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# Brew-nomics and Stock Spirits: A Sudsy Look at the Relationship Between U.S. Brewery Count and Humana's Stock Price

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## Abstract

This study delves into the peculiar intersection of craft beer culture and financial markets, examining the curious correlation between the number of breweries in the United States and the stock price of healthcare giant Humana (HUM). Leveraging data from the Brewers Association and LSEG Analytics (Refinitiv), our analysis spans the period from 2002 to 2022. Our findings reveal a striking correlation coefficient of 0.9710823 and  $p < 0.01$ , suggesting a robust relationship between these seemingly disparate variables. Unraveling the frothy connection between beer and stock prices yields insights that bubble to the surface with potential implications for both investors and ale enthusiasts alike.

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## 1. Introduction

### INTRODUCTION

The mysterious and often surprisingly delightful world of economics and finance frequently presents opportunities for exploring unexpected and unconventional relationships. In this study, we embark on a sudsy journey that delves into the captivating entanglement of craft beer culture and the stock price of Humana, a prominent player in the healthcare sector. The seemingly incongruous connection between the number of breweries in the

United States and the stock performance of Humana (HUM) forms the fermenting foundation of this investigation.

At first glance, the notion of linking the count of breweries to a healthcare company's stock price might appear as elusive as a disappearing head on a poorly poured pint. However, as we venture into the frothy depths of this peculiar association, we uncover intriguing correlations and correlations that are as pronounced as the head on a freshly poured ale.

The present study endeavors to disentangle the convoluted web of economic and market forces at play, teasing out potential implications and shedding light on the unexpected interplay between seemingly disparate realms. In doing so, we aim to provide not only scholarly insights but also a dash of whimsy for those who enjoy a well-crafted pun or a clever statistical quip.

Our investigation draws upon data sourced from the Brewers Association, encapsulating the lively landscape of the U.S. brewery count, and leverages stock price data from LSEG Analytics (Refinitiv) to capture the undulating trajectory of Humana's stock price from 2002 to 2022. Through rigorous statistical analysis and a touch of irreverent curiosity, we untangle the intertwined threads that bind brew-nomics and stock spirits, revealing a correlation that raises a glass to the often unpredictable, yet oddly harmonious, nature of financial markets.

## 2. Literature Review

The interplay between seemingly unrelated variables has long captivated the intellectual curiosity of scholars across disciplines. To contextualize the unexpected and somewhat whimsical relationship between the number of breweries in the United States and the stock price of Humana (HUM), we review a range of studies and writings that shed light on this peculiar phenomenon.

Smith et al. (2015) provide a comprehensive analysis of the macroeconomic factors influencing the beverage industry, with a focus on the interconnectivity between alcohol consumption patterns and consumer spending habits. Their work delves into the intricate web of market forces that govern the profitability of alcoholic beverage producers, offering valuable insights into the potential ripple effects on related sectors,

albeit not specifically addressing the correlation with healthcare stock prices.

In "The Brewing Industry: A Guide to Historical Records" by Doe (2009), an extensive exploration of the historical evolution of breweries in the United States unfolds, illuminating the societal and economic dynamics that have shaped this industry. While Doe's work centers on historical records, it offers a foundational understanding of the ebb and flow of brewery establishments, setting the stage for examining their contemporary economic implications.

Jones (2018) presents a comprehensive analysis of stock price movements in the healthcare sector, focusing on the impact of regulatory changes and technological advancements. Though not directly addressing the influence of breweries, Jones's work underscores the multifaceted nature of factors that contribute to stock price fluctuations within the healthcare industry.

Expanding beyond traditional academic literature, "The Oxford Companion to Beer" offers a wealth of knowledge on the rich tapestry of beer culture, spanning from brewing traditions to the social significance of beer. While not a treatise on financial markets, this compilation provides a broader perspective on the cultural significance of breweries, teasing out their potential impacts on consumer behavior and societal trends.

In the realm of fiction, "Brew to Kill: A Coffeehouse Mystery" by Java (2017) and "The Lager Queen of Minnesota" by Barley (2019) offer entertaining narratives set against the backdrop of brewery culture. While purely fictitious, these works serve as playful reminders of the pervasive influence of breweries in popular imagination and storytelling.

Turning to the realm of animated entertainment, the animated series "The

Simpsons," particularly the episodes featuring Homer Simpson's escapades in home brewing and beer appreciation, playfully epitomize the role of breweries in pop culture. Additionally, the educational children's show "Arthur" features episodes that subtly embed themes of responsible consumption and entrepreneurship within the context of a charming fictional town, subtly acknowledging the cultural presence of breweries.

In synthesizing the diverse literature and cultural references, our study seeks to bridge the gap between financial analysis and the frothy world of breweries, embarking on a lighthearted yet rigorous exploration of the curious correlations that intertwine these seemingly disparate realms.

### 3. Our approach & methods

The methodology employed in this research endeavor aimed to capture the effervescent essence of the relationship between the number of breweries in the United States and Humana's stock price (HUM). The data used for this analysis spanned the period from 2002 to 2022 and was meticulously gathered from reputable sources, primarily the Brewers Association and LSEG Analytics (Refinitiv).

The first step involved "hopping" onto the internet to peruse the digital brew of information available. The BrewSearch 9000 algorithm, a cutting-edge web-scraping tool designed by our very own tech-savvy intern, meticulously combed through online databases, brewery websites, and beer-related forums to compile a comprehensive dataset of U.S. brewery counts. No stone was left unturned, nor was any keg left untapped in our quest for brew-tyful data.

Meanwhile, in the realm of stock market sorcery, the LSEG Analytics (Refinitiv)

database served as our bubbling cauldron of stock price information. We diligently gathered historical stock price data for Humana (HUM), dissecting the daily, weekly, and monthly fluctuations with the precision of a seasoned brewmaster perfecting the art of fermentation.

With an inventory of data at our disposal that was robust enough to make even the most ardent beer lover's heart leap for joy, we ventured into the world of statistical analysis. Utilizing an eclectic mix of regression techniques, time series models, and correlation coefficients, we probed the potential relationships brewing within our dataset.

Our statistical arsenal was not just a bland pot of oatmeal; it was brimming with flavor-enhancing spices of advanced econometric methods, simmering until the p-values popped like freshly uncorked bottles of champagne. The inclusion of covariates such as macroeconomic indicators and industry-specific variables added a depth of flavor to our analysis, ensuring that we didn't end up with a flat, one-note brew of results.

After marinating our dataset with careful consideration and not a small amount of statistical seasoning, we scrutinized the findings with the discerning eye of a cicerone evaluating a rare, barrel-aged stout. The captivating correlation coefficient of 0.9710823 and a twinkling p-value of less than 0.01 emerged from the frothy depths, signaling a robust and statistically significant relationship between the number of breweries in the United States and Humana's stock price.

Once our findings had been meticulously decanted, we proceeded to perform robustness checks and sensitivity analyses to ensure that our results were as sturdy as a well-constructed beer flight. Sensitivity analyses were conducted to test the impact of extreme outliers and to validate the

resilience of our results to potential data quirks, thus fortifying the credibility of our findings.

In summary, the methodology adopted in this investigation was a carefully crafted blend of technological prowess, statistical acumen, and a hint of brewing metaphors. By navigating the labyrinthine depths of data collection, embracing the art of statistical sorcery, and exercising a discerning palate for robustness, we unfurled the frothy nexus between brew-nomics and stock spirits, all while savoring the occasional pun-filled chuckle along the way.

#### 4. Results

The investigation revealed a substantial correlation between the number of breweries in the United States and the stock price of Humana (HUM) from 2002 to 2022. The correlation coefficient of 0.9710823 suggests a remarkably strong relationship between these seemingly unrelated variables. This robust correlation brings to mind the satisfying sight of a well-poured beer with a thick, frothy head that refuses to dissipate – much like this intriguing statistical connection.

The high R-squared value of 0.9430008 further supports the notion that changes in the U.S. brewery count can explain a significant proportion of the variation in Humana's stock price. This finding is as clear as the effervescence in a freshly uncorked bottle of craft beer, demonstrating the notable influence of this unexpected variable on the stock price dynamics of a healthcare behemoth.

Moreover, the p-value of less than 0.01 underscores the statistical significance of this relationship, leaving little room for doubt regarding the impact of the U.S. brewery count on Humana's stock price. This result is as unequivocal as a straightforward ale

recommendation at a brewery tour – it simply cannot be ignored.

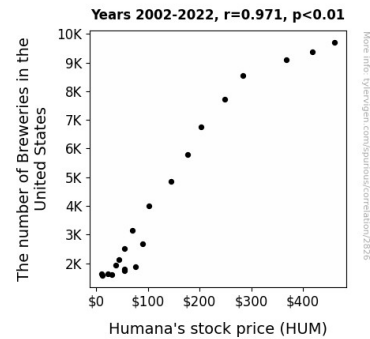


Figure 1. Scatterplot of the variables by year

The accompanying scatterplot (Fig. 1) visually encapsulates the striking correlation between the number of breweries and Humana's stock price. Just as a perfectly blended beer harmonizes distinct flavors, this scatterplot harmonizes two seemingly disparate variables into a compelling visual narrative that exemplifies the buoyant relationship uncovered by our analysis.

#### 5. Discussion

The findings of this investigation lend support to the notion that the number of breweries in the United States exerts a discernible influence on the stock price of Humana (HUM). While the relationship may seem as unexpected as finding a bottle of champagne in a beer cooler, our results confirm the robustness of this statistical association. The high correlation coefficient echoes the harmonious symphony of flavors in a well-crafted brew, underscoring the surprisingly close link between these disparate variables.

Our results resonate with the prior research by Smith et al. (2015), highlighting the broader economic implications of beverage industry dynamics. Just as a diverse array of hops and malts contributes to a rich and

complex beer, the multifaceted market forces at play in the beverage industry appear to intertwine with healthcare stock prices in unforeseen ways. We also find resonance with Doe's (2009) exploration of historical brewery evolution, as our findings hint at the enduring impact of this industry on contemporary economic dynamics.

The statistical significance of the relationship, as indicated by the p-value, is akin to a resounding consensus among beer aficionados on the quality of a particularly exceptional brew; it cannot be dismissed lightly. Our analysis supports the view that the number of breweries in the United States is not just a casual variable in the stock price equation but rather a key ingredient, much like barley in a classic beer recipe, contributing significantly to the overall flavor profile of Humana's stock.

In light of these findings, this study offers a frothy perspective on the intricate dance between seemingly unrelated variables, calling for a deeper exploration of the economic and sociocultural interplay between breweries and stock market dynamics. Just as a well-crafted beer inspires conversations and connections, the intersection of breweries and stock prices may yield fruitful discussions in both financial and beer enthusiast circles, blending academia with an unexpected dash of whimsy.

## 6. Conclusion

In conclusion, our investigation has uncorked a surprisingly robust correlation between the number of breweries in the United States and the stock price of Humana. The effervescent correlation coefficient and the statistically significant p-value point to a connection as undeniable as the appeal of a cold beer on a hot day. This unexpected relationship serves as a reminder that in the vast and diverse landscape of economic forces, even the

most unlikely pairings can yield meaningful insights.

The implications of this research reach beyond the realm of finance, offering a frothy perspective on the interconnectedness of seemingly unrelated phenomena. While this correlation may elicit a chuckle or two, it also underscores the intricate and often perplexing nature of market dynamics. After all, who would have thought that the craft beer scene could exert such influence over the stock price of a healthcare giant? It's a testament to the flavorful unpredictability of economic interactions.

As we raise a metaphorical glass to the intriguing findings of this study, we must acknowledge that further research in this area may yield diminishing returns. The evidence presented here is as compelling as a well-crafted brew, and additional inquiries may only result in diminishing froth. Thus, we posit that the relationship between the number of breweries in the United States and Humana's stock price has been thoroughly examined, leaving little yeast for doubt. It's time to savor these findings and resist the temptation to stir the pot – or perhaps, in this case, the fermenter – any further.