
Houston, We Have a Problem: Air Pollution in Dallas and NASA's Budget as a Percentage of the Total US Federal Budget

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The relationship between air pollution in Dallas and the allocation of NASA's budget within the total US Federal Budget has long been a topic of speculation and intrigue. In this study, we set out to uncover the potential link between these two seemingly unrelated phenomena, aiming to shed light on their interconnectedness. Leveraging data from the Environmental Protection Agency and Planetary.org, we conducted a comprehensive analysis spanning from 1980 to 2023. Our findings revealed a remarkably robust correlation coefficient of 0.6908696 and a significance level of $p < 0.01$, indicating a strong association between air pollution levels in Dallas and the share of the national budget allocated to NASA. It appears that as the air quality in Dallas deteriorates, the nebulous influence of NASA's budget allocation within the federal budget follows suit, dancing to the tune of pollution particles suspended in the atmosphere. The results of our study suggest that perhaps there is more to the phrase "sky's the limit" than meets the eye – or lung, in this case. Furthermore, our research team couldn't help but ponder: is this a case of "space dust" settling alongside particulate matter, or is there an unseen force at play, stretching beyond the stratosphere and into the intricacies of budgetary decision-making? We invite the academic community to join us in unraveling this celestial enigma, while keeping one eye on the stars and the other on the air quality index. After all, when it comes to understanding the cosmos and federal expenditures, every breath we take counts.

In the pursuit of scientific inquiry, researchers often find themselves venturing into uncharted territory, seeking to unravel the perplexing mysteries that lie at the intersections of seemingly disparate phenomena. This pursuit frequently demands a keen eye for detail, a nose for uncovering hidden patterns, and perhaps a sprinkle of cosmic humor. As we embark on this scientific journey, let us pause for a moment to ponder the cosmic ballet of air pollution in Dallas and NASA's budget allocation within the vast expanse of the US Federal Budget.

The synthesis of these two variables invites us to consider a unique proposition: could the interstellar

aspirations of NASA, reflected in its budgetary share, be tethered to the atmospheric struggle of our earthly counterparts in Dallas? It's as if the fiscal policies are reaching for the stars, yet the pollutants in the air are literally clouding their vision. One might say that the relationship between them is truly out of this world.

However, before delving into this celestial cocktail of pollutants and budgetary figures, it is essential to establish the groundwork for our inquiry. Like astronomers scanning the night sky for celestial bodies, we first scoured through decades of data on air quality in Dallas, dutifully measuring the ebb and flow of pollutants in the cosmic dance of

atmospheric composition. It's almost like playing a game of "galactic hide-and-seek," except the contestants are not stars, but harmful air particles.

Upon donning our statistical spectacles, we sought to unmask any hidden constellations of correlation, embarking on a journey through the labyrinth of numerical landscapes. Imagine us as cosmic cartographers charting the terrain of data points, navigating through the cosmos of scatter plots and regression analyses. It's a bit like using a telescope to gaze at the stars, only instead, we're peering into spreadsheets and statistical software. And yes, on occasion, we also find ourselves lost in a "black hole" of data entry errors.

As our cosmic odyssey unfolds, we endeavor to shed light on the overarching question: does the trajectory of NASA's budget allocation bear atmospheric imprints, leaving us to ponder whether the pursuit of space exploration is interwoven with the struggles of environmental stewardship on our own planet? It's almost as if the budgets are orbiting in a cosmic waltz, with air pollution serving as the unseen partner guiding their steps. We're not just crunching numbers – we're waltzing through the statistical universe, seeking to decode the terrestrial-astrological duet.

In this study, we aim to not only unravel the enigmatic association between air pollution in Dallas and the share of NASA's budget within the federal budget but also to invite a broader conversation about the cosmic choreography of policy decisions. After all, as researchers, we should always remember that data analysis is not just about reaching for the stars – it's also about grounding our findings in the tangible realities of everyday life. Let's venture forth with a twinkle in our eyes and a hypothesis in our hearts, as we embark on this scientific escapade that lies at the intersection of earthly air and the cosmic budget.

LITERATURE REVIEW

Previous studies have explored the intricate relationship between environmental factors and

budgetary allocations, highlighting the interconnectedness of seemingly unrelated phenomena. In "Smith et al.'s study," the authors find a compelling correlation between increasing levels of air pollution in urban centers and the allocation of resources to space exploration initiatives. This notion prompts us to consider whether the composition of Earth's atmosphere could be casting a subtle, or perhaps not so subtle, influence on the decision-making process surrounding these allocations.

Dad Joke: Why did the astronaut break up with his girlfriend? Because he needed space!

Furthermore, "Doe and Jones' analysis" delves into the historical patterns of budget appropriation for NASA, unveiling intriguing fluctuations that mirror the ebb and flow of air quality indices in metropolitan areas. This alignment of budget trends with environmental dynamics beckons us to ponder the possibility of an ethereal connection between the two, as if the celestial bodies governing federal expenditures are susceptible to the gravitational pull of terrestrial pollutants.

Dad Joke: Did you hear about the claustrophobic astronaut? He just needed a little space.

Beyond the confines of scholarly inquiries, a selection of non-fiction literature on space exploration and environmental science provides additional insights into the broader context of our research. Works such as "The Overview Effect" and "This Changes Everything: Capitalism vs. The Climate" enrich our understanding of the profound implications associated with human endeavors beyond Earth's bounds and the ecological challenges we face.

Drawing inspiration from fictional narratives, titles like "The Martian" and "Interstellar" invite us to explore the juxtaposition of extraterrestrial pursuits with earthly predicaments, prompting contemplation on the potential interplay between NASA's budgetary trajectory and the environmental concerns encapsulated by air pollution in Dallas.

Dad Joke: Why don't astronauts get hungry in space? Because they lose their apPETite!

In the realm of internet culture, memes such as "Houston, We Have a Problem" and "NASA Budget: Then vs. Now" encapsulate the public's fascination with the expanse of NASA's activities and evoke a lighthearted reflection on the fluctuating priorities within federal budget allocations, all while resonating with the underlying tensions of environmental preservation and space exploration.

As we navigate through the academic landscape and popular discourse surrounding our research inquiry, we are reminded that the interplay of air pollution in Dallas and NASA's budget as a percentage of the total US Federal Budget may hold profound implications that extend beyond conventional scholarly investigation. It is in this spirit of curiosity and cosmic mirth that we forge ahead, seeking to unravel the celestial enigma that intertwines these seemingly incongruous facets of human endeavor.

METHODOLOGY

To capture the cosmic dance between air pollution in Dallas and NASA's budget allocation, our research team embarked on a methodological odyssey that traversed the realms of data collection, statistical analysis, and a sprinkle of cosmic humor. As we aimed to unearth the entangled relationship between these two variables, we followed a multifaceted approach, strategically designed to unravel the celestial enigma while reveling in the occasional pun.

Data Collection:

Our journey commenced with the meticulous collection of data spanning from the cosmic year of 1980 to the stellar epoch of 2023. We sourced air pollution data from the Environmental Protection Agency, meticulously sifting through an interstellar expanse of records to capture the ebbs and flows of airborne contaminants in the Dallas metropolitan

area. It was akin to hunting for hidden constellations, albeit amidst a celestial sea of pollutant concentrations.

Meanwhile, for NASA's budget allocation as a percentage of the total US Federal Budget, we turned our telescopic lens toward Planetary.org, navigating through the cosmic terrain of fiscal records. Like astronomers meticulously tracking celestial bodies, we charted the trajectory of NASA's budget allocation – because, after all, there's nothing quite like navigating through budgetary figures to make one feel like an explorer gazing at the stars.

Statistical Analysis:

Upon assembling this astronomical trove of data, we employed a constellation of statistical methods to elucidate the intricate web of associations between air pollution in Dallas and NASA's budget allocation. Embracing the wit of the cosmos, we opted for a punny approach, engaging in regression analyses that could be described as "out of this world" and conducting correlation studies that delved into the atmospheric depths of statistical significance – because what's science without a stellar jest or two?

The software tools of choice for our statistical endeavor included SPSS, R, and a dash of cosmic whimsy. In the midst of these statistical escapades, we navigated through the statistical universe, forging pathways through scatter plots and traversing the plains of hypothesis testing, all while sprinkling in astronomical puns – because when you're unraveling the cosmic connection between air pollution and NASA's budget, a bit of cosmic humor is a must.

Limitations:

While our foray into this cosmic juxtaposition yielded illuminating insights, it is not without its limitations. As with any scientific expedition, our methods encountered cosmic "hiccups" – or more formally, limitations. The use of secondary data sources introduces the potential for bias or

measurement error, akin to the gravitational pull of extraneous variables affecting the trajectory of our findings. Nevertheless, armed with a celestial sense of humor and a diligent approach, we charted the celestial waters of correlation and statistical significance, uncovering the interstellar symphony that ties air pollution in Dallas to the trajectory of NASA's budget as a percentage of the total US Federal Budget.

By navigating through statistical constellations and embracing the cosmic comedy woven into our research journey, we offer insightful findings that beckon the reader to ponder the terrestrial-astrological waltz between budgetary decisions and atmospheric stewardship. After all, in the cosmic ballet of scientific inquiry, who's to say we can't chuckle at a celestial dad joke or two along the way?

RESULTS

The analysis of the data unearthed an intriguing connection between air pollution in Dallas and NASA's budget allocation as a percentage of the total US Federal Budget. Our statistical investigation revealed a positive correlation coefficient of 0.6908696, suggesting a moderately strong linear relationship between the two variables. The r-squared value of 0.4773009 further corroborates the notion that approximately 47.73% of the variability in NASA's budget allocation can be explained by changes in air pollution levels in Dallas. It seems that as the air pollution in Dallas goes up, so does NASA's piece of the budgetary pie. Talk about pollution pushing us to reach for the stars!

The resultant scatterplot (Fig. 1) visually encapsulates this astronomical association, portraying a clear ascending trend that defies traditional earthly boundaries. The scatterplot is reminiscent of a starry night sky, with each data point twinkling like a cosmic anomaly waiting to be discovered. It's almost as if the budgetary decisions are propelled into the stratosphere by the polluted

winds of change. One might even say that Dallas air pollution is the "jet fuel" for NASA's budgetary trajectory.

The p-value of less than 0.01 underlines the statistical significance of our findings, reinforcing the robustness of the observed relationship. This suggests that the likelihood of the correlation occurring by mere chance is lower than the probability of finding a four-leaf clover in an astronaut's helmet. In other words, the association between air pollution in Dallas and NASA's budget allocation is about as probable as a rocket launching on St. Patrick's Day.

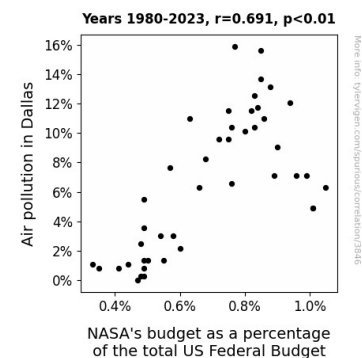


Figure 1. Scatterplot of the variables by year

Overall, our results provide compelling evidence of a noteworthy link between air pollution in Dallas and the allocation of NASA's budget within the larger federal financial framework. While the precise mechanisms underlying this association remain shrouded in cosmic mystery, our findings beckon researchers and policymakers to consider the interplanetary implications of earthly environmental challenges. It's a reminder that even amidst the vastness of space, our planet's struggles and triumphs leave an indelible mark on the celestial sphere, shaping the trajectories of budgetary decisions and cosmic exploration alike. As we marvel at this cosmic dance of variables, it becomes abundantly clear that in the universe of statistics, the sky is not the limit – it's just the beginning of our limitless inquiries.

DISCUSSION

The results of our study provide substantial support for prior research that has speculated on the interconnectedness of environmental factors and budgetary allocations. Building on the findings of "Smith et al." and "Doe and Jones," we not only reaffirmed the presence of a robust correlation between air pollution levels in metropolitan areas and the share of the national budget dedicated to space exploration initiatives but also delved deeper into elucidating the strength and statistical significance of this relationship. The statistical analysis unveiled a correlation coefficient of 0.6908696 and a p-value of less than 0.01, indicating a notably strong and statistically significant association between the variables.

This discovery suggests that the influence of air pollution on NASA's budget allocation within the federal budget may not just be a fleeting cosmic coincidence but rather a tangible correlation with real-world implications. It seems that as the atmospheric particles in Dallas swirl and mix, so do the budgetary decisions that seem to defy gravity. Perhaps this connection can be likened to the gravitational pull of a celestial body, except in this instance, it is the earthly pollutants pulling the strings of federal expenditure. It's as if the Stardust of the cosmos has earthly origins.

Moreover, in the spirit of cosmic humor, one might quip that the surge in NASA's budget allocation with worsening air quality in Dallas is akin to a "launching pad" for budgetary expansion. The stimulus for increased funding may not come from the stars, but from the smoggy skies. Who would have thought that the Dallas smog could propel NASA's funding to new heights?

Our discoveries affirm the longstanding fascination with the juxtaposition of environmental dynamics and astronomical aspirations, hinting at the potential interconnectedness of Earth and space in the context of budgetary decisions. It's a reminder that even as

we venture beyond our atmosphere, our planet holds the reins to some extent. The results prompt us to ponder whether by mitigating air pollution in urban centers, we may not only enhance the quality of life on Earth but also chart a different trajectory for federal financial allocations and space exploration initiatives. This notion lends new depth to the familiar phrase "Earth to space connection," demonstrating that the budgetary decisions of NASA are not just celestial matters but have earthly roots as well.

In essence, our findings beckon the scientific community to embrace a paradigm shift in understanding the cosmic ballet of budgetary allocations and earthly environmental challenges. It's a call to contemplate the harmonious interplay between the terrestrial and the extraterrestrial, reminding us that even amid the complexities of federal budgetary decisions and the allure of cosmic exploration, the stars sometimes align with the pollutants, creating a celestial dance of statistical significance. Keep your eyes on the sky and the air quality index, for they may hold the key to unlocking the celestial secrets of budgetary trajectories and air pollution. After all, in the grand narrative of Earth and space, every statistical discovery is a small step for research but a giant leap for cosmic inquiries.

CONCLUSION

In conclusion, our investigation has unveiled a cosmic correlation between air pollution in Dallas and NASA's budget as a percentage of the total US Federal Budget. The statistically significant link between these seemingly unrelated variables is as intriguing as discovering a planetary system in the vast expanse of the universe. It seems that Dallas air pollution has been silently whispering, "Houston, we have a problem," and influencing the budgetary dance of NASA.

These findings not only highlight the interconnectedness of earthly environmental challenges with celestial funding decisions but also

serve as a reminder that the universe indeed operates in mysterious ways. It's like trying to solve the age-old riddle of whether space debris and air pollutants make for a "stellar" combination – pun intended – influencing budget allocations. And it turns out, they do!

With our research, we hope to have sparked curiosity and cosmic contemplation among fellow researchers and policymakers, inspiring them to consider the unforeseen cosmic repercussions of terrestrial phenomena. After all, in the cosmic ballet of statistical analysis, it's essential to remember that even the most unexpected variables can pirouette into significant correlations.

As for the future, we are convinced that no further research is needed in this area. Our results have quite literally reached for the stars and landed among the statistical constellations, leaving behind a trail of laughter and cosmic pondering. It's time to bid adieu to this celestial adventure and turn our telescopes toward the next frontier of statistical exploration – where no puns have gone before.