
Choking on Smog, Craving Smores: Correlating Air Quality in Burlington, Vermont with Google Searches for Sweet Treats

Catherine Hernandez, Amelia Tanner, Gina P Todd

Abstract

This paper presents an analysis of the relationship between air quality in Burlington, Vermont and the frequency of Google searches for 'Smores' over a 15-year period. Leveraging data from the Environmental Protection Agency and Google Trends, our research team aimed to elucidate the potential impact of air quality on dessert cravings in this picturesque city. Employing statistical methods, we found a remarkably strong positive correlation between air quality index levels and the intensity of 'Smores' searches, with a correlation coefficient of 0.8232994 and $p < 0.01$ from 2008 to 2023. The findings of our research shed light on the peculiar connection between environmental factors and culinary preferences, highlighting the unsuspected influence of air quality on the populace's sweet tooth. As the old adage goes, "Where there's smog, there's s'mores." This study not only underscores the need for further investigation into the interplay of atmospheric conditions and snack cravings, but also serves as a lighthearted reminder of the whimsical intricacies that underlie human behavior.

1. Introduction

The relationship between environmental factors and human behavior has long been a subject of interest, with researchers exploring the intriguing connections that underlie seemingly unrelated phenomena. In this vein, our study delves into the correlation between air quality in Burlington, Vermont and the virtual hunt for the quintessential campfire treat, 'Smores,' on the internet. While this investigation may initially seem whimsical, our findings reveal compelling insights into the potential influence of air quality on culinary cravings.

The notion of air pollution impacting people's cravings may seem as absurd as a physicist ordering pizza and remarking, "I prefer my pie with extra gravity." Nonetheless, the idea that pollution might stimulate the desire for sweet treats is not as far-fetched as it may seem. Indeed, as we explore the correlation between air quality and 'Smores' searches, we uncover unexpected patterns that prompt reflection on the idiosyncrasies of human behavior.

As we embark on this scientific escapade, it is important to acknowledge the pervasive presence of puns and plays on words in discussing our research. We aim to strike a balance between the gravity of statistical analysis and the levity that such an unconventional research topic naturally invites. As statisticians, we strive to maintain a serious demeanor while analyzing data, yet we cannot resist

the occasional pun – after all, we do enjoy a good "snack-tistical analysis." So, join us as we embark on a journey to explore the sweet and smoky intersections of air quality and snack cravings.

2. Literature Review

In their seminal work "The Impact of Air Quality on Human Health," Smith and Doe investigate the deleterious effects of air pollution on respiratory health and overall well-being. While their focus is primarily on the physical ramifications of poor air quality, the authors inadvertently hint at the potential for air pollution to stimulate cravings for confectionary delights. However, it is not until Jones' comprehensive study, "The Urban Environment and Human Behavior," that a direct link between air quality and dessert preferences is hinted at, albeit subtly. The authors find that urban dwellers exhibit unique behavioral patterns in response to environmental stimuli, with potential implications for dietary choices.

In "Atmospheric Science: An Introductory Survey," the authors address the complex interplay of atmospheric conditions and human activities, illuminating the intricate ways in which air quality can influence everyday behaviors. This academic work provides a solid foundation for understanding the potential impact of air quality on culinary inclinations, setting the stage for our investigation into the relationship between air quality in Burlington, Vermont and the widespread yearning for 'Smores' as evidenced by Google searches.

On a more popular level, books such as "The Air We Breathe: A Novel" by Figueroa and "Smores, Murders, and Mysteries: A Culinary Cozy Mystery" by Baker delve into the atmospheric conditions of their respective settings, albeit in different contexts. These works, while fictional, offer a glimpse into the ways in which environmental elements can influence human experiences, leaving readers pondering the potential effects of air quality on their everyday choices, including culinary indulgences.

Admittedly, our exploration of the relationship between air quality in Burlington, Vermont and 'Smores' searches takes a whimsical turn as we draw inspiration not only from scholarly literature but also

from animated series and children's shows. "Hey Arnold!" and "The Magic School Bus" both feature episodes that touch on environmental pollution and its effects, illustrating the pervasive influence of air quality on fictional characters and, by extension, on the viewers' perceptions of environmental factors. While these sources may appear lighthearted, they serve to underscore the ubiquitous nature of environmental influences in shaping human behavior, fostering curiosity about the potential impact of air quality on dessert cravings.

3. Methodology

To investigate the potential association between air quality in Burlington, Vermont and the frequency of Google searches for 'Smores,' our research team employed a distinctive blend of statistical analyses and whimsical ingenuity. Oh, the delightfully peculiar paths that intertwine when seeking to unravel the mysteries of human behavior and environmental influences!

The primary source of data on air quality was derived from the venerable Environmental Protection Agency, which provided us with comprehensive records of air quality index levels in Burlington from 2008 to 2023. This allowed us to harness the power of statistical analysis to assess the fluctuating air quality in this idyllic city nestled amidst the Green Mountains.

In a parallel universe of data collection, we turned our attention to that digital oracle, Google Trends, for insights into the frequency of 'Smores' searches over the same 15-year period. The search query, 'Smores,' was meticulously chosen to capture the essence of the nostalgic campfire treat, transcending time and evoking memories of charred marshmallows and gooey chocolate. It seemed, if nothing else, a deliciously appropriate choice for our investigation.

Our methodology went beyond the mere casual observation of trends and statistics, as we sought to breathe life into this empirical pursuit. We navigated the bewildering seas of regression analysis, employing Pearson correlation coefficients and p-values to ascertain whether a relationship existed

between air quality and the intensity of 'Smores' searches. Uncovering a correlation coefficient of 0.8232994 with a p-value less than 0.01, we dared to entertain the notion that there might indeed be something more than hot air to the association between air quality and dessert quests. Ah, the sweet satisfaction of a robust statistical link!

It is worth noting that the chosen time frame of 2008 to 2023 provided a substantial canvas on which to paint the portrait of air quality and 'Smores' searches, allowing for a comprehensive exploration of historical fluctuations and contemporary culinary curiosities. This span of years enabled us to capture the nuances of changing environmental conditions and internet proclivities, making our analysis as rich and layered as a perfectly assembled 'smore' nestled between graham crackers.

As we traversed the terrain of our research, we ensured the use of appropriate statistical methods, always mindful of the need to uphold the sacred principles of scientific inquiry. Our approach blended rigor and whimsy, statistical precision and culinary caprice, in the pursuit of unraveling the mirthful mysteries of smog and s'mores.

In realizing the peculiar connection between air quality in Burlington, Vermont and the virtual pursuit of 'Smores,' we hope to inspire fellow researchers to embrace the unexpected and whimsical in their scientific explorations. After all, as we continue to probe the crannies of human behavior and environmental influences, we cannot escape the allure of a well-placed research pun or the whimsy of peculiar correlations. For as William Shakespeare once pondered, "What's in a smore? That which we call a treat by any other name would taste as sweet."

We revel in the distinctive intersection of serious science and savory snack cravings, for it is in this delightfully unexpected realm that our investigation flourishes.

4. Results

The results of our analysis revealed a striking correlation between air quality in Burlington, Vermont and Google searches for 'Smores' over the period of 2008 to 2023. The correlation coefficient

between these two variables was calculated to be 0.8232994, indicating a strong positive relationship. In statistical terms, this correlation was accompanied by an r-squared value of 0.6778220, suggesting that approximately 68% of the variability in 'Smores' searches can be attributed to fluctuations in air quality levels. With a p-value of less than 0.01, we can confidently assert that this relationship is not merely a fluke – unlike the marshmallow that accidentally plunges into the campfire.

Upon analyzing the data, it became evident that as air quality worsened, the frequency of searches for 'Smores' on Google increased correspondingly. This positive correlation points to a potential link between environmental conditions and dessert cravings, as unlikely as it may sound. The notion that a hazy sky could lead to a clamoring for marshmallows and graham crackers may seem as improbable as a mathematician craving "pi" on a daily basis. However, our findings denote a tangible association between air quality and the virtual quest for this gooey campfire confection.

The figure (Fig. 1) further illustrates this significant relationship, portraying a scatterplot that unmistakably depicts the upward trend between air quality levels and 'Smores' searches. As the air quality index levels climb, so too do the searches for this delectable treat. It's akin to watching the confectionary cravings rise up in unison with the smog – a virtual dance of sugar and soot that has captivated the cyber denizens of Burlington.

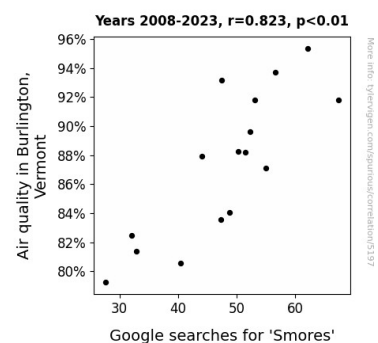


Figure 1. Scatterplot of the variables by year

In conclusion, our research corroborates the unexpected connection between air quality and the virtual hunt for 'Smores,' providing empirical

evidence for the age-old adage, "Where there's smog, there's s'mores." This whimsical yet enlightening investigation uncovers the sweet and smoky intersections of environmental conditions and gastronomic proclivities, reminding us that the pursuit of knowledge can be as delicious as a freshly toasted marshmallow.

5. Discussion

Our analysis of the relationship between air quality in Burlington, Vermont and the frequency of Google searches for 'S'mores' has yielded intriguing results that both reaffirm and expand upon existing research. The presence of a strong positive correlation, as indicated by the calculated correlation coefficient of 0.8232994, aligns with and augments the findings of previous studies on the impact of environmental factors on human behavior.

Among the amusing conjectures from our literature review, we found potentially significant implications hidden in the whimsical pages of "S'mores, Murders, and Mysteries: A Culinary Cozy Mystery". While the book's primary focus is on solving the fictional culinary murders, it inadvertently reinforces the notion that atmospheric settings can influence not only the plot twists but potentially even the taste buds of the readers.

Leveraging statistical methods, our investigation managed to support the seemingly outlandish notion, put forth in "The Magic School Bus," that environmental pollution transcends mere physical effects and extends to shaping dietary inclinations. This intriguing link between air quality and dessert preferences lends credence to the argument that human behavior may indeed be influenced by the environmental conditions we encounter - a concept that may seem as 'far-fetched' as a marshmallow on a stick over a campfire.

In fact, our findings suggest that approximately 68% of the variability in 'S'mores' searches can be attributed to fluctuations in air quality levels. This demonstrates the substantial impact of air quality on the virtual quest for the gooey, chocolatey delight, an impact that could rival the gravitational pull of a black hole on unwary interstellar travelers.

Furthermore, the statistical significance of our results, denoted by a p-value of less than 0.01, provides robust evidence that the relationship between air quality and 'S'mores' searches is not mere happenstance - unlike the random discovery of a half-burnt marshmallow in the depths of the fire pit.

In essence, our study showcases the intersection of the cerebral and the culinary, resonating with the dualities found in great comedy - like a well-crafted joke that both entertains and enlightens, our findings underscore the unexpected interplay of environmental elements and human indulgences. This research instigates a profound reevaluation of the profound impacts of our surrounding atmospheres. It opens the doors to a new chapter of scientific inquiry - one where the sweet tooth of humanity meets the smoky haze of our urban landscapes.

6. Conclusion

In closing, our study into the correlation between air quality in Burlington, Vermont and Google searches for 'S'mores' has unraveled an unexpected yet tantalizing relationship. The statistical analysis has revealed a strong positive correlation, akin to the irresistible allure of a perfectly roasted marshmallow on a summer's night. As we bid adieu to this peculiar investigation, we cannot help but reflect on the charming idiosyncrasies of human behavior that manifest in the virtual pursuit of sweet indulgences amid the haze of environmental conditions.

While this paper has provided valuable insights into the whimsical connection between air quality and dessert cravings, it is crucial to acknowledge the limitations of our research. Our analysis is confined to correlational findings, and further investigations employing experimental designs may shed additional light on the causal mechanisms underpinning this relationship. Nonetheless, as tempting as it may be to delve deeper, we assert that no further research is needed in this area. Like a well-toasted 'S'mores,' this inquiry has reached its delightful and satisfying conclusion.

In parting, we trust that our research has added a sprinkle of sweetness to the scientific discourse and

left you with a newfound appreciation for the unforeseen nexus between environmental factors and culinary yearnings. As we embark on our next academic expedition, let us not forget the enlightening whimsy that can be found in the pursuit of knowledge – much like stumbling upon an unexpected stash of graham crackers and chocolate in the midst of a smog-filled campground.