

## Exercises with Pearson Correlation

### 1. Georgia Southern Student Data

Students at Georgia Southern were asked to complete a cyber-harassment questionnaire. A number of constructs were included on this questionnaire and three were selected for this exercise:

- (1) life satisfaction: degree to which respondent is satisfied with life
- (2) socially connected: degree to which respondent believes they are socially connected with friends
- (3) Stress: amount of stress respondent experiences daily

For each construct the response scales range from 1 = low to 5 = high, so higher scores indicate more life satisfaction, more social connections, and more stress.

The total sample included several hundred responses, but the first 10 females and 10 male responses are reported below in Table 1.

Table 1: Data for Life Satisfaction, Social Connections, Stress, and Sex

Respondent	Life Satisfaction	Socially Connected	Stress	Sex (1 = female, 2 = male)
1	3.20	3.67	2.83	1
2	4.00	4.67	1.83	1
3	2.80	3	3.67	1
4	3.60	2	2.33	1
5	2.80	3.33	3.00	1
6	3.80	2.67	3.00	1
7	3.20	3.67	2.67	1
8	3.60	2.67	2.50	1
9	3.80	3.67	1.67	1
10	3.60	1.33	3.17	1
11	3.40	2.33	2.33	2
12	3.20	2.33	2.83	2
13	3.40	4	2.83	2
14	2.80	4	2.50	2
15	2.60	1.67	3.83	2
16	3.60	2.67	3.00	2
17	3.00	5	3.00	2
18	4.40	3	1.67	2
19	4.40	2.67	2.67	2
20	2.40	2.33	4.17	2

### 2. Life Satisfaction and Social Connections

What is the correlation between life satisfaction and social connections? Using the Pearson Correlation Excel spreadsheet, enter the above data and

- (a) find the correlation between these two variables,
- (b) p-value for this correlation,
- (c) indicate whether the correlation is statistically significant at the .05 level (i.e., is the null rejected), and
- (d) write a one or two sentence interpretation of the results.

**3. Life Satisfaction and Stress**

What is the correlation between life satisfaction and stress? Using the Pearson Correlation Excel spreadsheet, enter the above data and

- (a) find the correlation between these two variables,
- (b) p-value for this correlation,
- (c) indicate whether the correlation is statistically significant at the .05 level (i.e., is the null rejected), and
- (d) write a one or two sentence interpretation of the results.

Answers are provided below.

## Answers

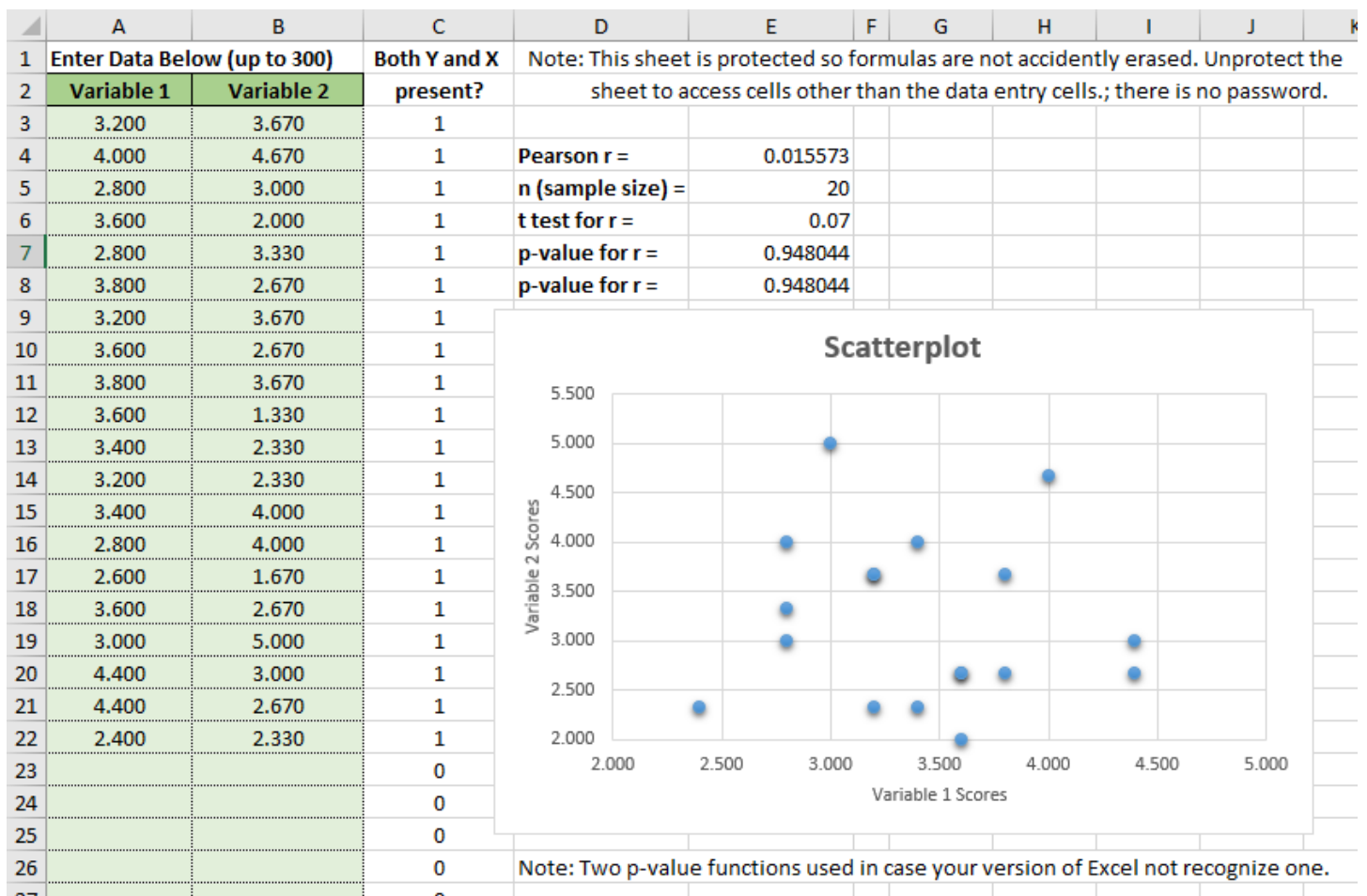
### 2. Life Satisfaction and Social Connections Results

The screen shot below shows the correlation between life satisfaction and social connections.

Results:

- (a) Pearson  $r = .015$
- (b)  $p\text{-value} = .948$
- (c) This correlation is not statistically significant at the .05 level
- (d) Brief interpretation

The Pearson correlation was weak and not statistically significant at the .05 level. This finding suggests that one's satisfaction with life is not related to one's social connections.



### 3. Life Satisfaction and Stress

The screen shot below shows the correlation between life satisfaction and social connections.

Results:

- (a) Pearson  $r = -.72$
- (b)  $p\text{-value} = .003$
- (c) This correlation is statistically significant at the .05 level
- (d) Brief interpretation

The Pearson correlation was negative, strong, and statistically significant at the .05 level. This finding suggests that one's satisfaction is negative related to stress; the greater one's stress, the lower will be one's satisfaction with life.

	A	B	C	D	E	F	G	H	I	J
1	Enter Data Below (up to 300)		Both Y and X	Note: This sheet is protected so formulas are not accidentally erased. Unprotect the sheet to access cells other than the data entry cells.; there is no password.						
2	Variable 1	Variable 2	present?							
3	3.200	2.830	1							
4	4.000	1.830	1	Pearson $r =$	-0.724006					
5	2.800	3.670	1	n (sample size) =	20					
6	3.600	2.330	1	t test for $r =$	-4.45					
7	2.800	3.000	1	p-value for $r =$	0.000307					
8	3.800	3.000	1	p-value for $r =$	0.000307					
9	3.200	2.670	1							
10	3.600	2.500	1							
11	3.800	1.670	1							
12	3.600	3.170	1							
13	3.400	2.330	1							
14	3.200	2.830	1							
15	3.400	2.830	1							
16	2.800	2.500	1							
17	2.600	3.830	1							
18	3.600	3.000	1							
19	3.000	3.000	1							
20	4.400	1.670	1							
21	4.400	2.670	1							
22	2.400	4.170	1							
23			0							
24			0							
25			0							
26			0	Note: Two p-value functions used in case your version of Excel not recognize one.						

