

STAC32

Applications of Statistical Methods

Ken Butler

April 20, 2017

Section 1

Some R stuff

Preamble

```
library(tidyverse)

## Loading tidyverse:  ggplot2
## Loading tidyverse:  tibble
## Loading tidyverse:  tidyr
## Loading tidyverse:  readr
## Loading tidyverse:  purrr
## Loading tidyverse:  dplyr

## Conflicts with tidy packages
-----

## filter():  dplyr, stats
## lag():     dplyr, stats
```

Reading the data

```
jumping=read_delim("/folders/myfolders/jumping.txt",delim=" ")

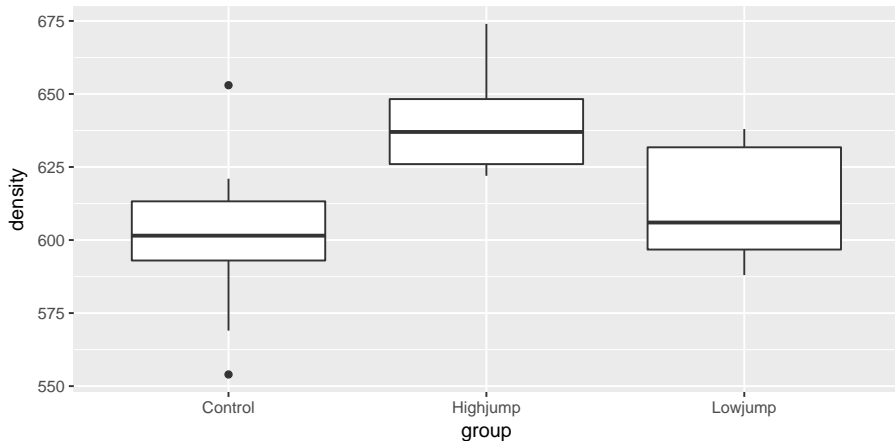
## Parsed with column specification:
## cols(
##   group = col_character(),
##   density = col_integer()
## )

glimpse(jumping)

## Observations: 30
## Variables: 2
## $ group   <chr> "Highjump", "Highjump", "Highjump", "Highjump", "Highj.
## $ density <int> 650, 622, 626, 626, 631, 622, 643, 674, 643, 650, 611, ..
```

A boxplot

```
ggplot(jumping, aes(x=group, y=density)) + geom_boxplot()
```



Mean density by group

```
jumping %>%  
  group_by(group) %>%  
  summarize(m=mean(density), sd=sd(density))  
  
## # A tibble: 3 × 3  
##       group      m      sd  
##       <chr> <dbl>   <dbl>  
## 1 Control  601.1  27.36360  
## 2 Highjump  638.7  16.59351  
## 3 Lowjump   612.5  19.32902
```

Section 2

The same thing in SAS

and now in SAS

Read in data:

```
proc import
  datafile='/folders/myfolders/jumping.txt'
  dbms=dlm
  out=rats
  replace;
  delimiter=' ';
  getnames=yes;
```


The dataset

```
proc print;
```

Obs	group	density
1	Highjump	650
2	Highjump	622
3	Highjump	626
4	Highjump	626
5	Highjump	631
6	Highjump	622
7	Highjump	643
8	Highjump	674
9	Highjump	643
10	Highjump	650
11	Control	611
12	Control	621
13	Control	614
14	Control	593
15	Control	593
16	Control	653
17	Control	600
18	Control	554
19	Control	603
20	Control	569
21	Lowjump	635
22	Lowjump	605
23	Lowjump	638
24	Lowjump	594
25	Lowjump	599
26	Lowjump	632
27	Lowjump	631
28	Lowjump	588
29	Lowjump	607
30	Lowjump	596

Mean density by group

```
proc means;  
  var density;  
  class group;
```

The MEANS Procedure

Analysis Variable : density

group	N Obs	N	Mean	Std Dev	Minimum	Maximum
Control	10	10	601.1000000	27.3636011	554.0000000	653.0000000
Highjump	10	10	638.7000000	16.5935061	622.0000000	674.0000000
Lowjump	10	10	612.5000000	19.3290225	588.0000000	638.0000000

Code for boxplot

```
proc sgplot;  
  vbox density / category=group;
```

The boxplot

