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ggparliament: A ggplot2 extension for parliament plots in R

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Software

- Review
- Repository
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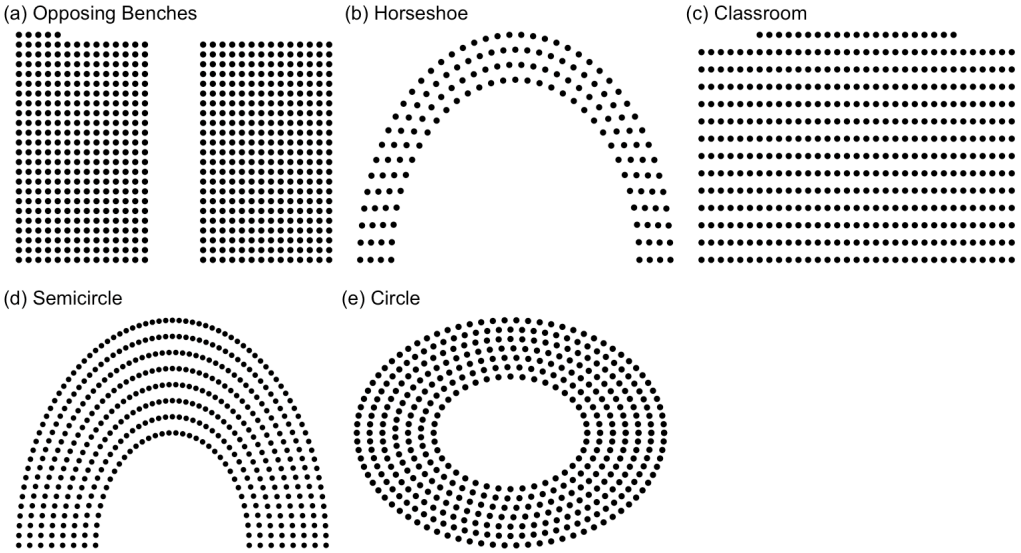
Summary

`ggparliament` is a `R` (R Core Team, 2018) package for visualizing legislative chambers. It allows for easy visualization of the party composition of a legislative body or for plotting election results using syntax from the `tidyverse`, a set of packages for cleaning, modelling, and visualizing data (Wickham, 2017). The package is one of the first `ggplot2` (Wickham, 2016) extensions for visualizing political data. It is considerably more detailed than most visualization tools for graphing legislatures in that it is designed to handle many different legislatures irrespective of size, number of parties, or characteristics of legislatures. Legislature visualizations are also known as parliament plots or parliament charts.

Visualizing legislatures can be done in a variety of formats - usually in a JavaScript framework. `ggparliament` seeks to implement the flexibility from JavaScript in `R`. `R` users will find they can use a similar syntax to the popular `ggplot2` package to generate a visualization of a legislative body. In particular, `ggparliament` is a `R` package because `R` is a statistical computing language that many quantitative political scientists use in research. (See `pscl` (Jackman, 2017), `Amelia` (Honaker, King, & Blackwell, 2011), `MatchIt` (Ho, Imai, King, & Stuart, 2011), and `margins` (Leeper, 2018) for an incomplete list of `R` packages created primarily for political science research.)

`ggparliament` is useful research tool for a variety of social science disciplines, including quantitative political science. It is particularly beneficial for political scientists who research political institutions, such as electoral systems, party politics, or legislative politics. `ggparliament` provides several layouts, representing different legislative chambers e.g. the United Kingdom's House of Commons, Australia's horseshoe-shaped parliament, or the widely-used semicircle legislative chamber.



The standard syntax for a `ggparliament` plot is as follows:

```
us_data <- ggparliament::election_data %>%
  filter(country == "USA" & year == 2016 &
           house == "Representatives") %>%
  parliament_data(election_data = .,
            parl_rows = 8,
            party_seats = .$seats,
            type = 'semicircle')

ggplot(us_data, aes(x,y), colour = "black") +
  geom_parliament_seats(size = 0.8) +
  theme_ggparliament()
```

`ggparliament` has been designed with several key features in mind. It provides multiple layouts for different parliamentary systems, catering to researchers of various political systems. `ggparliament` items can be more complex than what we have detailed here. For example, it is possible to facet the `ggparliament` object over numerous elections or parliaments; this work is further explained in the package documentation.

In this paper we present a `R` package to plot legislatures, also known as parliament plots. Parliament plots provide summary statistics for the distribution of a legislature, allowing users to view the number of seats per party. In addition, `ggparliament` visualizes descriptive data about legislators or legislative districts as well as election results.

References

Ho, D. E., Imai, K., King, G., & Stuart, E. A. (2011). MatchIt: Nonparametric preprocessing for parametric causal inference. *Journal of Statistical Software*, *42*(8), 1–28. Retrieved from http://www.jstatsoft.org/v42/i08/

Honaker, J., King, G., & Blackwell, M. (2011). Amelia II: A program for missing data. *Journal of Statistical Software*, *45*(7), 1–47. Retrieved from http://www.jstatsoft.org/v45/i07/

Jackman, S. (2017). *pscl: Classes and methods for R developed in the political science computational laboratory*. Sydney, New South Wales, Australia: United States Studies Centre, University of Sydney. Retrieved from https://github.com/atahk/pscl/

Leeper, T. J. (2018). *Margins: Marginal effects for model objects*.

R Core Team. (2018). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from https://www.R-project.org/

Wickham, H. (2016). *Ggplot2: Elegant graphics for data analysis*. Springer-Verlag New York. Retrieved from http://ggplot2.org

Wickham, H. (2017). *Tidyverse: Easily install and load the 'tidyverse'*. Retrieved from https://CRAN.R-project.org/package=tidyverse