STAT 270 More Notes for Wednesday, January 10, 2006

Software:

MINITAB 14 – freely available on SFU computers. Costs to have on own PC.
R – free to download from http://www.r-project.org/

Both good for simple stats, simulation, and graphics.
Minitab easy to learn for basics but hard to extend (future courses).
R harder to learn but can do anything.

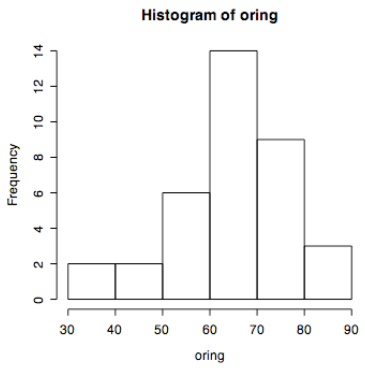
O-ring data (Challenger Disaster)

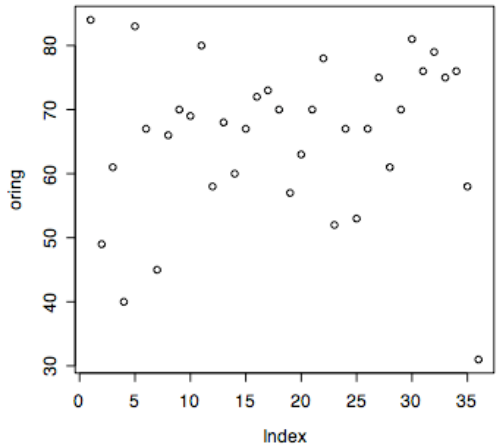
```
oring
 [1] 84 49 61 40 83 67 45 66 70 69 80 58 68 60 67 72 73 70 57 63
[21] 70 78 52 67 53 67 75 61 70 81 76 79 75 76 58 31
```

```
> stem(oring)

  The decimal point is 1 digit(s) to the right of the |

  3 | 1
  4 | 059
  5 | 23788
  6 | 01136777789
  7 | 000023556689
  8 | 0134
```

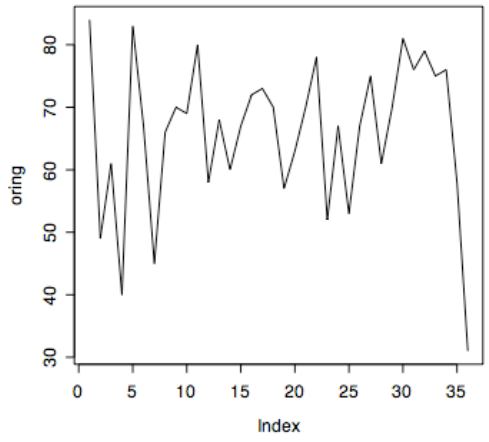
(or use stem(oring,2) for graph in text.

hist(oring)



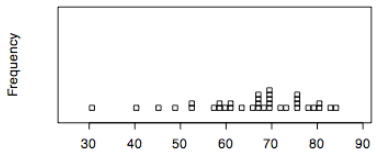


```
plot(oring)
plot(oring,type="l")
```

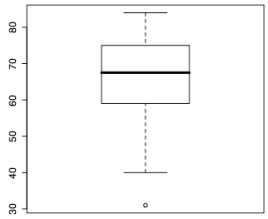



```
>mean(oring)
[1] 65.86111
> sd(oring)
[1] 12.15884
> max(oring)
[1] 84
> min(oring)
[1] 31
> range(oring)
[1] 31 84
> IQR(oring)
[1] 15.5
>help.search("percentile") # this tells you what the R command is for percentiles
> help("quantile")
> quantile(oring,.25)
 25%
59.5
> quantile(oring,.75)
75%
> quantile(oring,.75)-quantile(oring,.25)
 75%
15.5
```

> my.dotplot(oring)

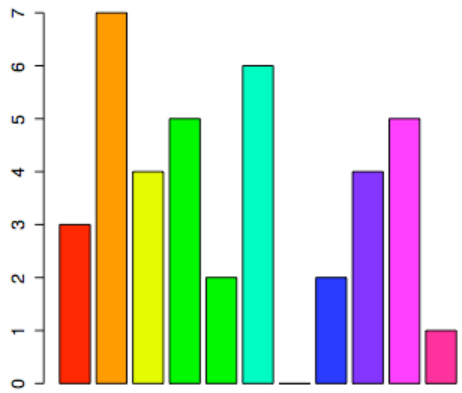



```
> my.dotplot
function (x,xlim.min=0,xlim.max=0,at=.2,cex=1,...)
# for multiple dotplots on one graph, you
# need repeated use of this function at
# different "at" levels.  This works but
# avoid at=.2 so full size plot is possible.
{
        if (at==.2) {op=par(fin=c(5,3))}
        min=min(x)
        max=max(x)
        #
        z=(x-mean(x))/sd(x)
        z=(round(10*z)/10)
        x=z*sd(x)+mean(x)
        edge=(max-min)/10
        if (xlim.min != 0 ) min= xlim.min+edge
        if (xlim.max != 0) max=xlim.max-edge
        #
        stripchart(x,method="stack",xlim=c( min-edge,
max+edge),ylab="Frequency",at=at,cex=cex,...)
        if (at==.2) {par(op)}
}
>boxplot(oring)
```



Distribution of application choices (1,2,...11) (up until 9:30 am this morning)

barplot(a,col=rainbow(11))



b=sort(a)
> barplot(b,col=rainbow(11))