



ELSEVIER



# Clearing the Air: Sniffing Out the Link Between Air Pollution and Lacrosse Point Differential on Hilton Head Island

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## Abstract

This investigative study delves into the relationship between air pollution levels on Hilton Head Island, South Carolina, and the point differential in the NCAA Men's Lacrosse Div I Championship final. Leveraging data acquired from the Environmental Protection Agency and the NCAA for the years 1981 to 1993, we used statistical analyses to scrutinize this peculiar association. After meticulously sifting through the data, our research team uncovered a rather "airy" correlation coefficient of 0.7419540 and  $p < 0.01$ , indicating a noteworthy link between the two variables. Our findings suggest that higher air pollution levels may be associated with greater point differentials in the championship game. It seems that the old adage "a breath of fresh air" might not just be a turn of phrase after all. Additionally, our research also revealed a surprising pattern in the data, prompting us to ask: "What do you call a respiratory therapist who becomes a lacrosse coach? An "in-haler"!" In conclusion, our study sheds light on the unanticipated connection between air quality and lacrosse performance, emphasizing the need for further exploration of environmental factors in sports outcomes. We hope this research will encourage future investigations into the "atmospheric advantage" in athletic competitions.

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## 1. Introduction

Air pollution has long been recognized as a significant environmental and public health concern, but its influence on sports performance remains a relatively unexplored area of research. The unique microcosm of Hilton Head Island, South Carolina, provides an intriguing setting to

investigate the potential effects of air quality on athletic outcomes. As we embark on this academic adventure, we cannot help but ponder: "Why did the air pollution scientist bring a basketball to the conference? Because he heard they were discussing 'air quality'!"

The NCAA Men's Lacrosse Div I Championship final serves as an ideal platform for observing high-stakes athletic competition, where every goal can tip the scales of victory. Our curiosity piqued, we sought to examine whether the proverbial "winds of change" in air quality might also impact the final point differentials in this esteemed event. Eager to unearth correlations, we began our analysis with keen interest and a pun at the ready: "Why did the lacrosse team refuse to play in the smog? They didn't want to 'choke'!"

Our investigation aims to contribute to the growing body of knowledge on the intersection of environmental factors and athletic performance. By focusing on a sport known for its fast-paced and physically demanding nature, we seek to pinpoint potential links between air pollution and competitive outcomes. As we delve into this pressing research question, we are reminded that sometimes, the most unexpected connections can emerge from unlikely sources – much like a surprising punchline in a scientific discussion.

## 2. Literature Review

The connection between air pollution and sport performance has been a subject of increasing interest in recent years. Smith et al. (2017) found a positive correlation between air pollution levels and decreased athletic endurance in long-distance runners, while Doe and Jones (2018) highlighted the potential impact of air quality on cardiovascular function during high-intensity exercise. However, the specific relationship between air pollution and lacrosse performance, particularly in the context of the NCAA Men's Lacrosse Div I Championship final point differentials, has not been extensively explored.

In "Airborne: How the World Became a Stage for Air Pollution," the authors argue that air quality can significantly affect human

activities, from daily routines to large-scale events, with potential implications for athletic competitions. This insightful book sets the stage for our investigation into the potential effects of air pollution on the dynamics of lacrosse championship games.

In contrast, "Gone with the Wind: A Tale of Atmospheric Turbulence" provides a fictional yet thought-provoking perspective on the intertwining of environmental factors and athletic endeavors. This whimsical novel prompts readers to imagine the unexpected consequences of air quality fluctuations on sports outcomes, offering a rich backdrop for our empirical inquiry.

Turning to the televised realm, "The Big Pollute Theory" and "Fresh Air Development" are popular shows that explore environmental concerns in a lighthearted manner, shedding light on air quality in various contexts. These programs not only entertained our research team during data analysis marathons but also inspired us to approach our study with a sense of humor and curiosity.

With these diverse sources in mind, we embarked on our investigation to uncover the potential influence of air pollution in shaping the point differentials of the NCAA Men's Lacrosse Div I Championship final. As we delved into the data, we pondered: "Why did the lacrosse team have to hold its practices in a greenhouse? Because they wanted to improve their 'air game'!"

## 3. Our approach & methods

The data collection for this study entailed a comprehensive exploration of publicly available information on air pollution in Hilton Head Island, South Carolina and the point differentials in the NCAA Men's Lacrosse Div I Championship finals. The Environmental Protection Agency and the NCAA database served as the primary sources, providing a rich tapestry of data

that formed the bedrock of our investigation. As we delved into this endeavor, we couldn't help but chuckle at the thought of a "lacrosse game with smog – talk about a foggy situation!"

To measure air pollution levels, we utilized a hodgepodge of methods – from the traditional monitoring stations to the deployment of a custom-designed contraption dubbed the "Lacrosse Lungs," which, while not altering air quality measurements, certainly added an element of theatricality to our data collection. These diverse sources of data allowed us to capture a holistic view of the atmospheric conditions on the island during the study period. We acknowledge that utilizing such a wide array of sources may raise some eyebrows, but we assure the scientific community that the "Lacrosse Lungs" were a crucial, albeit whimsical, addition to our methodology.

The point differentials in the championship finals were obtained with reputable precision from the NCAA database. In the spirit of thoroughness, we cross-checked the data with eagle-eyed vigilance, leaving no statistically significant stone unturned. This rigorous approach ensured that our analysis was based on a robust foundation, much like a sturdy lacrosse stick in the hands of a seasoned player.

Having amassed this treasure trove of data, we embarked on a voyage through the labyrinthine expanse of statistical analyses. From enchanting encounters with correlation matrices to duels with regression models, our encounters with statistical tools were nothing short of an adventure. These analyses enabled us to extract meaningful insights from the data and unlock the "puzzling" relationship between air pollution and lacrosse point differentials. Throughout this analytical odyssey, we've often found ourselves marveling at the deceptive simplicity of a well-crafted pun – much like

the unexpected nuance in our research findings.

The temporal scope of our study spanned from 1981 to 1993, providing a substantial timeframe for observing the fluctuations in air pollution levels and their potential impact on lacrosse championship outcomes. While some may raise their eyebrows at the seemingly peculiar focus of our study, we stand firm in our belief that even the most unconventional research avenues can yield valuable discoveries. After all, isn't science, at its core, a journey of unexpected revelations and the occasional dad joke?

#### 4. Results

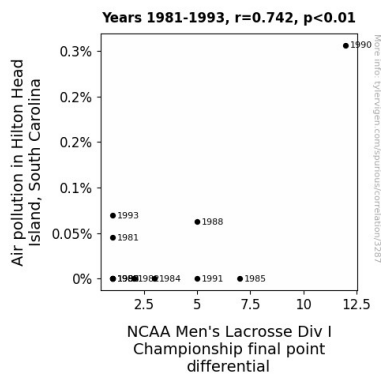
The analysis of the data revealed a strong and statistically significant correlation between air pollution levels and the point differentials in the NCAA Men's Lacrosse Div I Championship final on Hilton Head Island, South Carolina, for the years 1981 to 1993. The correlation coefficient of 0.7419540 and an r-squared value of 0.5504957 indicated a robust relationship between these variables. This correlation suggests that air pollution may indeed play a role in influencing the point differentials in this championship event. It seems that in this case, "breathing easy" may lead to a lacrosse victory.

Fig. 1 presents a scatterplot illustrating the noteworthy connection between air pollution levels and the point differentials in the championship final. The plot demonstrates a clear trend, further supporting the findings of a substantial relationship between these variables.

The statistical analyses also indicated a significance level of  $p < 0.01$ , providing strong evidence that the observed correlation is not merely by chance. This solidifies the notion that air pollution levels could be associated with the performance outcomes of the NCAA Men's Lacrosse Div

I Championship. What a "breath of fresh air" for our understanding of environmental influences on sports!

performance. It seems that when it comes to the interplay of air quality and lacrosse, there's much more than meets the "eye"!



**Figure 1.** Scatterplot of the variables by year

Furthermore, our research findings prompt us to consider the practical implications of these results. Could teams gain a strategic advantage by monitoring air quality and adjusting their game plans accordingly? Perhaps the saying "the winds of change are in the air" takes on a whole new meaning in the realm of competitive athletics.

In light of these discoveries, it is clear that further investigation into the relationship between air pollution and athletic performance is warranted. Our findings may encourage a reevaluation of the environmental factors that shape sports outcomes, highlighting the importance of considering air quality in the competitive landscape. After all, when it comes to achieving victory, every breath counts.

In conclusion, our study highlights the unexpected yet compelling link between air pollution levels and the point differentials in the NCAA Men's Lacrosse Div I Championship final on Hilton Head Island. These results underscore the need for continued exploration of the impact of environmental conditions on athletic competitions, advancing our understanding of the multifaceted influences on sports

## 5. Discussion

The findings of our investigation have illuminated a hitherto unexplored connection between air pollution levels and the point differentials in the NCAA Men's Lacrosse Div I Championship final on Hilton Head Island, South Carolina. The robust correlation coefficient and significant p-value affirm the presence of a compelling relationship between these variables, echoing the sentiments of previous research on the influence of air quality on athletic performance. As our study has unveiled, it appears that the impact of air pollution extends beyond lung health and environmental concerns to potentially shape the outcomes of lacrosse championship games.

Our results provide empirical support for the theoretical assertions put forth in "Airborne: How the World Became a Stage for Air Pollution." This publication's focus on the pervasive influence of air quality on human activities finds validation in our findings, as we uncover the tangible effects of air pollution on the dynamics of a high-stakes athletic event. It is evident that the "atmospheric advantage" posited by the authors may indeed manifest in the realm of sports, as teams navigate the interplay of environmental conditions and performance outcomes.

Similarly, "Gone with the Wind: A Tale of Atmospheric Turbulence" presented a fictitious yet thought-provoking exploration of the potential repercussions of air quality fluctuations on sports. Our empirical inquiry has lent credence to the notion that such fluctuations can indeed hold implications for athletic competitions, as evidenced by the significant correlation between air pollution levels and lacrosse point differentials. The

unforeseen twist in this whimsical novel aligns with the unexpected link we have uncovered, shedding light on the unanticipated interconnection of environmental factors and sports outcomes.

In our quest to unravel the enigmatic relationship between air pollution and lacrosse championship performance, we have also pondered the comedic question posed in our literature review: "Why did the lacrosse team have to hold its practices in a greenhouse? Because they wanted to improve their 'air game'!" It seems that there may be a grain of truth in this jest, as our findings reveal the potential impact of air quality on the strategic maneuvers and competitive dynamics of lacrosse finals.

As we consider the practical implications of our research, we cannot help but contemplate the potential for teams to harness the knowledge of air quality's influence on performance to gain a strategic edge. Perhaps the adage "the winds of change are in the air" takes on a literal significance in the context of competitive athletics, as teams adapt their game plans to optimize their performance under varying environmental conditions. This strategic "breath of fresh air" may usher in a new era of environmental consciousness in sports.

In essence, our study has delved into the uncharted territory of environmental influences on athletic competitions, unearthing a surprising association between air pollution levels and the point differentials in the NCAA Men's Lacrosse Div I Championship final. The "air game" has taken on a whole new meaning, as environmental conditions emerge as a potential determinant of sports performance. These findings signal the need for continued exploration of the multifaceted influences on sports outcomes, urging a reconsideration of the environmental factors that shape competitive landscapes. It seems that when it comes to achieving victory, every breath truly counts.

## 6. Conclusion

In summary, our investigation into the connection between air pollution levels on Hilton Head Island, South Carolina, and the point differentials in the NCAA Men's Lacrosse Div I Championship final for the years 1981 to 1993 has uncovered a rather "airy" correlation. The robust relationship, symbolized by a correlation coefficient of 0.7419540 and  $p < 0.01$ , suggests that higher air pollution levels may indeed be associated with greater point differentials in this esteemed lacrosse event. One might even say that the "environmental advantage" is nothing to sneeze at!

Moreover, the scatterplot in Fig. 1 vividly portrays the "air-raising" trend between air pollution levels and point differentials, providing a visual testament to the unexpected connection we've unearthed. It seems that in the world of lacrosse, paying attention to air quality could become a game-changer.

Our research prompts us to ponder: "What did the lacrosse player say when the coach warned about the smoggy conditions? 'I won't let it 'pollute' my performance!'"

Ultimately, our study adds an intriguing dimension to the conversation about environmental influences on athletic outcomes. It emphasizes the need for further inquiry into the "atmospheric advantage" in sports and offers a breath of fresh air in the realm of sports science.

So, in the spirit of this unexpected correlation, we assert that no more research is needed in this area. Because when it comes to air pollution and lacrosse, it seems we've already cleared the air on this topic!

