HW 2

Niall Dalton

Introduction

A survey was conducted to examine the influences of weather on anxiety, posed as the following research question: how does weather influence levels of anxiety? It was hypothesized that good weather (I.E. warm, sunny, & no extreme conditions) makes people feel less anxious, while bad weather (I.E. cold, dark, & harsher conditions) makes people feel more anxious[1].

Methodology

The following questions were posed to participants:

1. I feel more relaxed when the sun is out.
2. I think that warm, pleasant weather is calming.
3. I focus more on issues in my life when there is cold weather.
4. During cold and dark weather, I feel more stressed and anxious.
5. Warm weather brightens my day.
6. The prospect of cold weather stresses me out.
7. My friends seem less anxious when there is bad weather outside.
8. It seems like the people around me are less worried on warm days.
9. I feel more tense or on edge when there is cold and dark weather.
10. I feel more carefree when it's bright outside.

A scale of 1 to 5 was used to measure the accuracy of the above questions, with 1 denoting very untrue, 3 denoting neutral, and 5 denoting very true.

About half of the questions deal with the effects of good weather while the other half deals with bad weather. The questions regarding good weather were intended to target any possible reductions in anxiety. On the other hand, the questions regarding bad weather were intended to target any possible increases in anxiety. Note that questions 3 and 7 were reverse scored to provide a more thorough survey experience.

Data was collected in person and summarized in Excel. Tools in Excel and a small Python script were used to generate analysis. A total of 10 people took the survey, which may not be enough people for conclusive results.

Results

Table 1. The results from the survey, with accompanying statistical analysis. Average, standard deviation, and relative standard deviation (RSD) was reported for both individuals and per question.

Person	Gender	Athlete	Age	q1	q2	q3	q4	q5	q6	q7	q8	q9	q10	Average:	Std. dev:	RSD:
1	Female	No	16	3	2	3	1	3	1	3	4	2	4	2.6	1.07	0.413
2	Female	Yes	16	2	3	2	1	2	1	3	4	1	2	2.1	0.99	0.474
3	Female	No	17	4	4	2	3	4	2	4	2	2	3	3	0.94	0.314
4	Female	No	17	3	2	5	1	1	1	3	3	1	2	2.2	1.32	0.598
5	Female	No	17	4	4	3	4	5	5	3	4	3	5	4	0.82	0.204
6	Male	No	17	4	4	4	4	4	3	4	4	4	4	3.9	0.32	0.081
7	Female	Yes	18	4	5	3	5	5	5	3	4	4	3	4.1	0.88	0.214
8	Female	No	17	2	2	2	4	4	1	3	4	2	2	2.6	1.07	0.413
9	Male	No	17	3	3	3	3	3	1	4	4	1	2	2.7	1.06	0.392
10	Male	No	17	3	4	4	4	3	4	4	2	3	2	3.3	0.82	0.249
			Average:	3.20	3.30	3.10	3.00	3.40	2.40	3.40	3.50	2.30	2.90	Average RSD:		0.335
			Std. dev:	0.79	1.06	0.99	1.49	1.26	1.71	0.52	0.85	1.16	1.10			
			RSD:	0.25	0.32	0.32	0.50	0.37	0.71	0.15	0.24	0.50	0.38			

The results from the survey are presented in Table 1. All participants answered all questions, including gender, athlete (yes/no), and age. Note that Table 1 is after reverse scoring questions 3 and 7.

Analysis

The data showed that, *on average*, weather does not largely affect a person's anxiety. *However*, large relative standard deviations amongst both questions and an individual's answers indicates that weather does indeed play a role in levels of anxiety and that anxiety levels are not consistent across good and bad weather conditions – e.g. some participants were seemingly only affected by good weather and not cold weather.

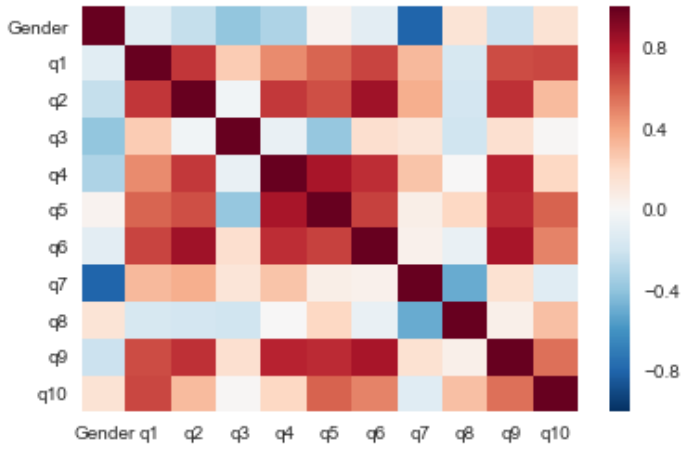

Figure 1. A correlation heatmap of gender and questions 1 – 10 (q1 – q10). A darker blue color represents a negative correlation between the two questions being intersected at that square, while a darker red color represents a positive correlation, and white represents no correlation.

A heatmap of correlations between gender and questions, as seen in Figure 1, showed that females tended to have a more negative correlation with the question set, meaning that their levels of anxiety are less affected by weather. Moreover, this heatmap determines that questions like number 5,6, and 9 have strong correlations with other questions, but not numbers 7 and 8, which are weakly correlate to the rest of questions. This discrepancy could be interpreted to mean that people's own anxiety is not related to the anxiety of others, which is what questions 7 and 8 involve.

Conclusion

The data describes interesting trends among the participants on the effects of weather on anxiety. The most important finding from this survey is that anxiety is inconsistent across good and bad weather. However, it cannot be concluded that weather alone is responsible for this inconsistency, as other factors, like seasonal changes and accompanying lifestyle changes (vacation, no school, etc.), may have a greater influence or causality on anxiety. Thus, more complete surveys that take other factors into account, as well as a larger sample size, could be done to extend this work.

References

1. Seasonal affective disorder. National Institute of Mental Health. https://www.nimh.nih.gov/health/topics/seasonal-affective-disorder/index.shtml. Accessed November 15, 2017