

## Introduction

This research focuses on identifying the main themes of misrepresented science on Twitter, by finding relationships between Twitter (mini-blog) posts and the validity of the reference. Misrepresented scientific research for this study, should be interpreted as information that either refers to, associates with, or references, an actual scholarly article, that is coupled with misconstrued findings, malicious misquotes, or simply lies about the findings, misrepresenting the study. Through the identification of academic articles shared, and through validating the 'caption' or 'shared meaning' of the article to discover if the scientific research is being misrepresented, then working to identify the why of the misrepresentation, the what themes, and the who (demographics) quantifiable analysis using academic journal databases, Twitter extract database, and R (R- programming language used for consolidation and statistical computing) to find recurring and significant themes. The results showed that the main themes of misrepresented science are, health science, climate change, and astrology.

Keywords: Pseudoscience, fakescience, misinformed, fake, nonsense, health, medicine, vaccinating, immunized, homeopathy, psychiatry, climate, climatechange, global, astrology.

## Focus

As academia continues to work to utilize Twitter and other social media platforms to gain an understanding of current events and sentiment, there has yet to be a shared understanding of the main themes of misrepresented science. This research works to gain some understanding and could potentially serve as a platform to explore the WHY of sharing misinformation or even originating misinformation and for WHAT purpose(s).

## Gaps In Literature

Researchers must continue the efforts to identify the differences between Twitter users and Twitter-bots. This near impossible task is crucial to understanding if confusion if malicious or simply ad bots gone array. Gaining this understanding will not only serve Twitter users, but society. Clearing confusing, providing clarity and appropriate scientific information is crucial to the betterment of all peoples.

## Method

The data utilized was from Twitter and consisting 10,000 tweets, between the dates of October 1st, 2008 and October 28th, 2018. The software utilized for analysis was R and Microsoft Excel. The Twitter data pull focused on fake or pseudoscience as a primary marker before extraction to ensure data was related to the study. To reiterate, this study is not concerned with Twitter conversations as a general review, but rather the main themes of misrepresented science circulating on the Twitter social media platform.

### Coding

IF ANY WORD (Theme)	COMBINED WITH ANY (utterances, words, text) [For example, nonsense article about psychiatry = Perceived Misrepresented Mental Health]	Sub-Category Consolidation	THEN (Coding)
pseudoscience	health, medicine, vaccinating, immunized, homeopathy, Psychiatry	Health	Perceived Misrepresented Health Science
fakescience	climate, climatechange, global	Climate Change	Perceived Misrepresented Climate Change
misinformed	astrology, astronomy	Astronomy	Astronomy Pseudoscience
fake			
bullshit			
nonsense			

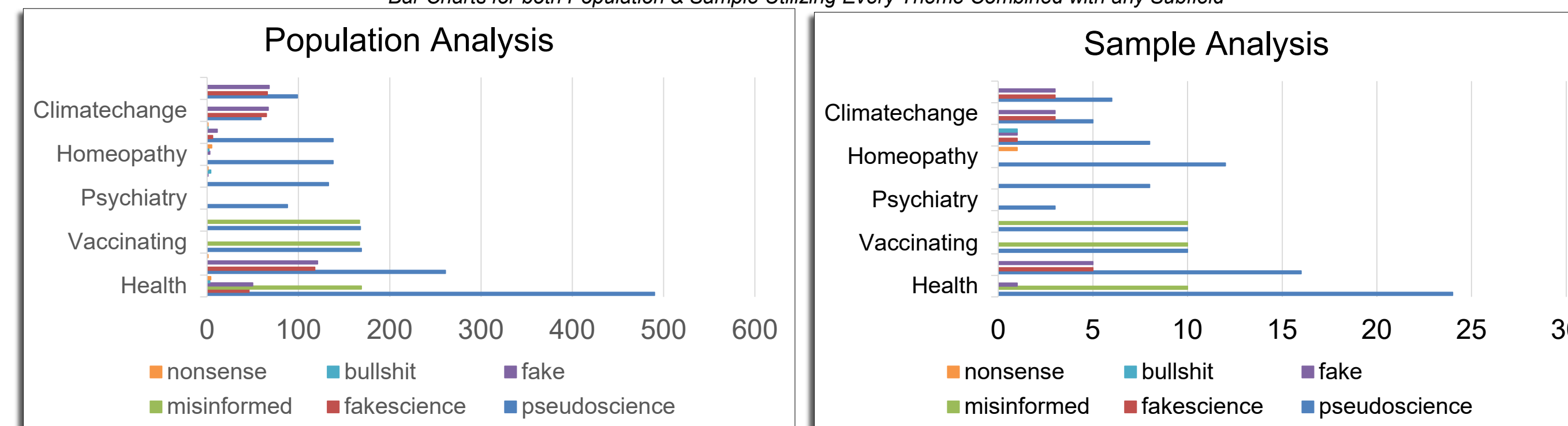
### Statistical Information & Sample Dataset

Statistical Information	DataSet (s)		
	Health	Climate	Astronomy
Sample Standard Deviation, s	17.19524558		
Variance (Sample Standard), s <sup>2</sup>	295.6764706	67	27
Population Standard Deviation, σ	16.71077497	1	11
Variance (Population Standard), σ <sup>2</sup>	279.25	30	0
Total Numbers, N	18	2	11
Sum:	159	1	0
Mean (Average):	8.833333333	1	0
Standard Error of the Mean (SE <sub>x</sub> ):	4.052958251	102	49

## Results

A random sample of 500 Tweets was identified, extracted, and utilized. Through analysis the most prominent themes of misrepresented science relate to the **health care field, the environmental field (with an emphasis on climate change), and lastly astronomy.**

Bar Charts for both Population & Sample Utilizing Every Theme Combined with any Subfield



### Findings

Coding Section	Frequency (%)	Sample (%)	% Difference
Perceived Misrepresented Health Science	1549 (15.49%)	102 (20.4%)	4.91%
Perceived Misrepresented Climate Change	925 (9.25%)	49 (9.8%)	0.55%
Astronomy Pseudoscience	139 (1.39%)	8 (1.6%)	0.21%
Unspecified / None / Other	7387 (73.87%)	341 (68.20%)	5.67%
Total	10000	500	9500

## Future Research

Utilizing the main themes of misrepresented science, it would benefit the body of research to further explore the underlying categories of misrepresented health science and misrepresented climate science. Investigating the main generators of scientific information being either misunderstood or misused would be the first step. The second step would involve analysing the seekers of this information and what researchers in these respective fields are doing to combat it, if anything at all.

## Reflection

I believe I can utilize this research process in every day life as it relates to my current profession as a systems and integrations manager. Gaining an understanding of where to find reliable resources of data was one thing, but to associate those resources along with my own analysis has been difficult but very rewarding. I am currently taking this Research Class at the same time I'm taking data storage and information retrieval. The combination of these two classes could not have been more perfect. It has allowed me to find information from reputable sources, extract it in a meaningful way for my organization, and provide very in depth analysis. This understanding has helped me formulate recommendations that take more into consideration than just my Human Resources portion – I am able to better articulate the problem to management, the IT department, and to the contracting section who are drafting new contracts or rewording current contracts to better suit my organizations needs.

## References

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