ACN 6312-003   📅 Lab Date: 11/09/2016
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Question 1

A researcher wants to determine if number of ice cream sales predicts the number of reported drowning events in her area.

a) What would be the most appropriate analysis to perform to answer this research question?

Simple linear regression is the most appropriate analysis to solve this problem. Linear Regression provides a way of predicting one variable with the help of other variable which are correlated.

b) Using SPSS, conduct the most appropriate analysis to answer the research question, and report your results in APA format. Be sure to report all relevant results.

A simple linear regression model including the predictor variable Icecream sales significantly predicted number of reported drowning events, $R^2 = .52$, F(1, 34) = 36.63, $p < 0.001$. The regression analysis also revealed that the variable Icecream sales had a positive relationship with number of reported drowning events, = 1.14, t(34) = 6.05, Alpha = .05.

Question 2

Now, the researcher hypothesizes that it would be most useful to predict the number of reported drowning using both ice cream sales and temperature as predictor variables.

a) What would be the most appropriate analysis to perform to answer this research question?

Multivariate linear regression is the most appropriate analysis to solve this problem. Multivariate linear Regression provides a way of predicting one variable with the help of more than one predictor variable.

b) Using SPSS, conduct the most appropriate analysis to answer the research question, and report your results in APA format. Be sure to report all relevant results.

A multivariate linear regression analysis was performed to determine how well a combination of icecream sales and temperature predicted the number of reported drowning. The regression analysis revealed that a combination of the variables icecream sales and temperature accounted for a significant amount of variance in the variable number of drowning events, $R^2 = 0.72$, F(2, 33) = 41.47, $p < .001$, at the .05 level of significance. The regression analysis also revealed that within the model, the variable icecream sales didn't account for a significant amount of variance in number of drowning events, = .33,

t(33) = 1.44, p = .159, but the variable temperature had a significant amount of variance in "number of drowning events, = .19, t(33) = 4.78, p ¡.001, Alpha = .05.

Question 3

A researcher wants to examine whether the amount of bamboo a panda eats in a week is associated with the hours spent with their mates.

Subject	Bamboo (in pounds)	Time with mate (hrs)
1.	10	80
2.	12	90
3.	8	80
4.	14	130
5.	10	110

a) Complete a Pearson correlation. (show work here, does not need to be typed).

$\mathbf{x}$	$(\mathbf{x} - \bar{\mathbf{x}})$	$(\mathbf{x} - \bar{\mathbf{x}})^2$	$\mathbf{y}$	$(\mathbf{y} - \bar{\mathbf{y}})$	$(\mathbf{y} - \bar{\mathbf{y}})^2$	$(\mathbf{y} - \bar{\mathbf{y}})(\mathbf{x} - \bar{\mathbf{x}})$
10	-0.8	0.64	80	-18	324	14.4
12	1.2	1.44	90	-8	64	-9.6
8	-2.8	7.84	80	-18	324	50.4
14	3.2	10.24	130	32	1024	102.4
10	-0.8	0.64	110	12	144	-9.6
$\sum = 54$		$\sum = 20.8$	$\sum = 490$		$\sum = 1880$	$\sum = 148$

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n} = \frac{54}{5} = 10.8$$

$$\bar{y} = \frac{\sum_{i=1}^{n} y_i}{n} = \frac{490}{5} = 98$$

$$S_x = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2} = \sqrt{\frac{SS}{n-1}} = \sqrt{\frac{20.8}{4}}$$

$$S_x = 2.28$$

$$S_y = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} (y_i - \bar{y})^2} = \sqrt{\frac{SS}{n-1}} = \sqrt{\frac{1880}{4}}$$

$$S_y = 21.68$$

$$cov(x,y) = \frac{\sum\limits_{i=1}^{n}(x-\bar{x})(y-\bar{y})}{n-1} = \frac{148}{4}$$

$$\mathbf{cov(x,y) = 37}$$

$$r = \frac{cov_{xy}}{S_x S_y} = \frac{37}{2.28 * 21.68}$$

$$\mathbf{r = 0.75}$$

b) Complete a t-test to determine the significance of the correlation.

Cutoff t as per the table for a two-tailed test at alpha = .05 with df = 3 is t(3) = 3.182

$$t = \frac{r}{\sqrt{\frac{1-r^2}{n-2}}} = \frac{0.75}{0.38}$$

$$\mathbf{t = 1.97}$$

c) Write the results in APA format.

A Pearsons correlational analysis revealed there is no significant correlation between amount of bamboo(in pounds) and time spend(in hours) with mates, $r(4) = .75$, $p = .146$. Alpha = .05.

Attachments

Output graph of the data into SPSS.