Data Analysis and Visualization

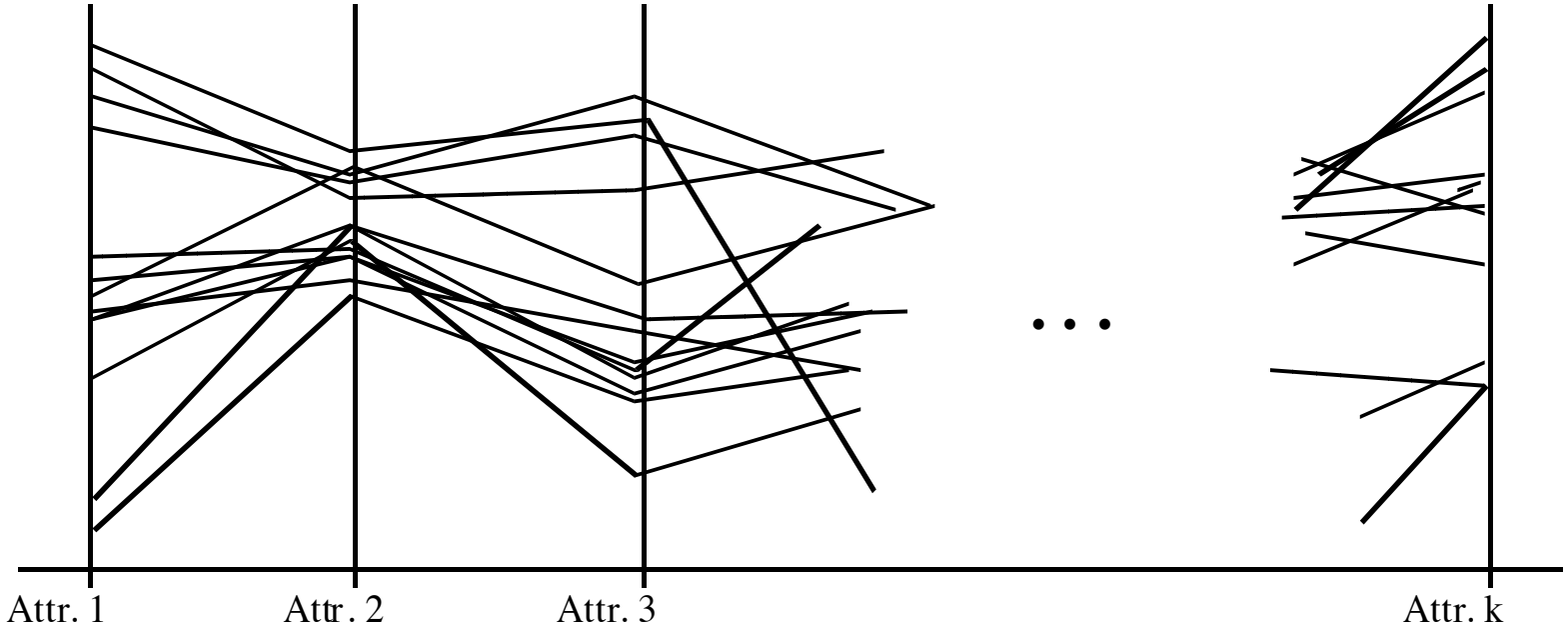
Universität Konstanz

Information Visualization

Parallel Coordinates Plots

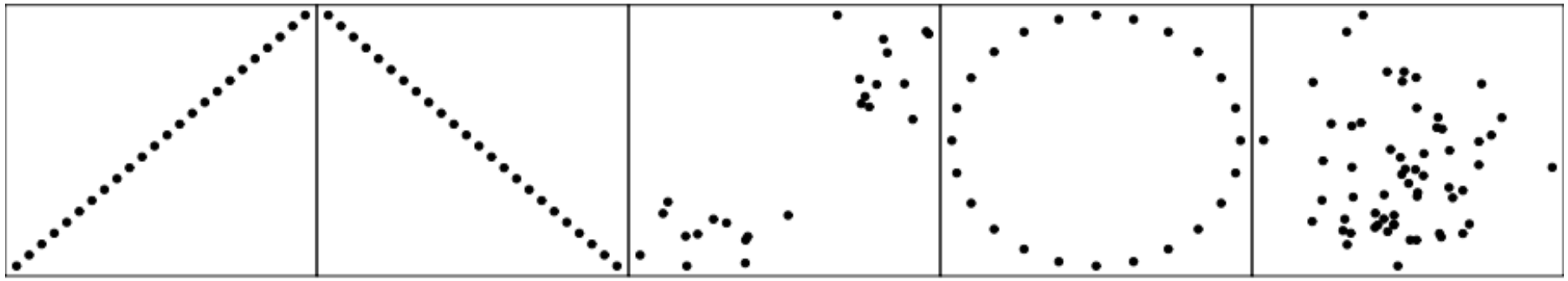


Dr. Johannes Fuchs

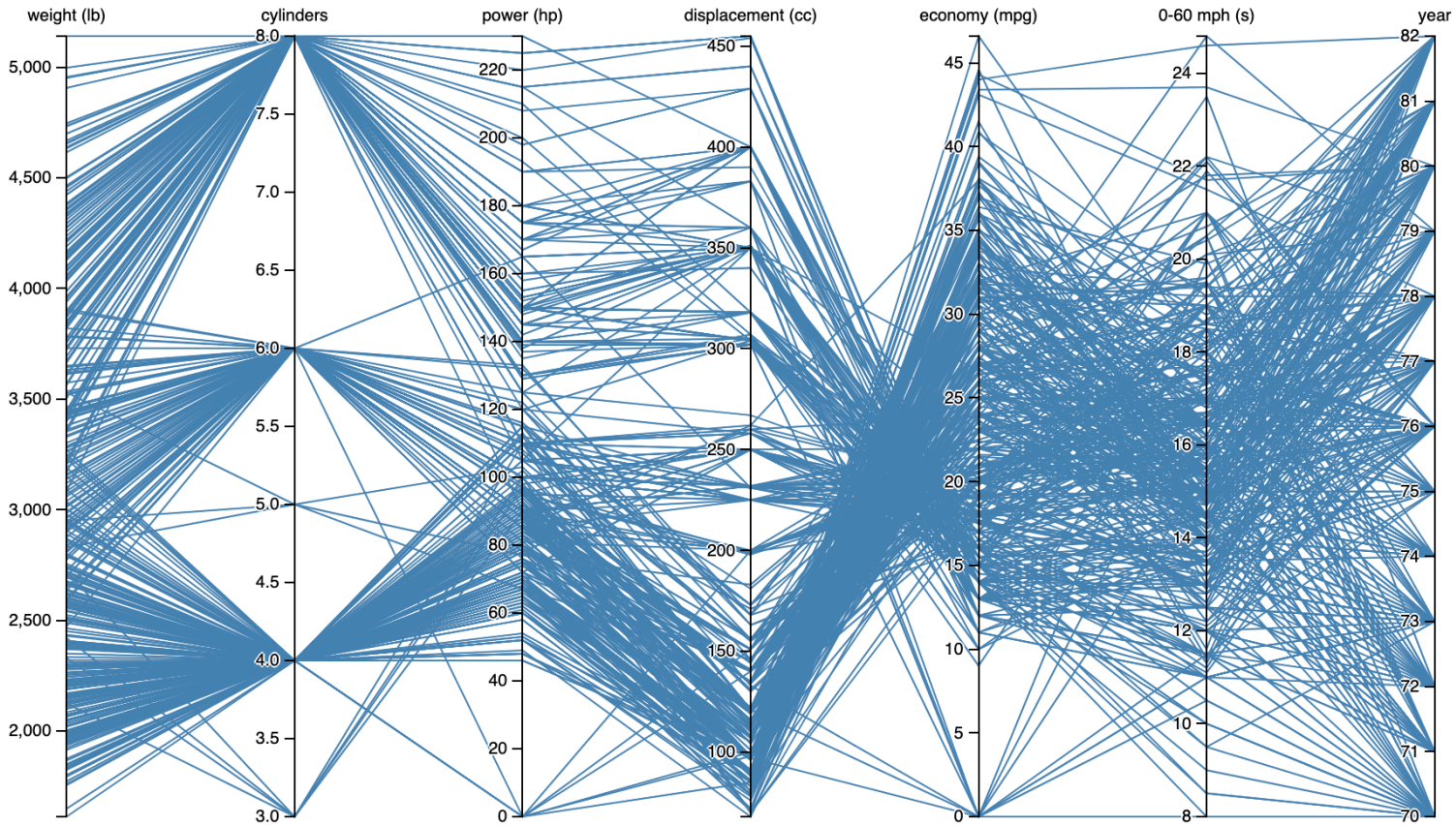


- n equidistant axes which are parallel to one of the screen axes and correspond to the attributes
- the axes are scaled to the [minimum, maximum] - range of the corresponding attribute
- every data item corresponds to a polygonal line which intersects each of the axes at the point which corresponds to the value for the attribute

Parallel Coordinates



Parallel Coordinates – How to Read



https://bl.ocks.org/jasondavies/1341281

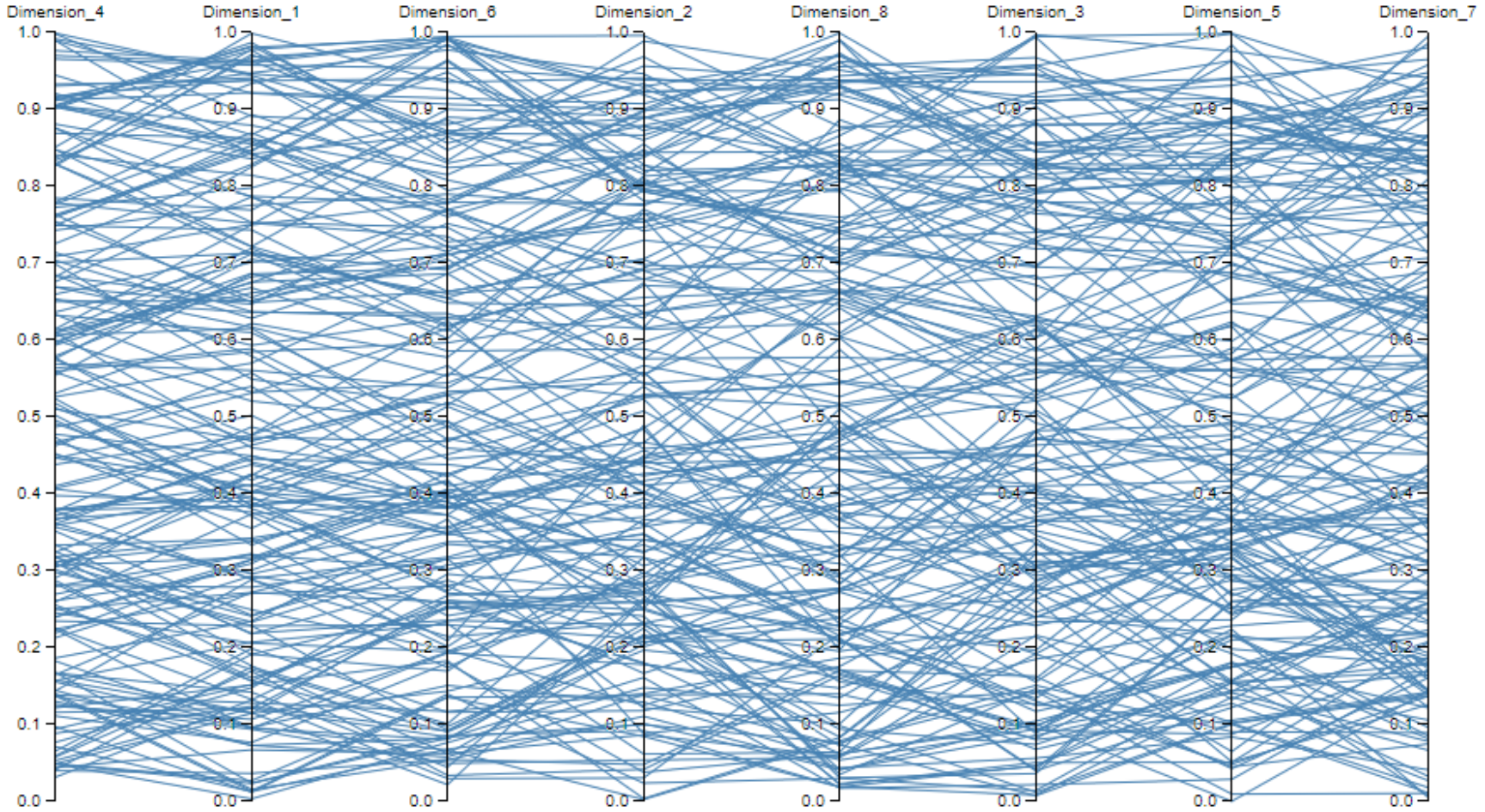
https://observablehq.com/@d3/parallel-coordinates

https://syntagmatic.github.io/parallel-coordinates/

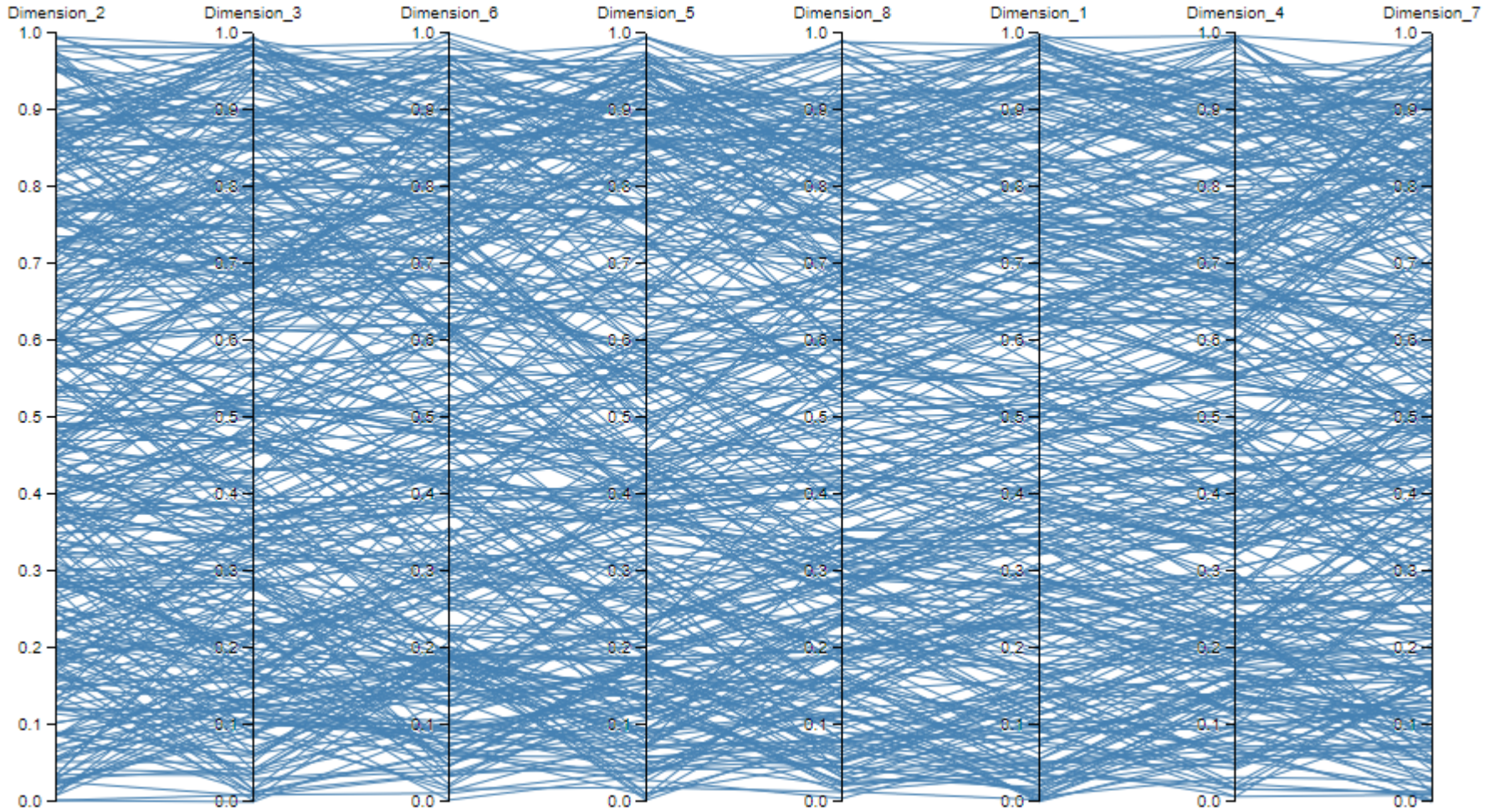
Parallel Coordinates – Example

R-Code: 06_PCPs.r

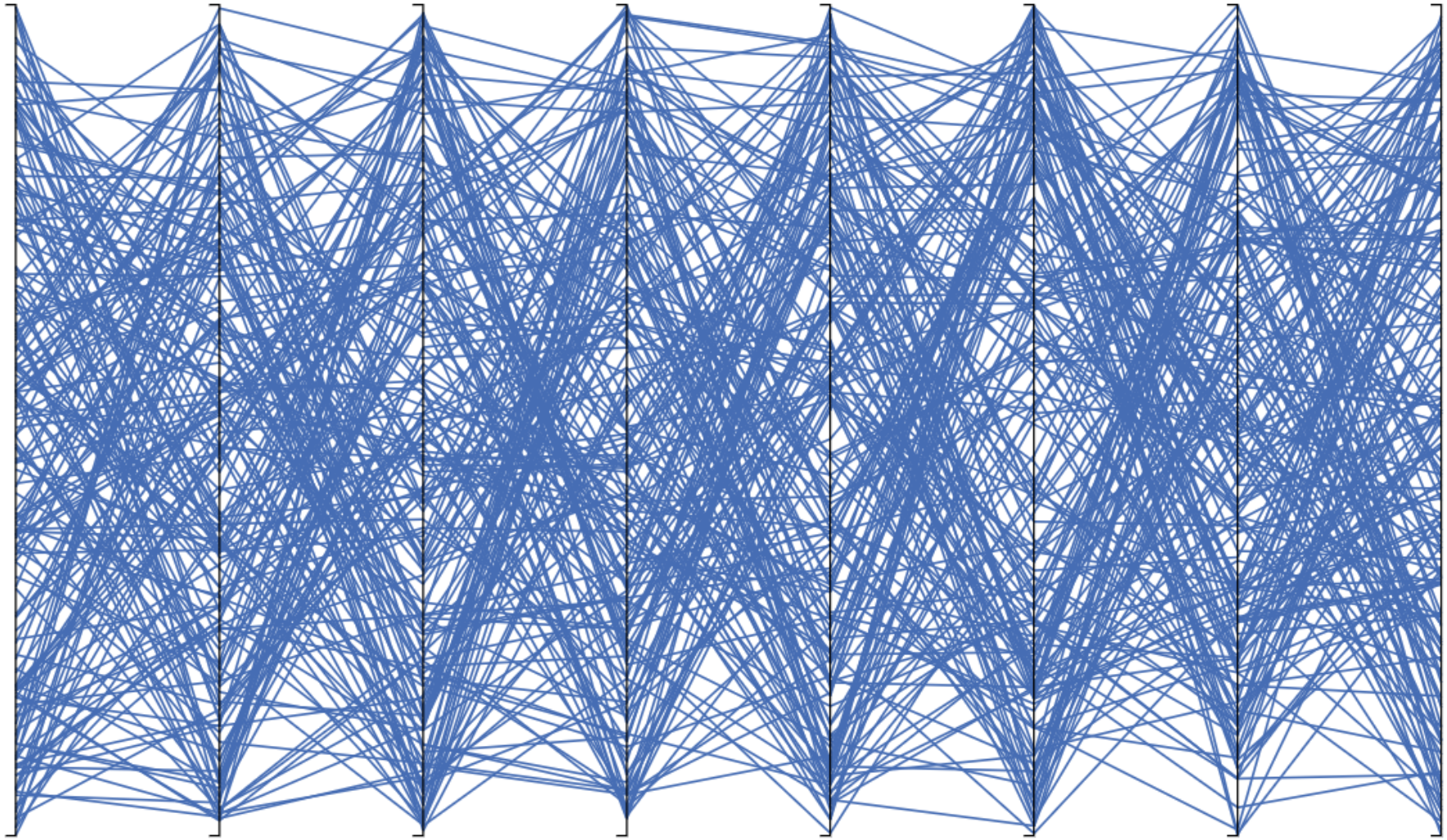
Simply apply the code snippets to your data set.



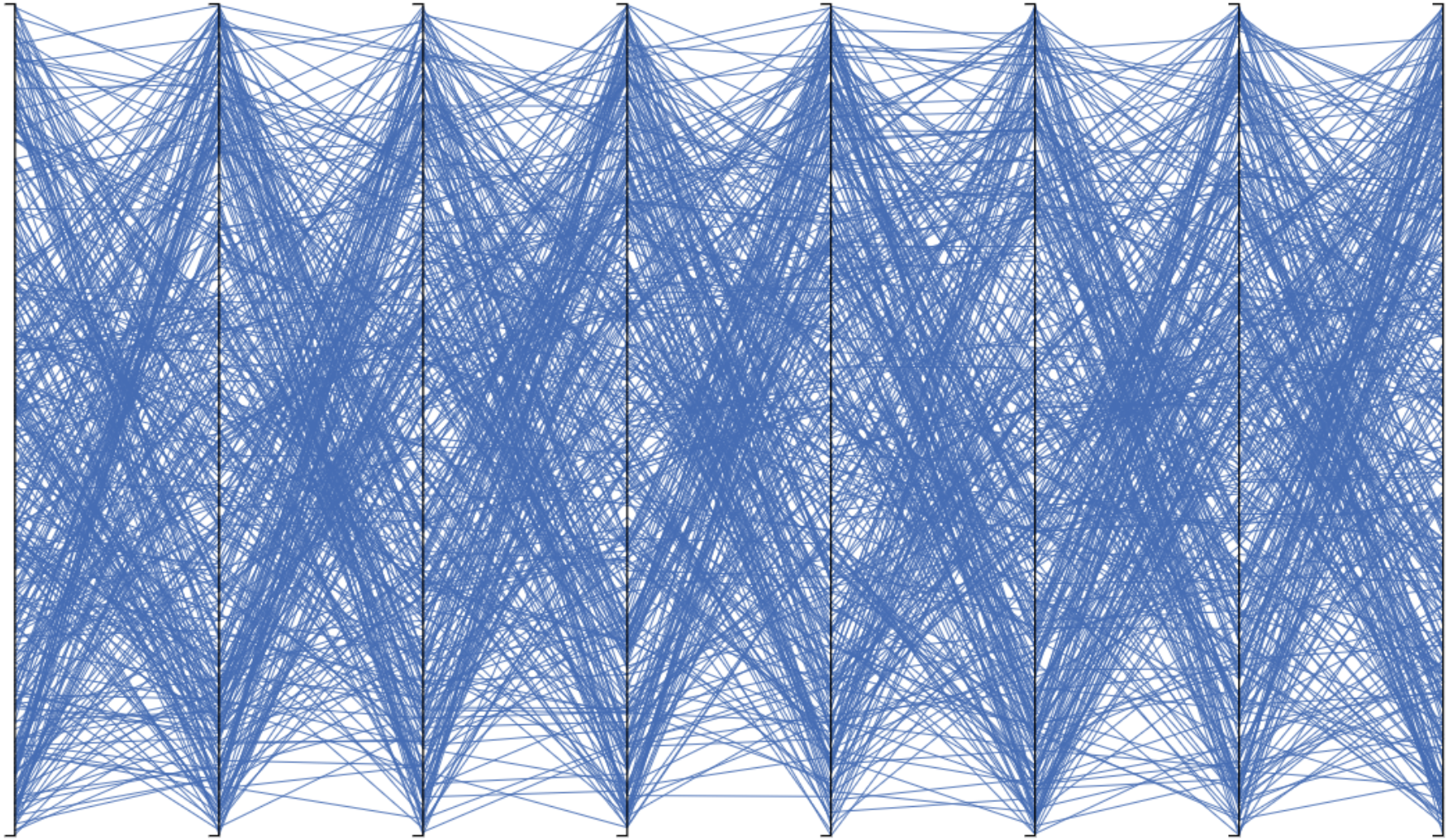
Parallel Coordinates – Effect of Clutter



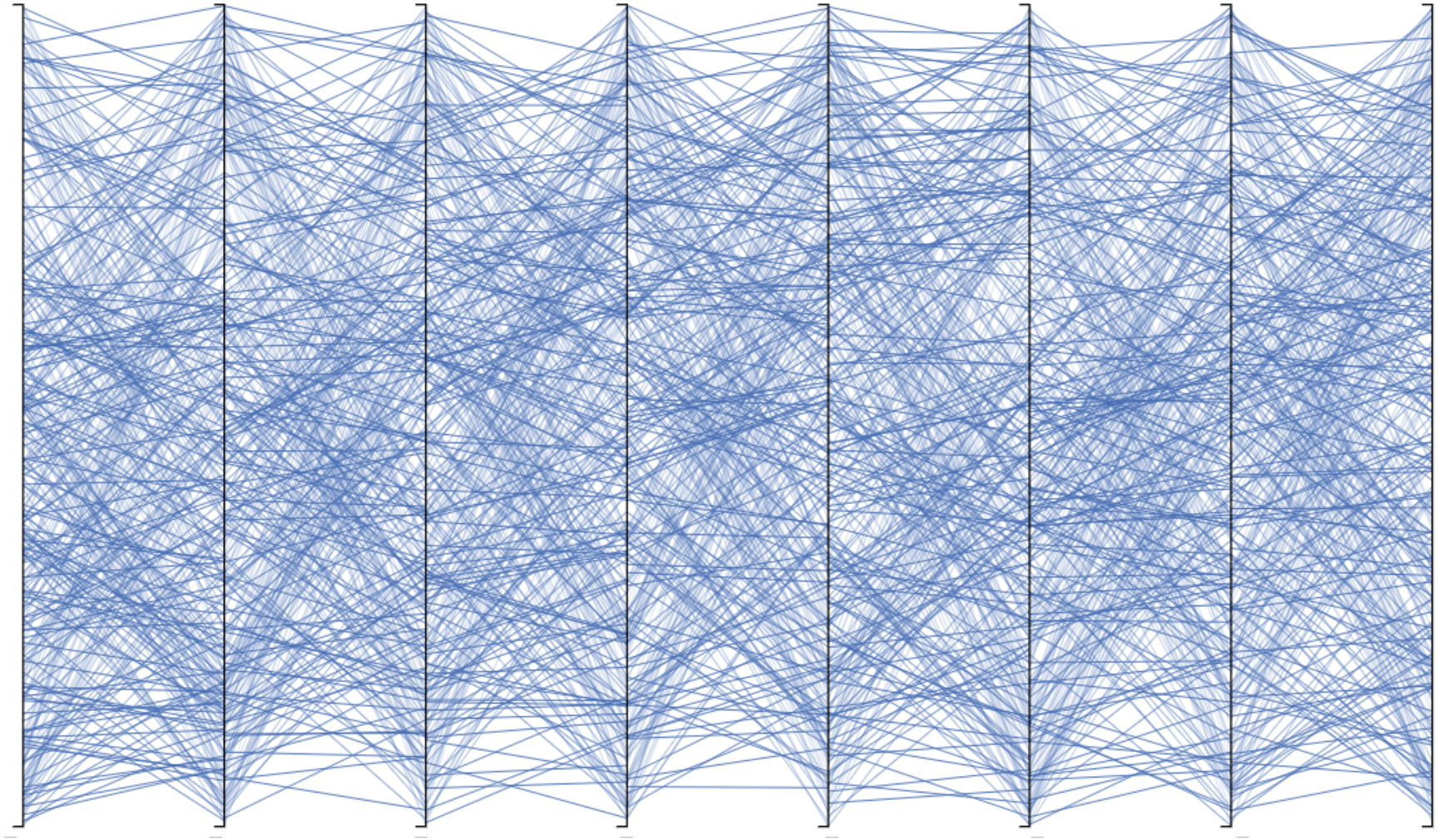
Parallel Coordinates – Effect of Clutter



Parallel Coordinates – Effect of Clutter



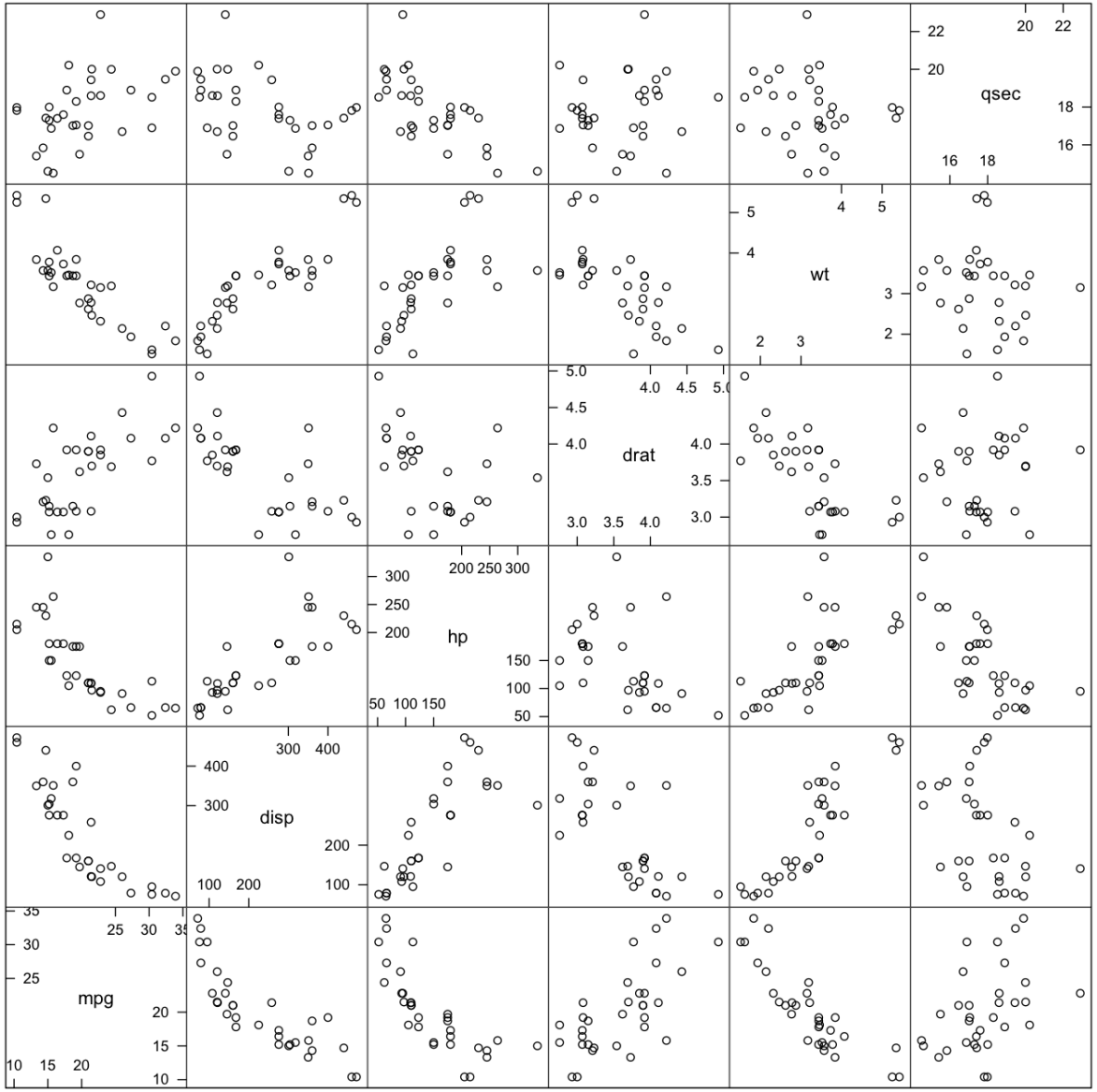
Parallel Coordinates – Effect of Clutter



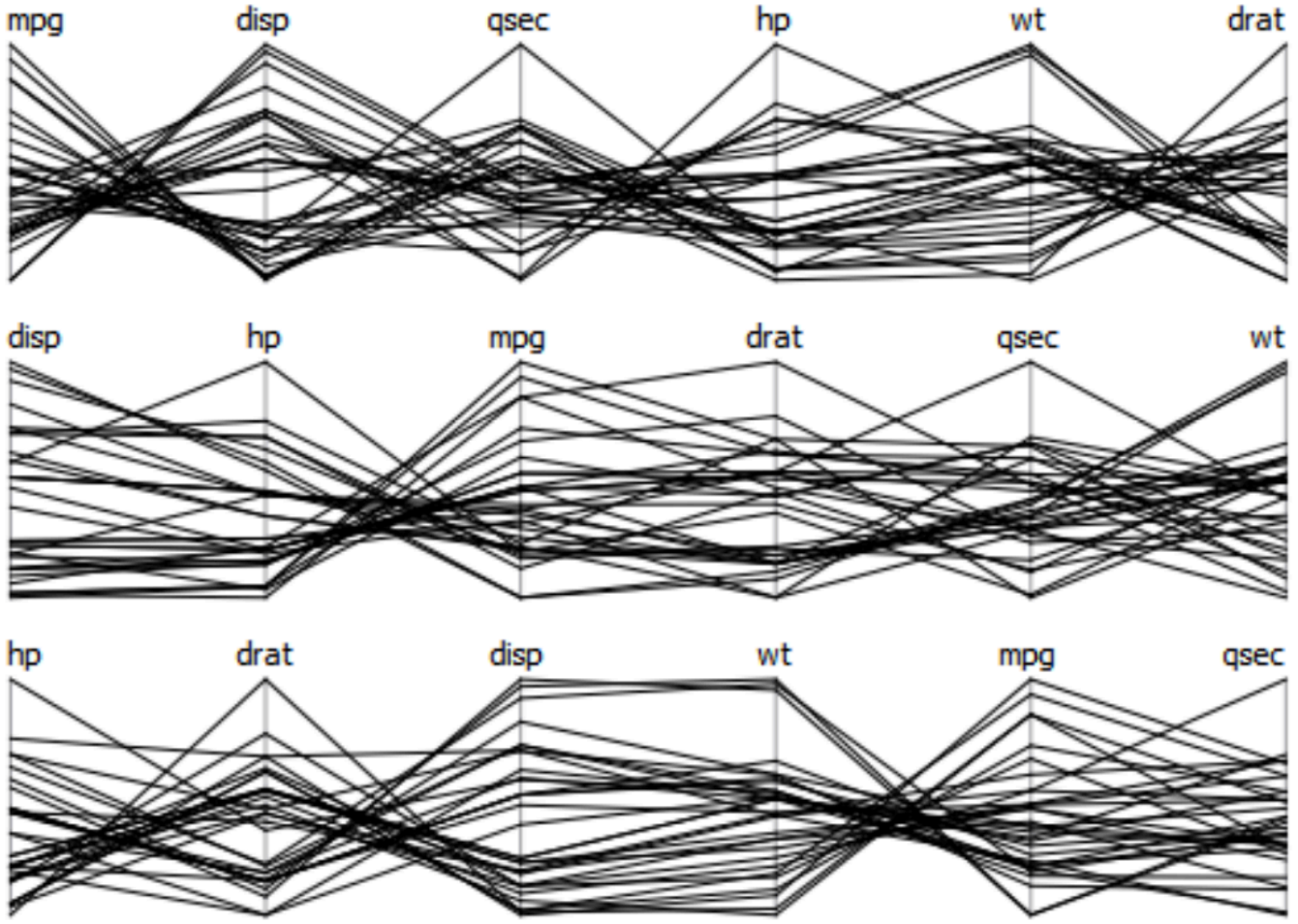
http://subspace.dbvis.de/pcp-adjustment/

Parallel Coordinates – Effect of Clutter

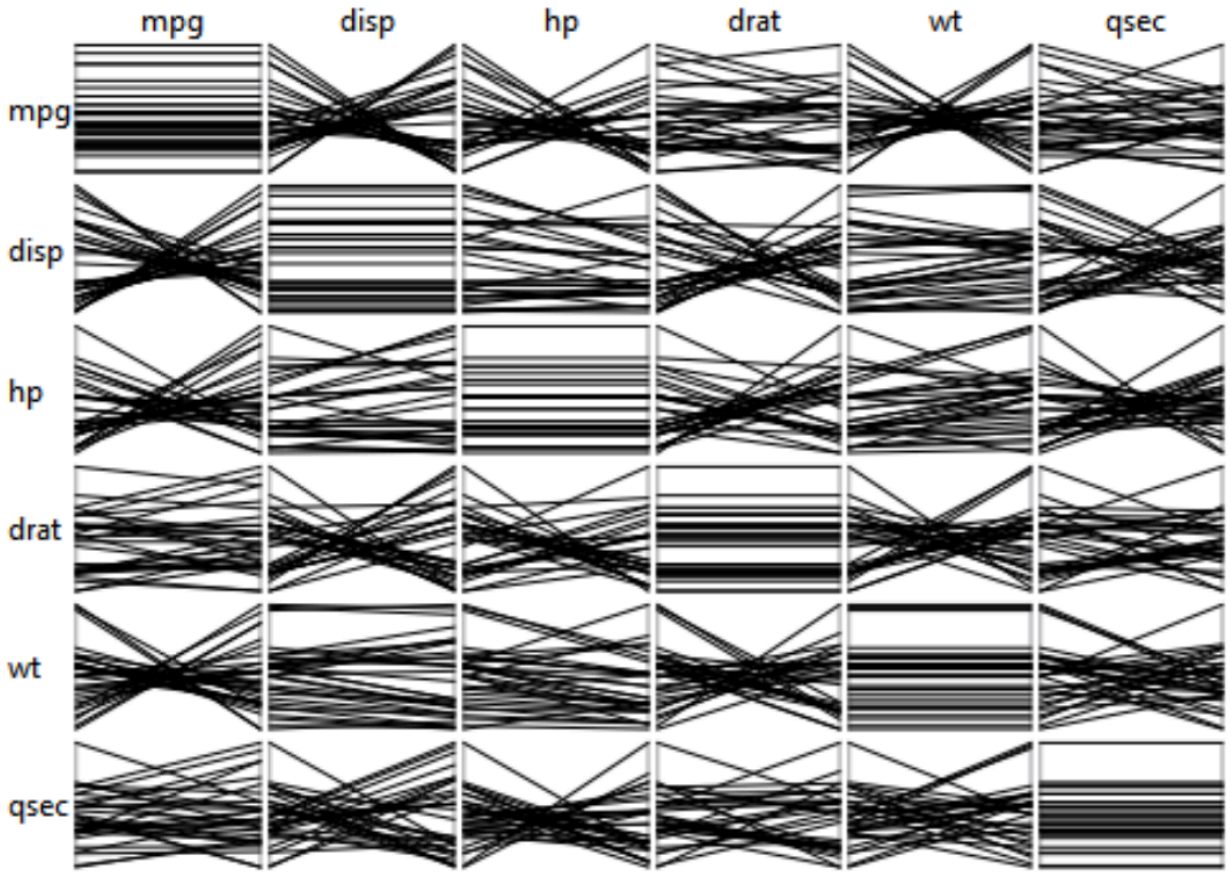
Pomerenke et al., 2019



Parallel Coordinates vs. Scatterplot Matrix



Parallel Coordinates vs. Scatterplot Matrix



Parallel Coordinates vs. Scatterplot Matrix

- Suitable to understand cluster characteristics.
- The order of dimensions will influence visible patterns in the data.
- Noise might introduce fake patterns

Guidelines – Parallel Coordinates Plots

Analyze the dataset articial.csv

Write your own R-script

OR

http://fuchs.dbvis.de/analysisTool/

OR

KNIME

Write down your findings?

References

Behrisch et al., 2018
Commercial visual analytics systems-advances in the big data analytics field.
Behrisch, Michael and Streeb, Dirk and Stoffel, Florian and Seebacher, Daniel and Matejek, Brian and Weber, Stefan Hagen and Mittelstaedt, Sebastian and Pfister, Hanspeter and Keim, Daniel: IEEE Transactions on Visualization and Computer Graphics, 2018

Pomerenke et al., 2019
Slope-Dependent Rendering of Parallel Coordinates to Reduce Density Distortion and Ghost Clusters
Pomerenke, David and Dennig, Frederik L and Keim, Daniel A and Fuchs, Johannes and Blumenschein, Michael: TVCG short paper, 2019