



How Can the Weather in our Community Affect us Mentally?

Rianah Pro

The Met Sacramento High School



Abstract

My research is about the weather in my community (downtown Sacramento) and how weather affects mental health because, I wanted to find out how people in my neighborhood were being affected by the weather. My research question is, "What are the weather conditions in my community and how can they affect us mentally?" To complete my research I took data from GLOBE measurement data about the weather conditions in my community. I collected research from articles that addressed how the weather affects mental health. After completing my research and analyzing my data I concluded that my results can neither prove nor disprove my hypothesis. The data I collected is not sufficient enough to determine if higher atmospheric temperature does indeed mean negative mental health. My hope is that with more data collected from all months of the year I will have sufficient evidence to draw a conclusion from.

Question/Hypothesis

My research question asks, "What are the weather conditions in my community and how can they affect us mentally?" My hypothesis is that, with higher atmospheric temperature individuals moods will be negative. With lower atmospheric temperatures, individuals will have more positive moods. I am interested in researching this topic because I have always wondered if and why environmental factors affect our internal health, especially mentally. In class we have learned about how the weather affects organisms physically and I wanted to find more about how organisms are affected mentally.

Introduction

Researching this topic is important because it will give people not only a greater understanding of the mental health of themselves but of others as well. This topic addresses the issue of mental health in low income communities. For my research I used atmospheric temperature data from GLOBE to understand the weather conditions in my community. I used research from, *Here comes the sun: how the weather affects our mood* (Haslam, 2013), and *Temperature and self-reported mental health in the United States* (Li, 2020), to understand how the atmosphere's temperature may affect mental health.

Research Methods

Planning

My plan for investigation is to collect data about the atmospheric temperatures in my community from the GLOBE website and the MyNasaData website. To investigate the other component of my research (the effect on mental health) I will look at articles and peer-reviewed journals that have previously studied this topic. My plan will produce data to test my hypothesis and will also serve as a way to come to a conclusion about how people in my community may be affected by our local weather. The study site is located at The Met Sacramento High School. This site is a school in downtown Sacramento. Majority of the ground cover is cement. There are many trees in the surrounding area and minimal air pollution (smog). I plan to collect the average atmospheric temperature for everyday, from February to April.



Investigating

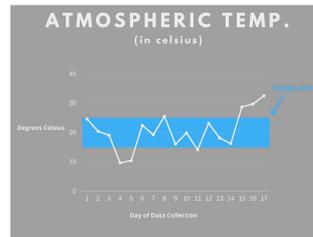
When I collected data we were in late winter to early spring so, majority of the temperature data collected were in the sixties and seventies. I collected a total of seventeen data points for measured atmospheric temperature. I collected data of the effect weather can have on mental health from a total of two sources. One is an article which references studies. The other is a peer reviewed journal which capitalized on a study they did that estimates the association between temperature and self reported mental health. To analyze my data, I first put everything I had collected into a table. Once I had the measured temperature side by side with the predicted mental state (deduced from the article and peer-reviewed journal), I used analytical methods to draw a conclusion about my research findings.

Results

Based off of the collected data represented in the table below, which includes atmospheric temperature measurements from seventeen different day, I was able to assess my results. Using knowledge I gathered from the weather and mental health articles I was able to deduce that there is a "happy zone" in which individuals mental states are positive. This "happy zone" ranges between fifteen to twenty-five degrees celsius (represented in the line graph below). According to my data, I can only partially answer my research question, "What are the weather conditions in my community and how can they affect us mentally?" As shown in my visualizations I only collected data for February through April. With more data from the rest of the months of the year I will be able to form more complete results.

Date	Site Name	Temperature (celsius)	Mental State (based on article)
2/22/19	The Met Sacramento	24.6 (76.28 F)	☑ (positive)
2/23/19	The Met Sacramento	20.4 (68.72 F)	☑ (positive)
2/24/19	The Met Sacramento	19.06(2 F)	☑ (positive)
2/25/19	The Met Sacramento	9.4(49.28 F)	☒ (negative)
2/26/19	The Met Sacramento	18.4 (65.12 F)	☑ (positive)
3/6/19	The Met Sacramento	22.4 (72.32 F)	☑ (positive)
3/8/19	The Met Sacramento	19.2 (66.56 F)	☑ (positive)
3/11/19	The Met Sacramento	25.5 (77.9 F)	☑ (positive)
3/22/19	The Met Sacramento	16.0(60.8 F)	☑ (positive)
3/25/19	The Met Sacramento	19.8 (67.64 F)	☑ (positive)

(*only a small portion of my chart)



Data Analysis

The most important results are that of atmospheric temperature measurements. These results help to determine whether the mental state of people in the community will be negative or positive. If the measured temperature was anywhere between fifteen degrees celsius and twenty-five degrees celsius I deduced that individuals mental state would be positive. Any lower or higher, and the mental states would be negative. This data is important to science because it gives scientists (and humans in general) a way to understand the behaviors of people in connection with the weather. The results are important to my community because this data will inform them of some of the reasoning behind their mental state during various weather conditions. Comparing my results to that of similar studies, reveals that the weather can have an effect on our mental health. Results from other studies complete my own results and help me form this conclusion. These results do contribute to answering the research question however, they are not sufficient enough to answer it completely.

Conclusions

Although these results could lead to supporting a conclusion, I cannot draw a conclusion from the data I currently have. From the results I can gather from the data collected I would say that through the months of February and April, temperatures ranged from 9.6 to 32.3 degrees celsius, in my community. This correlates to the mental states of individuals in my community being positive, 11 out of the 17 days I recorded. Improvements I could make to my research can be lengthening the time period of which I record data. And doing daily interviews of people in my community to see where they think their mental state is. I appreciated doing this research for GLOBE and NASA because it gave me the opportunity to do a project on an area of my interest.

Bibliography

- The GLOBE Program. Retrieved from globe.gov
- Haslam, N. (2013, Oct 22). *Here comes the sun: how the weather affects our mood*. Retrieved from theconversation.com.
- Li, M. (2020, Mar 25). *Temperature and self-reported mental health in the United States*. Retrieved from <https://journals.plos.org/>