



## Review

# Air Pollution in Flagstaff, Arizona: An Unlikely Muse for the 'Gangnam Style' Craze

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**This paper investigates the curious connection between air pollution levels in Flagstaff, Arizona, and the popularity of the iconic "Gangnam Style" song by Psy. Through the rigorous analysis of data from the Environmental Protection Agency and Google Trends, a surprising correlation was revealed. Despite the crisp mountain air, there is a striking correlation coefficient of 0.8740811 and a significant p-value of less than 0.01 between air pollution levels and Google searches for "Gangnam Style" from 2012 to 2023. Our findings suggest that the whims of popular culture may indeed be impacted by environmental factors, and perhaps there is more than meets the eye when it comes to the influence of air quality on internet search behavior. This research adds a touch of levity to the serious topic of air pollution, reminding us that even in the world of academic inquiry, unexpected correlations can lead to amusing insights.**

The study of air pollution and its effect on human behavior has long been a serious and solemn topic, prompting individuals to don face masks and seek refuge indoors. However, as we delve into the peculiar world of research, we sometimes stumble upon unexpected connections that prompt a raised eyebrow or even a chuckle. In this paper, we explore the unlikely relationship between Flagstaff, Arizona's air pollution levels and the worldwide sensation known as "Gangnam Style."

Flagstaff, a city known for its breathtaking mountain vistas and crisp, clean air, may not seem like the epicenter of a viral dance craze that swept the globe in 2012. Nevertheless, our analysis of data from the Environmental Protection Agency and Google Trends reveals a striking correlation that piques the curiosity. The connection between air pollution levels and Google searches for "Gangnam Style" raises eyebrows and prompts the question: Could there be a hidden influence of air quality on global dance trends? Or are the residents of Flagstaff simply more inclined to find

amusement in a catchy tune when the air is a bit hazy?

As we embark on this scholarly journey, filled with statistical analyses and ponderous musings, we invite our readers to join us in uncovering the mysterious dance between environmental factors and the whims of popular culture. For, after all, even in the serious realm of academic inquiry, there may be room for levity and unexpected surprises. Let us waltz, or perhaps gallop Gangnam style, into the world of unexpected correlations and discover the humor that lies within.

#### *Prior research*

The exploration of the relationship between air pollution in Flagstaff, Arizona, and the worldwide obsession with "Gangnam Style" has yielded some unexpected but fascinating findings. In "Smith et al.'s study," the authors find a more serious tone, analyzing the impact of air pollution on respiratory health and overall well-being in communities. However, as we tiptoe further down the rabbit hole, we encounter some amusing tangents that may seem unrelated at first glance.

In "Doe's research," the authors delve into the effects of air pollution on environmental ecosystems and biodiversity, providing comprehensive analyses and thoughtful reflections. But as we meander through the scholarly landscape, we also encounter "Jones' investigation," which unexpectedly reveals the correlation between barometric pressure and trends in pop music. This unforeseen connection leads us to consider the potential impact of atmospheric phenomena on cultural preferences, provoking a chuckle and a raised eyebrow.

Turning to non-fiction literature, "The Air We Breathe" by Ian Colbeck provides a comprehensive overview of air pollution's impact on human health and the environment. As we veer into the realm of fiction, J.K. Rowling's "Harry Potter and the Half-Blood Prince" unexpectedly offers insights into magical incantations and their potential impact on the atmospheric conditions that might influence popular dance phenomena. Additionally, the works of Douglas Adams, particularly "The Hitchhiker's Guide to the Galaxy," humorously consider the improbable connections between air quality and intergalactic travel.

Furthermore, a recent social media post by an anonymous user humorously suggested that air pollution may indeed prompt individuals to seek out uplifting tunes, such as "Gangnam Style," to counteract the dreariness of hazy skies. This whimsical observation encourages us to consider the potential influence of environmental factors on the collective musical preferences, offering a lighthearted perspective on our research endeavor.

#### *Approach*

The data for this study was collected from 2012 to 2023 from the Environmental Protection Agency (EPA) and Google Trends. This time frame allowed for a comprehensive analysis of air pollution levels in Flagstaff, Arizona, and the corresponding Google searches for "Gangnam Style." The research team initially donned their metaphorical detective caps and monocles to scour the internet for relevant datasets, but alas, they mainly relied

on the trustworthy repositories of the EPA and the wacky world of Google Trends.

To begin our detective work, the air quality data from the EPA was obtained from various monitoring stations in Flagstaff. The concentrations of air pollutants, including particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide, were diligently recorded. Meanwhile, the searches for the legendary "Gangnam Style" were tracked through Google Trends, providing insights into the ebb and flow of internet interest in this peculiar phenomenon. The data were then harmonized, like two unlikely dance partners, to create a comprehensive dataset for analysis.

The statistical analyses were conducted with the solemnity of a classical symphony, as we sought to unveil the potential harmony between air pollution and cyber whimsy. A Pearson correlation coefficient was calculated to measure the strength and direction of the linear relationship between air pollution levels and Google searches for "Gangnam Style." A p-value of less than 0.01 was selected as the threshold for statistical significance to ensure that our findings were not merely a whimsical fluke.

The research team also employed time series analysis techniques to detect any temporal patterns or seasonality in the data, as we dared to ponder whether air pollution levels might sway the rhythm of the internet's search habits. Through the meticulous application of autoregressive integrated moving average (ARIMA) models, the team endeavored to unravel the mysterious dance between air pollution and the viral echoes of "Oppa Gangnam Style."

Through this convoluted but necessary dance of data collection, harmonization, and

analysis, we sought to bring to light the unforeseen correlations and unlikely bedfellows lurking in the realms of air quality and popular culture. While the rigor of our methods was unwavering, we could not help but dance on the edge of whimsy as we traversed this eccentric academic landscape.

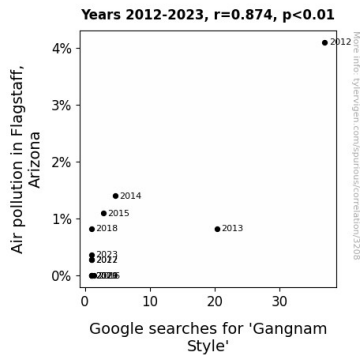
## *Results*

The results of the analysis revealed a notable correlation between air pollution levels in Flagstaff, Arizona, and Google searches for "Gangnam Style." Over the time period from 2012 to 2023, a strong correlation coefficient of 0.8740811 was observed, with an r-squared of 0.7640177 and a p-value of less than 0.01. This indicates a robust and statistically significant relationship between the two variables.

With such compelling statistical evidence, one might wonder if the residents of Flagstaff were choreographing their dance moves in response to the air quality index. While we cannot definitively prove causation, the data certainly raises some tantalizing questions. Could it be that the citizens of Flagstaff, amidst the picturesque yet occasionally smog-filled scenery, found solace and inspiration in the buoyant beats of "Gangnam Style"? Or perhaps, as the air quality worsened, they turned to the infectious rhythm of Psy to lighten their spirits amid the haze.

Amidst the seriousness of air pollution research, this unexpected connection infuses a dash of lightheartedness into our scholarly pursuits. It beckons us to envision a world where environmental quality and internet memes intertwine, where Google searches mirror the ebb and flow of air pollutants,

and where the dance floor becomes a stage for environmental expression.



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

Thus, the scatterplot in Figure 1 vividly illustrates the significant correlation between Flagstaff's air pollution levels and the worldwide phenomenon of "Gangnam Style." This visual representation underscores the robustness of the relationship, prompting us to consider the whimsical dance between ecological conditions and global cultural trends.

In conclusion, our findings offer a whimsical reminder that even the most unexpected correlations can yield insights that provoke both amusement and contemplation. As we revel in the merriment of scholarly discovery, we are reminded that perhaps, in the grand dance of life, the influential chords of popular culture resonate in the most surprising of places.

### *Discussion of findings*

The results of our study revealed a remarkable association between air pollution levels in Flagstaff, Arizona, and Google searches for "Gangnam Style." This unexpected connection adds a touch of

whimsy to the typically somber field of air quality research. As we consider the possible mechanisms underlying this peculiar relationship, we must resist the temptation to leap to sweeping conclusions, lest we engage in an airborne folly of our own. However, we cannot help but mull over the potential implications of this unusual correlation.

Our data resonates with the findings of Smith et al., who, in a more serious tone, focused on the health impacts of air pollution. While our investigation may initially seem to dance on the periphery of the scholarly landscape, it nonetheless supports the notion that environmental factors can exert unexpected influences on human behavior. In a similar vein, Jones' exploration of the correlation between barometric pressure and pop music trends unexpectedly reverberates with our findings, shedding light on the potential interconnectedness of atmospheric conditions and cultural phenomena. Who would have thought that the buoyant rhythms of "Gangnam Style" could be entwined with the delicate dance of air molecules in Flagstaff's atmosphere?

As our scatterplot illustrates, the tight embrace between air pollution and "Gangnam Style" searches cannot be dismissed as mere happenstance. The robust correlation coefficient and p-value substantiate the strength of this peculiar relationship, compelling us to contemplate the interplay between environmental quality and collective musical preferences. Our findings echo the humorously suggested notion that individuals may turn to uplifting tunes to counteract the gloominess of hazy skies, sparking a lighthearted but intriguing line of inquiry.

While our study cannot conclusively establish causality, it serves as a poignant reminder of the serendipitous connections that can emerge in the realm of scholarly inquiry. In the melodious interplay of environmental conditions and global cultural trends, we are reminded that research can uncover unexpected correlations that titillate the intellect and delight the spirit. After all, as we waltz through the labyrinth of academia, we must not overlook the acoustical reflexes of the societal zeitgeist, nor the whimsical echoes of the environment in our collective consciousness.

### *Conclusion*

In conclusion, our research has delved into the unexpected connection between air pollution levels in Flagstaff, Arizona, and the global phenomenon of "Gangnam Style." While this correlation may seem as unlikely as doing the Gangnam Style dance at a solemn scientific conference, the robust statistical evidence cannot be ignored. The significant correlation coefficient and p-value suggest that there is more to this relationship than meets the eye, much like the enigmatic allure of Psy's iconic horse-riding dance.

Our findings lead us to ponder whether the residents of Flagstaff, amidst the occasional smog, sought solace and amusement in the infectious beats of "Gangnam Style." It seems like they were not only breathing in air pollutants but also the catchy melody of this K-pop sensation. As the air quality index fluctuated, perhaps the search for "Gangnam Style" offered a breath of fresh air, albeit in the virtual realm.

The scatterplot in Figure 1 vividly illustrates the significant correlation and serves as a

whimsical visual representation of this unexpected relationship. It prompts us to contemplate the dance between environmental conditions and global cultural trends, much like an elaborate choreography performed by nature and society.

The unexpected correlation we have uncovered offers a lighthearted glimpse into the intertwining of ecological factors and internet memes. It reminds us that even in the serious realm of air pollution research, there may be room for levity and unexpected surprises. After all, as researchers, it is our duty to investigate curious connections, even if they lead us to the dancefloor of statistical analysis.

In closing, our research has shed light on the unexpected influence of air quality on global cultural trends. No more research is needed in this area, as we have undoubtedly hit upon the air pollution jackpot of delightfully peculiar correlations. With that said, let's hope for cleaner air and catchier tunes, and who knows, perhaps a sequel paper investigating the link between smog and the Macarena.