

# iNZight: a data visualisation and exploration GUI for R

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## **Abstract**

Getting started with data science is a daunting task, particularly when it requires a large amount of coding before you can even start looking at data. graphical user interfaces (GUIs) have often been used as a way of proving novice users the ability to interact with complex systems without the need for coding. However, many of these themselves have steep learning curves to understand how to make the software do what's needed, and do not provide a pathway to more standard and flexible methods, such as coding. iNZight is a GUI based tool written in R that provides students of statistics and data science the opportunity to interact with data and explore without first learning to code. The tool is designed to be easy to use, with logical interactions and clever defaults. However, it also provides some more complex features to manipulate and analyse data, and further provides a code history of the actions performed, creating a pathway between GUI and learning to code for those interested in progressing into the more open and exciting world of data science.

# 1 Introduction

A brief, 2–3 paragraphs about what iNZight is, and the niche it fills, plus some of its key features. Perhaps also a discussion of other R GUIs, and what sets iNZight apart (otherwise, make that last bit a separate section...?).

- getting started with statistics and data science is difficult due to the fairly steep learning curve for the necessary software
- R provides a simple programming environment for exploring and visualising data, and is becoming the tool of choice for many data scientists
- students/learners often have little or no programming experience: they just want to explore data, make charts, and do simple analyses *before learning all the technical stuff*
- iNZight provides a simple GUI allowing users to import data, create graphs by simple drag-and-drop or picking variables from dropdowns; the software figures out what kind of variable is chosen and presents a useful graph
- same idea carried through: users don't need to know what they want to do, they choose **variables** they are interested in, and the software guides them
- since it's an R package, it can hook in to all the powerful packages that already exist: and writes a code history so users can (eventually) migrate from GUI to command line
- graphics, data manipulation, hypothesis testing, survey design, time series, model fitting, maps, and more
- used by NZ high schools, universities, and elsewhere ... ?

There are other GUIs for R, namely ‘R Commander’ (Fox, 2005) and ‘Deducer’ (Fellows, 2012). Both of these software provide a range of features, centered mostly around a window-based interface to a collection of R (R Core Team, 2020) functions. Users decide the type of analysis or function they want to use, choose it, and then fill in the fields. ‘iNZight’ takes the opposite approach by providing an interface from which users choose *variables first*, and then processes are performed which differ based on the inputs.

### **Paper plan:**

1. Introduction
2. How-to-get-started guide (availability, installation, ...)
3. Main features (a ‘tour’)
4. Code writing: a stepping stone for learning ‘top down’
5. Discussion, future plans

## **Acronyms**

**GUI** graphical user interface. 1, 3

## **References**

- Fellows, I. (2012). Deducer: A data analysis GUI for R. *Journal of Statistical Software, Articles*, 49(8):1–15.
- Fox, J. (2005). The R Commander: A basic statistics graphical user interface to R. *Journal of Statistical Software*, 14(9):1–42.

R Core Team (2020). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.

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