

# Connecting R with D3 for dynamic graphics, to explore multivariate data with tours

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**Abstract** The *tourr* package in R (REF) has several algorithms and displays for showing multivariate data as a sequence of low-dimensional projections. It can display as a movie but has no capacity for interaction, such as stop/go, change tour type, drop/add variables. The *tourrGui* (REF) package provides these sorts of controls, but the interface is programmed with the dated *RGtk2* (REF) package. This work explores using custom messages to pass data from R to D3 (REF) for viewing, using the *shiny* framework.

## Introduction

The tour algorithm (Cook et al. 1995; Cook et al. 2007) is a way of systematically generating and displaying projections of high-dimensional spaces in order for the viewer to examine the multivariate distribution of data. It can do this either randomly, or by picking projections judged interesting according to some criterion or index function. The *tourr* package (Wickham et al. 2011) provides the computing and display in R (R Core Team 2012, Ihaka and Gentleman (1996)) to make several types of tours, grand, guided, little and local. The projection dimension can be chosen between one and the number of variables in the data. The display, though, has no capacity for interaction. The viewer can watch the tour like a movie, but not pause it and restart, or change tour type, or number of variables.

These interactive controls were provided with the *tourrGui* package (Huang, Cook, and Wickham 2012), which was programmed with the *RGtk2* package (Lawrence and Temple Lang 2010). This is not the toolkit of choice today, and has been superseded with primarily web-capable tools, like *shiny* (Chang et al. 2017). To display dynamic graphics though, still takes some work. This work explores the use of D3 (Heer 2011) as the display engine.

## Section title in sentence case

This section may contain a figure such as Figure 1.

Figure 1: The logo of R.

## Another section

There will likely be several sections, perhaps including code snippets, such as:

```
#> [1] 1 2 3 4 5 6 7 8 9 10
```

## Summary

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## References

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