

ggsignif: Displaying Significance Brackets for 'ggplot2'

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Software

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Summary

Research hypotheses often concern with differences between two or multiple groups and (Frequentist and Bayesian) hypothesis testing can provide indices (p -value or Bayes Factor) for evidence for such differences. In the context of visualizing these group differences, the **ggsignif** package provides a quick way to annotate the difference between two levels of groups in a plot. These annotations can signify if the group differences are statistically different. It provides a single layer `geom_signif` to achieve this. In doing so, it further extends the fundamental strength of the **ggplot** package ([Wickham, 2016](#)): the ability to quickly make advanced plots encapsulating complex statistical methods by combining layers of visualization.

Statement of Need

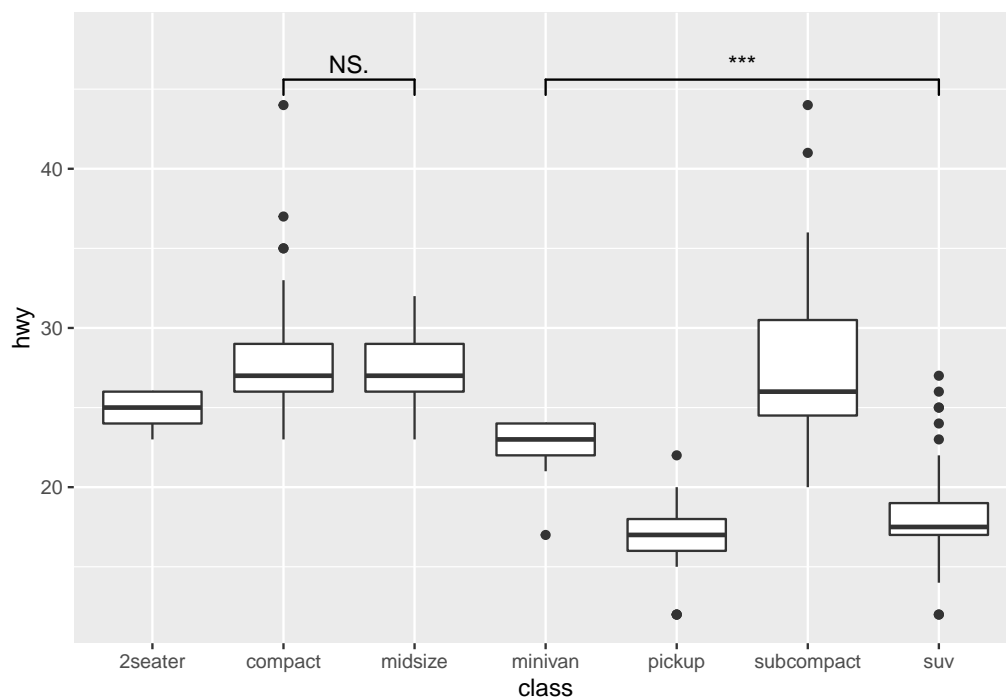
Often when researchers statistically analyze data, they run a one-way or a multi-way ANOVA to assess if *any* of the group means differ from each other, and then follow up these global difference-related analysis with more fine-grained. *post hoc* multiple comparisons between different levels of the grouping variables (also called as design factors). The **ggsignif** package provides a way to graphically display all or a few (depending on the context of the research hypotheses) of such comparisons. It is also used by developers of other R packages as the back-end for graphical displays of pairwise comparisons, such as **ggpubr** ([Kassambara, 2020](#)), **ggstatsplot** ([Patil, 2018](#)), and more. These packages also highlight how the package can be extended to display results from any type of pairwise comparisons test, e.g. Bayesian t -test, Dunn test, etc.

Features

The following is a simple example demonstrating how a group difference can be annotated using `geom_signif` layer from **ggsignif** package.

```
library(ggplot2)
library(ggsignif)

ggplot(mpg, aes(class, hwy)) +
  geom_boxplot() +
  geom_signif(
    comparisons = list(c("compact", "midsize"), c("minivan", "suv")),
    map_signif_level = TRUE
  ) +
  ylim(NA, 48)
```



For more advanced examples, the readers are encouraged to read the package website: <https://const-ae.github.io/ggsignif/>.

Licensing and Availability

ggsignif is licensed under the GNU General Public License (v3.0), with all source code stored at [GitHub](#), and with a corresponding issue tracker for bug reporting and feature enhancements. In the spirit of honest and open science, we encourage requests/tips for fixes, feature updates, as well as general questions and concerns via direct interaction with contributors and developers, by [filing an issue](#). See the [Contribution Guidelines](#) for this package.

Acknowledgements

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References

- Kassambara, A. (2020). *Ggpubr: 'ggplot2' based publication ready plots*. Retrieved from <https://CRAN.R-project.org/package=ggpubr>
- Patil, I. (2018). *ggstatsplot: 'ggplot2' based plots with statistical details*. *CRAN*. doi:10.5281/zenodo.2074621
- Wickham, H. (2016). *ggplot2: Elegant graphics for data analysis*. Springer-Verlag New York. Retrieved from <https://ggplot2.tidyverse.org>