

# Effect of Weather on Small Mammal Populations



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## Introduction

- Rapid global and environmental change, especially with concern to climate, has many effects on several populations. Identifying at-risk species is crucial to the management thereof.
- Small mammals are used as an indicator species for other populations and can help wildlife professionals estimate population densities of several other species
- In order to evaluate population density estimates for larger species that are more difficult to trap, we can rely on small population estimates as an indicator of the larger species.
- Often trapped are two mice species, *Peromyscus maniculatus* and *Peromyscus leucopus*.
- These small mammals can be killed while in the live traps used to capture these animals. While no study utilizing live traps intends to harm or kill the specimens, the weather during which the traps are laid can cause more deaths than intended.
- Using previous trap data and collecting weather data from PlanoWeather.com, where information regarding temperature, barometric pressure, and several other factors can be found.
- I tested to determine whether certain weather patterns led to more deaths of the mice in the live traps in previous trap sessions.

## Background



P. Leucopus or White-Footed Deer Mouse

<http://greglasley.com/content/Mammals/White-footedDeermouse.php>

P. Maniculatus or the North American Deer Mouse



<https://mammals.carnegiemnh.org/pa-mammals/deer-mouse-peromyscus-maniculatus/>

## Methods

- First, I gathered data collected from previous trap sessions from other independent studies advised under Dr. Phillips
- I used Plano Weather Index to obtain information regarding average low daily temperature and barometric pressure for days throughout said trapping sessions
- Analyzed data set and observed preliminary trends
- I then created graphs comparing weather averages with deaths of specimen to observe trends in the data set
- Finally, I was able to draw conclusions presented from the graphs

## Figures

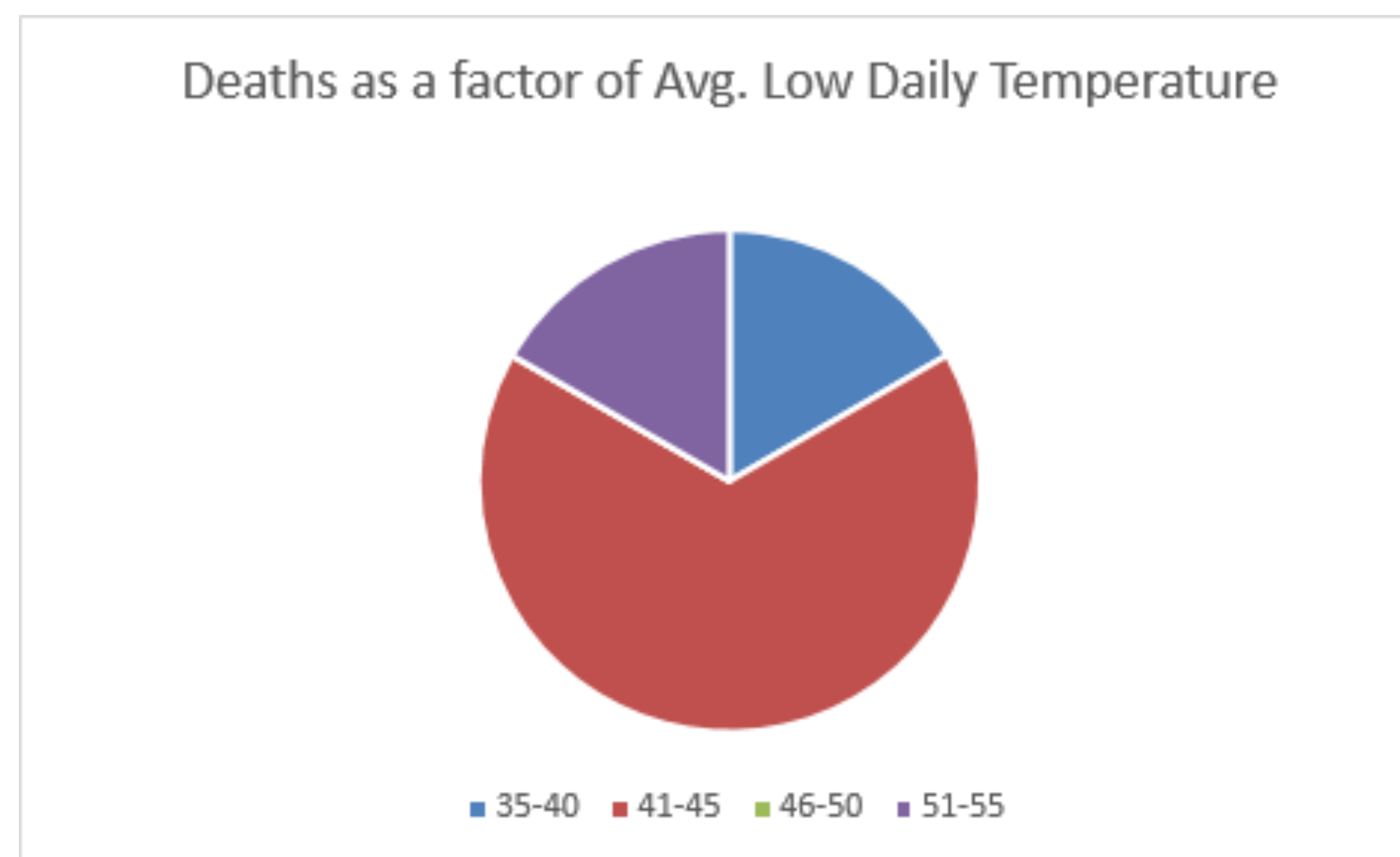


Figure 1. This pie chart shows the proportion of deaths as it relates to a range of daily low temperatures. There was a majority of deaths that occurred between low temperatures of 45-45 degrees. One may also be able to notice that all but one death occurred when the average low temperature was below 45 degrees Fahrenheit.

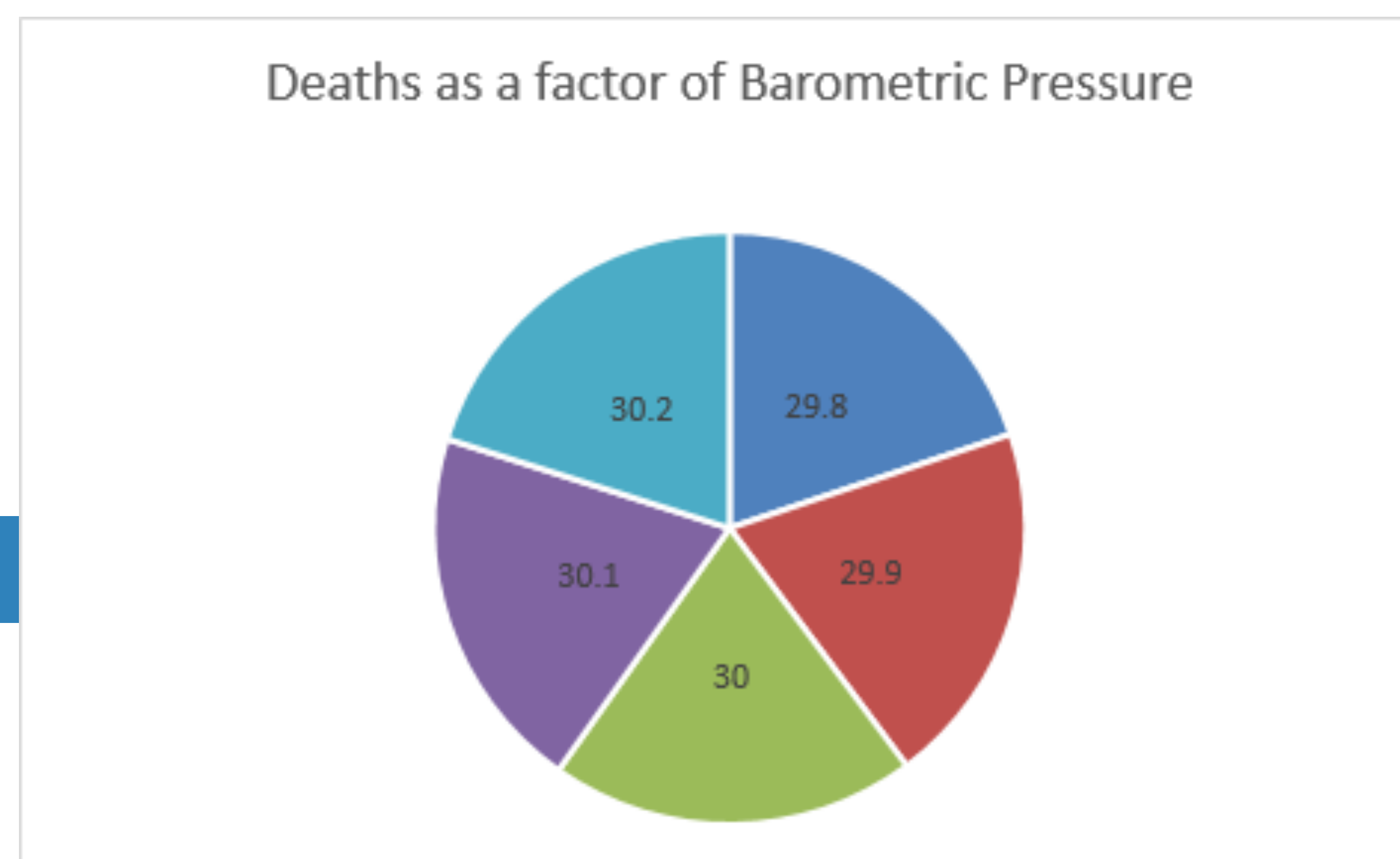


Figure 2. This pie chart shows the proportion of deaths as it relates to barometric pressure. There does not appear to be any correlation between barometric pressure and deaths in traps. Deaths occurred both at low and high barometric pressure readings.

## Conclusion

- The use of small mammals as indicators for other species' densities has proven effective
- From the small data set obtained, I was able to look at potential correlations between average daily low temperature and barometric pressure with deaths of small mammals in live Sherman mammal traps
- Although all deaths collected appear to occur below 45 degrees Fahrenheit, there is no direct evidence of such
- There appears to be no correlation between average barometric pressure and deaths of mammals in the traps
- Overall, small sample size
- Future studies would trap in a wide variety of conditions throughout several times of the year
- Longer trap sessions with more data to draw results from



Figure 3. The above image is an aerial photograph of the study site (CB's Place) with trap locations and transects shown.

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- Lastly, I would like to thank previous students for their hard work that resulted in the collection of the data used for this project.

## References

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- [https://www.academia.edu/29650936/Field\\_Identification\\_of\\_Peromyscus\\_Leucopus\\_and\\_P\\_Maniculatus\\_In\\_Southern\\_Wisconsin](https://www.academia.edu/29650936/Field_Identification_of_Peromyscus_Leucopus_and_P_Maniculatus_In_Southern_Wisconsin)