

RECITATION  
DESCRIPTIVE STATISTICS – 2 NUMERICAL VARIABLES

First:

Review one or more homework problems, as needed.

Then:

Explain difficult concepts from the lecture.

Scatter Plots:

How does a linear, positive relationship look? What does this mean?

How does a linear, negative (a.k.a. inverse) relationship look? What does this mean?

Graphing a straight line:

What is the formula for a straight line?

How do we graph a straight line?

What is the Y-intercept ( $b_0$ )?

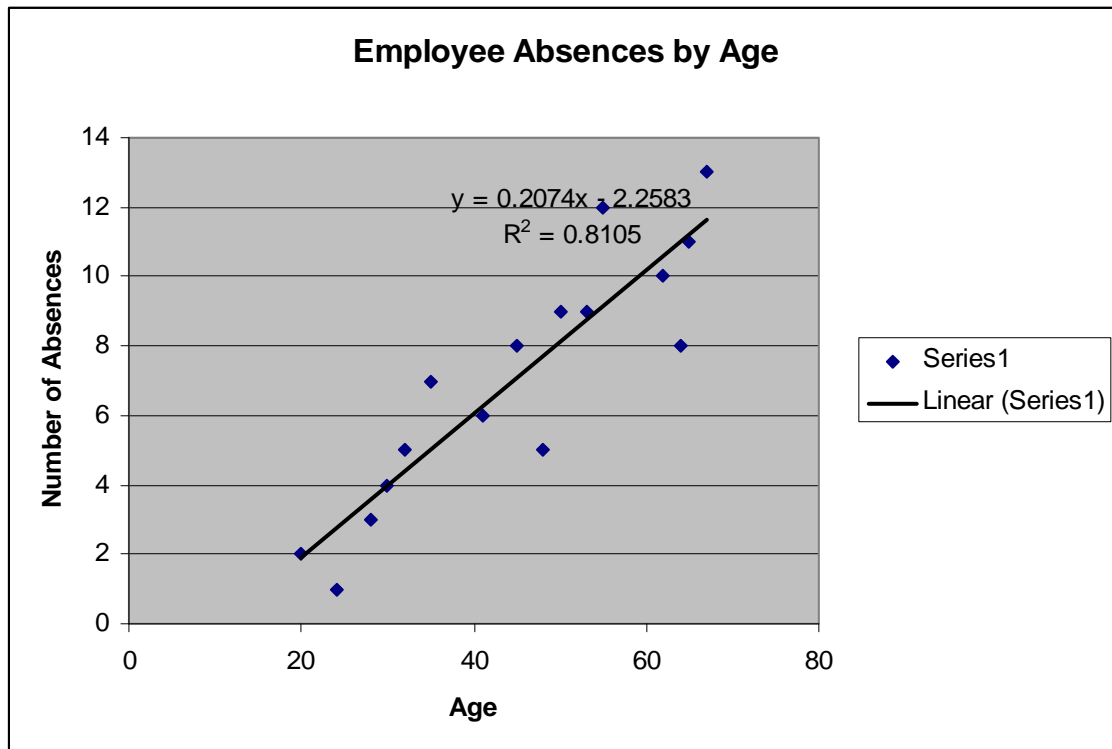
What is the slope ( $b_1$ )?

On the Web:

From the Oswego City School District Regents Exam Prep Center [Equations and Graphs of Straight Lines](#)

Example from handout “Creating a Scatter Diagram Using MS Excel” at [http://cisnet.baruch.cuny.edu/friedman/stat/h\\_scatterxl.doc](http://cisnet.baruch.cuny.edu/friedman/stat/h_scatterxl.doc)

Age	# absences
20	2
24	1
28	3
30	4
32	5
35	7
41	6
45	8
48	5
50	9
53	9
55	12
62	10
64	8
65	11
67	13

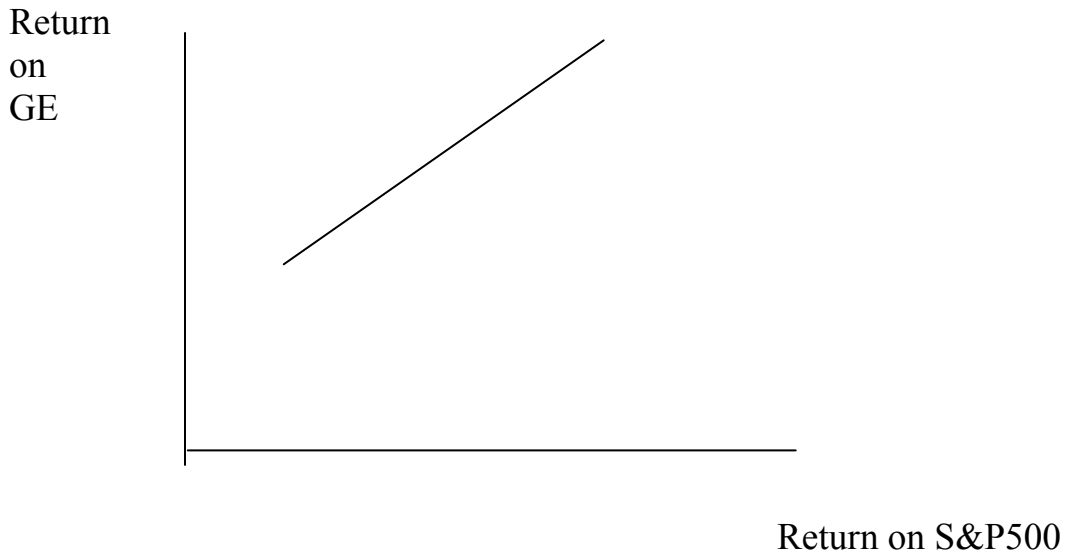


## Measuring a Stock's Beta:

Dependent variable: Quarterly returns on a specific stock, say GE.

Independent variable: Quarterly returns on the S&P500 which is a surrogate for the entire stock market.

[Return = difference in Price + Dividend]



$$\hat{Y} = b_0 + b_1X$$

$b_1$  = the slope of the line = the beta of the stock

if the beta = 1, GE is just as volatile as the S&P500

if the beta = 2, GE is 2 times as volatile as the S&P500

We have two rates of change and  $\frac{\Delta GE}{\Delta S \& P}$ . Do they change together (say, beta of 1.0) or differently?

	Returns Stock ABC	Returns S&P 500				
Year 1	11%	20%				
Year 2	6%	18%				
Year 3	-8%	-14%				
Year 4	12%	18%				
Year 5	7%	13%				
Year 6	8%	12%				
Year 7	-10%	-20%				
Year 8	9%	14%				
Year 9	6%	13%				
Year 10	-8%	-17%				
Year 11	4%	4%				
Year 12	11%	14%				
Average Return	<b>4.00%</b>	<b>6.25%</b>				
SUMMARY OUTPUT						
<i>Regression Statistics</i>						
Multiple R	0.973281463					
R Square	0.947276806					
Adjusted R Square	0.942004487					
Standard Error	0.019265806					
Observations	12					
ANOVA						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	1	0.066688287	0.066688287	179.66984	1.02536E-07	
Residual	10	0.003711713	0.000371171			
Total	11	0.0704				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.006735691	0.006090118	1.106003315	0.2946222	-0.00683394	0.020305322
X Variable 1	0.532228948	0.039706435	13.40409804	1.025E-07	0.443757482	0.620700413

beta of stock ABC is .53