Univariate Graphical Displays

Why Histograms can be bad…

These are all the same data set!
Univariate Graphical Displays

Box-Plots are Harder to Fool With…

- Box is has “hinges” at Q1 and Q3
- Line at Median (Q2)
- Whiskers up to 1.5 IQRs long
- Dots for possible outliers

Quantile-Quantile plots are good for comparing data sets to a distribution.

```r
obsvals <- sort(ds)
expvals <- qchisq((1:1000)/1001, 3)
plot(obsvals, expvals)
lines(c(0, 20), c(0, 20))
```
Loading in Data and Text Functions

```r
census <- read.table("http://www.stat.sc.edu/~habing/courses/data/census.txt", header=TRUE)

birth <- census[, "Birth"]
heartd <- census[, "HeartD"]

source("http://biostatistics.iop.kcl.ac.uk/publications/everitt/RSPCMA/functions.txt")
```

Scatterplots

```r
plot(birth, heartd)
```
Scatterplots

```r
plot(birth, heartd, xlim=c(14,15))
```

Scatterplots

```r
jbirth <- jitter(birth)
plot(jbirth, heartd, xlim=c(14,15))
```
Scatterplots

\texttt{plot(jbirth, heartd, xlim=c(14, 15), type="n")}
\texttt{text(jbirth, heartd, census[,2], cex=0.9)}

![Scatterplot 1](image1)

Scatterplots

\texttt{plot(birth, heartd)}
\texttt{abline(lm(heartd ~ birth), lwd=2)}

![Scatterplot 2](image2)
Scatterplots

\texttt{plot(birth, heartd)}
\texttt{lines(lowess(birth, heartd), lwd=2)}

Bivariate Boxplot

\texttt{bvbox(birth, heartd)}
Density Plots

\[ \text{den} <- \text{bivden}(\text{birth}, \text{heartd}) \]

\[ \text{persp} (\text{den.seqx}, \text{den.seqy}, \text{den.den}, \text{xlab="birth"}, \]
\[ \text{ylab="heartd"}, \text{zlab="den"}) \]
Density Plots

den<-bivden(birth,heartd)
contour(den$seqx,den$seqy,den$den,nlevels=10)

Adding a Third Variable

symbols(birth,heartd,circles=over65,inches=0.1)
Adding a Third Variable

```r
library(lattice)
cloud(over65~birth*heartd)
```

Adding a Third Variable

```r
coplot(heartd~birth|over65)
```
Lots of Variables!

\texttt{pairs(census[,3:8])}

Lots of Variables!

\texttt{source("http://www.stat.sc.edu/~habing/courses/530faceF03.txt")}
\texttt{faces(census[1:16,3:8],
\texttt{substring(census[1:36,1],1,10))}