

# Intro to R - the Stats

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# Basic statistics in R

# Reading in some data

- ▶ Let's read in some data from the internet:

```
# Data is available on this course's github page:  
# github.com/jabranham/math-camp  
# Data from Herrera et al (forthcoming, AJPS)  
library(foreign)  
my_data <- read.dta("data/herrera-data.dta")  
my_data$fptp <- as.logical(my_data$fptp)
```

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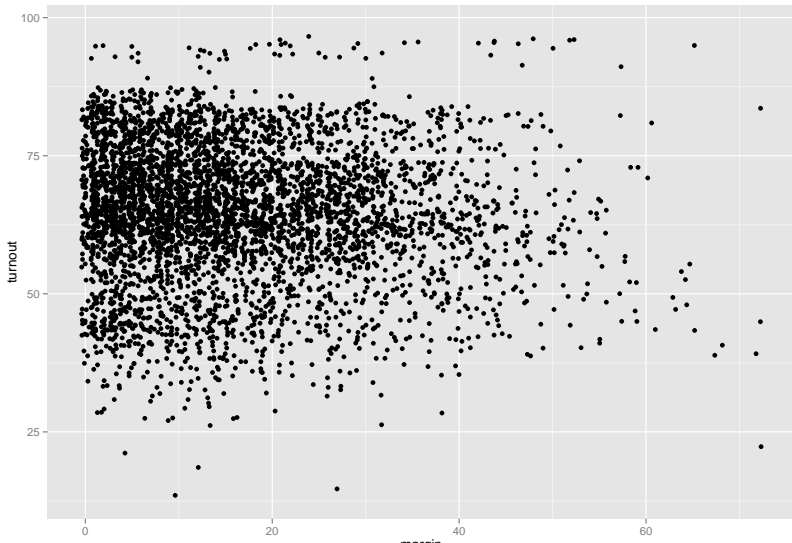
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- ▶ unit of observation: country-year
- ▶ DV: turnout
- ▶ margin: margin between candidate w/ plurality and runner-up
- ▶ fptp: dummy for FPTP systems
- ▶ ppi: parliamentary power index



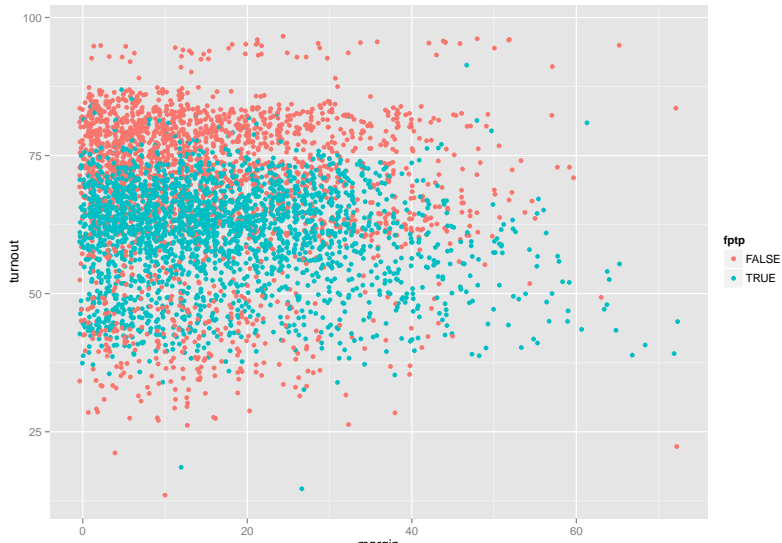
# First step: Plot your data!

```
library(ggplot2)  
ggplot(my_data, aes(margin, turnout)) + geom_jitter()
```



## Maybe it looks different in FPTP systems?

```
ggplot(my_data, aes(margin, turnout, color=fptp)) +  
  geom_jitter()
```



## Means by group

```
mean_fptp <- mean(my_data$turnout[my_data$fptp==TRUE])  
mean_notfptp <- mean(my_data$turnout[my_data$fptp==FALSE])  
c(mean_fptp, mean_notfptp)
```

```
## [1] 60.25896 69.64283
```

Maybe we want uncertainty too...

```
sd_fptp <- sd(my_data$turnout[my_data$fptp==TRUE])  
sd_notfptp <- sd(my_data$turnout[my_data$fptp==FALSE])  
c(sd_fptp, sd_notfptp)
```

```
## [1] 9.293468 13.688340
```

## There's a formal test

- Tests whether the mean is statistically different from each other

```
with(my_data, t.test(my_data$turnout[my_data$fptp==TRUE],  
  my_data$turnout[my_data$fptp==FALSE]))
```

```
##
```

```
##  Welch Two Sample t-test
```

```
##
```

```
## data:  my_data$turnout[my_data$fptp == TRUE] and my_data$turnout[my_data$fptp == FALSE]
```

```
## t = -27.097, df = 3933.7, p-value < 2.2e-16
```

```
## alternative hypothesis: true difference in means is not equal to 0
```

```
## 95 percent confidence interval:
```

```
##  -10.062820  -8.704922
```

```
## sample estimates:
```

```
## mean of x mean of y
```

```
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```

## There's a formal test

- ▶ Tests whether the mean is statistically different from each other
- ▶ LOTS more of this in Stats I

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