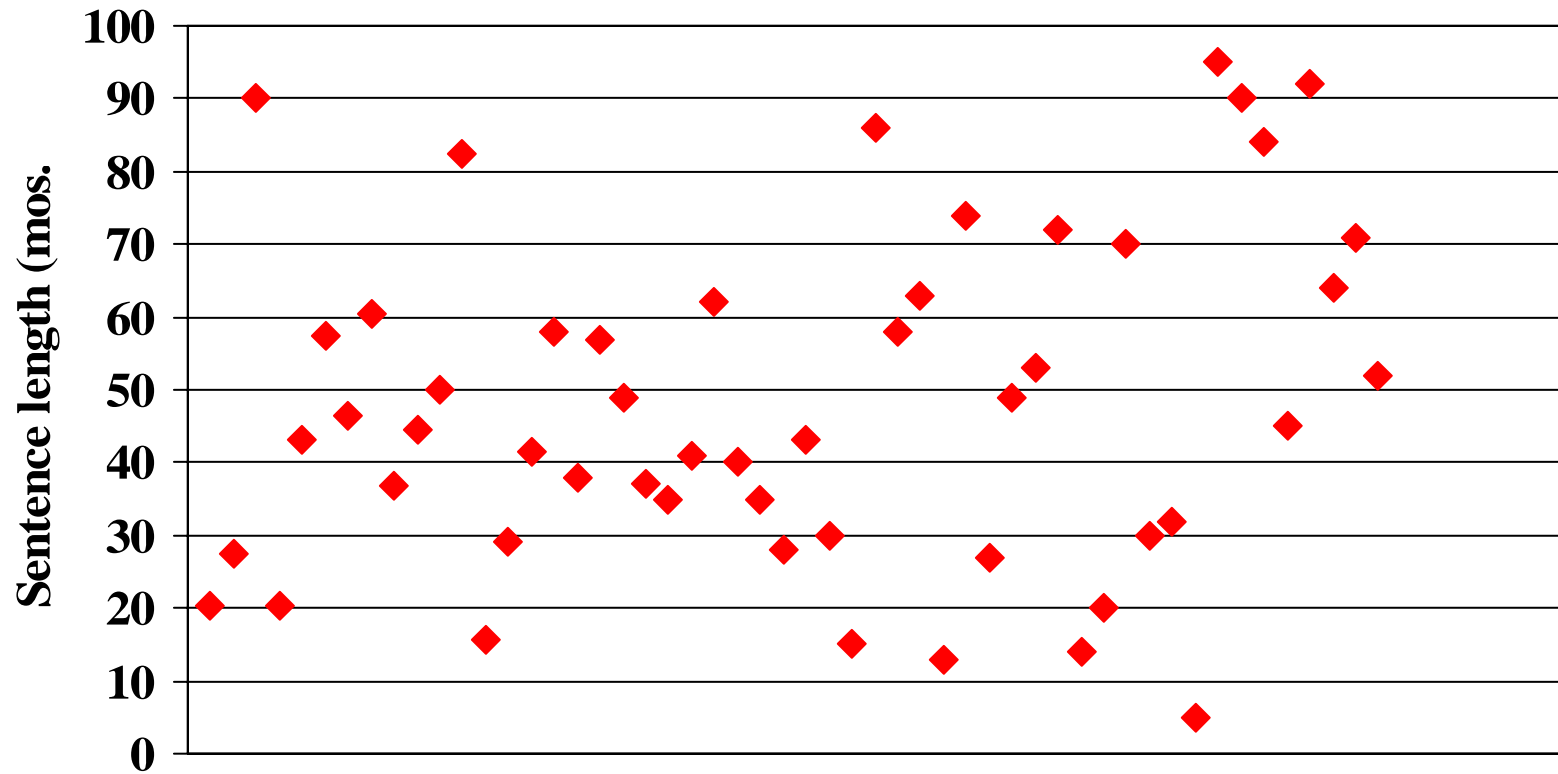


Correlation and Scatterplots

For each individual, have values for a variable:

<u>Individual</u>	<u>Sentence length</u>
1	12
2	60
3	24
4	12
5	6
6	72
7	48
8	36

Scatterplots



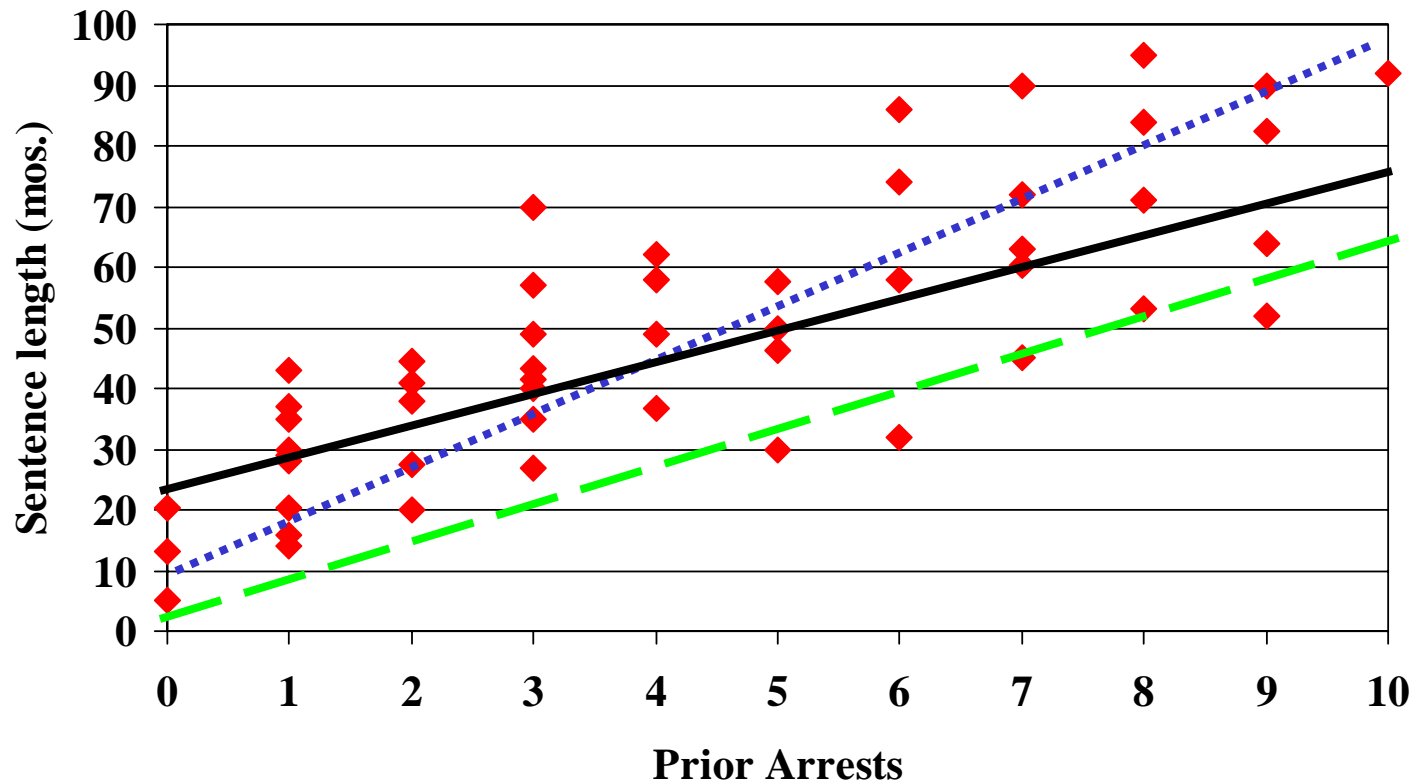
Scatterplots

- Also used to show joint distribution of 2 variables
- Horizontal axis (X) = independent variable
- Vertical axis (Y) = dependent variable

For each individual, have values for 2 variables:

<u>Individual</u>	<u>Sentence length</u>	<u># arrests</u>
1	12	0
2	60	4
3	24	2
4	12	1
5	6	0
6	72	5
7	48	3
8	36	2

Scatterplot with regression line

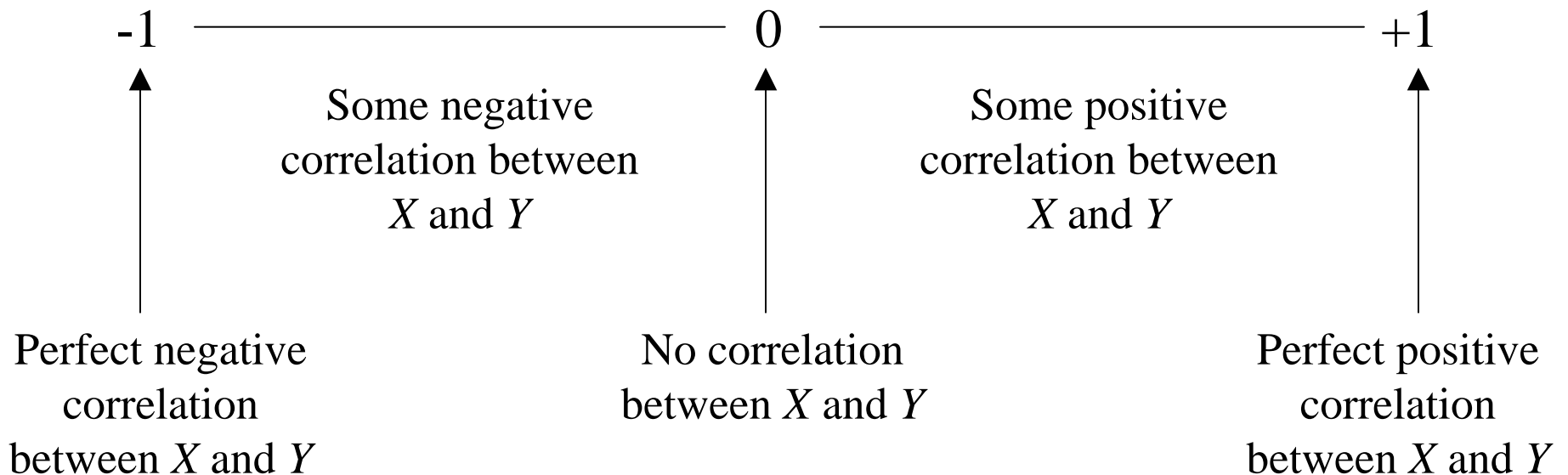


Correlation

- Measures strength of association between two variables
- Correlation coefficient known as r
e.g. $r = .22$
- Does *not* demonstrate causation

Correlation coefficient

- Ranges from -1.0 to $+1.0$



Source: Statistics, by Ott, Larson, Rexroat & Mendenhall, 1992

Correlation coefficient

- Highest *absolute* number = strongest correlation
 - e.g. $-.63$ stronger than $.52$
- Lowest *absolute* number = weakest correlation
 - e.g. $.18$ weaker than $-.27$

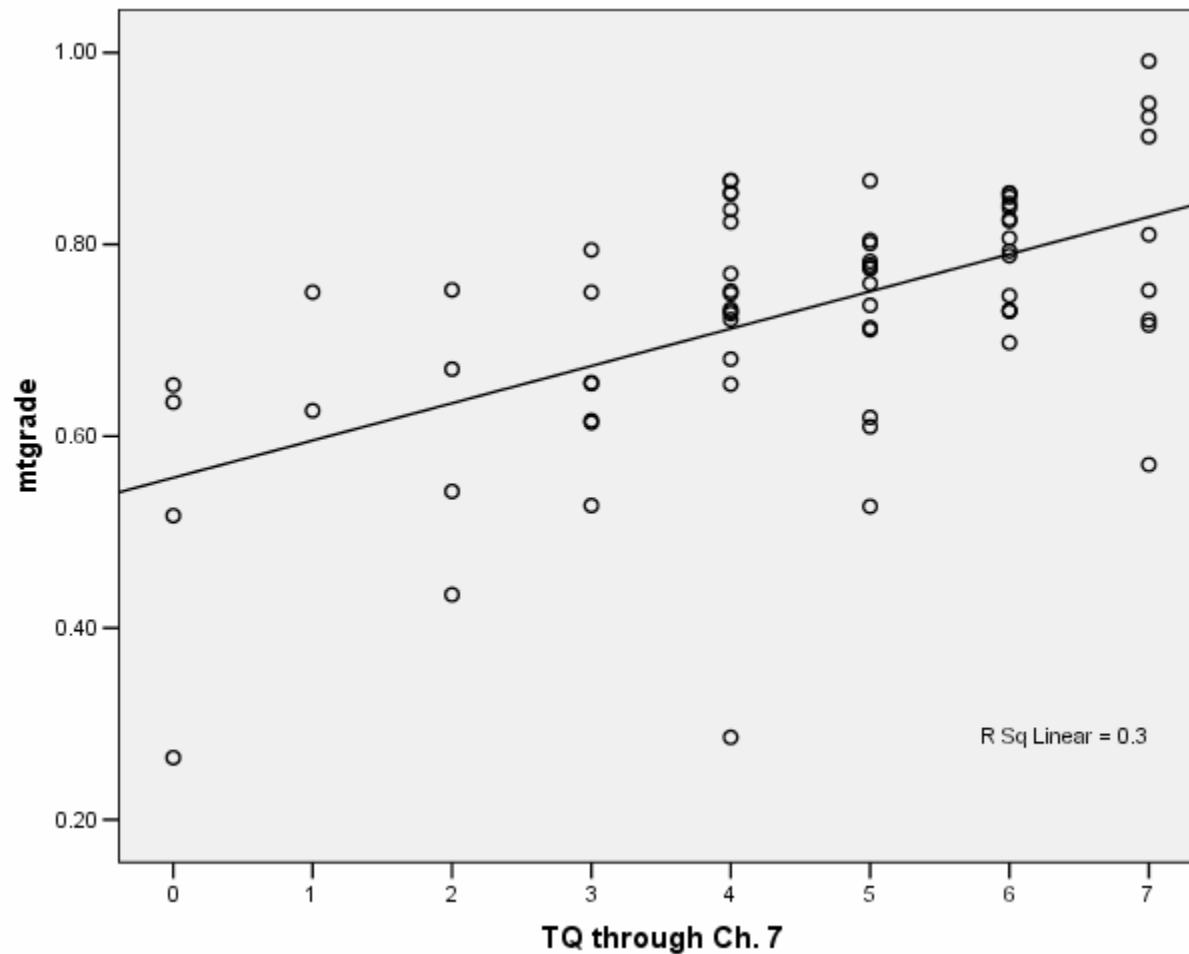
Correlation coefficient

- Negative correlation (e.g. $-.43$) signifies *inverse relationship*
 - As one variable goes up, other goes down
 - As one variable goes down, other goes up
 - Regression line slopes down to right
- Positive correlation (e.g. $.43$) signifies *direct relationship*
 - As one variable goes up, other goes up
 - As one variable goes down, other goes down
 - Regression line slopes up to right

Correlation coefficient

- Correlations can be statistically significant...or not
 - MicroCase denotes statistical significance with asterisks
 - * $p \leq .05$
 - ** $p \leq .01$
 - *** $p \leq .001$

Correlation between tutorial quizzes completed and mid-term grades – CJ 201 – Spring 2007



$r = .548, p < .001$