

For the following correlations and df, what are the critical values when using alpha of .05 and .01? In each case, would you reject or fail to reject the null hypothesis at $\alpha=.05$? $\alpha=.01$?

$r=.67, n=26$



$r=.45, n=31$



$r= -.74, n=20$

1

$r=.39, n=26$

$r=.95, n=9$

$r= -.48, n=14$

Correlation does not lead to causation, unless you are an uninformed or lazy journalist. Read ONE of the articles on the website noted on the bottom of this page. Describe the study, and then explain any faulty conclusions made by the author. Does the author imply that one variable causes the other?

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3 Gable and Lutz (2000) studied 65 children, 3 to 10 years old, and their parents. One correlation focused on levels of *parental control over eating* and *childrens' participation in extracurricular activities*, with the following results: $r = -.34, n = 65, p<.01$. Another correlation focused on *parental level of appropriate nutrition beliefs* and *amount of daily television consumed by children*, with the following results: $r = -.36, n = 65, p <.01$. **Briefly explain these results** to someone who has never taken a statistics class. Suggest possible explanations for these relationships.

5 You're curious about a stereotype asserting a relationship

4 Identify the direction of each of the following correlations. Be sure to identify each example as positive, negative, or zero (not correlated). Then give one possible explanation for the results. Be cautious and wary of reaching 'causal conclusions'.

☑Professor Johansen finds that for every diet beverage someone drinks during the day, the likelihood of heart attacks increases by 4 percent.

☑Margaret notices that the temperature in her office drops several degrees from July to December. In a careful review of the budget she discovers that the company's utility expenses also drop from July to December.

☑Fontaine who runs a gym has created a special exercise/weight lifting class for women that are overweight. He finds that for two days a woman attends the class she loses ½ % body fat.

☑Many students in Professor Handel's class express that they want a review session. Professor Handel agrees to hold an open review session for two hours the day before the exam. He then has his TA write down when each student arrives at the session and when they depart. When the exams are graded, Professor Handel announces there will be no more review sessions. The longer students spent at the review session the lower their score on the exam.

☑Over a four week period a teacher watches elementary school children playing during recess. She counts the number of times students slide down a recently added playground slide. Some slide a lot and some do not slide at all. As the weeks progress she sees little change in sliding behavior over time.

between mental health and cat ownership among the elderly. As a statistics student you could ask elderly people how many cats they have and how many mental health problems they have. **For each of the following**, use hypothetical data for about 10 participants and DRAW a scatterplot including a regression line.

- A weak positive correlation
- A perfect positive correlation
- A strong negative correlation
- A perfect negative correlation
- No correlation
- A weak negative correlation
- A strong positive correlation

A researcher gathered data on psychology students' ratings of their likelihood of attending graduate school and the numbers of credits they had completed in their psychology major (Rajecki, 1998). Put the r values in order from weakest to strongest. 1.00, -0.001, 0.56, -0.27, -0.98, 0.09.

The actual finding in the study was $r = -0.27$. Explain what this means in terms of the variables that were studied.

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http://jonathan.mueller.faculty.noctrl.edu/100/correlation_or_causation.htm

Run an Excel Analysis: A sports psychologist is interested in the relation between how many weeks someone has been exercising and his or her resting heart rate. Using the following data, answer the questions. Assume $\alpha = .05$.

Weeks of Exercise (X)	Resting Heart Rate (Y)
2	82
4	78
8	72
14	66
10	66
9	70
9	69

8

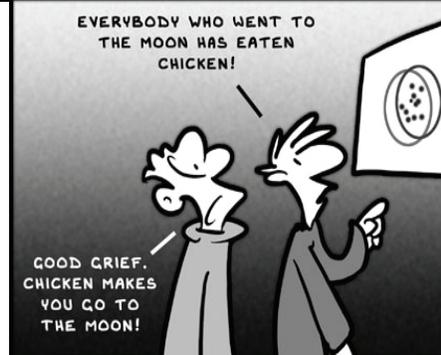


Open up Microsoft Excel. Enter the above data and run a correlation. For Mac Excel 2011, you can click on an empty cell and then *Insert*—>*correl*. Then you will have to tell Excel which data are part of the calculation.

For Windows Excel 2010, click on an empty cell. Then, go to the *Formulas* tab—>*Insert Function* and search for “Pearson” or “correlation.” Then you will have to tell Excel which data are part of the calculation.

If you’re struggling with Excel, search with Google for “online correlation coefficient calculator.” Use an online calculator to calculate the coefficient.

- Print up Excel output or webpage on which you performed the analysis. **Attach printout** to homework.
- Write out your conclusions (i.e., steps 6 a, b, c and d) complete with APA probability statement.
- Compute r^2 and theorize about what this correlation might really mean in terms of shared variance.



While it’s true that the main focus of this chapter is on the Pearson r , there are other types of bivariate correlations.

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- Describe briefly a correlation study that would need a *biserial* analysis.
- Describe briefly a correlation study that would need a *Spearman’s rank-order* analysis.

Statistics play an important role in genetics. For instance, statistics indicate that number of offspring is an inherited trait. If your parents didn't have any kids, odds are you won't either. What the...?

A statistics instructor wants to know if scores on tests relate to how long the student takes to complete the test. The SPSS output below displays her results:

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- What is the Pearson r value?
- Will you reject or fail to reject?
- What did the instructor learn about the relationship between time and score?

Correlations

		score	time
score	Pearson Correlation	1	.083
	Sig. (2-tailed)		.745
	N	18	18
time	Pearson Correlation	.083	1
	Sig. (2-tailed)	.745	
	N	18	18

Gable, S. & Lutz, S. (2000). Household, Parent, and Child Contributions to Childhood Obesity. *Family Relations*, 49(3), 293-300.

Rajecki, D.W., Laurer, J.B., & Metzner, B.S. (1998). Early graduate school plans: Uniformed expectations. *Journal of College Student Development*, 39, 629-632.