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Does more pollen mean more sneezing?

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Background

- Every year millions of people suffer from seasonal allergies, according to the CDC about 25% of adults have to deal with these allergies. Pollen comes from all different things like trees, grasses, and weeds and as climate change increases annually the amount of pollen released into the air also increases. Research has shown that climate change has specifically impacted the amount of birch and oak pollen released annually. Although there is data to show that there has been an increase in pollen release there is little to no information on if the prevalence of allergies has increased or decreased along with pollen prevalence. I believe that with an increase in pollen throughout recent years there will also be an increase in the prevalence of those with respiratory allergies.



Figure 1. Pollen sacks on an Oak tree, Figure 2. National Health Interview Survey logo, Figure 3. North Carolina Department of environmental quality logo

Methods

- To observe this correlation, I have used data from NHIS database which is conducted every year to account for those with respiratory allergies. This data focused specifically on children with a range of 1514-2321 participants annually. This variable along with hundreds of others were observed to understand the health of those within the United States.
- Pollen data was acquired from the North Carolina Department of Environmental Quality. This data is specifically from Raleigh, North Carolina and starts in 1999-2016 and includes pollen grain count of trees, grasses, and weeds.

Results

My hypothesis was that with pollen increase there will also be an increase in children with allergies. Through analysis it was found that there is no correlation between pollen count and the percent of children with respiratory allergies. Overall, there was a decrease in the percent of children with allergies, but pollen count is steadily increasing annually

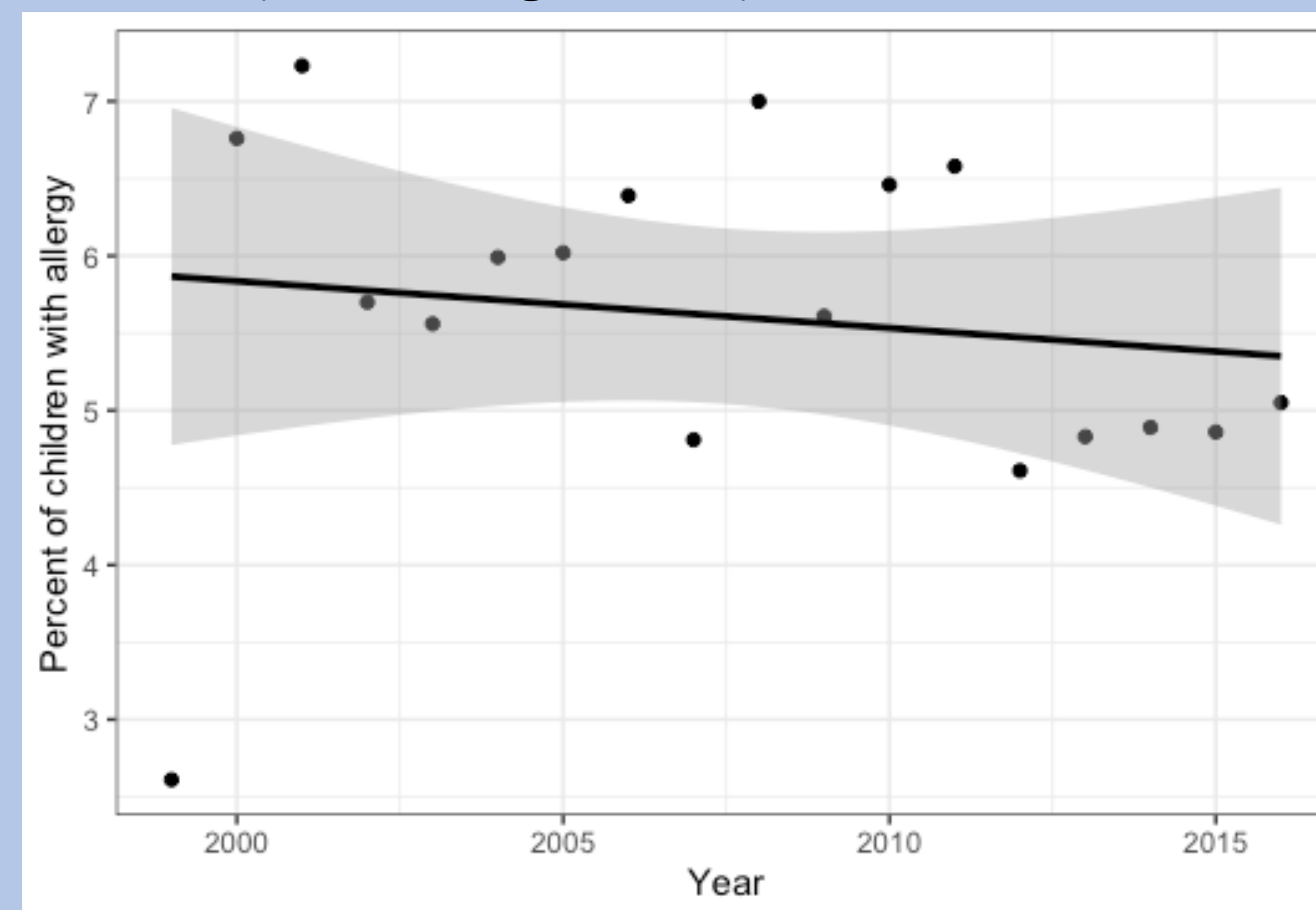


Figure 3a. The percent of children with allergy for each year

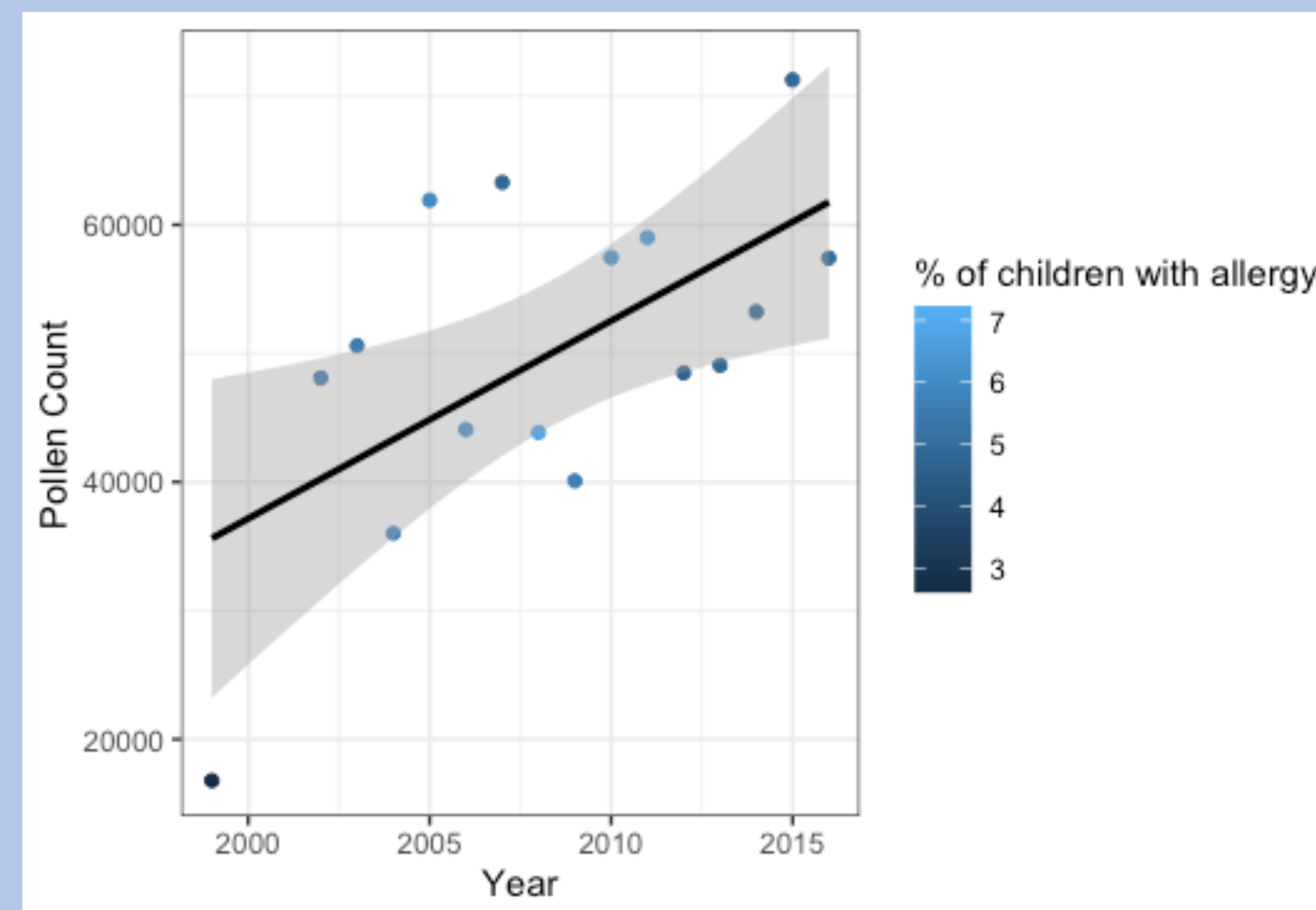


Figure 3b. Pollen count by year along with percent of children with allergy

The Anova results indicated that there was a p-value of 0.1877 indicating that we must accept the null hypothesis. It seems that there is no correlation between the percentage of children with allergies and the pollen count seen annually

Conclusion

- Pollen count is increasing annually in all species that release pollen and allergies are a constant problem but it seems that there is no correlation
- To further this research I would need data on all people not just children since the population most affected by seasonal allergies is adults
- If the pollen data were more specific to a species that could also change the correlation seen in this data.
- Overall I believe with more data on respiratory allergies and more accessibility to pollen data would benefit this study.

Acknowledgements

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References

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