

## Exercises with t-test

### 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 Compared by Sex

Is there a difference in life satisfaction between female and male college students at Georgia Southern? Using the t-test Excel spreadsheet, enter the above data for life satisfaction by sex and

- (a) find the life satisfaction means for both groups,
- (b) p-value and t-test for this difference,
- (c) indicate whether the difference 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. Temperature in Statesboro, June and July 2016**

Is there a difference in mean Fahrenheit in Statesboro during the months of June and July? Below are recorded high temperatures for 10 randomly selected days from June and July 2016. Using the t-test Excel spreadsheet, enter the temperature data and

- (a) find the temperature means for both months,
- (b) p-value and t-test for this difference,
- (c) indicate whether the difference 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.

<u>June High</u>	<u>July High</u>
95	92
93	96
91	97
92	96
85	97
94	95
95	93
93	96
76	98
94	96

Answers are provided below.



