Correlation

- Two continuous variables.
- Same logic applies to binary variables
  - Same interpretation.
- What about correlation of ranks?

  Ex: The rank of wages for each major by gender.

  - Pearson correlation coefficient cannot be used w/ rank data.
  - Spearman's rho (ρ)

  Can be used to calculate correlations between ranks.

  ↳ Use SPSS.

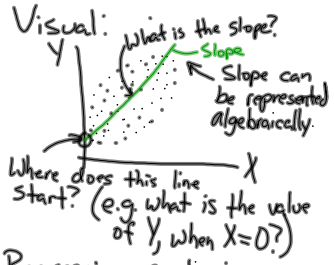
Linear Regression

- Extension of correlation

Correlation (Direction & strength)

Slope (Direction & Trade-off)

Visual:



Regression equation:

$Y = \alpha + \beta X + \varepsilon$

("alpha", "Beta", Epsilon)

Y variable — X variable

What's the value of Y? (e.g. GPA) ← For each value of X "e.g. days absent"

α = the value of Y when X = 0 (aka intercept)

β = is the slope (or trade-off) between X and Y. (aka slope)

ε = the amount of error between predicted and actual values. (aka: residual, error)

Ex: Right-to-work legislation
↳ Cannot compel people to join unions.

Opposite of RTW is "fair share"

What's the impact of being a right-to-work state on union membership?

Hypothesis:

1. Being a right-to-work state will increase union membership. (probably false)
2. Being a right-to-work state reduces union membership.
3. There is no relationship between right-to-work and union activity.

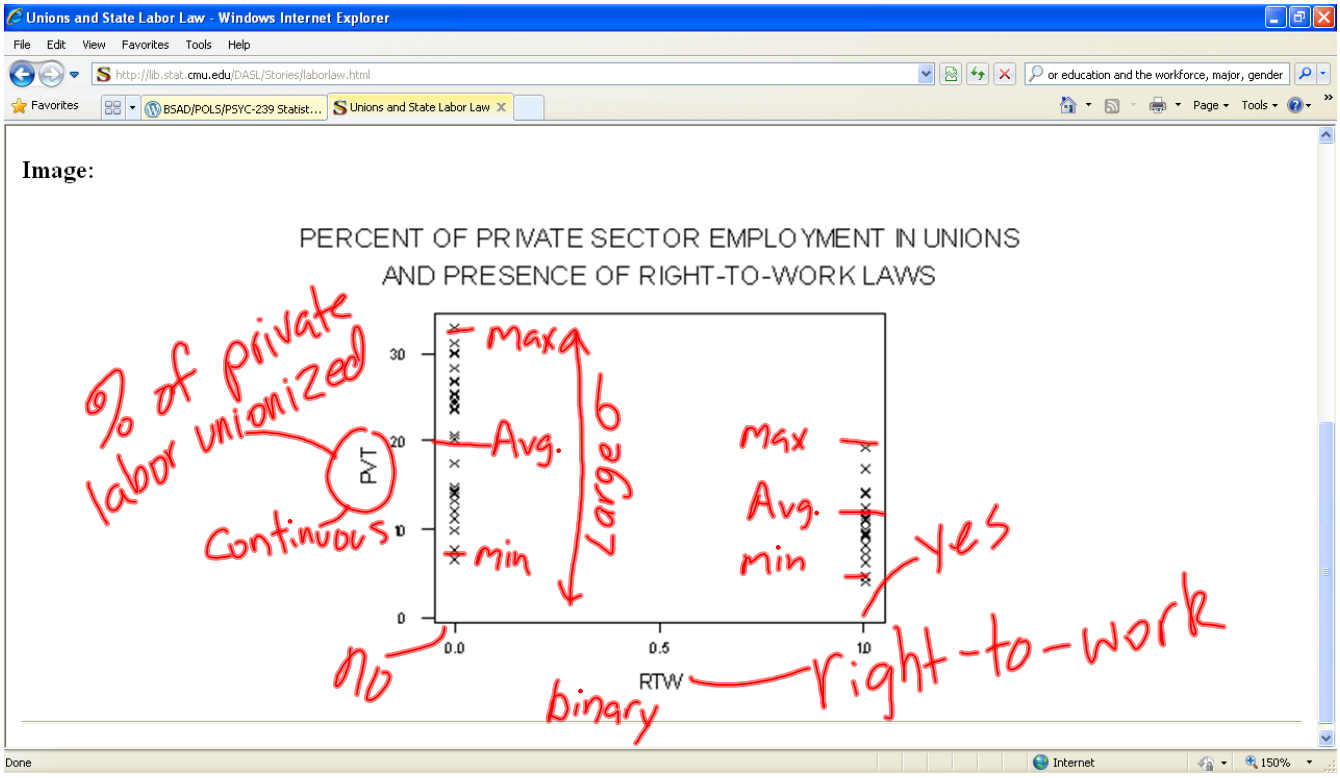

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Image:
PERCENT OF PRIVATE SECTOR EMPLOYMENT IN UNIONS
AND PRESENCE OF RIGHT-TO-WORK LAWS
PVT
RTW
0
10
20
30
0.0
0.5
1.0
% of private labor unionized
Continuous
max
Avg.
min
Large b
max
Avg.
min
yes
no
binary
right-to-work
Done
Internet
150%

$$\frac{1}{n}\sum x_i$$

$$= \frac{x_1 + x_2 + x_3 + \cdots x_n}{n}$$

$15 + 15 + 15 +$ ← 12 times

$$\frac{12 \times 15 + 24 \times 16 + \cdots}{n}$$