

Conversations in time: interactive visualization to explore structured temporal data

Earo Wang

Department of Statistics, The University of Auckland, New Zealand

Email: earo.wang@auckland.ac.nz

Corresponding author

Dianne Cook

Department of Econometrics and Business Statistics, Monash University, Australia

Email: dicook@monash.edu

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Abstract

A brief summary of our ideas

1 Introduction

- An ensemble of graphics
- Accelerate the exploratory data visualization process

2 Background

2.1 Interactive visualization systems with linking views

- {ggobi} and {xggobi}
- {cranvas} and {cranvastime}
- [crossfilter.js](#)
- {crosstalk} and html widgets

2.2 Tidy temporal data and workflow

- {tsibble}
- and tsibble-centered workflow

3 Shared temporal data for coordinated views

- Symbolic formula to express structural specifications among keyed units, using / and * from Wilkinson notation (10.2307/2346786) for nesting and crossing.
- Nesting variables generate hierarchical tree, hence `plotly_key_tree()`. Overview and navigation made easier.
- One-to-many linking: marking a single point of interest highlights all other points that share particular data values (connect-type)
- Lists of key values, and json

- R6 subclass of SharedData from {crosstalk}

4 Slicing and dicing time

- Time wrapping: absolute time to relative time, grouped by corresponding lower-resolution time. date-times -> hours, by dates
- Transform and send newly-transformed data via server, without updating anything else (e.g. layout and graphical elements), to avoid completely redrawing.
- A shiny module: slider and plot

5 Case study: monthly domestic tourist trips in Australia

6 Conclusions and discussions