

# Introduction to the **mountainplot** package

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## 1 Abstract

The **mountainplot** package provide an extension to the **lattice** package that allows for the consutruction of mountain plots, which are also known as folded empirical cumulative distribution plots.

## 2 Setup

Load the package and use the **singer** data from the **lattice** package. Combine the first and second parts of each voice part into a new variable called **section**.

```
library("mountainplot")
data(singer, package = "lattice")
singer <- within(singer, {
  section <- voice.part
  section <- gsub(" 1", "", section)
  section <- gsub(" 2", "", section)
  section <- factor(section)
})
# Change levels to logical ordering
levels(singer$section) <- c("Bass", "Tenor", "Alto", "Soprano")
```

## 3 Mountain plot

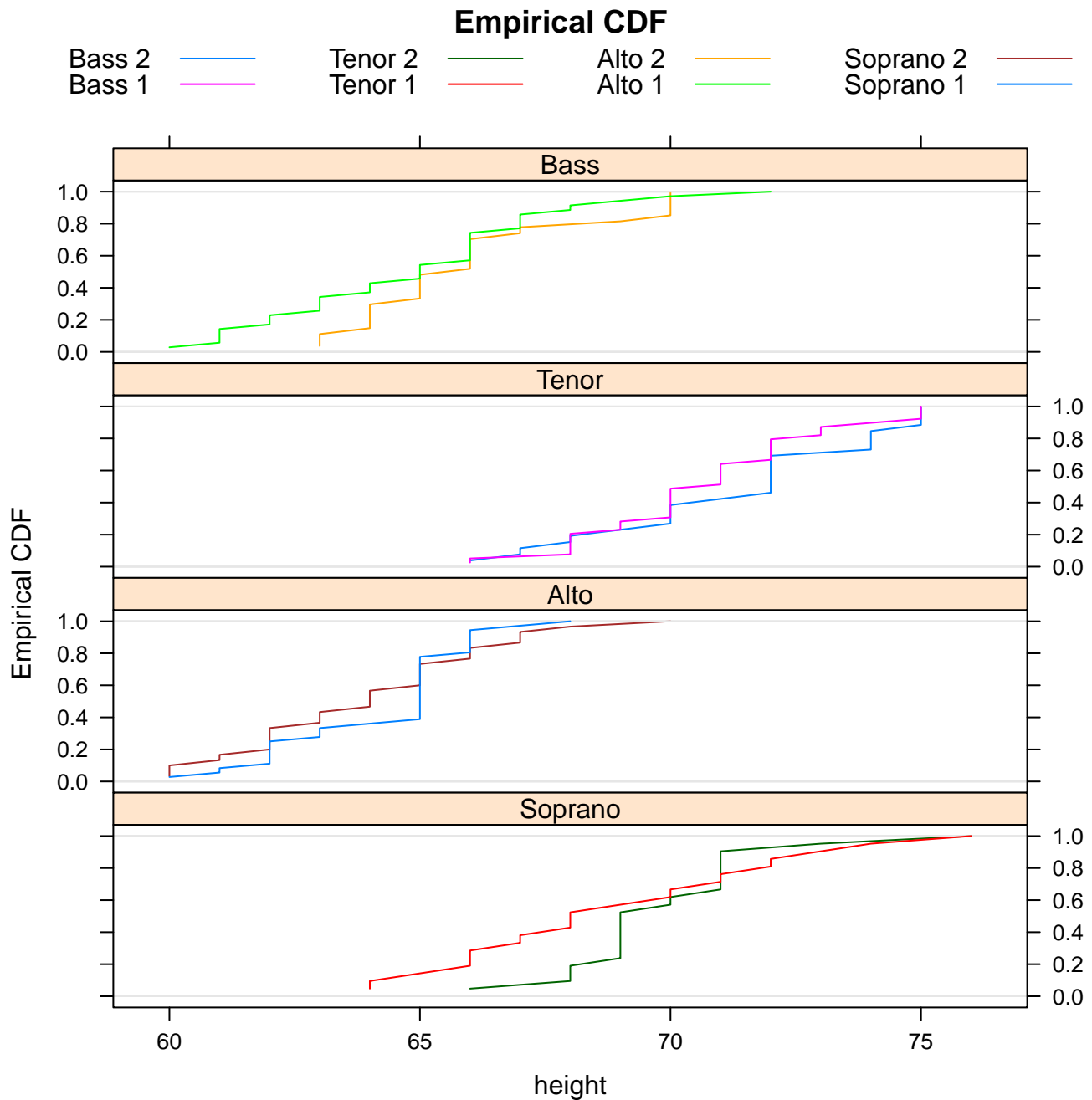
A mountainplot, or folded empirical cumulative distribution function, is similar to an ordinary empirical CDF, but once the cumulative probability reaches 0.50, the CDF is inverted, decreasing back down instead of continuing upward.

Here is an example of the traditional empirical CDFs.

```
require(latticeExtra) # for ecdfplot

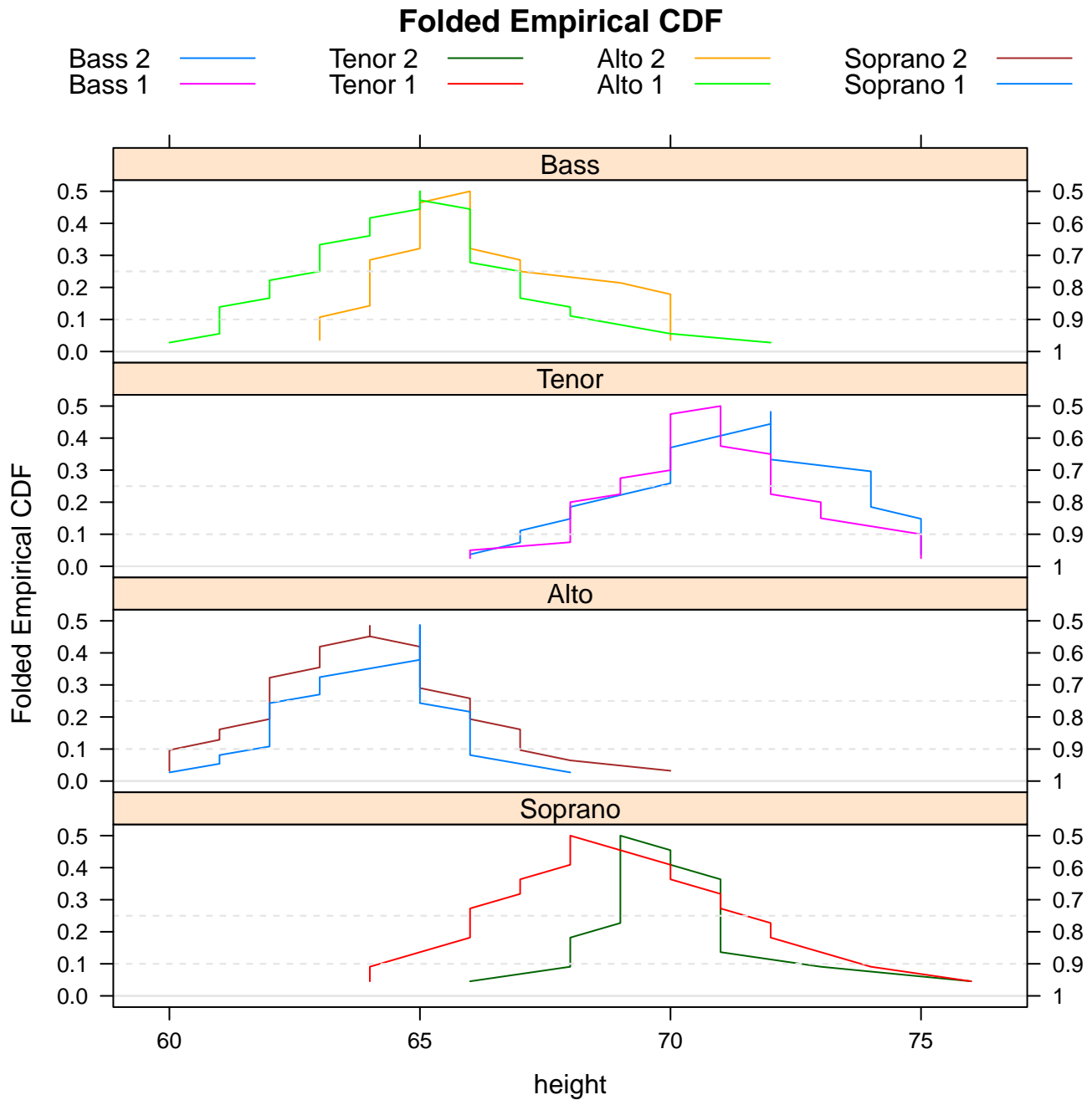
## Loading required package: latticeExtra
## Loading required package: RColorBrewer
## Loading required package: lattice
##
```

```
## Attaching package: 'lattice'
##
## The following object is masked _by_ '.GlobalEnv':
##
## singer
ecdfplot(~height|section, data = singer, groups=voice.part, type=1,
        layout=c(1,4),
        main="Empirical CDF",
        auto.key=list(columns=4), as.table=TRUE)
```



Here is a view of the same data shown with a mountain plot.

```
mountainplot(~height|section, data = singer, groups=voice.part, type=1,
             layout=c(1,4),
             main="Folded Empirical CDF",
             auto.key=list(columns=4), as.table=TRUE)
```



Monti (1995) claims that a mountain plot facilitates the following tasks when exploring data:

1. Determine the median.
2. Determine the range.
3. Determine central or tail percentiles of any specified value.
4. Observe outliers.
5. Observe unusual gaps in the data.

6. Examine the data for symmetry.
7. Compare multiple distributions.
8. Visually examine the sample size.

## 4 Appendix

Session information:

- R version 3.1.2 (2014-10-31), x86\_64-w64-mingw32
- Base packages: base, datasets, grDevices, graphics, methods, stats, utils
- Other packages: RColorBrewer 1.1-2, knitr 1.8, lattice 0.20-29, latticeExtra 0.6-26, mountainplot 1.0
- Loaded via a namespace (and not attached): evaluate 0.5.5, formatR 1.0, grid 3.1.2, highr 0.4, stringr 0.6.2, tools 3.1.2

## 5 Bibliography

K. L. Monti. (1995) Folded empirical distribution function curves-mountain plots. *The American Statistician*, 49, 342–345. <http://www.jstor.org/stable/2684570>