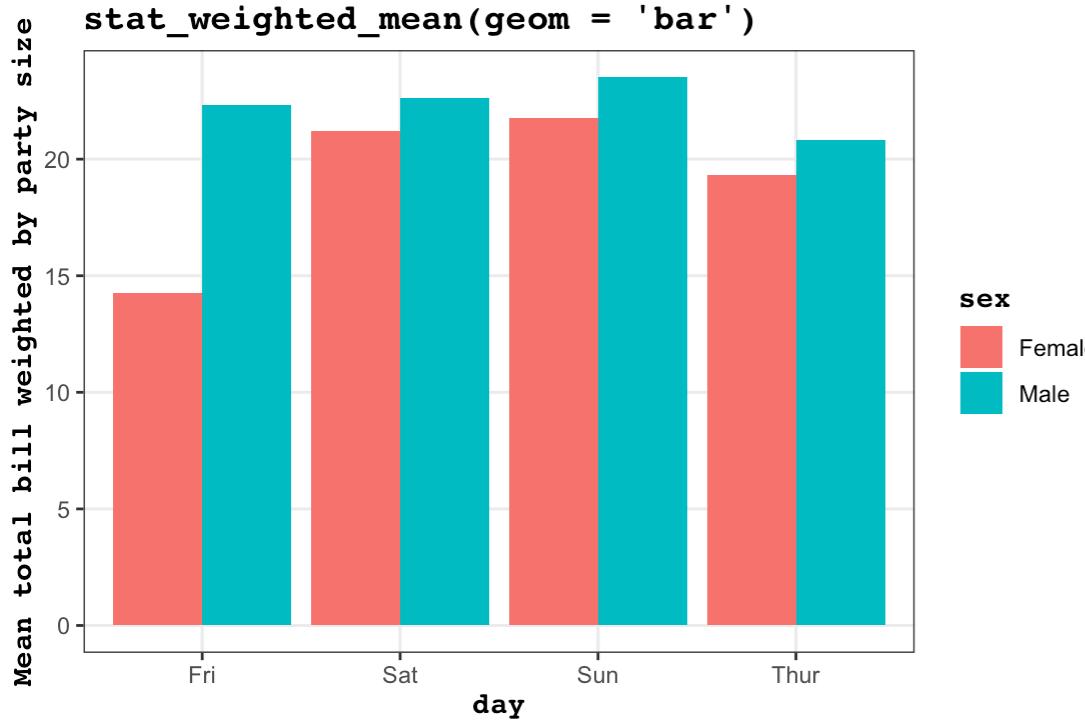
`ggstats` – new stat functions for weighted mean and proportions

`ggridges` – ridgeline plots (partially overlapping line plots)

`ggpmisc` – displays model fit statistics and summaries

# ggstats

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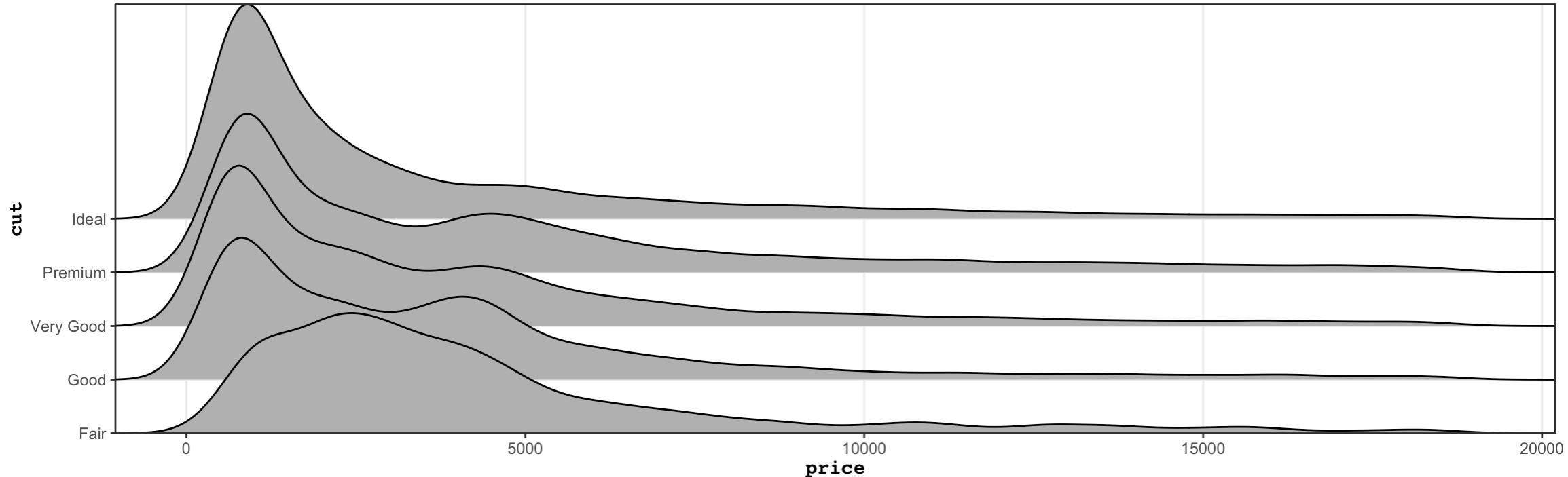


Code source: <https://larmarange.github.io/ggstats/>

# ggridges

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```
stat_density_ridges(geom = 'density_ridges')
```

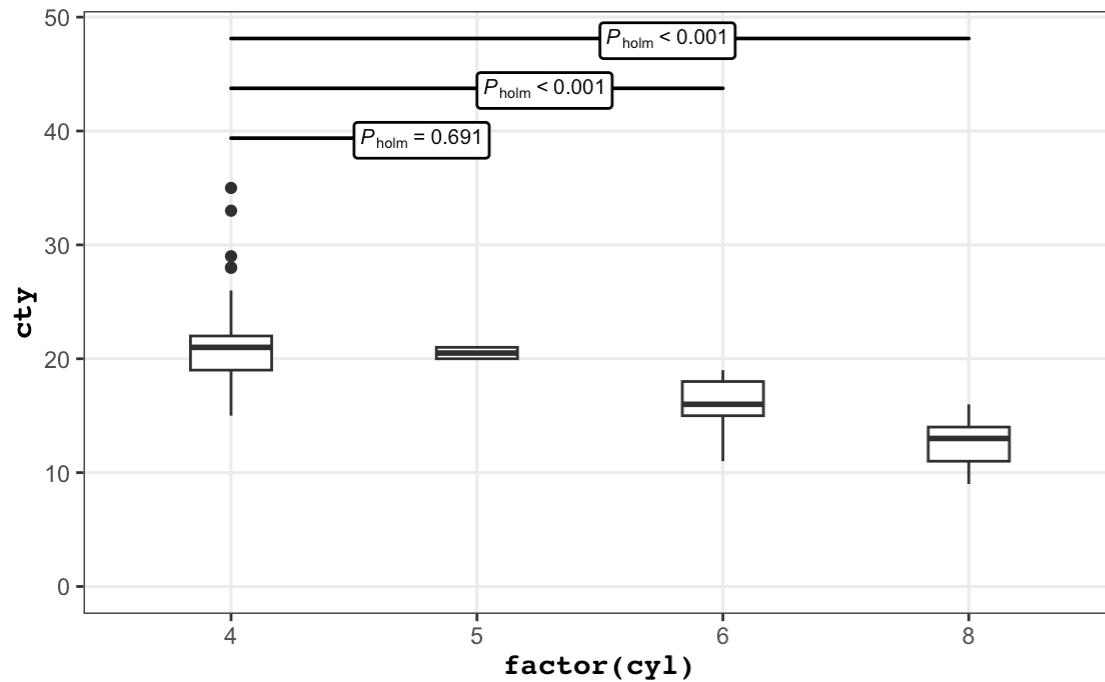


Code source: <https://github.com/wilkelab/ggridges>

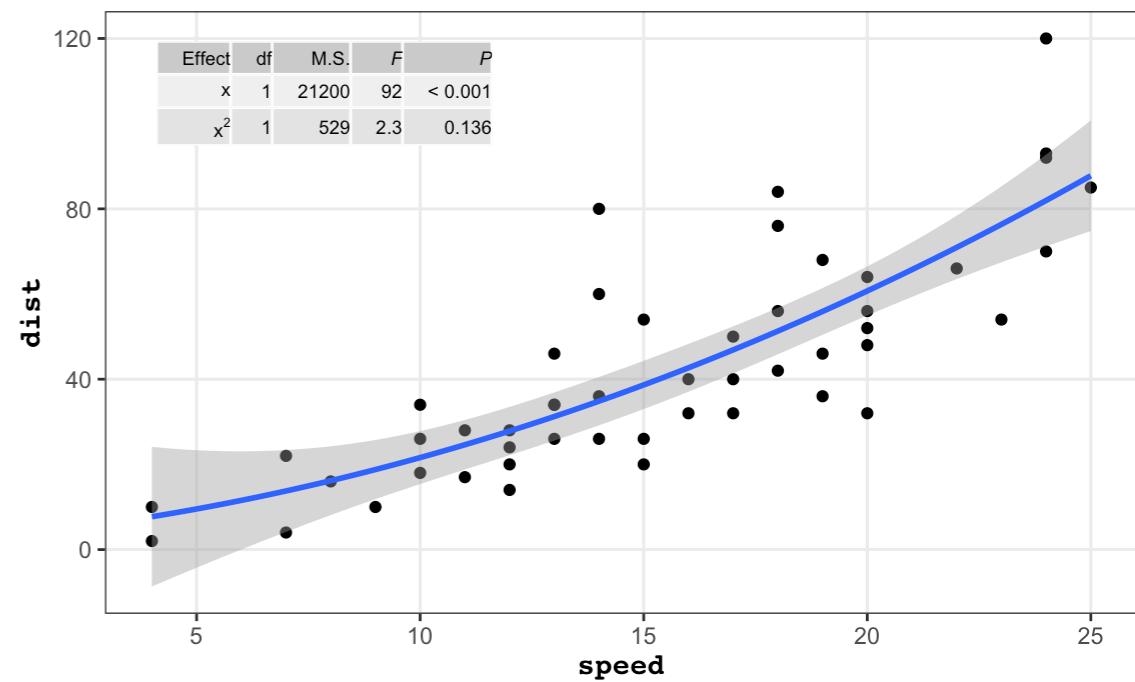
# ggpmisc

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**stat\_multcomp()**



**stat\_fit\_tb()**



Code source: <https://github.com/aphalo/ggpmisc>

# New Facets

`geofacet` – facet plot geographically while preserving some of the original geographical orientation

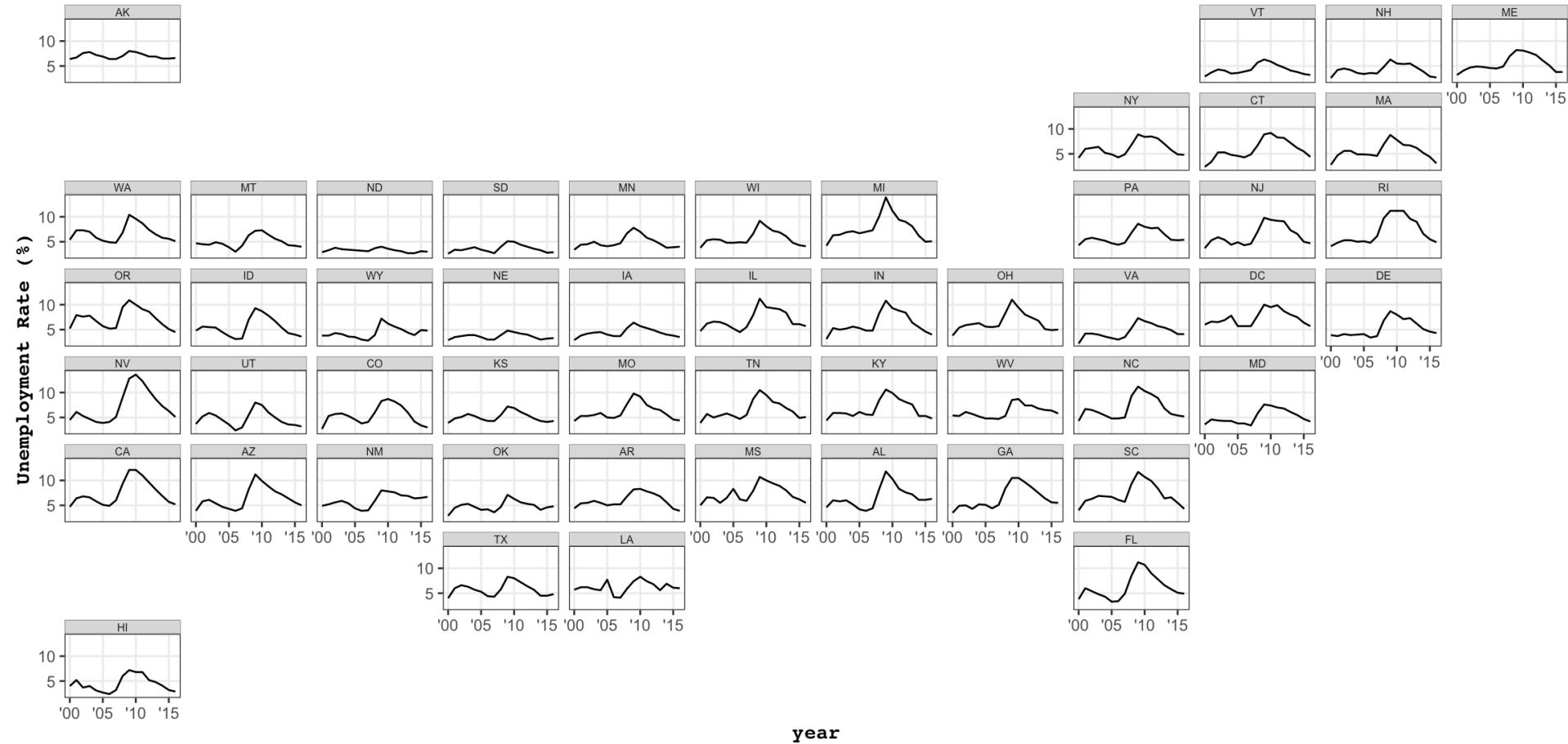
`ggh4x` – nested facets

`ggside` – implemented as geoms but really adds facets

# geofacet

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```
facet_geo(grid = 'us_state_grid2')
```

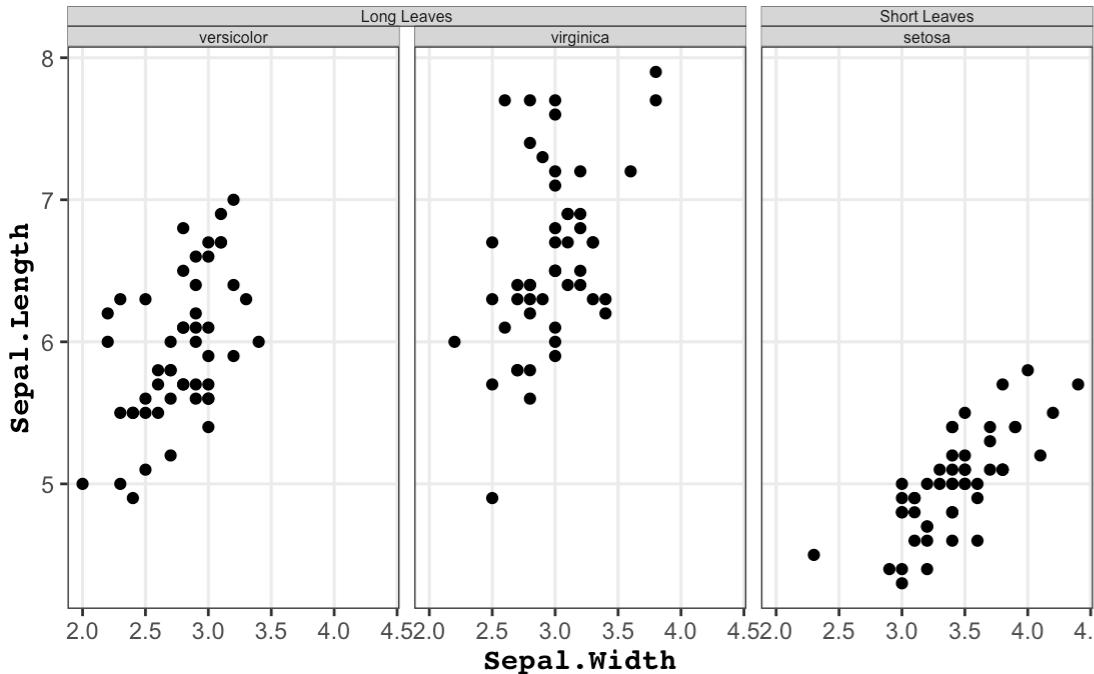


Code source: <https://github.com/hafen/geofacet/>

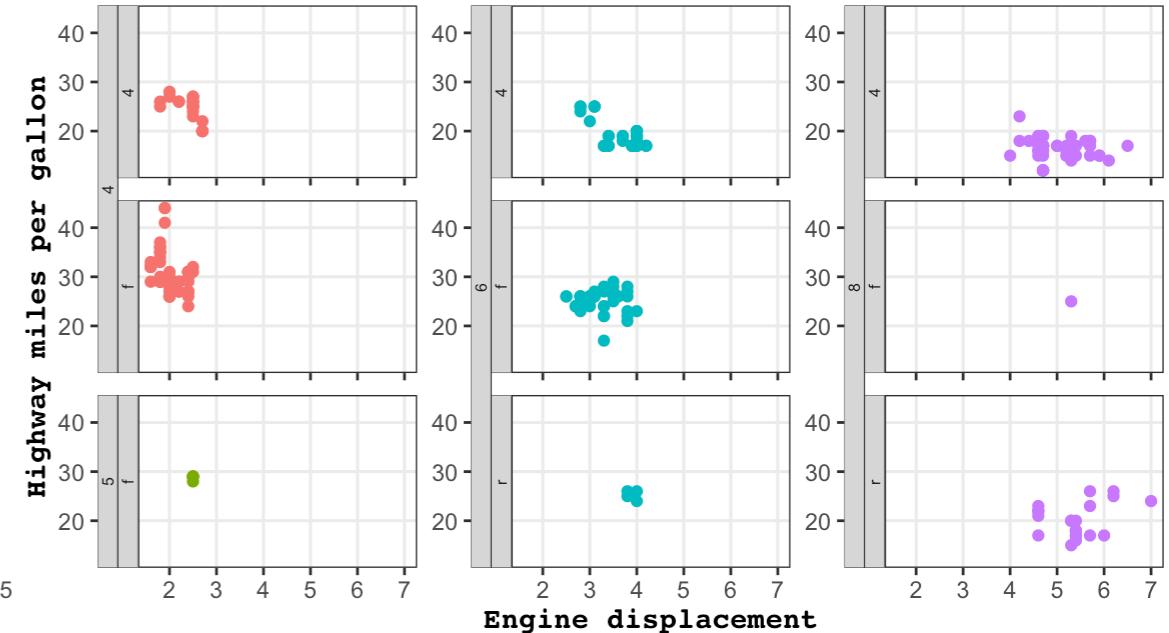
# ggh4x

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`facet_nested()`



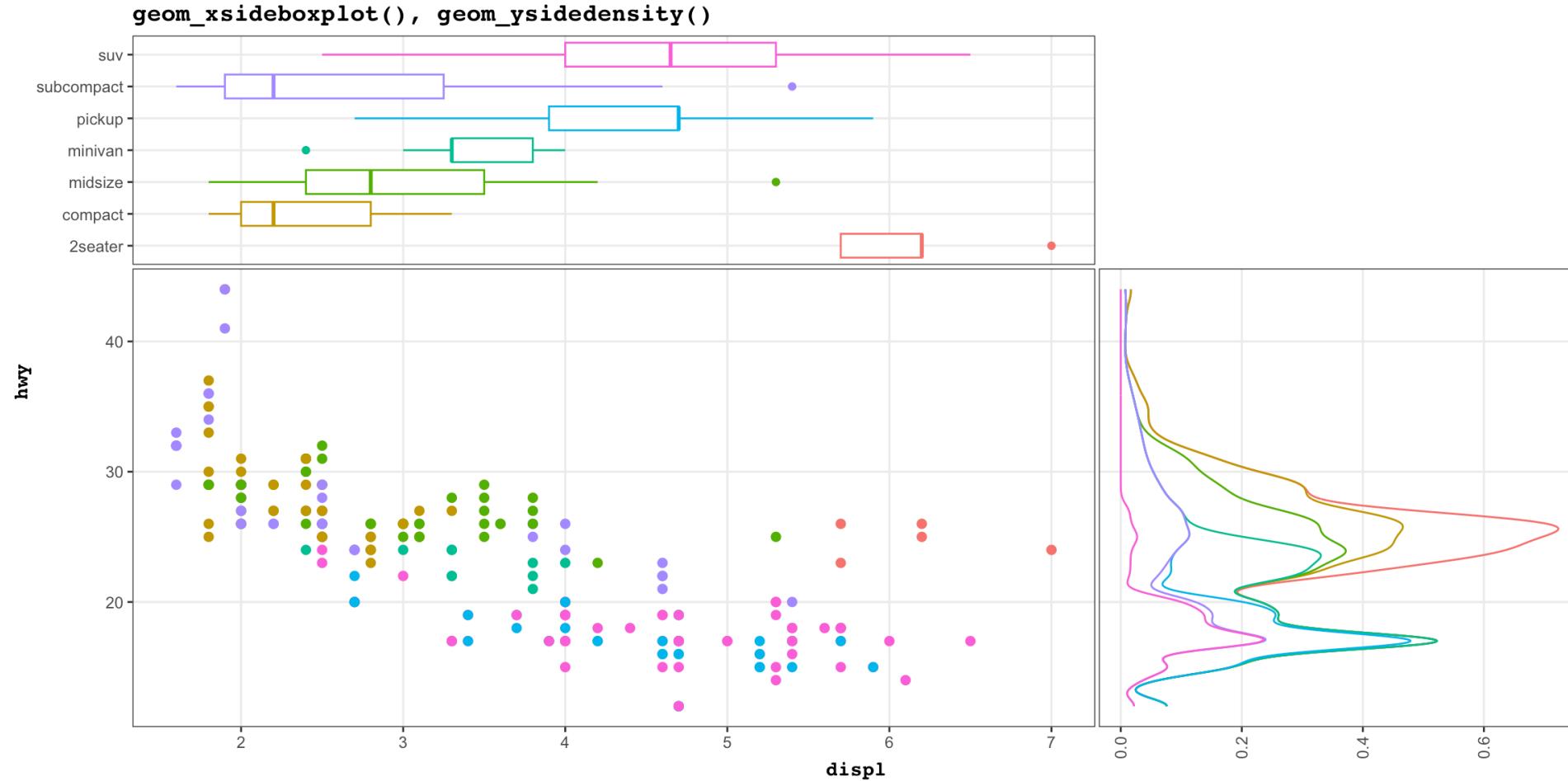
`facet_nested_wrap()`



Code source: <https://teunbrand.github.io/ggh4x/articles/Facets.html>

# ggsайд

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Code source: <https://github.com/jtlandis/ggsайд>

# New Scales

`ggsci` – color palettes inspired by colors used in scientific journals, data visualization libraries, science fiction movies, and TV shows

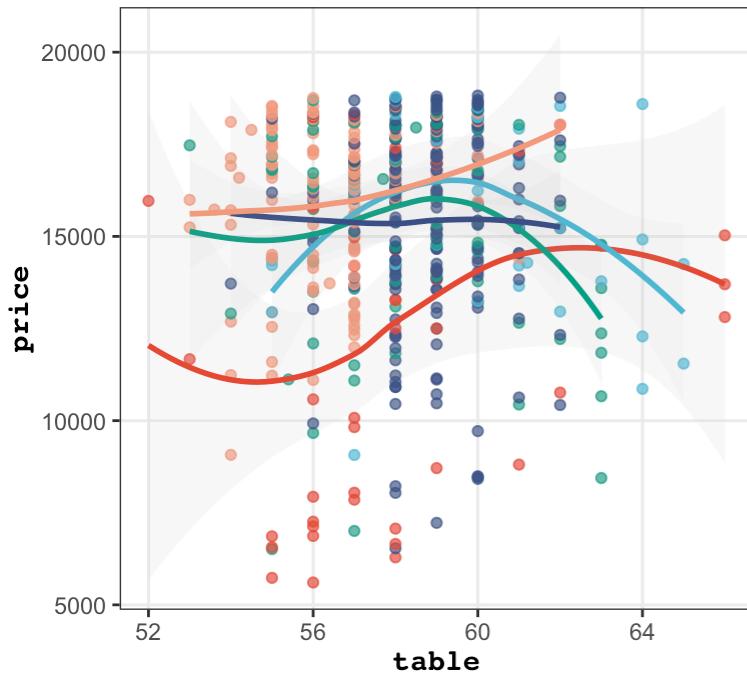
`ggnewscale` – use multiple fill/color scales in one plot

`ggbreak` – set breakpoints for truncating the plot

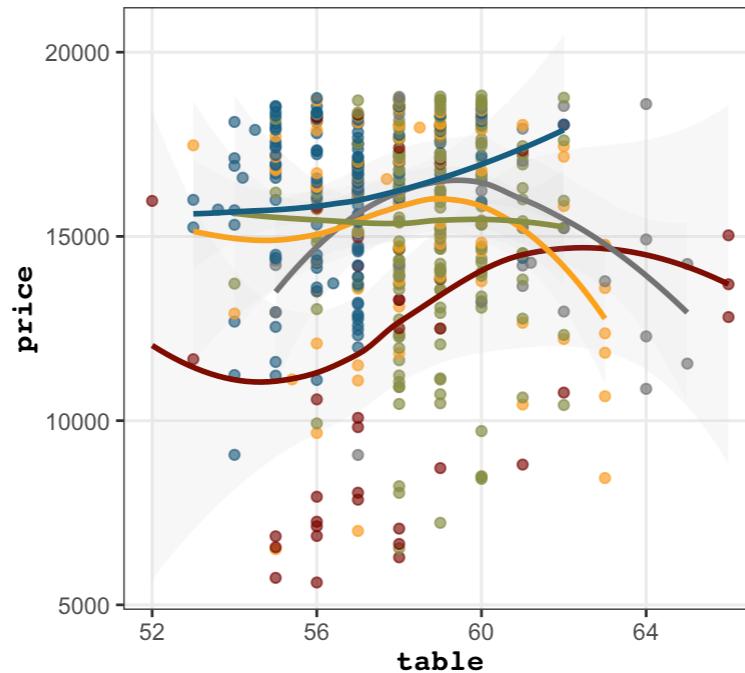
# ggsci

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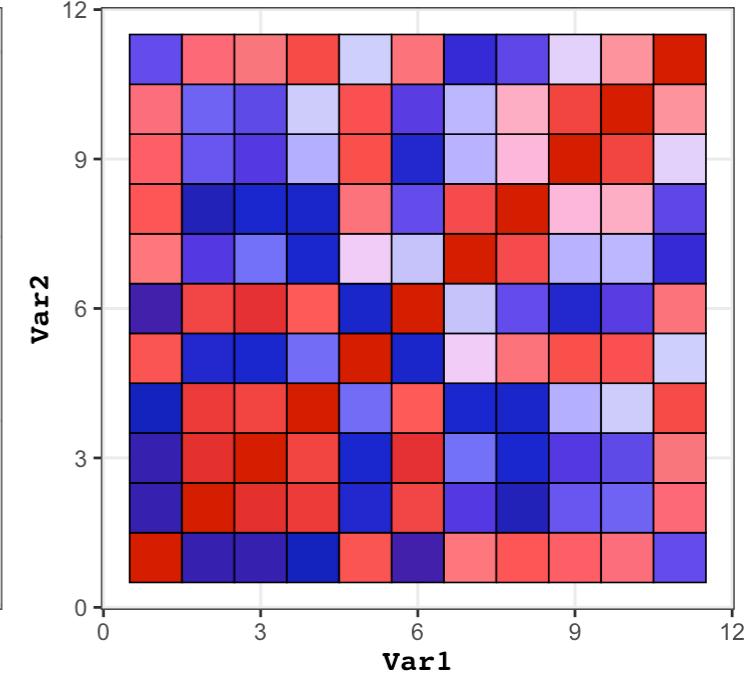
`scale_color_npg()`



`scale_color_uchicago()`



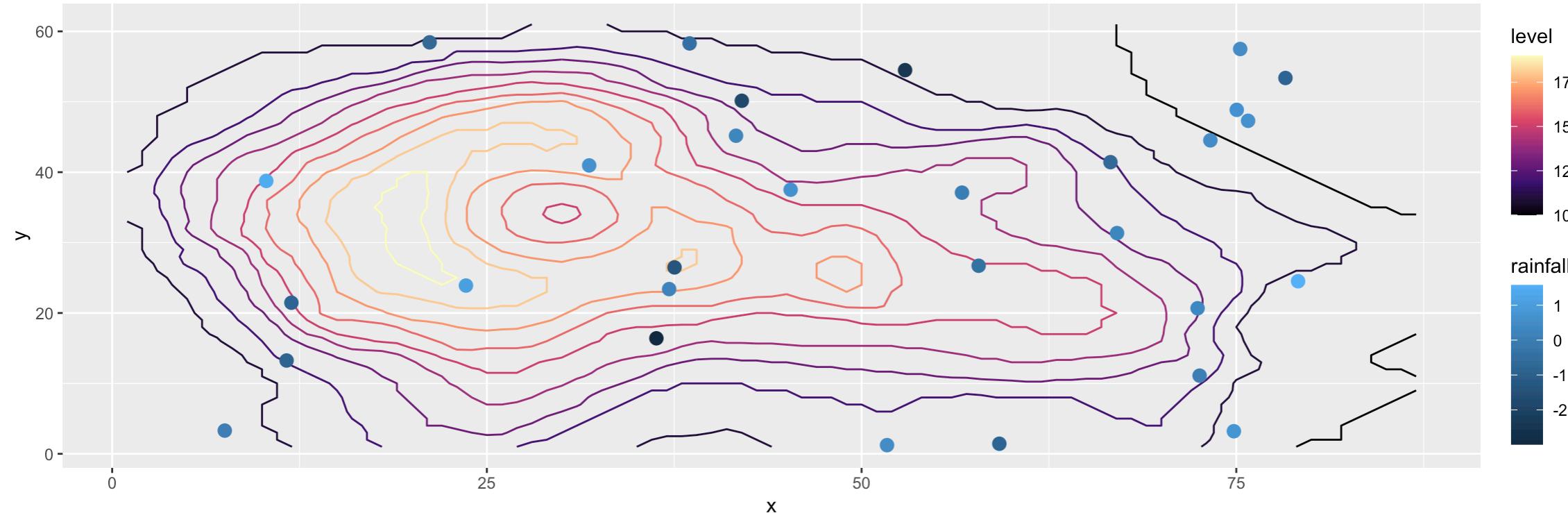
`scale_fill_gsea()`



Code source: <https://nanx.me/ggsci/articles/ggsci.html>

# ggnewscale

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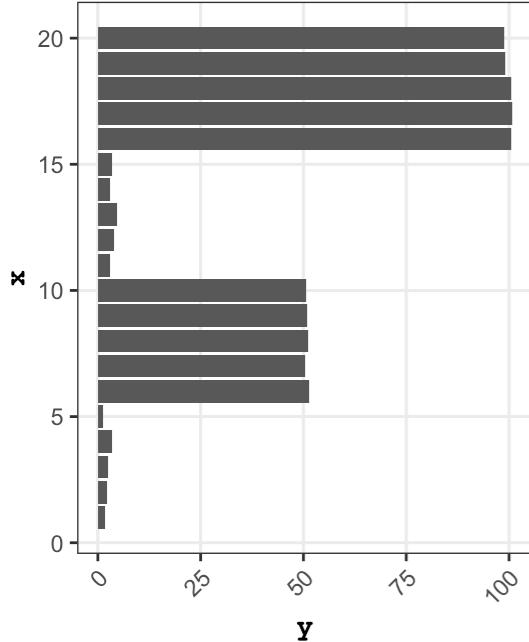


Code source: <https://github.com/eliocamp/ggnewscale/>

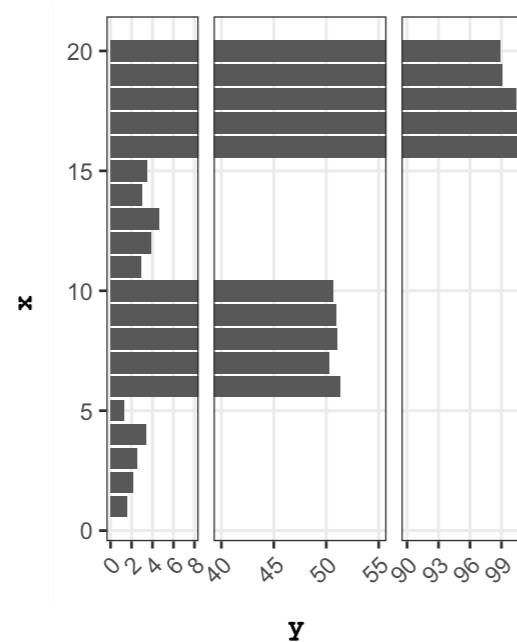
# ggbreak

</>

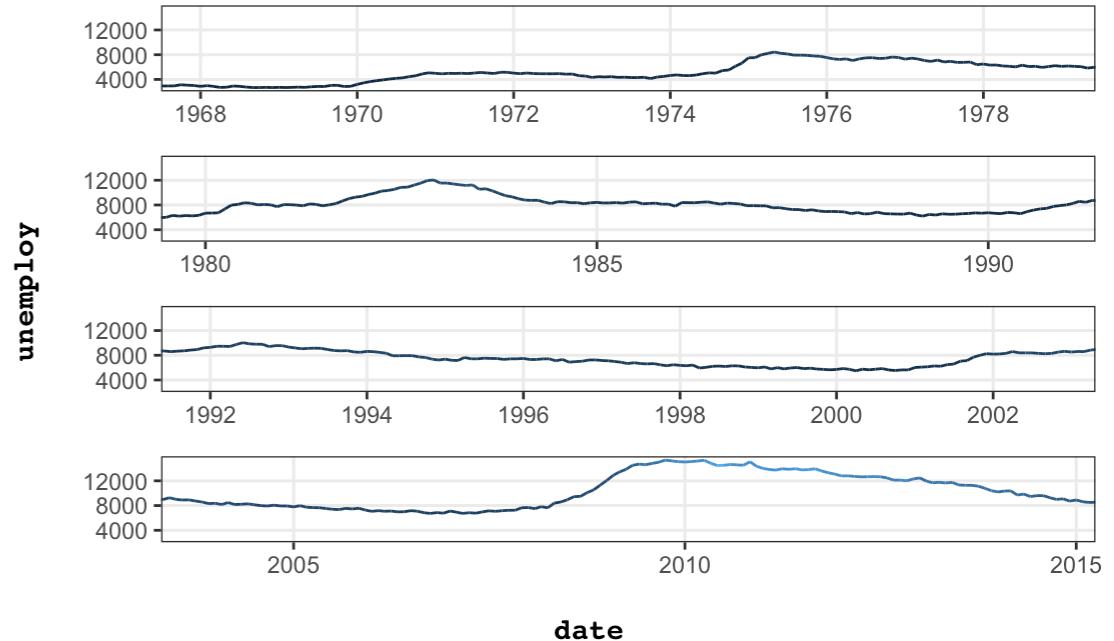
**without scale breaks**



**scale\_x\_break()**



**scale\_wrap()**



Code source: <https://cran.r-project.org/web/packages/ggbreak/vignettes/ggbreak.html>

# New Themes

`hrbrthemes` – typography-centric themes and theme components for `ggplot2`

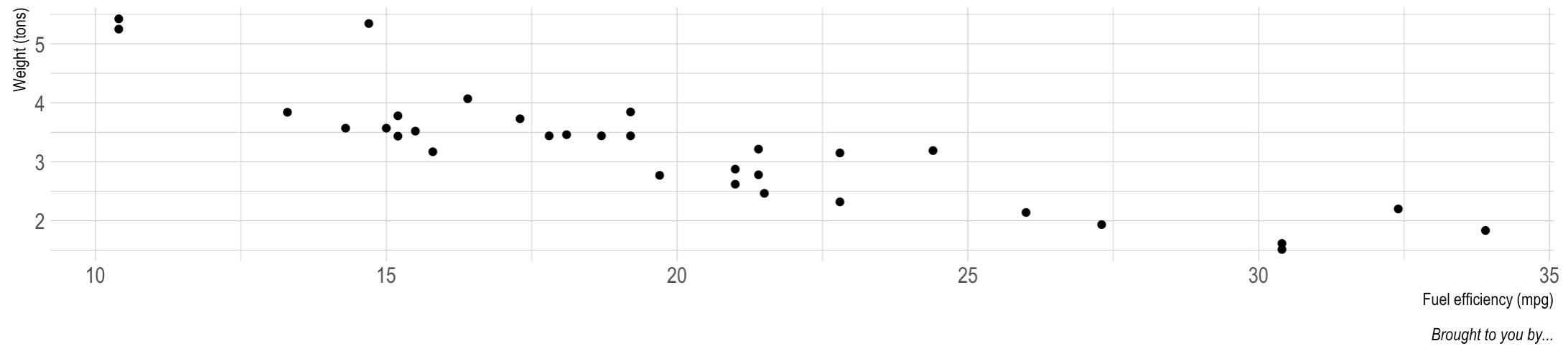
`tvthemes` – various `ggplot2` themes and color/fill palettes based on popular TV shows

# hrbrthemes

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## ggplot2 scatterplot example using theme\_ipsum()

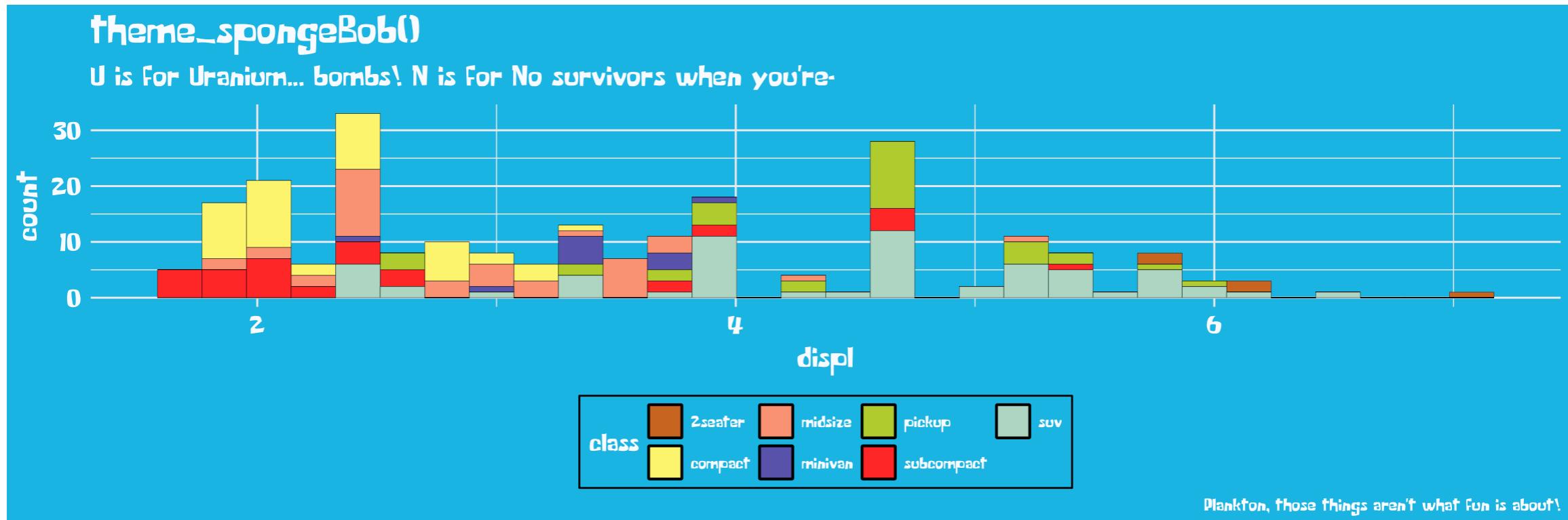
A plot that is only useful for demonstration purposes



Code source: <https://github.com/hrbrmstr/hrbrthemes>

# tvthemes

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Code source: <https://ryo-n7.github.io/tvthemes/articles/examples.html>

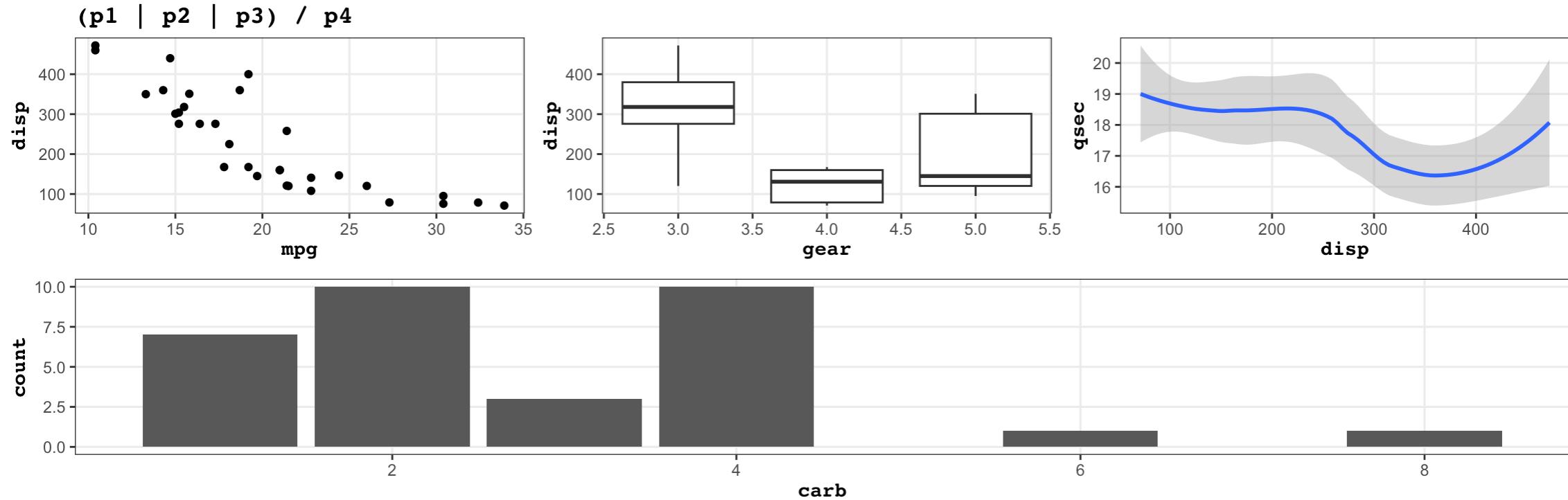
# Misc

`patchwork` – easily combine separate ggplots into the same graphic

`ggridge` – adds animation through new grammar classes

# patchwork

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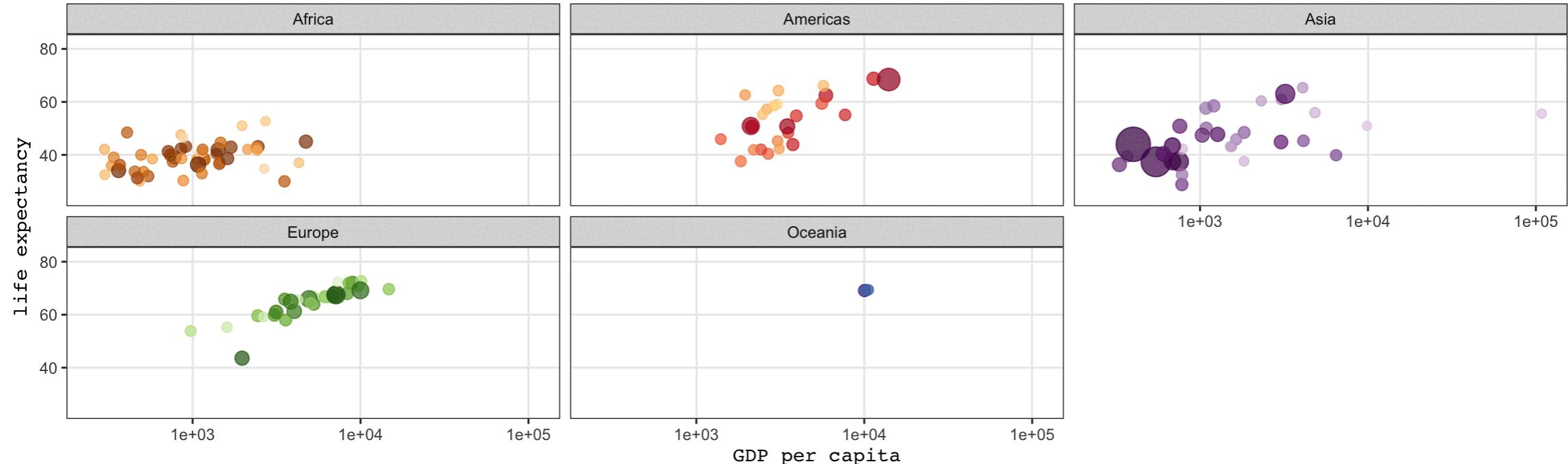


Code source: <https://patchwork.data-imaginist.com/>

# ganimate

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transition\_time() | Year: 1952



Code source: <https://gganimate.com/>

# Classifying by construct:

ALTERNATIVE INITALIZE PLOT FUNCTION

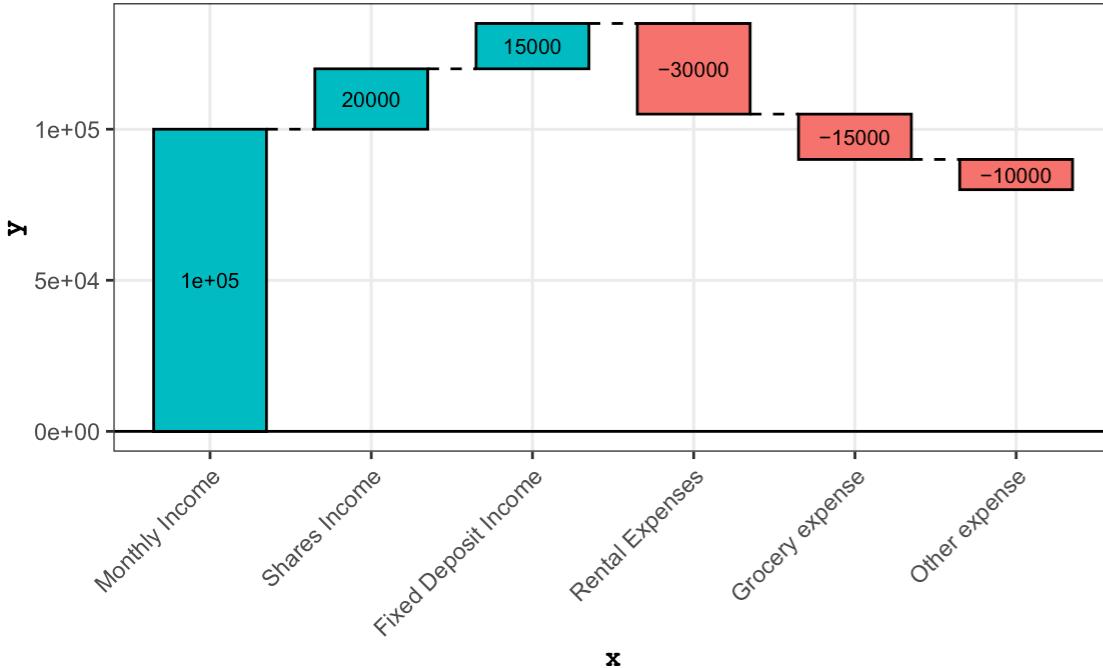
# Transforms Data

waterfalls – waterfall plots

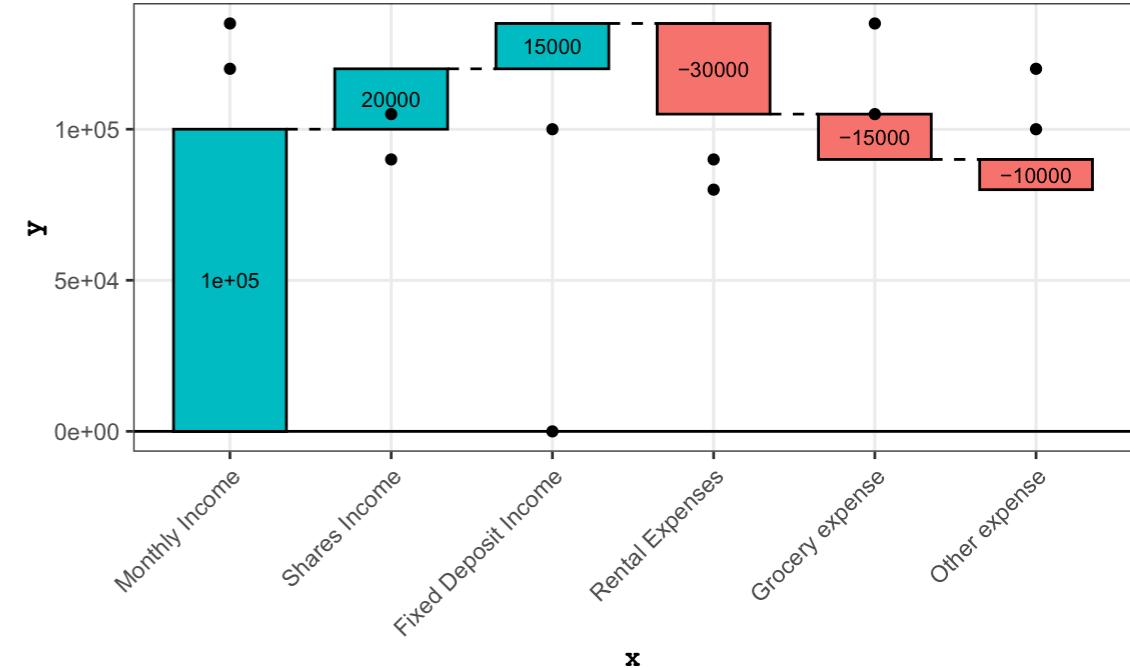
# waterfalls

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`waterfall()`



`waterfall() + geom_point()`



Code source: <https://rpubs.com/techanswers88/waterfall-chart-ggplot>

# Full Specialized Plots (returns ggplot2 object)

`ggraph` – network visualization

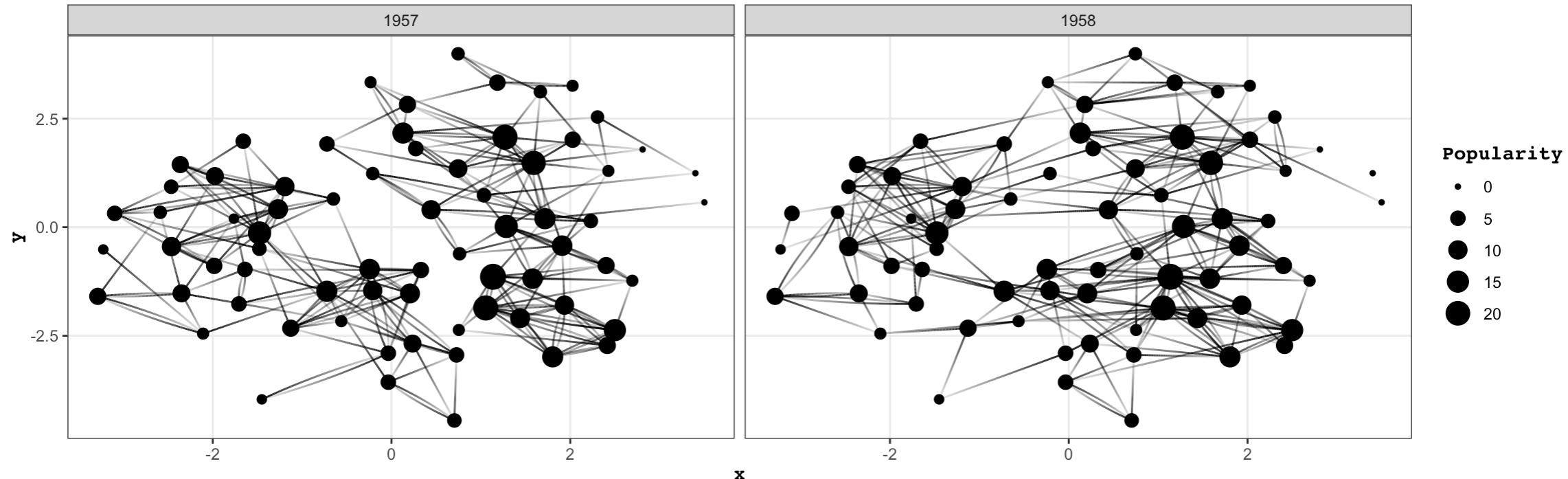
`ggdendro` – dendograms

`ggVennDiagram` – venn diagram

# ggraph

</>

**ggraph()**

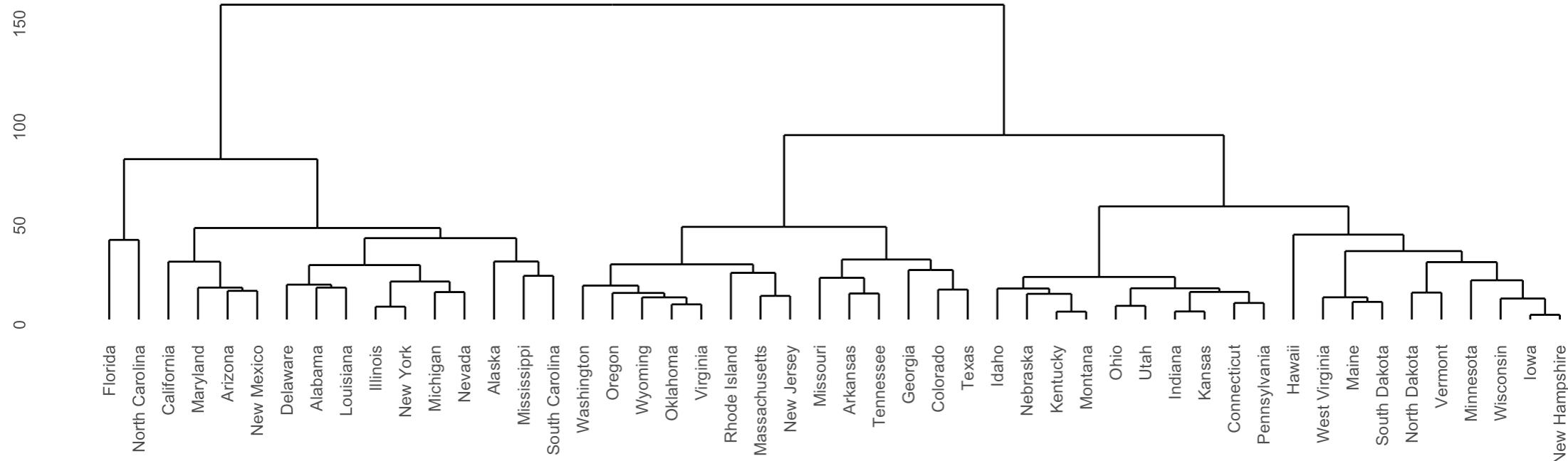


Code source: <https://ggraph.data-imaginist.com/>

# ggdendro

</>

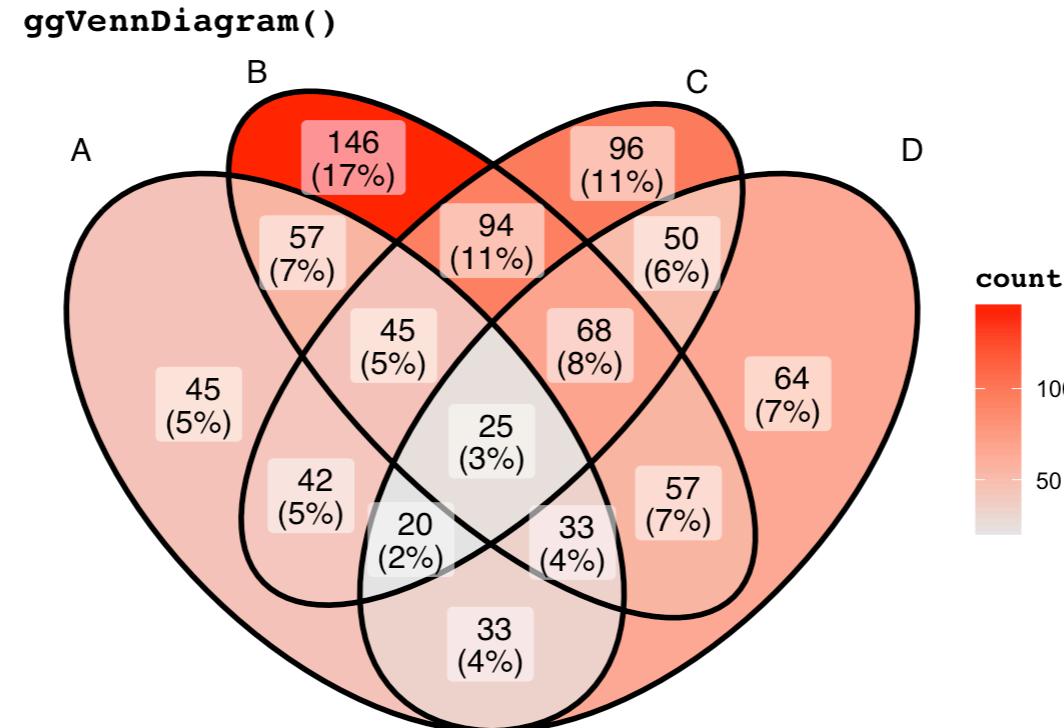
**ggdendro()**



Code source: <https://cran.r-project.org/web/packages/ggdendro/vignettes/ggdendro.html>

# ggVennDiagram

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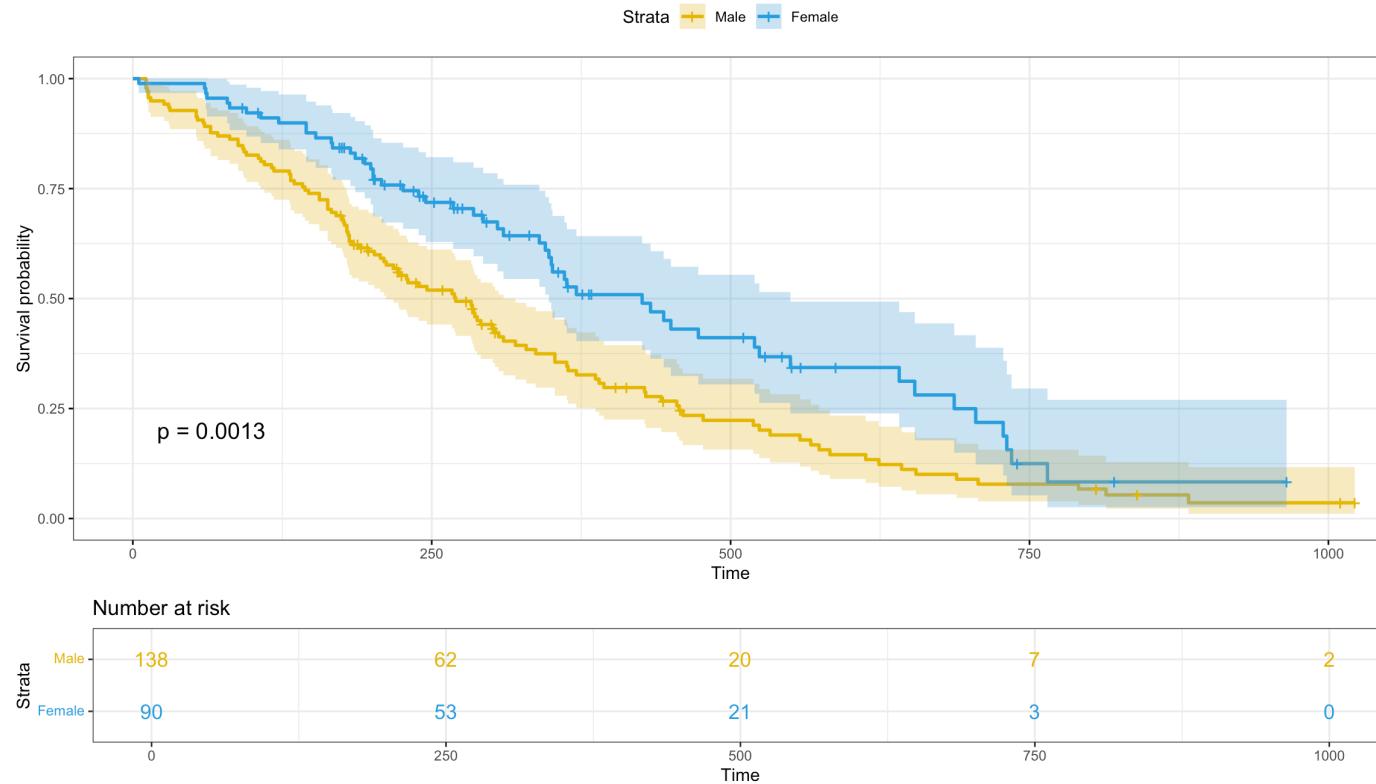
Code source: <https://github.com/gaospecial/ggVennDiagram>

# Does Not Return ggplot2 Object

`survminer` – provides functions for survival analysis and visualization

# survminer

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Code source: <https://github.com/kassambara/survminer>

```
> library(survminer)

> require("survival")

> fit <- survfit(Surv(time, status) ~ sex, data = lung)

> ggsurvplot(
+   fit,
+   data = lung,
+   size = 1,                               # change line size
+   palette =
+   c("#E7B800", "#2E9FDF"),# custom color .... [TRUNCATED]

> + labs(title = "ggsurvplot()")
Error in +labs(title = "ggsurvplot()") :
  invalid argument to unary operator
> |
```

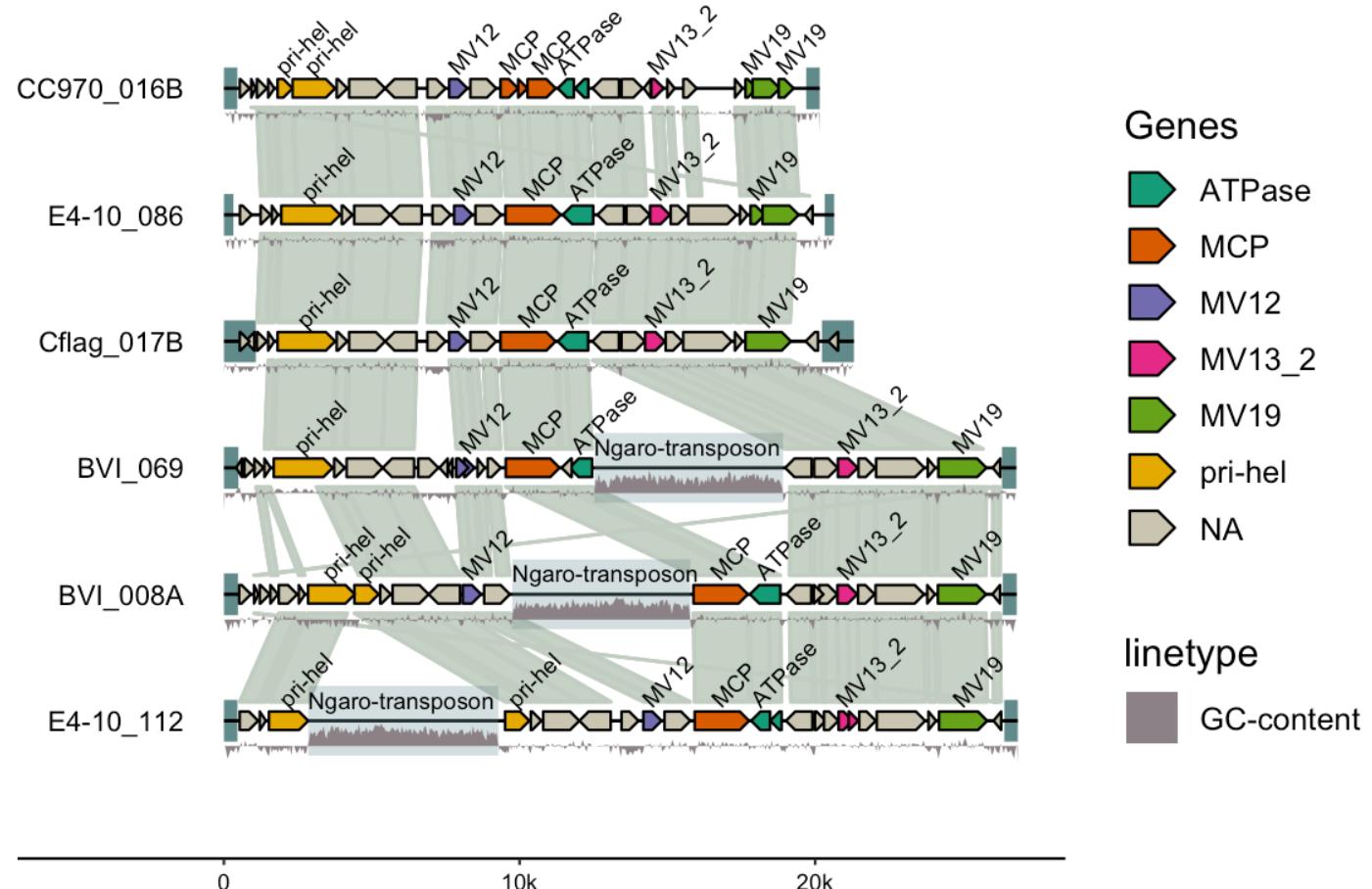
error - not ggplot2 object

# New Components

`ggenomes` – package for comparative genomics that adds dedicated plot functions for genes

# gggenomes

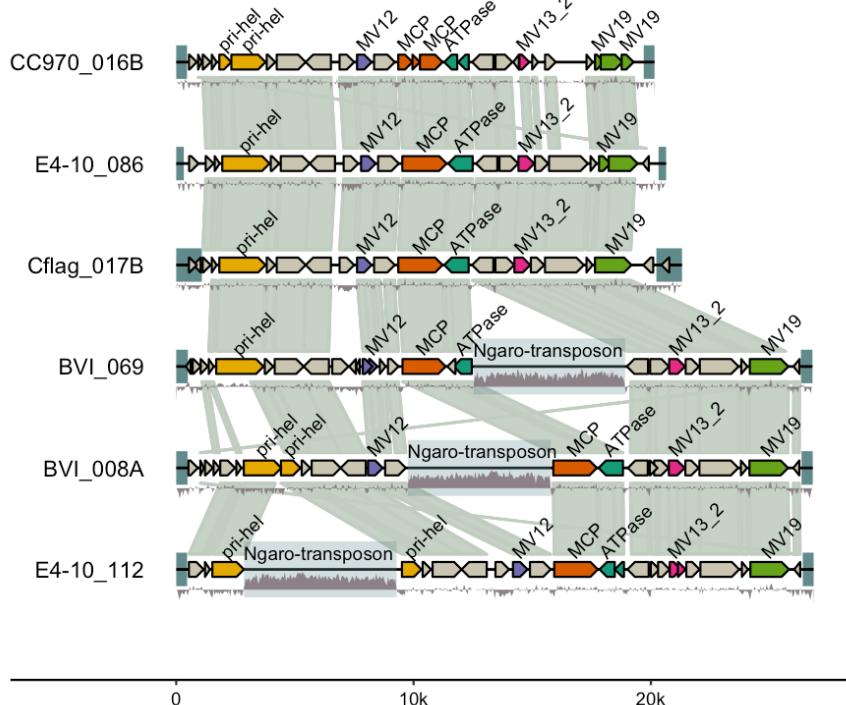
</>



Code source: <https://thackl.github.io/gggenomes/>

# Modular components

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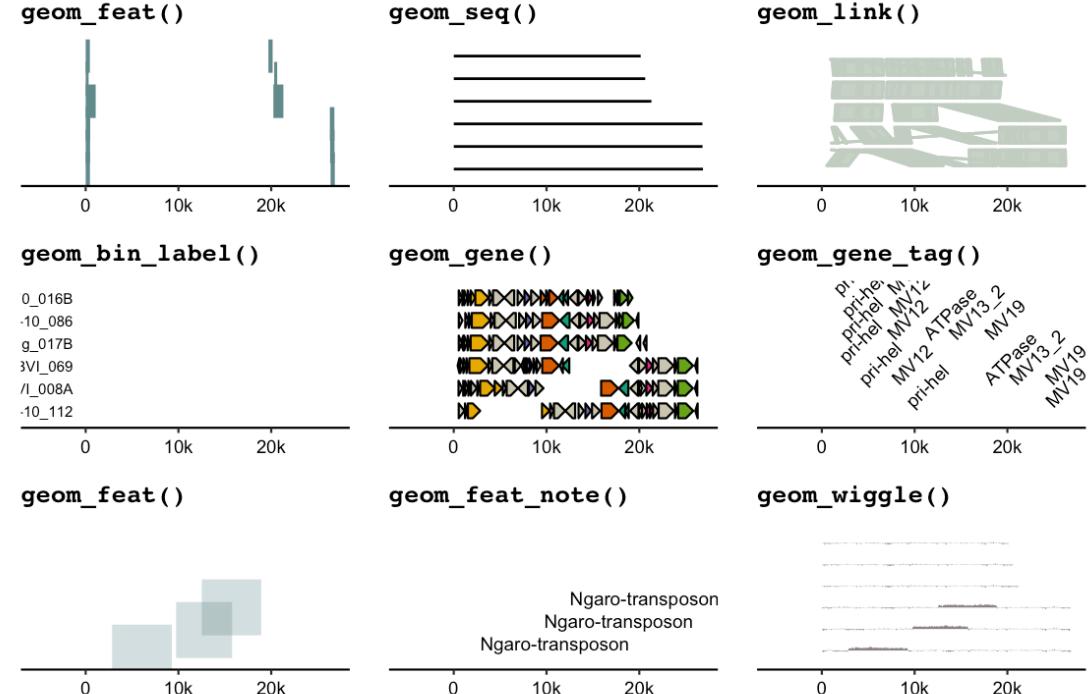


Genes

- ATPase
- MCP
- MV12
- MV13\_2
- MV19
- pri-hel
- NA

linetype

- GC-content



# Modular components

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