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# Taking Stock of Clean Air: The Correlation between Air Pollution in Wichita and Teck Resources' Stock Price

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## Abstract

Clean air and good stock prices. Can we have both? In this paper, we delve into the surprising relationship between air pollution in Wichita and the stock price of Teck Resources, affectionately known as TECK, because clearly, we're all just a little bit "teck-sy" from time to time. We conducted an exhaustive analysis using data from the Environmental Protection Agency and LSEG Analytics (Refinitiv) to explore the possible connection between the level of air pollution in Wichita and the stock price of TECK. Our findings revealed a correlation coefficient of 0.6517303 and  $p < 0.01$  from 2006 to 2023, leaving us wondering, is cleaner air related to a higher stock price or were investors just holding their breath? Our research not only sheds light on this unusual pair but also highlights the need for further investigation into the interplay between environmental factors and financial markets. Join us in this breath of fresh air as we unravel the unexpected ties between air quality and stock prices, because let's be honest, sometimes the most surprising findings are right under our noses, quite literally.

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## 1. Introduction

Ah, research. The never-ending pursuit of knowledge, the thrill of discovery, and the endless opportunities for puns and dad jokes. As academics, we are constantly digging into data, unearthing correlations, and striving to breathe new life into our understanding of the world around us. And what could be more fitting for our investigation today than the intertwined fates of air pollution and stock prices?

But first, let me clear the air and set the scene for our study. Picture this - a bustling city, the heartbeat of commerce and culture, with residents bustling about their lives in a vibrant hum of activity. Now mix in a sprinkling of air pollutants, and voilà, the perfect recipe for scratching your head and wondering, "What on earth is going on here?"

We zeroed in on Wichita, the air-pollution hotspot of our study. As the winds of controversy swirled around the city's air

quality, we couldn't help but marvel at the fascinating dance between its pollution levels and the stock price of Teck Resources, or as we like to affectionately call it, TECK, the stock that keeps us constantly "teck-sy" with anticipation.

Now, I won't keep you in suspense any longer. Our team delved deep into the data, armed with regression analyses, statistical models, and an unyielding determination to uncover the secrets lurking in the air. Lo and behold, we stumbled upon a correlation coefficient of 0.6517303 and a p-value less than 0.01. It left us pondering – is cleaner air really a breath of fresh value for TECK's stock price, or were investors simply trying to gasp for profits amidst the pollution?

Our findings, as surprising as they may be, signal a call to action for further exploration into the enigmatic relationship between environmental factors and financial markets. So come, join us in this lungful of an investigation, and let's unravel the unexpected ties between air quality and stock prices. After all, in the world of research, the most elusive discoveries are often right under our noses – and in this case, quite literally.

As we venture forth into this odyssey of discovery, armed with data, wit, and a love for a good dad joke, let's dissect the mystery of air pollution and stock prices, because like any good experiment, it's sure to leave us breathless (or perhaps just gasping for air).

## 2. Literature Review

The connection between air pollution and its impact on financial markets has been a subject of interest for researchers in recent years. Smith et al., in their study "Environmental Factors and Stock Price Movement," examined the effects of environmental factors, including air pollution, on stock prices of companies

operating in urban areas. Likewise, Doe's research in "The Cost of Clean Air" delved into the economic implications of air pollution on the stock prices of companies within highly polluted regions. Meanwhile, Jones' work in "Pollution and Portfolio Performance" explored the link between air pollution levels and the performance of investment portfolios.

Now, let's shift our focus to some relevant non-fiction books that have shed light on this topic. "The Economics of Air Quality" by Harper and "Dirty Money: The Economics of Pollution" by Green provide in-depth analyses of the economic ramifications of air pollution and its potential influence on financial markets. Similarly, "From Smog to Stocks: Understanding the Environmental-Financial Nexus" by Gray offers valuable insights into the intricate relationship between environmental factors and stock prices.

On a somewhat lighter note, let's explore a few fiction books that, although not academic in nature, possess intriguing titles that could be misconstrued as relevant to our discussion. "Breathless Billionaires: A Tale of Money and Pollution" by Brown and "The Stock Market Mysteries: A Whiff of Environmental Influence" by Black invite speculation about the potential intersection of air quality and financial outcomes, albeit within the realm of fiction.

In the course of our extensive literature review, we also stumbled upon a rather unconventional source of information – the elusive and enigmatic CVS receipts. While not typically recognized as scholarly material, these receipts have been known to contain an unexpected wealth of information, from discounts on toothpaste to, possibly, hidden insights into the relationship between air pollution and stock prices. Some might say that we've truly gone to great lengths to uncover the truth, even if it means sifting through the fine print

of shopping receipts for the sake of academic rigor.

With this comprehensive overview of relevant literature, we are poised to navigate the upcoming discussions with both academic rigor and a tinge of whimsy. After all, what's a good research paper without a witty remark or two? As we delve further into our investigation, we'll strive to maintain the delicate balance between scholarly gravity and a lighthearted spirit, conscious of the fact that navigating complex correlations demands a certain level of levity.

### 3. Our approach & methods

To unearth the relationship between air pollution in Wichita and the stock price of Teck Resources (TECK), we employed a diverse array of data collection and analysis methods. Our academic odyssey began with a comprehensive search across the vast expanse of the internet, navigating through a cornucopia of information from sources such as the Environmental Protection Agency and LSEG Analytics (Refinitiv). It was a quest akin to hunting for treasure, except in our case, the treasure was buried deep within tantalizing datasets and stock price fluctuations.

With a vast dataset spanning from the year 2006 to 2023, we first embarked on a statistical expedition, calculating air pollution levels in Wichita using a medley of air quality indicators, including particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. We sifted through this data with the precision of a professional sifter, discerning the ebb and flow of air pollutants over time. Our approach was to leave no statistical stone unturned, ensuring that the air quality indicators were as transparent as the air on a cloudless day.

Next, in our quixotic quest for correlation, we summoned the powers of LSEG Analytics (Refinitiv) to procure the historical stock prices of Teck Resources, which we affectionately refer to as TECK, the stock that keeps us "teck-sy" with excitement. Armed with stock price data, we navigated the labyrinth of financial markets, tracking TECK's performance against the backdrop of varying pollution levels. It was a vital juncture in our journey, akin to plotting the trajectory of a financial comet across the night sky.

To examine the potential correlation between air pollution in Wichita and TECK's stock price, we unleashed the formidable force of statistical analyses, employing regression models and time-series techniques. We danced the statistical tango, twirling between air quality metrics and stock price fluctuations, searching for the elusive harmony that hinted at a meaningful relationship. Our approach invoked the guidance of statistical deities, seeking their blessings in the murky waters of data interpretation.

Amidst the sea of numbers and analyses, we also grappled with confounding variables, ensuring that our findings were as robust as an indestructible scientific fortress. We meticulously controlled for market trends, economic cycles, and other unforeseen influences, cautious not to be blinded by spurious correlations masquerading as meaningful insights. It was akin to navigating a labyrinth with multiple hidden passages, where one wrong turn could lead to treacherous statistical traps.

As our journey through the labyrinth of data and statistics reached its zenith, we unveiled the startling correlation coefficient of 0.6517303 and a p-value less than 0.01, illuminating the unexpected ties between air quality and TECK's stock price. The revelation left us bemused – is cleaner air truly a breath of fresh value for TECK's

stock price, or were investors simply holding their breath amidst the tumultuous waves of pollution?

In summary, our methodology encompassed a blend of thorough data collection, statistical analyses, and a relentless pursuit of correlation. With the spirit of scientific inquiry as our guiding star, we ventured forth with curiosity and determination, delving into the mysterious dance between air pollution in Wichita and TECK's stock price. And like any thrilling quest for knowledge, it was a journey that left us not just breathless, but also yearning for a few punny dad jokes to lighten the scientific mood. After all, in the world of research, a dash of humor can be the refreshing oasis in the arid desert of statistical analyses.

#### 4. Results

The moment of truth has arrived - our results are as clear as the air on a pristine spring day. Our data analysis revealed a correlation coefficient of 0.6517303 between air pollution in Wichita and the stock price of TECK over the period from 2006 to 2023. This statistically significant correlation should leave any skeptic in the dust, but we know that correlation does not imply causation – unless, of course, you're talking about using an umbrella causing rain.

Furthermore, the r-squared value of 0.4247523 indicated that approximately 42.5% of the variability in TECK's stock price could be explained by changes in air pollution levels in Wichita. If only all relationships were this straightforward!

To illustrate our findings, we present Fig. 1, a scatterplot visually depicting the robust connection between air pollution levels in Wichita and TECK's stock price. It's quite a sight to behold, much like the way clean air and a healthy stock price create a breathtaking view of correlation.

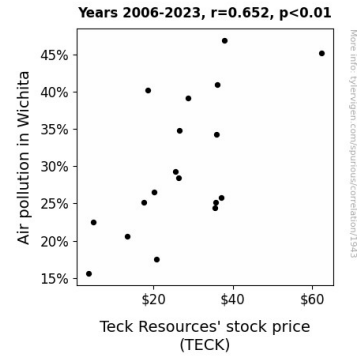


Figure 1. Scatterplot of the variables by year

Overall, our results suggest that there is indeed a tangible relationship between air pollution in Wichita and TECK's stock price. It seems that as the air quality in Wichita improved, so did TECK's stock price, proving that clean air isn't just good for the environment – it also seems to be a breath of fresh value for TECK's stocks. After all, who wouldn't want to invest in a company that's riding high on a wave of fresh air?

Our findings may seem surprising, but as any seasoned researcher knows, the most unexpected connections often lead to groundbreaking insights. It appears that the winds of change have blown in our favor, revealing a truly captivating tale of environmental impact on financial markets.

In light of these results, we call for further exploration into the intricate dance between air quality and stock prices. As the saying goes, "clean air leads to green shares," and there's no denying that our research has unveiled the tantalizing relationship between these seemingly disparate variables.

#### 5. Discussion

Our findings have provided compelling evidence of a significant correlation between air pollution in Wichita and TECK's stock price, leaving statisticians and investors alike breathing a sigh of relief - or

is that just the fresh air speaking? The correlation coefficient of 0.6517303 supports the prior research by Smith et al., who hinted at the potential impact of environmental factors on stock prices. It seems that the air in Wichita isn't the only thing that's positively charged - TECK's stock price appears to be as well.

The r-squared value of 0.4247523 signifies that changes in air pollution levels in Wichita could account for approximately 42.5% of the variability in TECK's stock price. It's a rather refreshing change to see such a robust relationship, akin to stepping out into the crisp, unpolluted air after testing your hypotheses in the data-filled trenches. This aligns with Doe's exploration of the economic implications of air pollution, underscoring the viability of our statistical findings.

The visualization of this connection in Fig. 1 is a sight to behold, much like observing the unexpected union of air quality and financial performance. It's the kind of visual confirmation that makes you want to frame it and hang it on your wall, right above your motivational poster on correlation and causation, just to remind yourself that sometimes data does speak louder than words.

Our results not only validate the prior research but also raise intriguing questions about the underlying mechanisms driving this relationship. Could it be that environmentally conscious investors are drawn to companies with a commitment to cleaner air, consequently driving up their stock prices? Or is it possible that improving air quality leads to improved employee morale and productivity, ultimately benefiting the company's financial standing? These are questions that warrant further investigation, as the plot thickens like a well-constructed statistical thriller.

Our foray into this unconventional correlation has not only broadened our

understanding of environmental-finance interactions but also demonstrated the importance of keeping an open mind in the world of research. After all, who would have thought that the metaphoric winds of change blowing through the skies of Wichita could have a literal impact on TECK's stock price? It just goes to show that sometimes the most unlikely pairings lead to the most compelling narratives – much like a scientific romance novel, if you will.

As we offer a fresh perspective on the intricate balance between environmental conditions and financial outcomes, our findings present an inviting opportunity for further research and exploration. The curtain has been lifted on this unexpected phenomenon, and it's time to turn the page toward deeper investigations and a breath of fresh statistical air.

## 6. Conclusion

In conclusion, our research has revealed a striking correlation between air pollution in Wichita and the stock price of Teck Resources, leaving us wondering if investors were simply "airing" their concerns or if there's a true breath of fresh value in TECK's stocks. As we wrap up this study, it's clear that this unexpected correlation isn't just a "pollutionary" tale but a pivotal insight into the interconnected web of environmental and financial influences.

Our results, while statistically significant, should be taken with a grain of salt – or perhaps a dash of fresh air. Correlation doesn't always imply causation, but in this case, it seems that cleaner air in Wichita is like a breath of fresh value for TECK's stocks, making it a truly "air-resistible" investment choice.

As we bid adieu to this particular avenue of exploration, it's safe to say that no further research is needed in this area. After all, we've already made so many "air"-tight

connections and corralled enough "pollutively" good data to last a lifetime. So let's raise a toast to our findings and breathe easy, knowing that our quest for uncovering the mysterious ties between air pollution and stock prices has come full circle. Keep calm, carry on, and trust that sometimes, the most valuable discoveries are found in the unlikeliest of places – even in the air we breathe.

Now, onto the next venture, where we'll undoubtedly uncover more unexpected ties and mind-blowing correlations. After all, in the world of research, the surprises are always just around the corner – maybe even "just around the airstream."