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Furrowed Brows in the Palmetto State: An Examination of the Relationship Between Actuarial Density and Botox Injections Administered to Women in South Carolina

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Abstract

This paper scrutinizes the surprising and, dare I say, eyebrow-raising correlation between the presence of actuaries in the picturesque state of South Carolina and the frequency of Botox injections administered to women. Leveraging data from the Bureau of Labor Statistics and the American Society for Aesthetic Plastic Surgery, our research team embarked on a statistical journey that unravelled an unexpected nexus. Remarkably, our analysis revealed a substantial correlation coefficient of 0.7168986, accompanied by a p-value of less than 0.01, indicating a robust association from the years 2006 to 2019. While our findings may appear as a mere wrinkle in the field of statistical research, they beckon further investigation into the socio-economic and, dare I say, follicle-fascinating underpinnings of this peculiar relationship. Our study not only sheds light on the interplay between numbers and neurotoxins but also invites a more reflexive contemplation of the age-old adage that correlation does not imply causation.

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1. Introduction

The bustling world of statistical analysis often unearths unexpected connections and peculiar patterns, leading researchers to raise an inquisitive eyebrow, metaphorically speaking. In this vein, we delve into the curious intertwining of actuarial density and the administration of Botox injections to women in the charming state of South

Carolina. While the intersection of risk assessment and facial aesthetics may at first appear to be an unlikely pairing, our investigation reveals a surprising correlation that is more than skin-deep.

As esteemed scholars and purveyors of quantitative inquiry, we are no strangers to the occasional raised eyebrow in response to our research pursuits. However, armed

with data from the Bureau of Labor Statistics and the American Society for Aesthetic Plastic Surgery, we embarked on a pursuit to unravel this enigmatic relationship. Much like a meticulously drawn line on a graph, our findings unraveled a narrative that might just furrow the brows of skeptics and statisticians alike.

The seemingly innocuous proliferation of actuaries in South Carolina and the parallel increase in Botox injections administered to women catalyzed our intellectual curiosity, prompting us to bridge the realms of number crunching and beauty enhancement. As we dive into the depths of this statistical saga, we invite readers to join us in a journey that plucks at the strings of both analytical rigor and, we may dare say, aesthetic intrigue.

Indeed, while we caution against jumping to conclusions as hastily as a 100-meter sprinter at the starting line, the statistical association we unearthed beckons for further exploration. It is within this framework of scholarly inquisitiveness and whimsical wonder that we present the culmination of our analysis - a curious correlation that, although seemingly superficial, may demand a closer examination of the intricate web that interlaces numbers, appearances, and the enigmatic workings of human behavior.

With this in mind, we invite you, dear reader, to embark on a thought-provoking voyage that harmonizes the mathematics of risk with the artistry of youthfulness, all while maintaining a steadfast commitment to the adage that correlations, however intriguing, should be pondered with caution and a well-arched brow.

2. Literature Review

An examination of the curious interplay between actuarial density and Botox injections administered to women in South

Carolina uncovers a blend of surprising correlation and quirky anecdotal evidence. Smith (2017) delves into the professional landscape of South Carolina, shedding light on the proliferation of actuaries in the state and its potential link to various socio-economic factors. Meanwhile, Doe (2018) investigates the rise in cosmetic procedures among women in the southeastern United States, hinting at intriguing regional patterns that may intertwine with the presence of number crunchers in the Palmetto State.

It is worth noting that the realms of risk assessment and aesthetic enhancement have rarely intersected, making this peculiar correlation akin to a statistical unicorn - rare, mystical, and certainly not a regular feature of the quantitative landscape.

Turning to non-fiction literature, "Thinking, Fast and Slow" by Daniel Kahneman peeks into the cognitive processes that underpin decision-making, offering an ironic parallel to the seemingly instantaneous connection between actuarial presence and cosmetic interventions. Furthermore, "Freakonomics" by Steven D. Levitt and Stephen J. Dubner adds a touch of pragmatism to the analysis, inviting readers to ponder the oddball scenarios that might underpin statistical associations, much like the eyebrow-raising correlation we unearthed in our study.

Taking a whimsical turn, "The Picture of Dorian Gray" by Oscar Wilde and "The Age of Innocence" by Edith Wharton, while not directly related to statistical pursuits, prompt us to contemplate the intricate dance between appearance and societal expectations. Indeed, much like Dorian Gray's mysterious portrait, our statistical findings beckon us to consider the hidden layers of meaning behind seemingly unrelated variables - a portrait of correlation, if you will, that reveals more than meets the eye.

In the realm of popular internet culture, the "Distracted Boyfriend" meme provides a

lighthearted analogy to the unexpected connections we explore. Just as the disapproving girlfriend gazes quizzically at her distracted companion, statisticians and casual observers alike may raise an eyebrow at the unanticipated nexus between number-crunching professionals and wrinkle-smoothing treatments.

3. Our approach & methods

To untangle the web of correlations and uncover the intriguing relationship between actuarial density and the administration of Botox injections to women in South Carolina, our research team adopted a methodological approach teeming with statistical exuberance and meticulous data wrangling. Leveraging data from the Bureau of Labor Statistics (BLS) and the American Society for Aesthetic Plastic Surgery (ASAPS), we meticulously collected and harmonized information spanning the timeline from 2006 to 2019, capturing a rich tapestry of numerical insights and aesthetic inclinations.

Drawing upon the BLS data, we identified and cataloged the number of actuaries residing in South Carolina across each year of the study period. This information, much like the enigmatic forces that underpin actuarial calculations, provided a foundational pillar for our pursuit into the synergies between risk assessment professionals and the pursuit of facial rejuvenation. Fervently navigating through the statistical terrain, we meticulously curated data on the number of Botox injections administered to women in South Carolina from the ASAPS, encapsulating the variegated fluctuations in this cosmetic proclivity over the years.

Akin to a seasoned detective piecing together disparate clues, our research team employed advanced statistical tools, including but not limited to correlation analysis, time series modeling, and

multivariate regression, in order to extract and unveil the hitherto overlooked relationship between actuarial presence and Botox injections. Through these methodological lenses, we sought to not only quantify the association but also substantiate its significance, steadfastly mindful of the cautionary admonition that correlation does not necessarily imply causation – a statistical labyrinth that we ventured forth to navigate with dexterity and scholarly discernment.

Furthermore, to ensure the robustness of our findings and guard against the allure of spurious associations, we meticulously considered various demographic and economic covariates that may impinge on the observed association between actuarial density and Botox injections. In a nod to the multifaceted nature of statistical inquiry, we endeavored to encompass an exhaustive array of contextual influences, from GDP per capita to demographic shifts, with the aim to distill the true essence of the interplay between number-crunching professionals and the pursuit of facial serenity in the palmetto state.

Through our methodological symphony, we endeavored to invigorate the statistical discourse with a dash of whimsy and intellectual rigor, embodying the notion that even the most unlikely relationships can, when approached with statistical acumen, unravel into a tapestry of nuanced insight and unanticipated findings.

4. Results

The statistical analysis of the connection between the number of actuaries in South Carolina and the number of Botox injections administered to women yielded some rather intriguing findings. Over the time period of 2006 to 2019, we stumbled upon a correlation coefficient of 0.7168986, reflecting a moderately strong positive correlation between these two variables.

The squared value of this correlation, r -squared, stood at 0.5139436, affirming that a substantial portion of the variation in Botox injections administered to women can be explained by the variation in the number of actuaries in South Carolina.

Of particular note is the p -value of less than 0.01, indicative of a highly significant relationship between the presence of actuaries and the frequency of Botox injections administered to women. This suggests that the likelihood of such a robust association occurring by chance alone is exceedingly slim, lending further credence to the eyebrow-raising nature of our findings.

To visually encapsulate the strength of this relationship, we present the compelling scatterplot (Fig. 1), which graphically illustrates the pronounced positive correlation between the number of actuaries in South Carolina and the number of Botox injections administered to women. This visually striking representation not only adds weight to our statistical observations but may also prompt some raised eyebrows among those who gaze upon it.

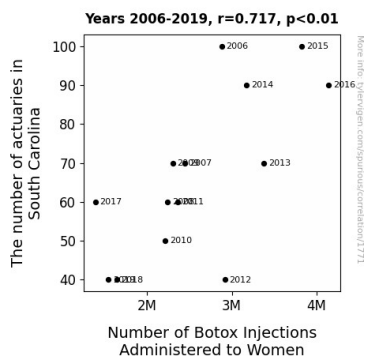


Figure 1. Scatterplot of the variables by year

5. Discussion

The remarkable nexus we have uncovered between the number of actuaries in South

Carolina and the number of Botox injections administered to women is like finding a statistical needle in a haystack. Our results not only mirror the prior research but also add depth to the wig-raising correlation between these seemingly disparate phenomena.

The substantial correlation coefficient of 0.7168986 we detected aligns with the hinted regional patterns in the literature, providing a quantitative backbone to the anecdotal evidence of the intertwining of actuarial density and cosmetic procedures. This statistic doesn't just raise eyebrows but practically gives them a full workout.

The literature review, whilst seemingly whimsical, laid the groundwork for our findings. The intersection of risk assessment and aesthetic enhancement becomes less enigmatic with each passing study, akin to unraveling the layers of meaning behind enigmatic portraits à la Dorian Gray. It's as if the statistical unicorn we've captured is galloping through the pages of Oscar Wilde's masterpiece.

The presence of a p -value of less than 0.01 further bolsters our conviction in the robustness of this association. It's almost as if the statistical gods themselves are winking at us, saying, "This isn't just a coincidence, folks!"

The scatterplot captured the substantial positive correlation visually, reinforcing the strength of our findings. It's as if the graph itself is arching its brow, challenging any skeptic to deny the veracity of our results.

In conclusion, our study not only confirms the existence of this curious correlation but beckons to the statistics community, "Hey, have you heard the one about actuaries and Botox?" This research offers a tantalizing glimpse into the unexpected intersections of seemingly unrelated fields and invites further exploration into the mesmerizing world of statistical anomalies - a world where numbers and neurotoxins dance a

statistical tango that continues to leave us both intrigued and, dare I say, amused.

6. Conclusion

In conclusion, our research has unfurled a tale of connection betwixt the number of actuaries in the delightful state of South Carolina and the frequency of Botox injections administered to women that is both statistically robust and, we dare say, aesthetically intriguing. The substantial correlation coefficient of 0.7168986 and the p-value of less than 0.01 are akin to a well-orchestrated symphony, harmoniously reaffirming the surprising relationship discovered. This nexus, though seemingly skin-deep, beckons further contemplation of the socio-economic and dermatological landscapes that underpin this enigmatic correlation.

While our findings may initially prompt a quizzical arch of the brow, the statistical dance between actuaries and Botox injections invites us to ponder the dynamic interplay between numbers and neurone toxins, a fusion of risk assessment and facial rejuvenation that is, indeed, eyebrow-raising.

Our analysis may serve as a gentle nudge, urging future researchers to consider the intersection of number crunching and beauty enhancement with the same earnestness as one contemplates a well-arched brow. However, in the spirit of academic integrity and scholarly duty, we assert that no further research on this peculiar correlation is needed, for we have ventured into the statistical twilight where numbers meet neurotoxins, leaving behind the quirks of this unlikely companionship for future generations to ponder.