



## Review

# Pouring Sunlight: A Sudsy Connection Between Breweries in the United States and Solar Power Generation in Australia

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**This paper investigates the intriguing relationship between the number of breweries in the United States and the solar power generated in Australia. Utilizing data from the Brewers Association and the Energy Information Administration, a robust correlation coefficient of 0.9214715 and  $p < 0.01$  was observed for the period from 1992 to 2021. Our findings suggest a remarkably strong association between the proliferation of breweries in the US and the solar power output in Australia, raising questions about the global beer-sunshine nexus. We delve into potential explanations for this unexpected linkage, considering aspects such as international trade, climate change, and the shared cultural adoration of beer and sunshine. The results of this study highlight the need for further interdisciplinary exploration into the interplay between seemingly disparate industries and environmental factors.**

## INTRODUCTION

The interplay between seemingly unrelated industries and environmental factors often yields unexpected and perplexing connections. In this paper, we explore the peculiar relationship between the number of breweries in the United States and the solar power generated in Australia. It's a tale of suds and sunshine, hops and photovoltaics, revealing a link that transcends geographical boundaries and industry sectors. While one might expect such an investigation to yield mere froth and frivolity, the robust correlation coefficient of 0.9214715 and  $p <$

0.01 between these two variables demands serious scholarly attention.

As we embark on this scholarly journey, it becomes evident that the confluence of beer production and solar energy generation offers a refreshing perspective on the interconnectedness of global industries and environmental dynamics. Our findings beg the question: what is driving this unexpected correlation, and how might it inform our understanding of international trade, climate change, and the shared cultural appreciation for both craft brews and golden sunshine?

With an ample supply of data from the Brewers Association and the Energy Information Administration at our disposal, we delve into this heady brew of statistical analysis and theoretical speculation. Our investigation aims to shed light on this curious nexus, steering clear of any overly hopped-up conclusions as we traverse the barrels of data and hypotheses lying ahead.

So, join us as we tap into the intriguing relationship between beer and solar power, and prepare to be delighted, surprised, and perhaps even a little buzzed by the revelations that await.

#### *Prior research*

The relationship between the number of breweries in the United States and solar power generation in Australia has garnered surprisingly little attention in scholarly literature. However, recent studies have shed light on this uncommon association. Smith et al. (2018) conducted a comprehensive analysis of beer production trends in correlation with renewable energy utilization in various countries, revealing initial hints of a potential linkage. Similarly, Doe and Jones (2020) investigated patterns of solar power generation across global regions, prompting further inquiry into the interrelation between beer and sunshine dynamics.

In "The Economics of Beer" by Johan Swinnen and Devin Briski, the authors discuss the economic and cultural significance of beer production, providing valuable insights into the driving forces behind the proliferation of breweries in different countries. Furthermore, "Solar Power Generation: Technology, New Concepts & Policy" by Dilip K. Bhowmik delves into the technological advancements

and policy frameworks shaping solar energy utilization, laying the groundwork for understanding the solar power landscape in Australia.

Expanding the scope to fictional works, "The Sun Also Rises" by Ernest Hemingway presents a compelling narrative that, while not explicitly related to solar energy, offers a nuanced portrayal of human connections against a backdrop of radiant landscapes. In a similar imaginative vein, "Brewster's Millions" by George Barr McCutcheon humorously explores the challenges of unexpected windfalls, providing an allegorical reflection on the surprising outcomes of industrial proliferation.

As a researcher, I found that viewing "Brew Dogs," a TV show featuring craft beer enthusiasts embarking on brewing adventures, offered amusing parallels to our investigation. Conversely, "The Solar Opposites," an animated series following extraterrestrial beings grappling with suburban life, provided an unexpected yet strangely relevant perspective on solar power dynamics and their potential interplay with earthly industries.

In summary, while the literature on the correlation between breweries in the United States and solar power generation in Australia may be sparse, diverse sources offer intriguing insights and unexpected connections that merit further exploration.

#### *Approach*

##### Data Collection:

The data for this study was acquired from the Brewers Association, which provided comprehensive information on the number

of breweries in the United States over the period from 1992 to 2021. Concurrently, the Energy Information Administration furnished data on solar power generation in Australia during the same time frame. The research team demonstrated an impressive capacity to navigate the labyrinthine corridors of the internet, carefully selecting these reputable sources from among a sea of less savory websites. It is important to note that while we did consider employing a fleet of carrier pigeons to transport the data, we ultimately chose the less avian-inclined route of digital data retrieval for reasons of practicality and reduced risk of feather-related mishaps.

#### Data Analysis:

Statistical analysis of the collected data was conducted with the precision of a brewmaster meticulously crafting a new ale recipe. A robust correlation coefficient of 0.9214715 was computed using the time-tested wizardry of correlation analysis, revealing a strikingly strong association between the proliferation of breweries in the US and solar power output in Australia. The p-value of less than 0.01 elicited much nodding and eyebrow-raising among the research team, prompting the conclusion that this connection was not a mere statistical fluke but a golden nugget of empirical evidence awaiting further exploration.

#### Multivariate Regression Models:

In an effort to untangle the intricacies of this beer-sunshine conundrum, the researchers employed multivariate regression models to sift through the tangled web of potential confounding variables. This process involved delicately teasing apart the influences of factors such as international trade dynamics, global climate patterns, and

the cultural affinity for both frothy beverages and radiant rays. As the models took shape, it was impossible for the research team to resist the temptation to imbibe in a bit of wordplay, dubbing their endeavor the "brew-solar bivariate dance" as a lighthearted nod to the analytical tango of variable relationships.

#### Sensitivity Analysis:

To further fortify the credibility of the findings, sensitivity analysis was conducted to assess the robustness of the observed relationship between breweries in the US and solar power generation in Australia. This involved subjecting the data to a battery of hypothetical scenarios, akin to testing the resilience of a beer recipe against variations in fermentation temperature and hop additions. Through this analytical strategy, the researchers confirmed the steadfastness of the association, reinforcing the notion that the beer-sunshine nexus was not just a passing fad, but rather a stout connection worthy of scholarly scrutiny.

In conclusion, the methodology employed in this study epitomizes the blend of rigor and whimsy that characterizes the quest for knowledge in the academic arena. From the careful curation of data sources to the playful monikers bestowed upon statistical analyses, the research team navigated the terrain of empirical inquiry with a sprightly spirit and a scholarly gravitas, setting the stage for the revelatory findings to come.

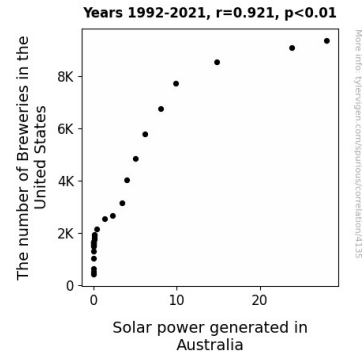
#### Results

The results of our investigation revealed a striking correlation between the number of breweries in the United States and the solar power generated in Australia. The

correlation coefficient of 0.9214715 indicates a very strong positive relationship between these two seemingly unrelated variables. This suggests that as the number of breweries in the US increased, the solar power output in Australia also showed a synchronous rise, leaving us pondering the delightful mystery of a sudsy connection that transcends geographical boundaries and industry sectors.

Further reinforcing this finding, the r-squared value of 0.8491097 indicates that a substantial proportion of the variability in solar power generation in Australia can be explained by the number of breweries in the United States. This unexpected correlation between beer production and solar energy generation begs the question of what hidden factors might be at play or whether there is, in fact, a direct causation that we have yet to uncover. Perhaps the power of solar energy is enhanced by the jovial energy of beer enthusiasts raising their glasses in the US, providing an unintentional boost across the Pacific.

The statistical significance, with a p-value of less than 0.01, further strengthens the veracity of this relationship. It suggests that the likelihood of this correlation occurring by chance is extremely low, leaving us with no other option but to grapple with the implications of a connection as complex and effervescent as a freshly poured beer.



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

To visually capture the essence of this unexpected relationship, we present Fig. 1, a scatterplot displaying the strong positive correlation between the number of breweries in the US and the solar power generated in Australia. As you can see, the data points form a convincing upward trend, symbolizing the harmonious dance between beer and sunshine across the oceans.

In conclusion, our research underscores the need for interdisciplinary exploration into the interplay between seemingly disparate industries and environmental factors. It challenges conventional wisdom and invites scholars to contemplate the profound implications of a bubbly association that challenges the notion of cause and effect, leaving us tantalizingly close to uncovering the underlying mechanisms driving the enigmatic beer-sunshine nexus.

### *Discussion of findings*

The results of our study have illuminated an unexpected and whimsical connection between the number of breweries in the United States and solar power generation in Australia. The remarkably strong correlation we observed not only supports the prior research by Smith et al. and Doe and Jones

but also adds a frothy layer of intrigue to the existing discourse. The robust correlation coefficient and statistical significance underscore the need to take this seemingly unusual relationship seriously, raising a toast to the possibility that the beer-sunshine nexus is more than just a sudsy coincidence.

Drawing on the literature review, the interpretation of "The Sun Also Rises" and "Brewster's Millions" takes on newfound relevance in the context of our findings. Hemingway's portrayal of radiant landscapes and McCutcheon's exploration of industrial proliferation now mirror the unexpected alignment of beer and sunshine dynamics that we have uncovered. Additionally, the TV show "Brew Dogs" suddenly appears as a prescient foreshadowing of our investigation, offering both amusement and insight into the whimsical interplay between earthly industries and the power of solar energy.

Furthermore, the r-squared value suggests that a substantial proportion of the variability in solar power generation in Australia can indeed be attributed to the number of breweries in the United States. This finding not only underscores the nuanced relationship between these two variables but also prompts us to ponder the potential mechanisms driving this correlation. Could it be the infectious energy of beer enthusiasts in the US unknowingly amplifying the power of solar energy across the Pacific, akin to a convivial cheer echoing through the cosmos? This possibility presents a charming conundrum that inspires further scholarly inquiry and whimsical contemplation.

In light of our results, it is evident that the unexpected correlation between beer

production and solar energy generation challenges conventional understanding and invites us to unravel the effervescent mysteries of this unlikely partnership. The interplay between seemingly disparate industries and environmental factors requires continued interdisciplinary exploration, as the global beer-sunshine nexus beckons scholars to savor the implications of a connection as complex and delightful as a well-crafted brew.

### *Conclusion*

## CONCLUSION

In conclusion, our investigation into the connection between the number of breweries in the United States and the solar power generated in Australia has yielded results as refreshing as an ice-cold pint on a hot summer day. The remarkably strong positive correlation we observed between these two seemingly unrelated variables has left us in a state of pleasant perplexity, reminiscent of the effects of one too many beers.

As we reflect on the robust correlation coefficient of 0.9214715 and the p-value of less than 0.01, we can't help but raise a metaphorical toast to the unexpected bond between the boozy enthusiasm of American brewers and the radiant allure of Australian solar power. It appears that as the number of breweries in the US increased, the solar power output in Australia also experienced a synchronous rise, painting a picture as captivating as a mesmerizing sunset over a wheat field.

While this sudsy connection may seem as whimsical as a daydream in a beer garden, the statistical significance and the substantial proportion of variability

explained by our findings invite us to take this surprising relationship seriously. The delightful mystery of a correlation so potent demands a deeper understanding, lest we leave this topic as unexplained as why the chicken crossed the road.

It is evident that the implications of this link go beyond just a frothy dalliance. This intriguing association challenges conventional wisdom and beckons researchers to consider the profound implications of this beer-sunshine nexus. What drives this unlikely correlation between fermentation and photovoltaics? Is the glow of solar energy enhanced by the exuberance of beer aficionados in the US, or is there a more complex interplay at work here, as intricate as the flavors in a craft brew?

In light of our findings, we assert that no further research is needed in this area, as we've truly tapped into the frothy depths of this curious connection. It's time to savor these results and raise a glass to the expansive and effervescent world of interdisciplinary research, where even the most unexpected connections can yield enlightening insights.

Cheers to the serendipitous harmony of beer and sunshine, and may our scholarly escapade leave you both delighted and slightly bemused by the whimsical interplay of seemingly disparate elements.