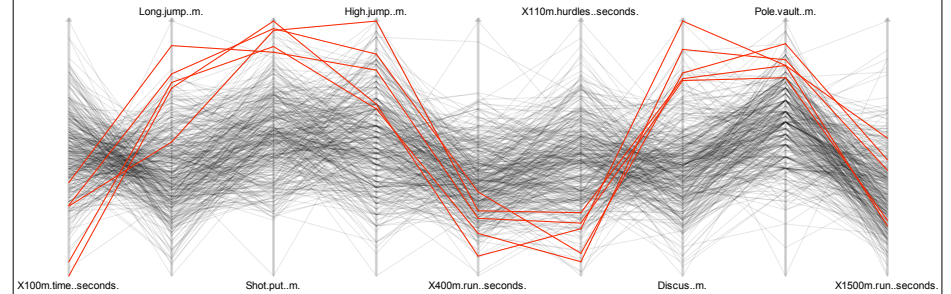


# Decathlon data

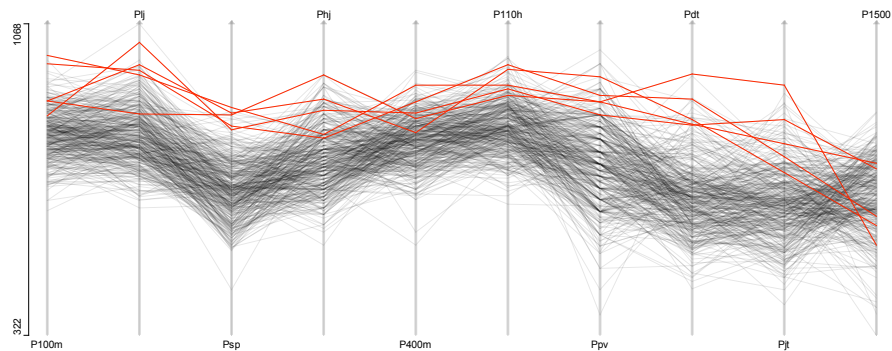
- Best performances each year, 1985 to 2006, by individual decathletes, 7968 cases
- Only complete, not hand-timed
- 10 events, results, points, competition dates
- Nationality, birthday
- Source: [www.decathlon2000.ee](http://www.decathlon2000.ee)

# Decathlon performances



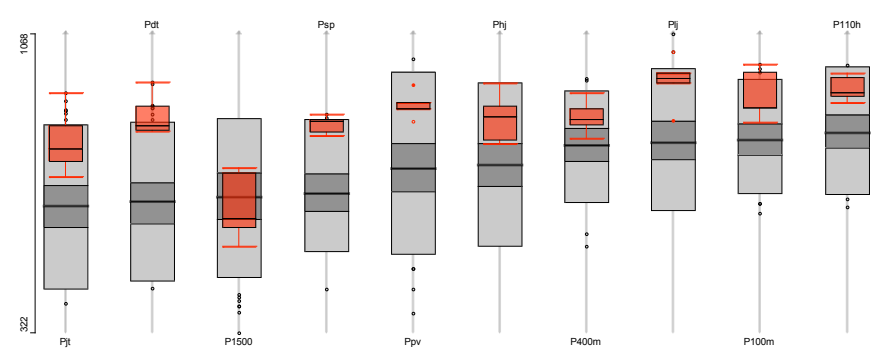
Best 5 performances 1985 to 2006 are highlighted

# Points and common scaling



Best 5 performances 1985 to 2006 are highlighted

# Events sorted by median

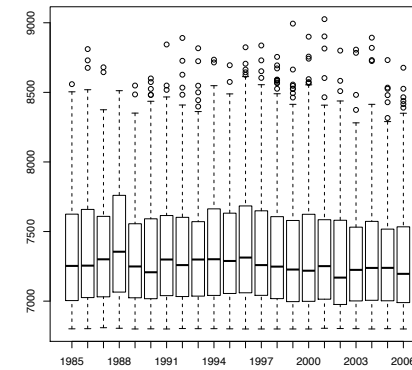


Best 5 performances 1985 to 2006 are highlighted

# Different Parallel plots

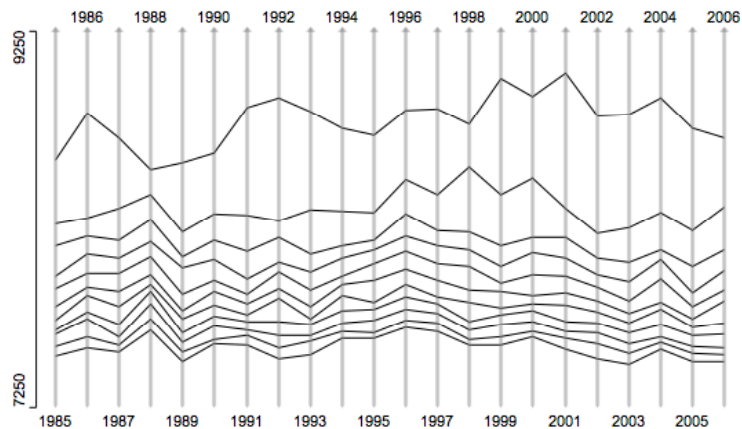
- Distinguish between
  - Parallel coordinate plots of cases across all variables
  - Parallel boxplots of cases across all variables
  - Boxplots of one variable by different groups of cases

# Total scores over time

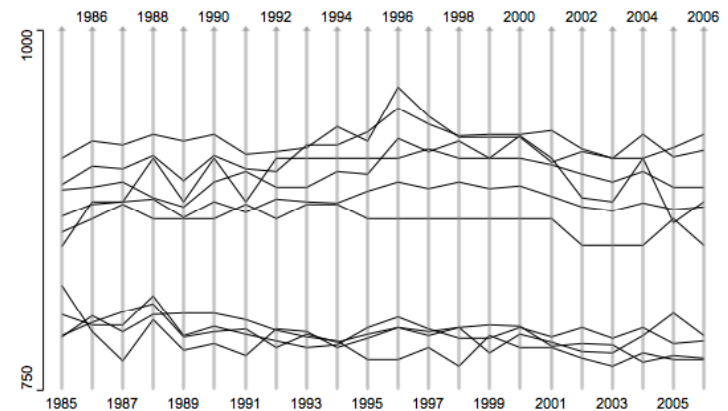


```
boxplot(ZKq$Total.points~ZKq$yearE)
```

# Best over time: 1st, 10th,..

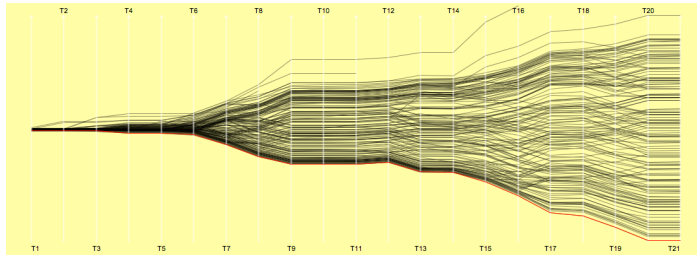


# 25th Best Event Performances



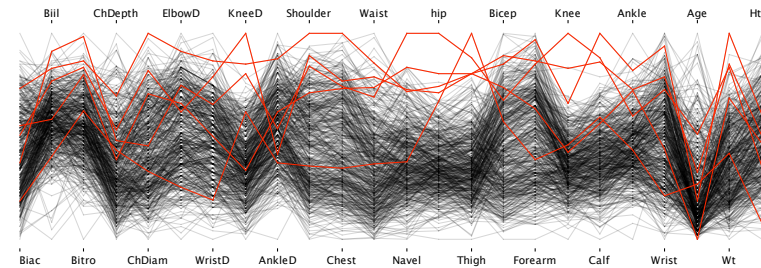
# Tour de France

- Times for each stage and rider
- Years 2005 to 2009
- [www.theusrus.de/blog/](http://www.theusrus.de/blog/)



# Parallel coordinate plots in R

- `parcoord`
  - `cparcoord` (library `gclus`)
  - `ggpcp` (library `ggplot2`)
  - `ipcp` (library `iplots`) with interaction
- ```
> ipcp(bodyX[,1:24])
```

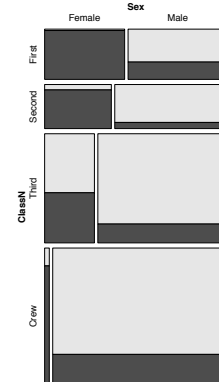


# Parallel coordinates

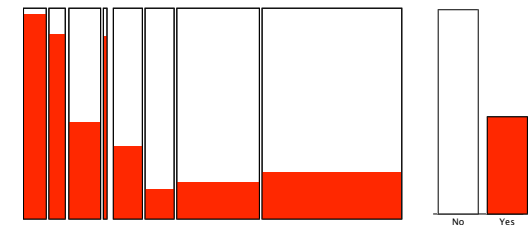
- Common scale
- Rescale (including standardisation and inverting)
- Order of axes
  - by hand
  - by sorting
  - permuting
- Delete/add axes
- Alignment
- Display as boxplots

# Mosaicplots in R

`mosaic` (library `vcd`)



`imosaic` (library `iplots`) with interaction

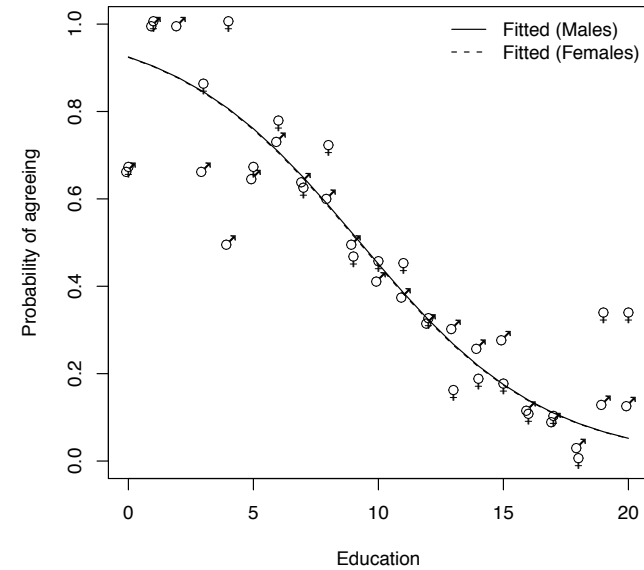


```
ibar(Survived)
imosaic(Sex, ClassN)
```

```
mosaic(Survived ~ ClassN+Sex, data = Titanic)
```

# Womensrole

- Survey data 1974/5 (in package *HSAUR2*)
- Years in education, gender, agree / disagree with the statement “Women should take care of running their homes and leave running the country up to men.”



from  
Everitt  
and  
Hothorn

Figure 7.6 Fitted (from *womensrole\_glm\_1*) and observed probabilities of agreeing for the *womensrole* data.

# Social Mobility

- Class of fathers and sons
- Two types of class: social and by income
- Two surveys in the UK: 1958 and 1970
- Source: Cox, Jackson and Lu “On Square Ordinal Contingency Tables” JRSS A Vol 172 (2009) 483-494

# Mosaicplots

- Change order of variables
- Remove/add variables
- Rotate variable
- Change order of categories within variables
- Alternative displays (fluctuation, multiple barcharts, ...)
- Zooming (+ censored zooming)
- Cellsize distribution
- Compare with models (e.g., logistic regression)
- Querying/labelling/orientation

# Comparisons

- What is the right group to compare a selection with?
  - with all
    - as in histograms, barcharts, scatterplots, ....
  - with rest
    - as in boxplots y by x
  - with appropriate other subgroups
    - as in mosaicplots
- Could comparisons be interactively suggested?
- What is a suitable test (or tests) to judge the comparison?