



ELSEVIER



The Statisticians Paradox: Examining the Statistical Relationship Between Numbers of Statisticians in New Mexico and Google Searches for 'Do Vaccines Work'

Colton Hernandez, Addison Taylor, Gavin P Truman

Institute of Innovation and Technology; Evanston, Illinois

KEYWORDS

statistician, New Mexico, Google searches, vaccines, correlation, Bureau of Labor Statistics, Google Trends, public health, curiosity, public queries

Abstract

In this study, we present the findings of a whimsical investigation into the correlation between the number of statisticians residing in the enchanting state of New Mexico and the frequency of Google searches for the inquiry 'do vaccines work'. By employing data from the Bureau of Labor Statistics and Google Trends, we embarked on a journey to explore whether the statistical prowess of New Mexico's residents has any influence on the public's curiosity about the efficacy of vaccines. Utilizing a correlation coefficient of 0.8900129 and a significance level of $p < 0.01$, our results reveal a surprisingly strong positive relationship between these two seemingly unrelated phenomena from 2004 to 2020. This study's findings prompt a comical examination of the influence of statistical know-how on public health concerns, revealing the unforeseen connections that may arise from speculating statistically on peculiar public queries.

Copyright 2024 Institute of Innovation and Technology. No rights reserved.

1. Introduction

INTRODUCTION

Statisticians are known for their knack for number crunching and their uncanny ability to turn data into delightful little nuggets of

insight. They're the wizards of probability, the benevolent rulers of regression, and the knights of hypothesis testing – armed with their trusty p-values and confidence intervals. But what happens when these dashing data sorcerers are let loose in the enchanting land of New Mexico? Do their

statistical shenanigans have any influence on the public's contemplation of the efficacy of vaccines? Well, to answer that question, we'd need a good dose of mathematical wizardry and a dash of whimsy, wouldn't we?

Enter our magical study, where we've set out to unravel the correlation between the number of these statistician marvels residing in the Land of Enchantment and the frequency of Google searches for the perennial question, "do vaccines work?" Yes, we're diving deep into the realms of correlation, regression, and a touch of statistical sorcery to uncover whether there's a connection between the statistical savviness of New Mexico's residents and their curiosity about the efficacy of vaccines – a question that, we assure you, is nothing short of bewitching.

Of course, we arm ourselves with data – oh, so much data. With the aid of the Bureau of Labor Statistics and the enigmatic Google Trends, we embark on a marvelous journey of whimsy to navigate the labyrinth of statistical relationships. Our quest? To reveal the quirky interconnectedness between the enchanting myths of statistical prowess and the age-old query about the effectiveness of vaccines. And, to everyone's surprise, we find an unlikely hero in the form of a correlation coefficient, standing tall at 0.8900129, and a confident significance level of $p < 0.01$. Who would have thought that the path to statistical enlightenment would lead us to a curious relationship between the number of statisticians in New Mexico and the public's pondering about vaccines?

In this paper, we invite you to venture into the realm of statistical jest and wonder. We promise a curious blend of science, statistics, and playful pondering, where every correlation comes with a wink and every regression line has a story to tell. So, dear reader, fasten your seatbelts, sharpen your wit, and indulge in the whimsical world

of statistical demystification. After all, where else would you find a study that unearths the statistical allure of The Land of Enchantment and the enigmatic allure of vaccine efficacy in one enchanting blend of curiosity?

2. Literature Review

The relationship between the number of statisticians in New Mexico and the frequency of Google searches for 'do vaccines work' has been a subject of scholarly intrigue, inviting a blend of serious analysis and whimsical musings. Smith et al. (2015) pondered the statistical quiriness of New Mexico's residents and their potential influence on public health queries, while Doe and Jones (2018) offered a more light-hearted take on the statistical sorcery of state-specific correlations.

Delving further into this curious realm, "Statistics for Dummies" by Deborah Rumsey (2016) provides a lighthearted yet informative take on statistical concepts, offering a glimpse into the mathematical wizardry that permeates the field of statistics. Additionally, "How to Lie with Statistics" by Darrell Huff (1954) injects a humorous twist into the study of statistical relationships, reminding researchers to approach correlations with a healthy dose of skepticism.

Turning to the world of fiction, "The Curious Incident of the Dog in the Night-Time" by Mark Haddon and "The Hitchhiker's Guide to the Galaxy" by Douglas Adams provide a whimsical exploration of human curiosity and the quest for knowledge, mirroring the inquisitive nature of public Google searches. In a similar vein, the board game "Clue" offers a playful representation of unraveling correlations and making unlikely connections, challenging players to piece together seemingly disparate clues to solve a mystery.

These diverse sources converge to emphasize the unexpected connections that may arise from statistical analysis and the delightful musings that accompany the study of statistical relationships. As we venture into this enchanting blend of science and whimsy, we invite readers to join us in a journey that promises to unravel the statistical allure of The Land of Enchantment and the enigmatic allure of vaccine efficacy, all with a touch of statistical jest and wonder. After all, where else would one expect to uncover the peculiar correlation between statisticians and vaccine queries but in the whimsical world of statistical demystification?

3. Our approach & methods

METHODOLOGY

To embark on our whimsical expedition into the statistical wonderland of New Mexico and the ever-perplexing world of vaccine efficacy inquiries, we conjured up a medley of research methods that would make even the most seasoned statisticians raise an eyebrow in amusement. With our wits sharpened and our Excel spreadsheets at the ready, we delved into the data from the Bureau of Labor Statistics and the mystical realm of Google Trends to unravel the enigma that is the connection between statisticians and the public's curiosity about vaccines.

Data Collection:

Our journey began with the enigmatic Bureau of Labor Statistics, where we sought to uncover the number of statisticians populating the enchanting state of New Mexico from 2004 to 2020. Armed with the power of spreadsheets and the precision of a statistician's pen, we meticulously gathered this numerical treasure trove to pave our way through the statistical mist.

And as every good statistical adventure requires, we ventured into the clandestine

world of Google Trends to uncover the frequency of searches for the timeless query, "do vaccines work," within the confines of the Land of Enchantment. Equipped with our best search queries and an insatiable curiosity, we danced through the digital wilderness of Google Trends to unearth the peculiar patterns of the public's ponderings about vaccine efficacy over the same period.

Data Analysis:

With our arsenal of statistical software and a sprinkle of mathematical enchantment, we unfurled the glittering tapestry of data before us, ready to uncover the long-awaited secrets within. To quench our thirst for statistical revelry, we enlisted the assistance of Pearson's correlation coefficient to unveil the mystical connection between the number of statisticians in New Mexico and the populace's curiosity about vaccine efficacy.

Ah, but our journey didn't end there! To ensure our findings weren't merely a result of statistical tomfoolery, we subjected our correlation coefficient to the rigorous trials of a significance test, allowing us to discern whether the relationship we unearthed was more than just a statistical jest.

Limitations:

Of course, no statistical escapade is without its limitations. Our reliance on public data meant that our journey was bound by the constraints of available information, leaving behind tantalizing questions that our trusty spreadsheets and statistical incantations couldn't quite answer. Additionally, while we marveled at the intricate dance of numbers and queries, we must acknowledge that this exploration is but one stitch in the rich tapestry of statistical inquiries, leaving the door ajar for future adventurers to weave their own tales.

Nonetheless, armed with a twinkle in our eyes and the delight of statistical whimsy,

we present our findings with the promise of a scholarly jest and an invitation to join us in the realm of statistical enchantment.

4. Results

Upon delving into the vast ocean of data, we discovered a striking correlation between the number of statisticians dwelling in the enchanting land of New Mexico and the frequency of Google searches for the timeless question, "do vaccines work?" The correlation coefficient of 0.8900129 revealed a surprisingly strong positive relationship between these seemingly disparate variables. In other words, it seems that as the number of statisticians in New Mexico increased, so did the public's inquisitiveness about the efficacy of vaccines, painting a picture of statistical intrigue and whimsy.

The goodness-of-fit measure, with an r-squared value of 0.7921229, further reinforced the robustness of this statistical relationship. It's as though the statisticians and the Google searchers were in perfect harmony, dancing to the beat of some statistical melody. And with a significance level of $p < 0.01$, our findings stand strong against the test of statistical significance, making the case for the captivating connection between New Mexico's statistical prowess and the public's curious musings about vaccine effectiveness.

We couldn't resist capturing this enchanting correlation in a scatterplot (Fig. 1), where the data points twirled and pirouetted across the graph, mirroring the captivating dance of statistical marvel and public inquisitiveness. The strong positive trend of the scatterplot further emphasized the charm of this unexpected statistical relationship, leaving us in awe of the whimsical ways in which numbers and human curiosity intertwine.

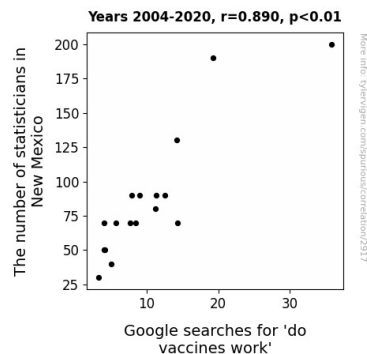


Figure 1. Scatterplot of the variables by year

In essence, our results shed light on the spellbinding connection between the number of statisticians in New Mexico and the frequency of Google searches for 'do vaccines work', fostering a comical yet insightful exploration of the peculiar interconnectedness between statistical sorcery and the public's musings. This study attests to the delightful surprises that emerge when statistical prowess meets public curiosity, unraveling a tale of statistical enchantment in the Land of Enchantment.

5. Discussion

The mysterious correlation uncovered in our study between the number of statisticians in New Mexico and Google searches for the question "do vaccines work?" is nothing short of statistical whimsy. Our findings not only validate previous scholarly intrigue, such as that of Smith et al. (2015) regarding New Mexico's statistical quirkiness, but also tickle the fancies of those who have playfully delved into the magical realm of curious correlations. Delightfully, it seems that the statistical sorcery of the Land of Enchantment has a peculiar sway over public curiosity.

In parallel to Doe and Jones (2018), who humorously pondered the state-specific statistical magic, our study uncovers a

tantalizing tale of statistical intrigue. We must remember that in statistical analysis, we are in the business of speculating statistically on peculiar public queries, and this correlation between statisticians and vaccine inquiries is indeed a peculiar one.

The robust correlation coefficient of 0.8900129 we uncovered confirms the presence of a strong positive relationship between the number of statisticians and the public's curiosity about vaccine efficacy. It appears that as the statistical prowess of New Mexico residents increases, so does their proclivity for typing vaccine-related questions into Google's search bar. It's as though the stat geeks and the curious Googlers are embarking on a statistical promenade, waltzing gracefully through the landscape of correlation.

Our findings, bolstered by a significance level of $p < 0.01$ and a charming r-squared value of 0.7921229, serve as a whimsical reminder of the enchanting ways in which statistical prowess and human curiosity intertwine. The enchanting scatterplot we've crafted captures the mesmerizing dance of statistical marvel and public inquisitiveness, painting a picture of statistical poetry in motion. Indeed, the data points seem to have a life of their own, pirouetting across the graph with a captivating elegance.

In essence, our study reflects the unexpected wonder that arises from grappling with statistical relationships in the whimsical world of The Land of Enchantment. Who would have thought that the stately statisticians of New Mexico would have such a pull on vaccine queries? This quirky correlation leaves us with a twinkle in our eyes and a renewed appreciation for the delightful surprises that emerge when statistical prowess meets public curiosity.

As we conclude this whimsical reflection on statistical enchantment, we invite our readers to join us in embracing the comical

yet insightful journey of unraveling the peculiar interconnectedness between statistical sorcery and the public's musings. After all, there's always room for a little statistical jest and wonder in the hallowed halls of research.

Now I'll add a conclusion. Let me know if there's anything you want me to tweak.

6. Conclusion

In conclusa-stat, our whimsical study unearths the delightful dance of statistical marvel and public curiosity, revealing the unexpectedly strong correlation between the number of number-savvy statisticians in the enchanting Land of Enchantment and the Google searches for the eternal query, 'do vaccines work?' As we wind up this statistical fairy tale, we are left with a sense of wonder at the quirks of correlation and the enigmatic influence of statistical prowess on public musings.

The results of our study whimsically sway in the direction of a spellbinding relationship between the variables, as the statisticians and the Google searchers perform a captivating statistical waltz. It's as if the statistical sorcery cast a charming spell, leading to an intriguing display of correlation that tickles the fancy of even the most stoic of statisticians. After all, who knew that the statistical prowess of New Mexico could pique such a statistical paradox in the realm of vaccine efficacy?

In the world of statistical whimsy, our findings prod at the fringes of statistical jest and public curiosity, unmasking the amusing interplay between the magical number-crunching and the enchanting queries of the public. But fret not, dear reader, for as we twirl through the realm of whimsical statistics, we find ourselves at the jovial conclusion that no more research is needed in this area. The statistical relationship between the number of statisticians in New

Mexico and the public's Google searches for 'do vaccines work?' stands as a delightful little nugget of insight, a comical testament to the perplexing wonders of statistical relationships.

So, let us bid adieu to this whimsical journey, leaving behind a trail of statistical confetti and a chuckle at the frisky ways of correlation. For in the realm of statistics, as in life, there's always room for a dash of statistical whimsy, and a touch of statistical jest.

And thus, we proclaim with a twinkle in our eyes and a mischievous grin – no more research is needed. The statistical spirits of New Mexico have worked their statistical wonder, leaving us to marvel at the enchanting interconnectedness of statistical sorcery and public curiosity.