

Electoral Rules and Political Parties

POS 3713

Setup

Let's return to our data set of the number of political parties in elections over time and around the world. Earlier in the semester, we hypothesized the following:

As the district magnitude¹ in an election goes up, the number of political parties² goes up as well.

Let's check if this hypothesis holds in these data. But rather than compare the histograms of ENEP for the three qualitative system types (SMD, small-magnitude PR, and large-magnitude PR), let's compare the ENEP as (the quantitative measure) ENEP varies using a scatterplot.

```
# load packages
library(tidyverse)

# load data
df <- read_rds("parties.rds")

# scatterplot
ggplot(df, aes(x = average_magnitude, y = enep)) +
  geom_point()
```

Some Statistics

```
# compute several statistics
mean(df$average_magnitude)

## [1] 13.15548

sd(df$average_magnitude)

## [1] 30.70661

mean(df$enep)

## [1] 4.022027

sd(df$enep)

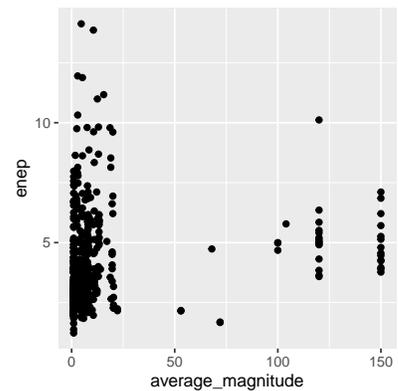
## [1] 1.885932

cor(df$average_magnitude, df$enep)

## [1] 0.1681808
```

¹ I measure district magnitude as the *average* district magnitude across all electoral districts in the country.

² I measure the number of political parties as the *effective number of political parties* (ENEP), which is calculated as $\frac{1}{\sum v_i}$, for each party's vote share v_i .



Some Questions

1. What variable is X ? What variable is Y ?
2. What is the average of X ? SD of X ?
3. What is the average of Y ? SD of Y ?
4. What is the correlation r between X and Y ?
5. What is the slope m of the regression line (of X predicting Y)?
6. What is the intercept b of the regression line?
7. Write the equation for the regression line.
8. What is the r.m.s. error of this regression line?
9. What is the average value of (or prediction for) Y when $X = 1$?
What about when $X = 2$? $X = 10$? $X = 100$? $X = -25$? $X = 1,000,000$?
10. If we increased district magnitude by one seat, how many more parties do we get? What if we increase it by 10 seats? Is this large enough to matter?