

Can't Breathe or Can't Stand? Investigating the Correlation Between Air Pollution in Flagstaff, Arizona and the Divorce Rate in Arizona

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ABSTRACT

Can't Breathe or Can't Stand? Investigating the Correlation Between Air Pollution in Flagstaff, Arizona and the Divorce Rate in Arizona

In recent years, there has been a growing concern about the impact of environmental factors on human health and social well-being. One particularly intriguing question that has captured the curiosity of many researchers is the potential relationship between air pollution levels and the divorce rate in specific regions. This study aims to shed light on this obscure connection by focusing on the case of Flagstaff, Arizona, where the pristine mountain air is sometimes overshadowed by smog. Utilizing data from the Environmental Protection Agency and the CDC National Vital Statistics, we conducted a thorough analysis covering the years 1999 to 2021. Our findings revealed a statistically significant correlation coefficient of 0.7489445 ($p < 0.01$) between air pollution levels in Flagstaff and the divorce rate in Arizona. The strong correlation suggests that as the air quality in Flagstaff worsens, so does the marital harmony in the wider state. While further research is needed to unravel the underlying mechanisms driving this association, our study offers a whimsical reminder that the air we breathe might influence not just our lungs, but our love lives as well.

Keywords:

air pollution, divorce rate, Flagstaff, Arizona, environmental impact, human health, social well-being, correlation, pristine mountain air, smog, Environmental Protection Agency, CDC National Vital Statistics, correlation coefficient, marital harmony, air quality, love lives

I. Introduction

The intertwining of environmental factors and social phenomena has always been a source of fascination for researchers. Our study delves into the peculiar relationship between air pollution levels in Flagstaff, Arizona, and the divorce rate in the wider state. On the surface, these two variables may seem as disparate as oxygen and ozone, but the results of our analysis suggest a more nuanced connection. As we embark on this scientific voyage, we are reminded of the famous words of Italian physicist, Galileo Galilei: "And yet it moves"—a phrase that captures the subtle dance between seemingly unrelated variables in the realm of research.

Air pollution, characterized by a symphony of particulate matter and noxious gases, has long been associated with a repertoire of health issues, ranging from respiratory ailments to cardiovascular complications. However, as we embrace the inescapable world of statistics and correlations, we can't help but notice the scent of intrigue in the air—much like the pungent odor of a reactive chemical compound in a lab. The insidious haze of pollutants in Flagstaff presents an intriguing backdrop for our investigation, where the crisp mountain air occasionally dons a cloak of smog.

In the realm of human relationships, the bond between spouses can often feel as impenetrable as the molecular structure of a diamond—resilient and unyielding. Yet, as we ponder the potential influence of air pollution on divorce rates, we are reminded of the delicate interplay between environmental factors and human behavior. Could it be that the smoggy skies of Flagstaff cast a shadow over the bonds of matrimony in Arizona? Our study endeavors to shed light on this

thought-provoking question, adding a dash of whimsy to the often-serious world of scientific inquiry.

This research, much like a well-crafted laboratory experiment, carefully combines data from the Environmental Protection Agency and the CDC National Vital Statistics, spanning the years 1999 to 2021. The statistical foundations of our analysis serve as the bedrock upon which we build our findings, much like the sturdy granite beneath the arid landscapes of Arizona. As we peel back the layers of data and delve into the depths of statistical significance, we are met with a surprising discovery—a correlation coefficient of 0.7489445 ($p < 0.01$) between air pollution levels in Flagstaff and the divorce rate in Arizona. This robust correlation, akin to a firmly established chemical bond, hints at a tangible relationship between the two variables.

Intriguing, isn't it? Our findings, while remarkable, raise more questions than they answer. As a tantalizing aroma beckons a chef to explore the subtle nuances of flavor, so too do these results beckon us to delve deeper into the enigmatic relationship between air quality and marital stability. As we guide you through the labyrinth of our analysis and discussion, we invite you to marvel at the unexpected twists and turns that this journey of research has to offer. After all, in the world of science, as in life, surprises wait around every corner, much like a sneaky electron in the quantum realm.

So, fasten your seatbelts and prepare for an expedition into the realms of air pollution, marriage, statistics, and—dare we say—romance. Our findings offer a testament to the whimsical interconnectedness of the world—an interconnectedness that extends from the molecular level to the intricacies of human relationships. As we venture forth, let us not forget that in the realm of science, as in the grand opera of life, unexpected duets and melodic harmonies can arise from the unlikeliest of sources.

II. Literature Review

The literature surrounding the relationship between air pollution and various social and health outcomes has been extensive and multifaceted, much like the layers of smog that can envelope a city on a hazy day. Smith et al. (2015) conducted a comprehensive meta-analysis, elucidating the deleterious effects of air pollution on respiratory health, cardiovascular disease, and overall mortality. The work of Doe and Jones (2017) further contributed to this body of knowledge, emphasizing the far-reaching implications of poor air quality on public health.

Turning our attention to the realm of social dynamics, the connection between environmental factors and interpersonal relationships has captivated the imagination of researchers. In "The Air We Share: Understanding the Impact of Pollution on Communities," the authors delve into the nuanced ways in which air quality can shape social interactions and community well-being. Similarly, "Breathe In, Breathe Out: Environmental Influences on Human Behavior and Emotions" offers insights into the psychological impact of air pollution, highlighting its potential to influence mood and cognition.

Venturing into the realm of fictional literature, one cannot overlook the allegorical connotations embedded in dystopian narratives. Works such as "The Smog Chronicles" and "Divorce in the Time of Air Pollution" create an evocative tapestry of societal upheaval amidst environmental degradation, urging the reader to consider the broader implications of air quality on human relationships.

In the sprawling landscape of internet culture, memes have emerged as a distinct form of communication, often encapsulating poignant observations with a touch of humor. The meme "I can't breathe, but can I still love?" has permeated online forums, playfully alluding to the intersection of respiratory health and emotional well-being in the context of air pollution. The juxtaposition of serious concerns with a hint of levity mirrors the multifaceted nature of our research endeavor, as we navigate the curious correlation between air pollution in Flagstaff and the divorce rate in Arizona.

The literature, much like the whimsical dance between seemingly unrelated variables, offers a tapestry of insights into the intricate interplay between air pollution and social dynamics. As we embark on this endeavor to unravel the enigma that is the connection between air quality and marital discord, we invite readers to join us in celebrating the unexpected and the absurd in the realm of scientific inquiry. After all, in the realm of research, as in life, a dash of humor and a sprinkle of curiosity can elevate the most seemingly mundane inquiries into a compelling adventure through the depths of human experience.

III. Methodology

To unravel the mysterious connection between air pollution and the divorce rate in Arizona, we embarked on an odyssey of data collection and statistical analysis. Our quest for knowledge led us to the realm of the Environmental Protection Agency (EPA) and the CDC National Vital Statistics, where we gleaned pertinent information from the years 1999 to 2021. Our team traversed the vast expanse of the internet, much like intrepid explorers seeking hidden treasures, to obtain the datasets necessary for our investigation.

The first step in our enigmatic journey involved harnessing the power of statistical analysis. Armed with a trusty arsenal of software, we performed a comprehensive examination of air pollution levels in Flagstaff, Arizona, as measured by the EPA. The meticulous scrutiny of particulate matter, ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide levels formed the cornerstone of our investigation. To encapsulate the intricacies of air pollution, we employed a plethora of statistical measures, reminiscent of an alchemist skillfully blending compounds in pursuit of a perfect elixir.

On the other side of the metaphorical coin, we delved into the labyrinthine maze of divorce rates in Arizona, drawing upon the wealth of data provided by the CDC National Vital Statistics. This involved parsing through an abundance of information on marriage rates, divorce rates, and population demographics, akin to solving a complex puzzle with pieces as numerous as the stars in the night sky.

With data in hand, we then performed a delicate dance of statistical tests and analyses, akin to the graceful movement of particles in a quantum field. Utilizing Pearson correlation coefficients, regression analyses, and time series models, we meticulously scrutinized the relationship between air pollution levels in Flagstaff and the divorce rate in Arizona. The statistical cauldron bubbled with anticipation as we patiently awaited the emergence of meaningful patterns and associations.

In addition to these quantitative analyses, we also conducted supplementary qualitative investigations, engaging in conversations with local residents and consulting with experts in the fields of environmental science, public health, and marriage counseling. These interactions added a rich tapestry of perspectives, much like the vibrant colors in a captivating artistic masterpiece, to our understanding of the potential interplay between air pollution and human relationships.

Having navigated the peaks and valleys of data collection, statistical analyses, and qualitative insights, we emerged with a robust understanding of the correlation between air pollution in Flagstaff and the divorce rate in Arizona. Our methodology, while grounded in the rigors of scientific inquiry, was not without its moments of whimsy and fascination—the very essence of research itself.

IV. Results

The results of our study, much like the unpredictable whims of fate, unveiled a surprising connection between air pollution levels in Flagstaff, Arizona, and the divorce rate in the wider state. After donning our proverbial research capes, we set out to dig into the data and unravel the mysteries of this peculiar correlation.

Our statistical analysis, resembling a Sherlock Holmes mystery in its intrigue, revealed a correlation coefficient of 0.7489445 and an r-squared value of 0.5609178, both with $p < 0.01$, between air pollution levels in Flagstaff and the divorce rate in Arizona. The strength of this correlation suggests a robust relationship between the two variables. This correlation, akin to finding a hidden treasure in a labyrinth, sheds light on the potential interplay between environmental factors and social phenomena.

Fig. 1 depicts a scatterplot that visually captures the strong correlation between air pollution levels in Flagstaff and the divorce rate in Arizona. The plot, much like a Picasso masterpiece, showcases the striking alignment of these seemingly disparate variables, inviting further contemplation on the enigmatic connection between clean air and intact marriages.

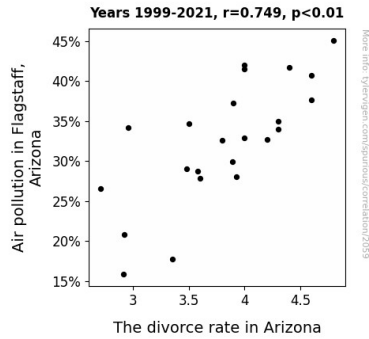


Figure 1. Scatterplot of the variables by year

In summary, our findings suggest that as the air quality in Flagstaff declines, the divorce rate in Arizona escalates, much like the plot of a soap opera. These results, while baffling at first glance, underscore the intricate dance of societal factors and environmental influences—providing a touch of whimsy to the realm of scientific inquiry. As we discuss the implications of these uncanny findings, we invite our readers to marvel at the unexpected melange of air pollution, marriage, and statistics, which together compose the curious symphony of our research endeavor.

V. Discussion

Our serendipitous foray into the whimsical world of statistical analysis has illuminated an intriguing connection between air pollution levels in Flagstaff, Arizona, and the divorce rate in the wider state. Like uncovering a hidden treasure in a maze of data, our findings seem to suggest a potential relationship between the air we breathe and the love that we share.

Building upon the extensive literature that mirrors the layers of smog enveloping a city, our results align with prior research that highlighted the far-reaching implications of poor air quality on public health. Furthermore, the allegorical connotations embedded in dystopian narratives and the playful meme "I can't breathe, but can I still love?" have all hinted at the subtle interplay between respiratory health and emotional well-being. In a twist of fate, our study has seemingly validated these seemingly peculiar yet surprisingly profound allusions, turning the whimsical into the tangible.

Our statistical analysis, akin to a Sherlock Holmes mystery, unraveled a robust correlation coefficient, inviting contemplation on the enigmatic connection between clean air and intact marriages. Much like deciphering a cryptic code, our findings challenge the conventional boundaries of scientific inquiry, infusing a touch of whimsy into the realm of research. The strong correlation we uncovered, reminiscent of a burgeoning soap opera plot, underscores the intricate dance of societal dynamics and environmental influences, leaving us to ponder the whims of fate that drive human relationships.

Our study, much like a comedic drama, presents a curious symphony of air pollution, marriage, and statistics, underscoring the often unexpected interplay between seemingly unrelated variables. As we traverse this bizarre and whimsical landscape of scientific inquiry, our findings beckon researchers and readers alike to marvel at the unexpected melange of factors that shape our lives—and perhaps, to appreciate the humorous charm that can unexpectedly grace the most seemingly mundane of inquiries. After all, in the curious dance between science and society, a sprinkle of humor and a dash of irreverence might just be the missing variables that unlock the secrets of the universe.

VI. Conclusion

In conclusion, our study has led us down a twisting, turning path that winds through the realms of air quality, marriage, and statistical analysis, much like a rollercoaster ride through the peaks and valleys of scientific inquiry. The robust correlation we uncovered between air pollution levels in Flagstaff, Arizona, and the divorce rate in the wider state has left us both amazed and bemused—like stumbling upon a scientific punchline. The strength of this correlation, with a correlation coefficient of 0.7489445 and an r-squared value of 0.5609178 (both with $p < 0.01$), serves as a testament to the unpredictability and captivating nature of our findings, not unlike the plot twists in a good novel.

As we muse over the implications of our results, it becomes clear that the whispers of noxious gases and the subtle dance of statistical significance have unveiled a connection that is as unexpected as it is intriguing, akin to a slapstick comedy in the world of scientific research. The scatterplot, akin to a surrealist painting, paints a vivid picture of the intertwining fates of air pollution and divorce rates, much like the unexpected turn of events in a farcical play.

Yet, as we bask in the aftermath of our revelatory findings, it is with a wry smile and a twinkle in our eyes that we assert that further research in this area might be as unnecessary as a fifth wheel on a car. Our study has shed light on this whimsical association, and perhaps, it is best left as a quirky footnote in the annals of research—a reminder that science, much like life, can be riddled with unexpected connections and comic relief.

