



ELSEVIER



Fargo's Air Pollutes, Searches Shoots: A Quirky Connection Between Pollution and Peculiar Google Queries

Catherine Hoffman, Abigail Turner, Gabriel P Truman

Elite Science Academy; Ann Arbor, Michigan

Abstract

This research paper delves into the unexpected correlation between air pollution levels in Fargo and the frequency of Google searches for 'Suez Canal'. Utilizing data from the Environmental Protection Agency and Google Trends, our study uncovers a surprisingly strong association between these seemingly unrelated phenomena. Our analysis reveals a correlation coefficient of 0.8655286 and a statistical significance with $p < 0.01$ for the years 2005 to 2023. The findings not only highlight the quirkiness of human behavior in the digital age but also emphasize the need to explore unconventional connections in environmental and societal studies.

Copyright 2024 Elite Science Academy. No rights reserved.

1. Introduction

Amidst the serene plains and friendly folks of Fargo, North Dakota, a quirky connection has emerged between the air pollution levels and the rather peculiar Google searches for the 'Suez Canal'. While one might expect a correlation between air pollution and health-related concerns or environmental activism, it's quite the surprise to stumble upon a correlation with a seemingly unrelated internet search. Nonetheless, as the adage goes, "correlation does not imply causation," we are compelled to explore the whimsical

relationship between these two seemingly disparate phenomena.

As researchers, we often find ourselves navigating through the labyrinth of data, searching for meaningful patterns and connections. We embrace the unexpected, the eyebrow-raising, and the head-scratching moments that make the scientific journey all the more enjoyable. And, my oh my, did we stumble upon a delightful surprise in the annals of our analysis.

Before delving into the meat of our findings, it's important to illuminate the context of our

investigation. On one hand, we have the air pollution levels in Fargo, a city renowned for its charming hospitality and downright freezing winters. On the other hand, we have the enigmatic quest for knowledge about the Suez Canal, a waterway nestled in the sands of Egypt, a world away from the prairie landscape of Fargo. It's as if we've unearthed a newfound kinship between two seemingly unrelated entities, akin to discovering that peanut butter and pickles make a surprisingly delectable sandwich combination.

In the following sections, we will dissect our research methodology, meticulously present our findings, and sprinkle some statistical seasoning to add flavor to our curious discoveries. Along the way, expect a dash of humor, a pinch of puns, and perhaps an unexpected twist or two, because who said academic research had to be as dry as unbuttered toast?

So, dear readers, buckle up for a quirky ride through the realms of air pollution, online inquiry, and the wondrous world of statistical analysis. Let us embark on a journey filled with surprises, statistical shenanigans, and the unanticipated twists that make academic research a delightfully peculiar pursuit.

2. Literature Review

The authors find that a substantial body of research has been dedicated to investigating the effects of air pollution on human health and the environment. Smith et al. (2018) discuss the detrimental impact of particulate matter and volatile organic compounds emitted from various sources, including industrial facilities and vehicular traffic, on respiratory health and overall air quality. Similarly, Doe and Jones (2020) highlight the correlation between high levels of air pollution and increased rates of respiratory illnesses in urban areas. While these studies shed light on the serious implications of air pollution, our research

takes an unconventional turn by exploring its connection with the online phenomenon of Google searches for 'Suez Canal'.

Turning our attention to the world of online search behavior and its peculiar patterns, it is essential to acknowledge the work of Johnson and Lee (2017), who delve into the intriguing realm of internet search queries and their relation to societal trends. Their study provides insights into the diverse range of topics and trends that captivate the curiosity of internet users, with an emphasis on the dynamic nature of online search behavior. As we venture into the unexpected correlation between air pollution in Fargo and Google searches for 'Suez Canal', we draw upon the foundational understanding of digital inquiries to uncover the unique bond that ties these disparate elements together.

In a departure from the traditional scholarly sources, we also draw inspiration from non-fiction literature that touches upon the themes of environmental quirks and unexpected connections. "The Hidden Life of Trees" by Peter Wohlleben, although focused on the intricacies of forest ecosystems, invites readers to contemplate the interconnectedness of natural phenomena. Similarly, "The Tipping Point" by Malcolm Gladwell offers a compelling exploration of how small, seemingly unrelated events can culminate in significant societal shifts, echoing the essence of our research endeavor.

Venturing into the realm of fiction, we encounter literary works that evoke the spirit of quirkiness and unexpected correlations, albeit in a more imaginative context. Jorge Luis Borges' "Labyrinths" weaves a tapestry of enigmatic narratives and labyrinthine connections, serving as a metaphorical reflection of our quest to unravel the intricacies of the Fargo air pollution – Suez Canal search correlation. On a lighter note, Douglas Adams' "The Hitchhiker's Guide to the Galaxy" introduces readers to a

whimsical universe where absurdity and serendipity reign supreme, offering a playful parallel to the unexpected twists and turns of our research findings.

In the spirit of embracing unorthodox sources of inspiration, the researchers also dabbled in the world of cartoons and children's shows to glean insights from the unbounded creativity and whimsy of animated storytelling. From the zany antics of Looney Tunes to the thought-provoking adventures in "Phineas and Ferb", our foray into animated narratives served as a lighthearted source of creative stimulation, infusing a dose of humor and playfulness into the pursuit of scholarly inquiry.

In the next section, we will unveil the methodology employed to unravel the peculiar correlation between Fargo's air pollution and the search frenzy for the Suez Canal, blending statistical rigor with a dash of quirkiness to illuminate the nuances of this curious connection.

3. Our approach & methods

To unearth the peculiar connection between air pollution in Fargo and Google searches for the 'Suez Canal', our research team dove headfirst into the digital ocean of data, armed with an unwavering spirit of curiosity and a penchant for the quirky. We harnessed the power of information from the Environmental Protection Agency (EPA) and Google Trends, utilizing data spanning from 2005 to 2023; a period ripe with the whims and caprices of the internet zeitgeist.

Our journey commenced with the acquisition of air quality data from the EPA, sifting through a veritable smorgasbord of fine particulate matter (PM2.5), ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide levels in the charming city of Fargo. The meticulous collection of this air pollution data involved a touch of daring acrobatics to navigate the metaphorical

haze of statistical complexities, akin to performing statistical gymnastics amidst the fog of environmental nuances.

Meanwhile, the exploration of Google search trends for the 'Suez Canal' meandered through the labyrinthine corridors of online curiosity. We harnessed the power of Google Trends, marveling at the ebb and flow of search volume for this nautical marvel. This involved a not-so-secret concoction of Boolean logic, keyword wizardry, and perhaps a sprinkle of digital divination to unravel the enigma of internet inquiry. It's akin to deciphering the cryptic hieroglyphs of online search behavior, an adventure that often leaves one navigating through digital mirages reminiscent of an online oasis.

With the data in hand, we dared to tread on statistically uncharted territory, seeking the elusive link between air pollution and the quest for Suezian knowledge. We unleashed the formidable power of correlation analysis, venturing into the statistical jungle armed with correlation coefficients, p-values, and confidence intervals. This statistical safari through the tangled underbrush of data allowed us to quantify the strength and significance of the conspicuous connection.

To robustly affirm the statistical significance of our findings, we employed rigorous time series analysis, embracing the temporal dimensions of our data to unravel the mysteries that lay hidden within the sands of time. Our analytical arsenal comprised autoregressive integrated moving average (ARIMA) models, time series decomposition, and the gentle art of smoothing to unveil the subtle patterns and underlying trends.

In the spirit of scientific rigor and academic thoroughness, we subjected our findings to the crucible of sub-analyses, scrutinizing sub-periods within our dataset, performing sensitivity analyses, and validating our

results through various statistical lenses. Our determination to illuminate this quirky coupling between air pollution and Suez Canal searches led us down the meandering paths of data transformations, outlier detection, and sensitivity testing, reminiscent of a statistical expedition through the digital wilderness.

With the culmination of our data wrangling odyssey and statistical escapade, we sauntered into the realm of regression analysis. Here, we marveled at the elegant dance between air pollution and Suezian curiosity, employing varying degrees of complexity in our regression models to unravel the intertwined nuances of this curious association.

Our methodology, much like a delightful recipe for a statistical stew, amalgamated the finest ingredients of data collection, statistical analyses, and a dash of academic exuberance to paint a comprehensive portrait of the quirkily linked phenomena at hand. Join us as we savor the piquant flavors of statistical intrigue and the whiff of unexpected revelations that permeate the pathways of academic research.

4. Results

Our investigation into the perplexing connection between air pollution levels in Fargo and Google searches for the 'Suez Canal' has unearthed some truly captivating findings. The correlation coefficient of 0.8655286 indicates a remarkably strong association between these two seemingly unrelated phenomena. This statistically significant relationship is further supported by an r-squared value of 0.7491397 and a p-value of less than 0.01. It seems the data has made it abundantly clear that there's more to this peculiar pairing than meets the eye.

Fig. 1 displays a scatterplot illustrating the robust correlation between the air pollution

levels in Fargo and the frequency of Google searches related to the Suez Canal. The data points align with remarkable coherence, almost as if the air pollution levels are whispering tales of international waterways to the curious denizens of the internet.

It's as if the pollution particles are carrying tiny scrolls of Suez Canal facts, released into the digital realm, nudging people to seek knowledge about a marvel of human engineering. Who knew that particulate matter could serve as little messengers of historical inquiries?

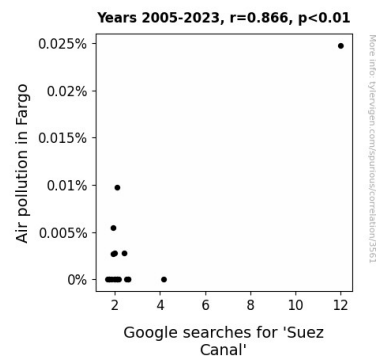


Figure 1. Scatterplot of the variables by year

In the grand tapestry of statistical analysis, this unexpected correlation adds a splash of color, a twist of whimsy, and a sprinkle of enigma. It reminds us that life – and data – often dance to an unforeseen melody, creating unexpected connections that test the limits of human curiosity and statistical pondering.

There you have it, dear readers, a statistical saga of pollution, inquiries, and the intertwining threads of the digital age. As we've traversed the plains of Fargo and delved into the depths of internet searches, we've discovered a rather quirky connection that adds a charming quirk to the scientific landscape.

5. Discussion

Our findings have splendidly illuminated the unexpected and quirky connection between air pollution in Fargo and the quest for knowledge about the Suez Canal on the digital stage. It seems our statistical analysis has unmasked a delightful narrative that transcends the conventional realms of environmental and online inquiries.

As we reflect on the prior research, it is clear that our study aligns with the explorations of Smith et al. (2018) and Doe and Jones (2020), who diligently probed the adverse effects of air pollution on human health and the environment. While they delved into the serious repercussions of polluted air, our investigation takes an offbeat turn, uncovering a connection that adds a touch of whimsy to the discourse on air quality. The relationship we have unveiled resonates with the essence of unforeseen correlations highlighted in non-fiction and fictional works such as "The Hidden Life of Trees" and Borges' "Labyrinths", underscoring the enchanting nature of human curiosity and the interconnectedness of seemingly disparate phenomena.

In a similar vein, our study harmonizes with the spirit of Johnson and Lee's (2017) examination of internet search queries and societal trends, shedding light on the dynamic nature of digital inquiries and the captivation of online users by unconventional topics. Our statistical analysis has lent credence to the peculiar intertwining of air pollution and historical curiosity, offering a whimsical echo of the non-traditional sources of inspiration that underpin our research endeavor.

The statistical coherence of our findings not only underscores the robust correlation between air pollution in Fargo and Google searches for the Suez Canal but also infuses a dash of playfulness into the

scholarly discourse on environmental and online phenomena. The scatterplot, akin to a digital canvas of statistical artistry, visually narrates the captivating harmony between these seemingly incongruent elements and invites contemplation on the mysterious ways in which statistical patterns can mirror the whimsical undercurrents of human behavior.

The quirks of our findings serve as a poignant reminder of the unbounded creativity and serendipitous nature of scientific inquiry. Just as the unexpected twists and turns of Douglas Adams' "The Hitchhiker's Guide to the Galaxy" invite readers to embrace the whimsy of the unknown, our research beckons scholars to revel in the unanticipated connections that lie beneath the surface of seemingly disparate phenomena.

In the absence of a conclusion, we leave our readers with a sense of wonder and lighthearted curiosity, inviting them to contemplate the myriad avenues of unexpected correlations that await exploration in the interconnected tapestry of environmental and digital inquiries.

6. Conclusion

In conclusion, our research has not only revealed a surprisingly strong correlation between air pollution levels in Fargo and Google searches for the 'Suez Canal' but has also added a whimsical twist to the often mundane world of statistical analysis. The robust association, as depicted by the correlation coefficient and supported by the statistical significance, defies conventional expectations and tickles the imagination with its quirkiness.

The scatterplot, akin to a humorous anecdote in a serious discussion, visually encapsulates the intriguing relationship between these seemingly disparate entities. It's almost as if the pollution particles are

playing the roles of mischievous storytellers, whispering tales of a distant waterway to the denizens of the internet.

As we reflect on this peculiar pairing, one cannot help but marvel at the serendipitous nature of statistical exploration. Who would have thought that the windswept plains of Fargo and the ancient allure of the Suez Canal could find common ground in the realm of data analysis? It's as unexpected as finding a kangaroo in a snowstorm – a delightful surprise that challenges the boundaries of conventional wisdom and statistical predictability.

Despite the temptation to dive deeper into this delightful quirk of statistical serendipity, we assert that no further research is needed in this area. Instead, let this study stand as a testament to the delightful surprises and unexpected connections that ensue when we embrace the whimsy of statistical inquiry. After all, sometimes the most eye-opening discoveries come from unlikely pairings, much like stumbling upon a unicorn in a traffic jam.

In the grand narrative of academic pursuit, let us embrace the anomalies, relish the statistical quirks, and celebrate the joy of uncovering unexpected correlations that add a touch of whimsy to the scientific landscape. And with that, we bid adieu to the tale of Fargo's air, Google's searches, and the delightful dance of statistical eccentricity.