

Hierarchical qualitative color palettes

Martijn Tennekes and Edwin de Jonge
 Statistics Netherlands (CBS)
 m.tennekes@cbs.nl

Motivation

Aim: Visualize tree-structured statistical data
Question: What color palettes to use?

Method

Color space: **Hue - Chroma - Luminance (HCL)**
 Designed to control human perception. [1, 2]

Branch in tree: controlled by Hue values

Hue range recursively assigned, starting with the root node:

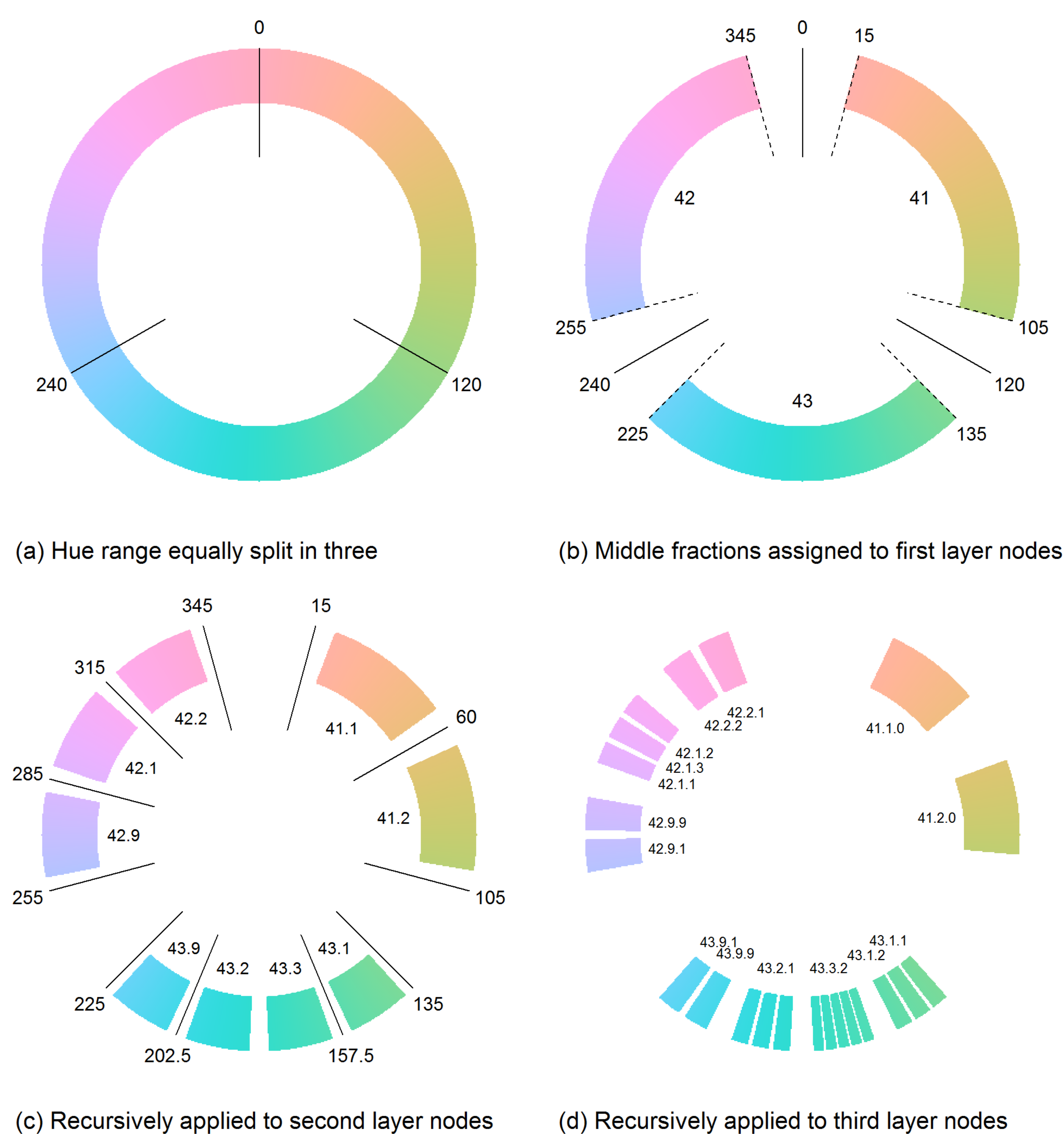


Figure 1. Assignment of Hue values

- Assigned hue ranges of siblings are permuted to prevent perceptual order. Permutation order is based on [1, 3, 5, 2, 4] permutation.
- Middle fractions f are kept to discriminate different branches. Choice of f trade-off between:
 - 1) discrimination of main branches (low f)
 - 2) discrimination of leaf nodes (high f).

Tree depth: controlled by Chroma and Luminance values

- Luminance decreases with tree depth
- Chroma increases with tree depth (More intense colors helps in discriminating leaf nodes)

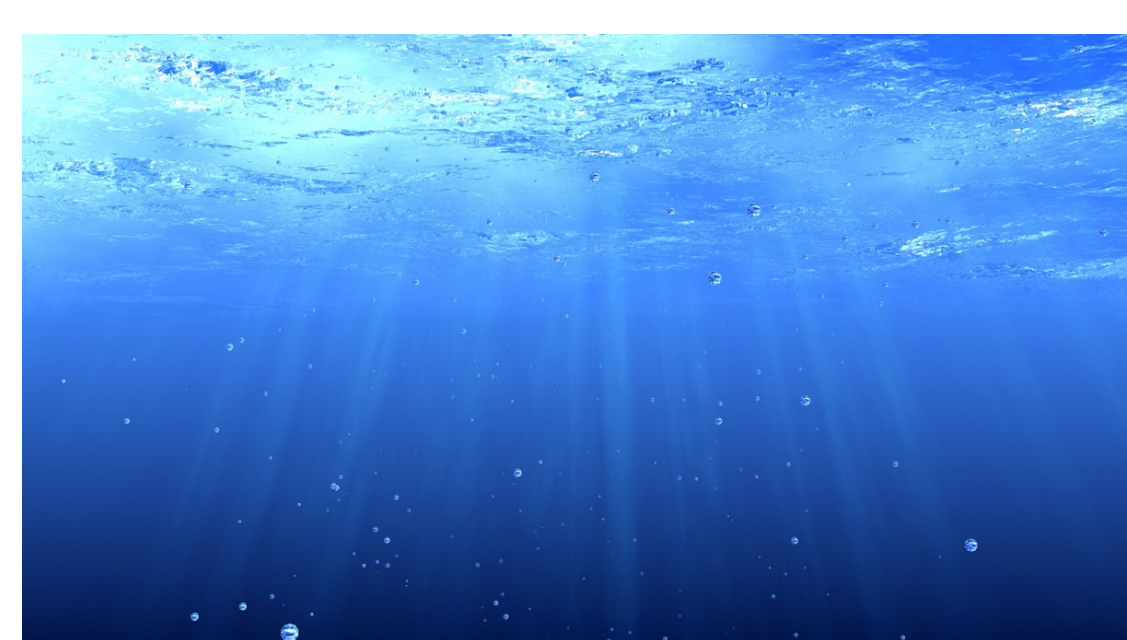


Figure 2. Analogous to ocean water

Example tree structure

European classification system of economic activity (NACE).
 Section F (Construction)

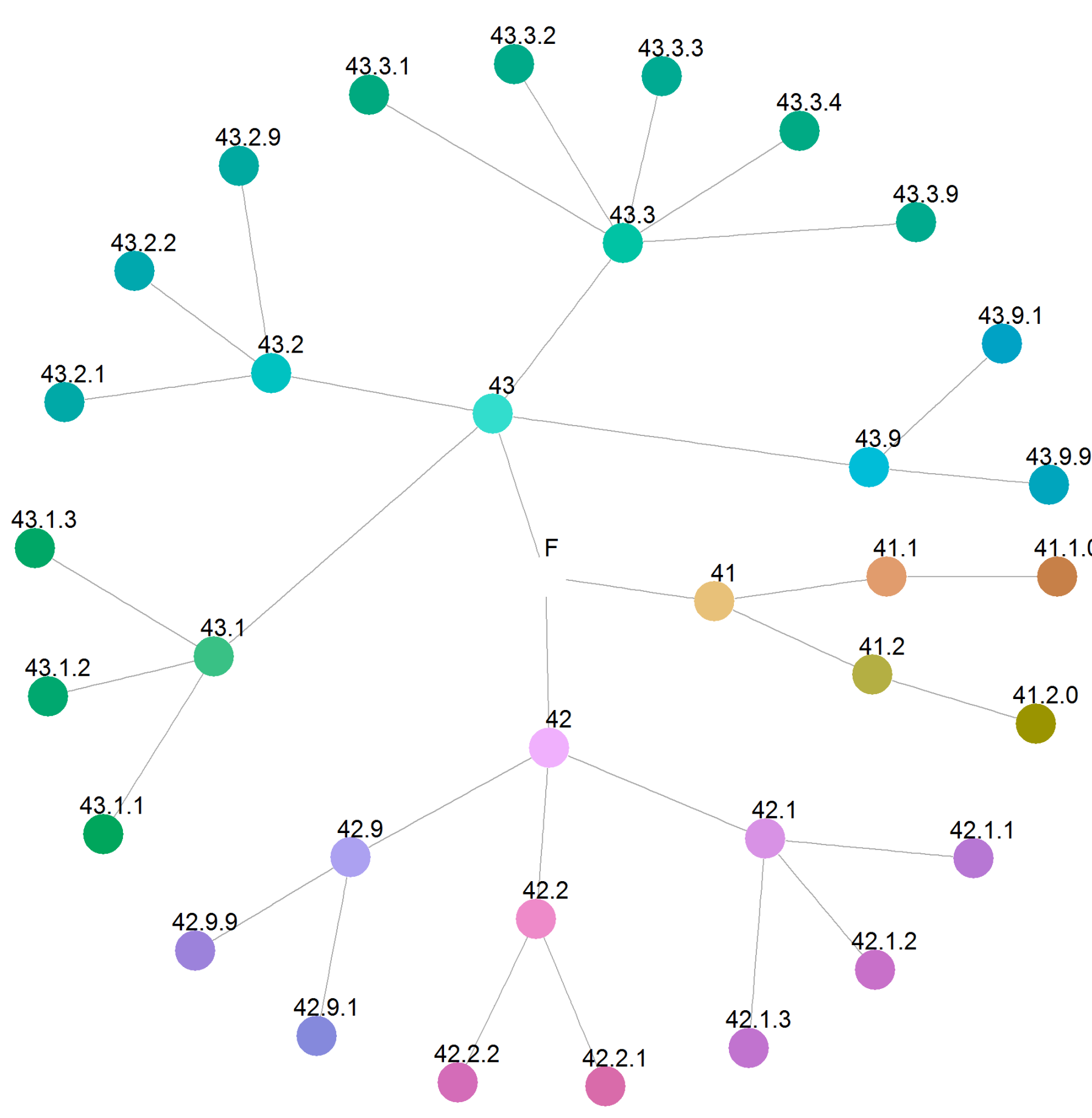


Figure 2. Tree structure of economic sector F of NACE

Applications



Figure 3. Treemap of fictitious turnover values per economic sector

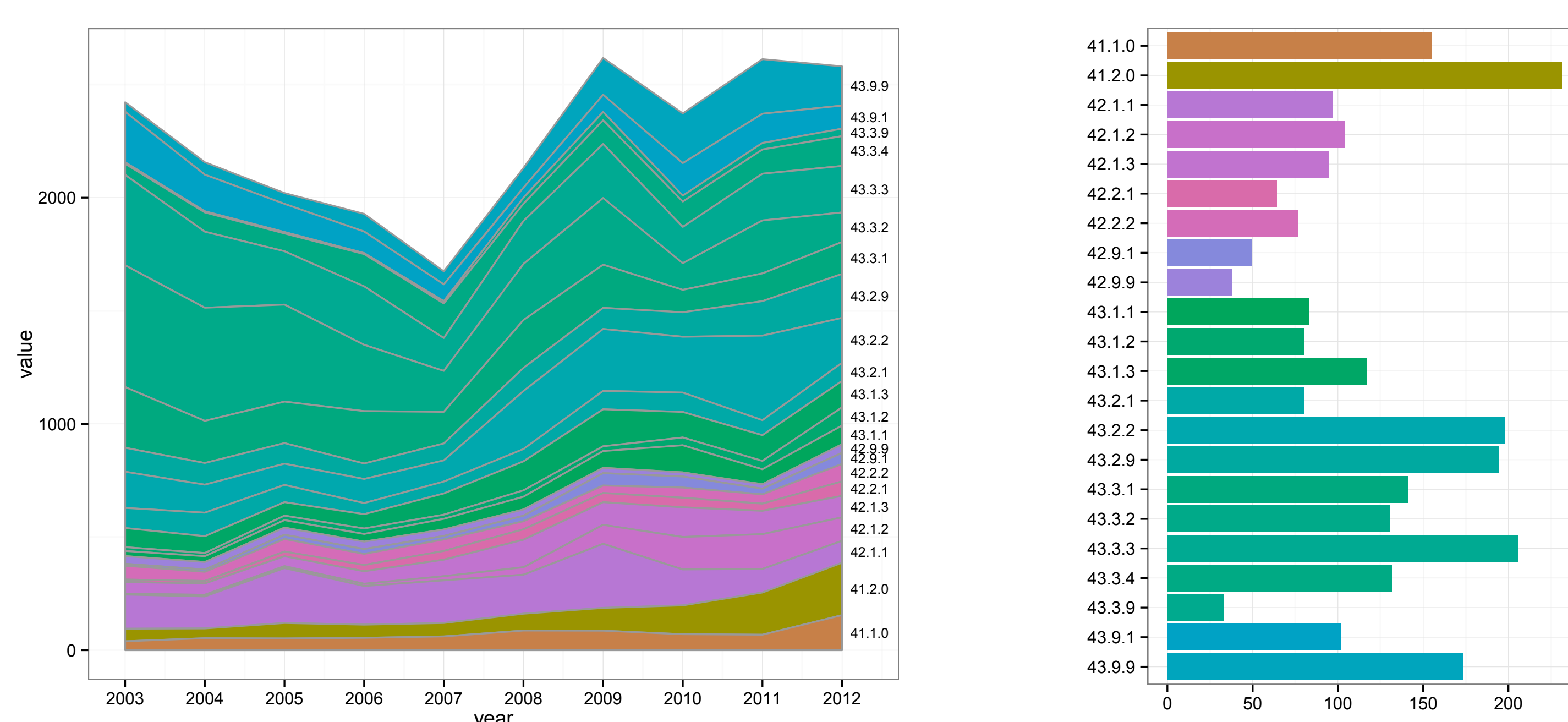


Figure 4. Stacked area chart and bar chart of fictitious turnover values

References

- [1] R. Ihaka. Colour for presentation graphics. In Proceedings of the 3rd International Workshop on Distributed Statistical Computing, Vienna Austria, 2003.
- [2] A. Zeileis, K. Hornik, and P. Murrell. Escaping rgbland: Selecting colors for statistical graphics. *Comput. Stat. Data Anal.*, 53(9):3259–3270, July 2009.