

LDG 660 SPSS Assignment 2

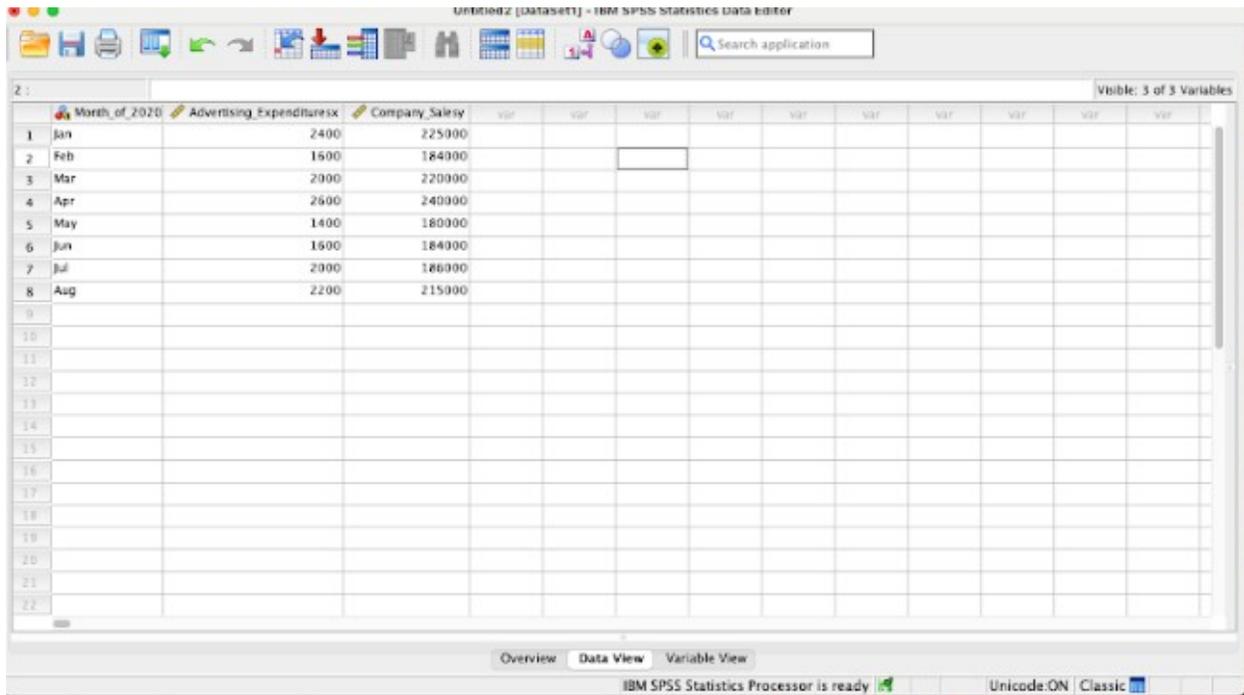
The following data represent advertising dollars spent and company sales for Nyack Electronics, Inc. for the months of January, 2020 thru August, 2020.

For illustrative purposes, we can tell that in the month of January, Nyack Electronics, Inc. spent \$2,400 in advertising and had corresponding company sales of \$225,000. Therefore, this would be a point on the scatterplot: (2400, 225000).

Conduct the steps below to complete the lab.

There are 5 steps (each worth 15 pts). The lab, in total, is worth 75 pts.

Step 1 (15 pts): Import the data into SPSS. Insert an image/screenshot below to confirm this.



The screenshot shows the IBM SPSS Statistics Data Editor interface. The title bar reads "Untitled2 [Dataset1] - IBM SPSS STATISTICS DATA EDITOR". The main window displays a data grid with 3 columns and 22 rows. The columns are labeled "Month_of_2020", "Advertising_Expndituresx", and "Company_Salesy". The data is as follows:

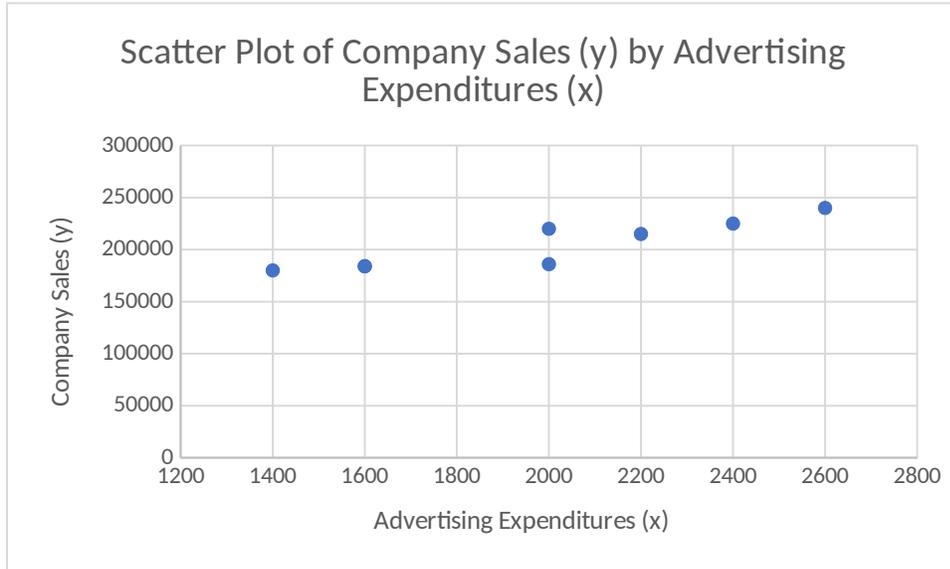
	Month_of_2020	Advertising_Expndituresx	Company_Salesy	var									
1	Jan	2400	225000										
2	Feb	1500	184000										
3	Mar	2000	220000										
4	Apr	2600	240000										
5	May	1400	180000										
6	Jun	1600	184000										
7	Jul	2000	180000										
8	Aug	2200	215000										
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The bottom of the window shows the status bar with "IBM SPSS Statistics Processor is ready" and "Unicode:ON | Classic".

Step 2 (15 pts): Generate a scatterplot

Note: You could do this via:

(1) Graphs → Chart Builder



Comment on what you see/what you can infer from the scatterplot. Does there appear to be a relationship between x and y – Advertising Expenditures and Company Sales?

Yes, there appears to be a positive relationship between x and y. It appears that as the company spent more on advertising, sales go up.

Step 3 (15 pts): Run a simple linear regression (remember which is 'x' and which is 'y').

Note: You could do this via:

(1) Analyze → Regression → Linear

Insert an image/screenshot of the output.

Regression

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	Advertising Expenditures (x)	.	Enter

a. Dependent Variable: Company Sales (y)
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.911 ^a	.813	.806	10290.320

a. Predictors: (Constant), Advertising Expenditures (x)

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3178155870	1	3178155870	30.014	.002 ^b
	Residual	655344150	6	105890688		
	Total	3833500000	7			

a. Dependent Variable: Company Sales (y)
b. Predictors: (Constant), Advertising Expenditures (x)

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	104060.729	18646.221		5.581	.001
	Advertising Expenditures (x)	50.729	9.290	.911	5.478	.002

a. Dependent Variable: Company Sales (y)

Step 4 (15 pts): What does the output tell you? Comment specifically on the p-value for the overall model (is it significant and how can you tell). Comment on the R-squared value and what it means.

R-value – 0.913 (correlation coefficient).

Ranges from -1 to 1, anything close to +1 indicates a strong relationship.

There is a relatively strong relationship between x and y.

R squared value - 0.833 tells me that 83.3% of the changes in sales is attributable to its relationship to advertising expenditures. The other 16.7% of changes are due to variables we have not considered.

p-value for the overall model (.002) - The p-value of .02 tells us that the overall model is significant. Advertising expenditures is a good predictor of company sales. We want our p-value to be less than 5%.

Step 5 (15 pts): What is the equation for the regression line? What is the predicted company sales if advertising expenditures were \$1,800?

$$50.729x + 104060.729$$

$$\text{Company sales} = 50.729 (\text{Adv Exp}) + 104060.729$$

$$= 50.729(1800) + 104060.729 = 195,372.92$$