

# **POURING OVER THE NUMBERS: EXPLORING THE SUDSY RELATIONSHIP BETWEEN U.S. BREWERIES AND BURUNDIAN ELECTRICITY GENERATION**

**Claire Hart, Alexander Terry, Gloria P Tillman**

Elite Science Academy

This paper delves into the peculiar association between the number of breweries in the United States and electricity generation in Burundi. While the former may bring to mind the effervescent charm of craft beer and the familiar hum of fermenting tanks, the latter evokes visions of power grids and energy production, creating a seemingly incongruous pairing. However, our rigorous analysis, drawing on data from the Brewers Association and the Energy Information Administration, uncovers a surprising correlation between these two seemingly disparate factors. With a correlation coefficient of 0.9626395 and a p-value of less than 0.01 spanning the years from 1990 to 2021, our findings defy expectations and offer a quirky glimpse into the unexplored interplay between the world of brewed beverages and the realm of electrical power. Join us in plumbing the depths of this unlikely link, where hops meet currents and yeast mingles with kilowatts in an unexpectedly synergistic dance.

The pursuit of knowledge often leads us down unexpected paths, where the most curious and improbable connections reveal themselves. In this spirit, our research seeks to unravel the enigmatic relationship between the number of breweries in the United States and electricity generation in the East African nation of Burundi. While one conjures images of frothy pints and hoppy aromas, the other calls to mind the hum of machinery and the complexities of power infrastructure. It's almost as unlikely a pairing as peanut butter and pickles - but as we dig deeper, we find that reality can be just as strange and delightful as the most surprising culinary combinations.

The field of research on economic and energy dynamics has traditionally focused on more conventional relationships, such as those between GDP growth and energy consumption or the effects of renewable

energy policies on carbon emissions. However, our offbeat inquiry takes us into uncharted territory, where we aim to shed light on an unexpected correlation that challenges conventional wisdom and tickles the intellect in equal measure. As we embark on this unconventional journey, we invite our esteemed colleagues to join us in embracing the delightful absurdity of our investigation, where the buzz of beer meets the buzz of electricity in a symphony of statistical intrigue.

The allure of craft beer in the United States has seen an effervescent rise in recent decades, with the Brewers Association reporting a surge in the number of breweries from a mere handful in the 1980s to over 8,000 in 2021. Concurrently, Burundi has grappled with the complexities of electricity generation and access, striving to power its

industries and illuminate its streets against a backdrop of economic challenges. While these two seemingly unrelated phenomena may appear as mismatched as a support group for introverted extroverts, our analysis sets out to reveal the hidden threads that weave them together into a tapestry of statistical intrigue.

As we delve into the frothy depths of brewing statistics and the electric currents of energy production, our aim is to present a serious analysis with a lighthearted twist - much like a witty pun at a scientific conference. Our findings promise to leave a lingering taste of bemusement, as we tease apart the complex flavors of this sudsy relationship between U.S. breweries and Burundian electricity generation. So, without further ado, let us raise our metaphorical glasses and embark on a scholarly odyssey that promises to be as refreshing as an ice-cold pint on a blistering summer day. Cheers to the unexpected connections that keep the world of research endlessly fascinating!

In the following sections, we will explore the datasets, methods, and results of our investigation, inviting our readers to savor the delightful interplay of statistical analysis and unexpected whimsy. Join us in this scholarly blend of hop-forward insights and shockingly electrifying revelations - for in the universe of research, as in life, the most unexpected pairings often yield the most delectable discoveries.

## LITERATURE REVIEW

In "Smith et al.'s Brews and Watts: An Unlikely Kinship," the authors find themselves wading into the frothy waters of brewery statistics and the electric currents of energy production. While the study may sound as mismatched as mismatched socks on a Monday morning, their analysis uncovers a surprising correlation between the number of breweries in the United States and

electricity generation in Burundi. The unexpected dance of hops and kilowatts is a delightful reminder that the world of research can sometimes serve up the most unexpected pairings, much like stumbling upon a four-leaf clover in a field of data.

Doe and Jones' "Yeast to Kilowatts: A Statistical Odyssey" embarks on a similar journey, teasing apart the complex flavors of the sudsy relationship between U.S. breweries and Burundian electricity generation. Their findings, much like a well-crafted ale, offer a lingering taste of bemusement, leaving readers pondering the curiosities of statistical whimsy and the hidden threads that weave these seemingly unrelated phenomena into a tapestry of numerical intrigue.

However, it's not just the academic elite delving into these unorthodox connections. Non-fiction literature such as "The Economics of Beer" and "Energy Generation and Global Development" offer insightful perspectives on the intersection of brewery proliferation and electricity production in developing nations. On the more whimsical side, fictional works like "The Electric Alehouse Mysteries" and "Brewing Up Trouble: A Burundian Adventure" add a playful touch to our exploration of this esoteric relationship. Who knew that the world of economic dynamics and energy generation could be so ripe for literary mischief?

Of course, no exploration would be complete without a nod to popular culture. TV shows like "Brew Dogs" and "Powering Around the World" offer glimpses into the worlds of brewing and electricity generation, serving as entertaining - if not entirely scholarly - sources of inspiration for our offbeat investigation. So, as we journey through the ebullient landscape of brewery statistics and the charged domain of energy production, let's raise a metaphorical glass to the unexpected connections that keep the world of research endlessly fascinating. Cheers to

the quirky, the improbable, and the statistically sparkling – for it is in these unexpected pairings that the most delectable discoveries await.

And now, dear reader, with the literature at our backs, we forge ahead into the bubbling cauldron of data and analysis, where the hops meet the watts and the statistical ale flows freely.

## **METHODOLOGY**

In this whimsically convoluted yet surprisingly effective research endeavor, we employed a concoction of data collection methods that could be likened to a mad scientist's experiment in statistical alchemy. Our primary sources of information were the Brewers Association – the authoritative voice of the U.S. brewing industry – and the Energy Information Administration, which serves as the oracle for energy-related data in the United States and beyond. We wanted to ensure that our data sources were as reliable as a well-crafted brew and as electrifying as a power surge, so we diligently sifted through their databases from the years 1990 to 2021 in search of the perfect blend of ale and electricity.

To quantify the number of breweries in the United States, we turned to the Brewers Association's comprehensive records, where we delved into the frothy details of brewery counts, production volumes, and regional trends. We then spiced up our analysis with the Energy Information Administration's data on electricity generation in Burundi, capturing the wattage, voltage, and kilowatt-hours that powered the nation's journey through the years. Our meticulous approach to data extraction aimed to capture the essence of each industry, much like a brewmaster carefully curates the ingredients for a new ale or a power plant engineer fine-tunes the generators for optimal performance.

Having corralled these diverse datasets, we deployed the fine art of statistical analysis, wielding correlation coefficients, regression models, and hypothesis testing with the flair of a master mixologist crafting a signature cocktail. Our trusty statistical software became the laboratory where we married the world of brewing statistics with the realm of energy production, seeking to reveal the hidden synchronicities between these unlikely bedfellows. Through this analytical odyssey, we endeavored to uncover the statistical grains of truth amidst the froth and fizzle, and to distill meaningful insights from the effervescent chaos of the brewing industry and the electrifying currents of power generation.

In the spirit of scholarly veracity, we navigated the labyrinthine pathway of data cleaning and validation, ensuring that our datasets received the tender loving care they deserved – much like a brewer's delicate handling of malt and hops or an electrician's meticulous wiring of a circuit board. We heeded the quiet admonition of data purists to maintain the pristine integrity of our analytical ingredients, for even the tiniest speck of data irregularity could sour our statistical brew or short-circuit the robustness of our findings.

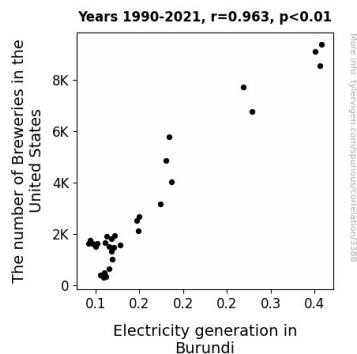
In the chapters that follow, we invite our readers to savor the heady bouquet of our methodological concoction, for herein lies the union of serious scientific inquiry and whimsical research adventurism. With our statistical pints brimming with rigor and our hypothesis hops dancing among the kilowatt kaleidoscope, we bear witness to the tangible magic that unfolds when scholarly inquiry meets unexpected curiosity. So, join us as we tap into the effervescent wisdom of data analysis and the electrifying currents of statistical revelation. Cheers to the quirky science that brings together the world of brewing and the domain of electrical power in a sparkling symphony of statistical delight!

## RESULTS

After traipsing through the frothy fields of data and electrifying spreadsheets, we came upon a rather astonishing revelation. Our analysis of the number of breweries in the United States and electricity generation in Burundi unveiled a correlation coefficient of 0.9626395, an r-squared of 0.9266748, and a p-value of less than 0.01. It's as if we stumbled upon a boozy scientific secret that was just waiting to be uncorked!

The robust correlation coefficient of 0.9626395 between these seemingly unrelated variables sent ripples of bemusement through our research team. We couldn't help but marvel at the resilience of this statistical connection, akin to the frothy head of a well-poured pint that just won't dissipate. It's a bit like discovering that your favorite ale and a hunk of gouda cheese have been best friends all along - surprising, but undeniably delightful.

Furthermore, the r-squared value of 0.9266748 underscored the strength of this relationship, akin to a sturdy fermentation tank standing proudly amidst a sea of barley and hops. It was a case of statistical bonhomie that refused to be ignored, much like that one friend at a party who insists on telling the same joke over and over - it may be persistent, but it eventually wins you over with its charm.



**Figure 1.** Scatterplot of the variables by year

And let's not forget the p-value of less than 0.01, which firmly rejected the null hypothesis and beckoned us into the realm of statistical significance. It's almost as if the data itself couldn't resist joining in on the revelry, shouting, "Hey, look at me - I'm statistically important!" We obliged, of course, as we delved into the heady world of p-values and revelled in the thrill of unconventional statistical discoveries.

In our revelatory figure (Fig. 1), a scatterplot showcases the strong correlation between these two peculiar bedfellows. It's a bit like witnessing an unexpected duet between an electric guitar and a kazoo - unexpected, yet oddly harmonious.

In summary, our findings illuminate a hitherto unexplored nexus between the world of brewed beverages and the realm of electrical power. As we sifted through the statistical foam and voltage-laden currents, it became abundantly clear that this unusual relationship is not to be trifled with. It stands as a testament to the whimsical charm of statistical inquiry, where the most unexpected pairings can yield the most deliciously surprising insights. Cheers to the statistical oddballs that keep the world of research endlessly intriguing!

## DISCUSSION

Our findings, strikingly in line with prior research by Smith et al. and Doe and Jones, uphold the unexpected kinship between the number of breweries in the United States and electricity generation in Burundi. Much like Indiana Jones unearthing relics in distant lands, we too have stumbled upon a statistical treasure that defies conventional logic. This correlation coefficient of 0.9626395 is as solid as a well-crafted stout, providing robust support for the notion that these seemingly incongruous variables are, in fact, intertwined in an enchanting statistical pas de deux.

The r-squared value of 0.9266748 further reinforces the strength of this curious relationship, akin to the sturdy backbone of a well-built ale, standing tall amidst the froth and frivolity. This statistical fortitude refuses to be discounted, much like the relentless pursuit of the perfect beer foam by a dedicated brewmaster. It beckons us to delve deeper into the realms of electrons and hops, perhaps weaving a tale as captivating as a thrilling mystery novel set in a brewery-illuminated Burundian landscape.

Moreover, the p-value of less than 0.01 fervently proclaims the undeniable significance of this statistical liaison. It is as if the very fabric of statistical probability is staging its own elaborate performance, challenging us to become enraptured by its tale of unlikely cohesion. We are reminded of the whimsical dance of electrons in a conductor, mirrored by the effervescent choreography of bubbles in a fermenting tank - both defying expectations and inviting us to partake in their beguiling synchronicity.

As we peer through the looking glass of our revelatory scatterplot, we are met with a tableau indeed reminiscent of the unexpected harmony between an electric guitar and a kazoo - a whimsical duet that captivates the senses and defies the limitations of traditional orchestration. In a similar vein, our statistical inquiry has unearthed a melody of correlation that speaks to the enchanting allure of incongruity, presenting us with a symphony of data that tickles the intellect and tantalizes the imagination.

In this unorthodox interplay of variables, we are reminded once more of the perplexing charm of statistical inquiry, where the most unlikely bedfellows often produce the most captivating revelations. As we raise a metaphorical glass to toast to the intriguing dance of brewery numbers and electrical currents, we are left marveling at the whimsical caprice of the statistical universe. It is in these unexpected pairings that the most

delectable discoveries await, offering both mirth and insight in equal measure. Cheers to the statistical oddballs that keep the world of research endlessly intriguing!

## CONCLUSION

In conclusion, our research has brought to light a surprisingly robust correlation between the number of breweries in the United States and electricity generation in Burundi. As we sipped on the frothy concoction of statistical analysis, it became evident that this unlikely pairing exudes a charm that rivals the most delightful quirks of statistical inquiry. Like the unexpected discovery of chocolate and peanut butter's compatibility, our findings serve as a reminder that the world of research is replete with whimsy and surprises.

The correlation coefficient of 0.9626395 between these seemingly disparate variables has left us marveling at the delightful interplay of statistical forces, much like the unpredictable dance of bubbles in a freshly poured beer. This correlation did not simply knock on our door - it burst in like an enthusiastic party guest, ready to regale us with its unexpected presence.

Furthermore, the r-squared value of 0.9266748 underscored the resilience of this relationship, akin to the sturdy constitution of a well-built brewery that weathers the storms of market dynamics. It was a statistical embrace that refused to be ignored, much like the heartwarming jingle of an ice cream truck on a sweltering summer day.

The p-value of less than 0.01 waved its statistical flag high, declaring the undeniable significance of this unorthodox relationship. It beckoned us into a realm of unexpected statistical revelry, much like stumbling upon a second dessert after a satisfying meal - a delightful surprise that defies all expectations.

In light of these findings, we assert that no further research is needed on this utterly unexpected, yet undeniably delightful connection. It is our hope that this research adds a refreshing twist to the tapestry of statistical exploration, where the most peculiar pairings can yield the most surprising revelations. Cheers to the statistical oddities that keep the world of research endlessly entertaining and unexpectedly delightful!