

**The Relationship Between Media Bias and the Political Views of
US Adults**

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Abstract

The goal of this project was to determine the relationship between the extent of bias of the media consumed by adults and the extremeness of their political views. American adults (n =1041) were surveyed and asked demographic questions, given a series of seven political statements, and asked to rate their level of agreement on a five-point Likert scale. They were also asked to check off the news sources they view on a regular basis. Using data from Pew and AllSides, each news source was tagged with its degree of liberal or conservative bias. It was hypothesized that people who only use polarized media sources will have answers towards one or five on the scale, corresponding to extreme opinions on social and political issues. Conversely, people who use a variety of media sources were hypothesized to have more moderate views. Analysis is still underway, but statistically significant findings have been made connecting extreme news sources to extreme political views (ANOVA p-value = 0.0063). There is a decrease in individual extremeness as the average source score gets closer to zero. In other words, in this survey, people who view neutral news sources have less extreme political views. This research draws conclusions about the population represented in this survey and helps gain insight into the political polarization so prevalent in our country today.

Introduction

In all elections, voters are exposed to news sources which help them receive the current information about candidates and important topics and issues. In a study done on news consumers, it was found that different age groups prefer different media platforms. By age, 18-49 year-olds preferred online media platforms, while older respondents aged 50 and over

preferred television. Overall, 57 percent of people got their news on TV (cable, local, nightly networks) and 38 percent got their news online (social media, websites, apps). A smaller percentage of people either got their news on the radio or in print newspapers. (Mitchell et al. 2016). Data show that recently, online and TV news platforms have become more popular than print, newspaper, or radio. The prevalence and use of news available on mobile devices has also risen rapidly in the past decade, as more Americans than ever are able to get digital news on such devices. This accessibility of apps such as Facebook and Twitter makes it easier for people to read news, though such news feeds are often not fact-checked and the news that appears on them are influenced by algorithms created by those companies.

An important aspect of this research is previous bias. Many people, Democrats and Republicans alike, believe that certain media sources are extremely biased. A survey by the Knight Foundation showed that US adults thought that Fox News, Breitbart News, MSNBC, The Huffington Post, and CNN did not give neutral opinions. News sources believed to be the most unbiased were PBS News, Associated Press, NPR, The Wall Street Journal, and USA Today. (Knight Foundation et al. 2018) When surveyed separately, Democrats and Republicans thought almost the opposite about the bias of news sources. Democrats believed that most sources were unbiased except Fox News and Breitbart News. Republicans, on the other hand, believed that almost all news sources were biased except Fox News and the Wall Street Journal (Knight Foundation et al. 2018). In a study done on Fox News, researchers compiled information from TV guides, FOX News transcripts, and presidential voting data to create a model showing how much FOX News can change a voter's political views. After analyzing the data, the study concluded that from 2000 to 2012, FOX News became increasingly conservative as the years

progressed, such that over time, viewers were receiving increasingly biased news (Martin et al. 2017). My study will help expand upon this theme by examining whether this conservative shift (and liberal shift in other news sources) also corresponds to the strength of the news viewers opinions.

Procedure

The first step of this research project was to distribute surveys (Appendix 1) to adults across the country using Google Forms. It was sent to people around the United States through email chains and social media.

The surveys first asked participants for their consent. Once that was given, they were asked demographic questions: age, state, income, race, gender, and party affiliation. The next part of the survey asked them to rate political statements on a five-point Likert scale. The statements represented either an extreme conservative or liberal view (Ex: Abortion should be illegal.), alternating whether a rating of one or five was associated with the expected liberal or conservative viewpoint. Then, respondents were given a list of media sources and were asked to check the box of each one they look at on a regular basis and how often.

The survey was open for two weeks and afterwards analysis began. Upon receiving all of the responses, data from Pew Research Center and AllSides was used to tag each news source with its degree of liberal or conservative bias on scale from negative two to positive two. Python and Excel were used for data analysis. The main variables considered for comparison were ones relating political and news source bias. Demographic variables were also observed and analyzed. For statistical analysis, the ANOVA and Tukey HSD tests were used.

Results

The data presented in this section are from the 1,041 survey responses that were collected from United States adults around the country. The graphs and tables below compare political question answers, the extremeness of media sources, the amount of news sources reported as used, and age of respondents. Data were statistically analyzed using standard error and ANOVA and Tukey HSD tests.

Figure 1

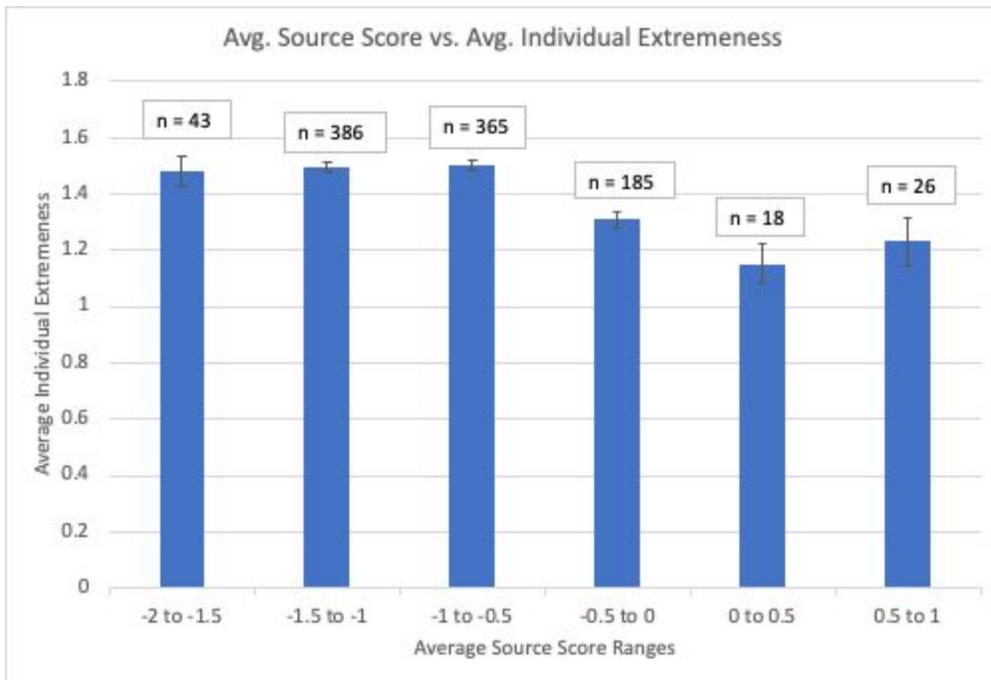
Table of Statements, Median Answers, and the Strength of Conviction about Each Statement *

Statement	Median Answer	Strength of Conviction about Each Statement Overall *	Standard Error
There should be universal background checks for all gun purchases.	5	1.8892	0.0118
Abortion should be illegal.	1	1.6898	0.0194
The government should do more to address climate change.	5	1.6435	0.0199
The government should help provide affordable healthcare to all citizens.	5	1.4884	0.0217
The wealthiest people and largest corporations should not bear an increased portion of the overall tax burden.	2	1.3979	0.0223
The death penalty should be abolished.	4	1.1599	0.0246
The trade war with China is justified.	3	0.8459	0.0246

* Average absolute value of the difference from 3 (highest possible is 2)

The table in *Figure 1* focuses on the survey’s political statements. As mentioned earlier, respondents were given these seven statements and then asked to rate them on a Likert scale from one to five. Five indicated strong agreement with the statement, and one indicated strong disagreement. This table shows the statements, the median responses for each, and the average absolute value of the difference from three, which is indicative of how far from three the answers typically were. I chose this latter measure because three corresponds to neutral on the scale of one to five. The table is organized with the statements with the most polarized median responses at the top, in red, to the most neutral one, in green.

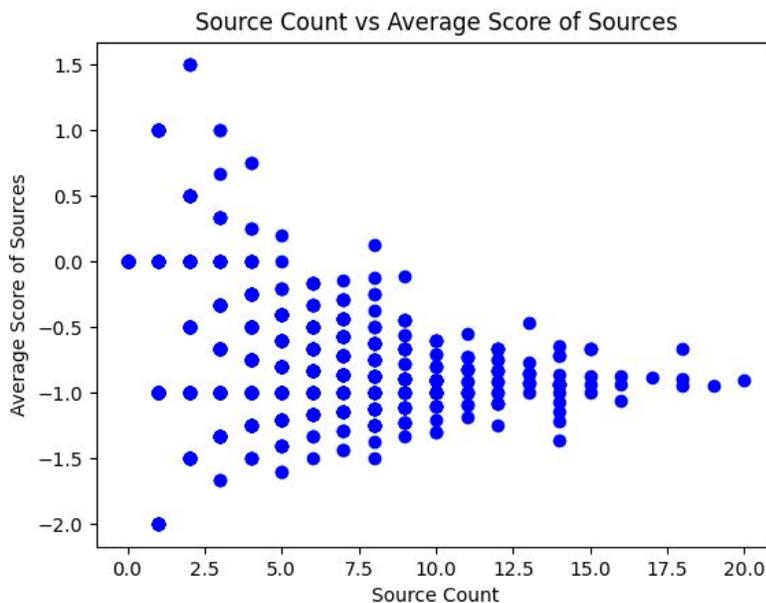
Figure 2



The graph in *Figure 2* compares reported news sources to political views. This graph consists of

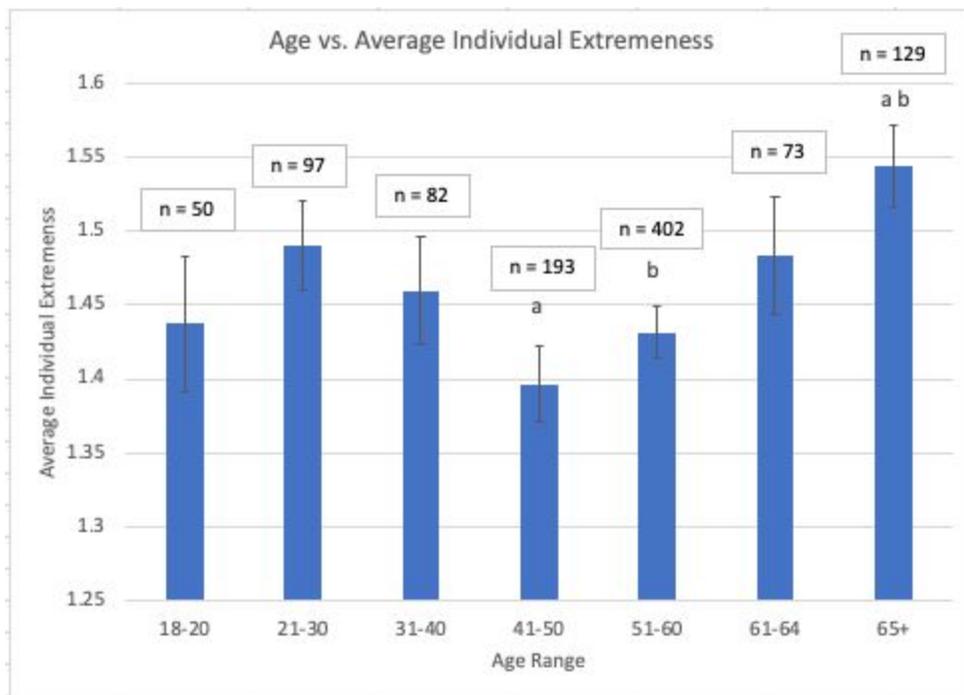
data from respondents who said they looked at news sources (n = 1028). Each bar is the average individual extremeness for the range of average source scores. Average source scores range from negative two to positive two. Negative two indicates very left (or liberal) leaning news sources, and positive two is very right (or conservative) leaning. When an ANOVA test was run on these groups the p-value = 1.7986 e-14 which is < 0.01. After the ANOVA test, a Tukey HSD test was conducted to show which groups were statistically different from each other. The first three groups were individually statistically different from the second three groups. This graph shows that as the average source score gets closer to zero, the average individual extremeness scores decrease. Additionally, there were not enough data points above one to graph. Specific p-values are shown in Appendix 2.

Figure 3



The scatterplot shown in *Figure 3* compares the amount of sources each respondent reported viewing versus the average score of those sources. On this graph, a score of negative two signifies very left leaning sources and positive two, very right leaning. As shown in the scatterplot, as the amount of sources looked at increases, the average score gets closer and closer to negative one. The fewer sources looked at, the more scores are closer to the extremes of negative two and positive two. It is important to note that the survey had more self-identified Democrats than Republicans, so it makes sense that the graph is shifted down and that there are many data points around $y = -1$, which is an average of left leaning sources.

Figure 4



The chart in *Figure 4* shows reported respondent age compared to the average individual

extremeness of that age range. One of the demographic questions asked was age range, and the x-axis shows the options that were given. The individual extremeness variable is the absolute value of the difference from three of the respondents' political question answers. An ANOVA test was run on these data groups, and the p-value calculated was 0.0063. Since the p-value = $0.0063 < 0.01$, we have convincing evidence that the groups are statistically different. After the ANOVA test, a Tukey HSD test was also run, and there were two sets of groups that were statistically different. To run this test, each group was given a letter, 18-20 = A, 21-30 = B and so on. Group D (41-50) is statistically different from Group G (65+) and Group E (51-60) is also different from Group G. On the graph, you can see these differences represented by 'a' and 'b' above the bars.

Discussion

The hypothesis for this research was that people who only use polarized news sources will have answers towards one or five on the scale, corresponding to extreme opinions on social and political issues. Conversely, people who use a variety of media sources were hypothesized to have more moderate views, closer to three on the scale. This hypothesis is tested using two different news source variables: the extremeness and number of news sources reported as used by each respondent. There is convincing evidence to support the hypothesis that respondents who reported more extreme sources averaged more extreme answers on the political statements. The second part of the hypothesis, pertaining to the number of sources, has yet to be supported or negated, and further analysis is still underway.

Figure 1 is a table with information about the political statements that were asked. This

table importantly shows how some questions had median answers of ones and fives (the most extreme options) while others, twos, threes and fours. From this table, you can see that people typically had the strongest view on gun control because the median was five, and the average absolute value was 1.88. On the other hand, the statement about the trade war in China had the most neutral answers, with the median answer being three. This table was important because after calculating the absolute value from three of everyone's average political response scores, I was able to create the individual extremeness variable. Absolute value was used because one and five are the same distance from a neutral response of three, even though they are on opposite sides of the scale, and it was important that this nuance was taken into consideration. The individual extremeness variable is what allowed me to compare political views and media consumption.

The first part of the hypothesis is supported by *Figure 2*, which compares the average source score to the corresponding average individual extremeness. By looking at the graph, you can see the decrease in average individual extremeness as the average source score gets closer to zero. This decrease is statistically significant because Groups A, B, and C are all individually statistically different from Groups D, E, and F. It is also interesting to note that the group with the largest sample size ($n = 386$) is Group B, which has both the second to most extreme source range (-1.5 to -1) and average individual extremeness (1.497). The second largest sample ($n = 365$) is Group C, and it had the highest average individual extremeness score of 1.5001. Group E on the other hand, has both one of the ranges closest to zero (0 to 1.5) and the lowest average individual extremeness score (1.151). The sample sizes of each group are important because they show that there are many more people with extreme average source scores than neutral ones.

This can lead to a conclusion that the population represented in my data, on average, looks at more biased news sources than neutral ones. Within the sources that were tagged using Pew and AllSides, 24 percent were neutral, 39.47 percent ‘leaned right’ or ‘leaned left, and 36 percent were labeled ‘left’ or ‘right’. In the case of my survey, the majority of respondents were Democrats, so more extreme liberal sources were reported. There were not enough data points to graph people with an average source above 1 ($n = 4$), which would be extreme conservative news sources.

While source count and individual extremeness have not been analyzed together yet, source count and source bias have and they do correlate as is seen in *Figure 3*. In the graph there is a very clear line at $y = -1$, which in *Figure 2* was also the most common average source score. Significant conclusions relating to the hypothesis cannot be drawn from this scatterplot, but it does show a correlation between the two variables.

Besides questions on political statements and news sources, participants were also asked demographic questions such as gender, age, income, race, location, and party affiliation. For each demographic variable, Tukey HSD tests were run to see if the group’s individual extremeness were statistically different from one another. The only variable that had differences was age, as can be seen in *Figure 4*. This graph shows the number of people in each age group and the average individual extremeness score for each age range. As stated in the annotation, Groups D and G were statistically different, and so were Groups E and G. The age range of 41-50 had the lowest average individual extremeness score of 1.397 while the oldest group (ages 65+) had the highest (1.544). The oldest age group having the highest individual extremeness score makes sense because if they have been consuming extreme news sources for a longer

amount of time, it may have contributed to their forming of more extreme views. It may have been ideal to have the age groups be more equal in size; almost half ($n = 402$) of my survey consisted of individuals aged 51-60, so younger groups are significantly under-represented.

My research and conclusions about the bias of news sources affecting the extremeness of adults' political views are very relevant today. Politics are as polarized as ever, even after the January 6, 2021 Capitol riot, and my research leads me to believe that the news sources people are looking at and trusting, are part of the reason they have extreme views. In addition to national relevance, my family is much of the reason I was interested in conducting this research. Three of my grandparents rely heavily on Fox News for their news and information, and my parents do not. Along with differences in their news sources, there were very large observable differences in their political views. I believed that these variables were related and not a coincidence, and I wanted to see if I was correct; my conclusions have supported this inference. I have also found correlations between age and extreme views, which could also contribute to my grandparents having the views that they do. For my family, and others in similar situations, these conclusions can help resolve some tension because we know that biased media may be the root of some of these differences. Going forward, we can all try to diversify our news sources (and fact-check them to the best of our ability) and perhaps that will lead to less extreme, more nuanced political views. Outside of family, this research could also be valuable to the news sources themselves. It could be beneficial for news providers to see how the way they present information can have broad repercussions on the population.

Reflecting back on my research, both the survey and the analysis, there were some points that could be improved in future work. In the data collection stage, the 'snowball effect' was

used to collect as many responses from across the country as possible. Because of this, I had no control over who filled out the survey. To draw conclusions that apply to the entire general population, it is important that the data be representative of the voting population. My survey respondents were 91 percent Caucasian and 61 percent female. In comparison, the United States is 72.2 percent Caucasian and 50.7 percent female (US Census). As such, the conclusions cannot necessarily be generalized to the population as a whole. If this survey were to be conducted again, it could be improved by trying to reach a representative sample of the United States population. Similarly, it would be ideal to have a sample of respondents who are more representative of the population in terms of how they self-identify politically; this sample arguably contained more Democrats than Republicans than the overall adult population.

Although there are no known errors in my analysis, there are aspects of the process that made data analysis difficult at times. Since this was the first research study that I have conducted, I did not have prior experience with large amounts of data and was not expecting over 1,000 respondents to complete my survey. Hence, I was not adequately prepared to organize and sort through the many thousands of resulting data points. At first I used Python to begin graphing the data, and later I used Excel for further organization and analysis of the data. In future work I would look into using a data analysis software that could more easily aid in both analysis and organization throughout the project.

Since the analysis has not yet fully concluded there are still some questions that I would like to answer. As said earlier, the second part of the hypothesis, relating the number of sources and the extent of their bias, has yet to be supported or negated. I would like to further my analysis and draw conclusions on this nuance in the coming months. If I am able to arrive at a

variable that links the number of sources and the extent of their bias, I think it would strengthen my conclusions.

In future research, I would focus more on demographics and also create more numerical variables that could be easily pulled from answers without too much manipulation and calculations. Additionally, I think it would be interesting to conduct two surveys with the same people, but at different times. They could be asked to change sources or another variable in their news consumption habits and then their results could be compared. If I were to conduct another survey, I may also ask participants to rate the bias of their news sources. This rating could then be compared to the Pew Research Center and AllSides data that I used in my analysis.

To summarize, the first part of the hypothesis pertaining to the bias of media sources on political views has been supported by my data and statistics. The second part, relating to the number of media sources used, is still being analyzed. This research draws conclusions about the population represented in my survey and also helps gain insight into the political polarization that is in our country and many families around the country.

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Appendix 1

Research Survey

Hi. My name is Shoshi Henderson, and I am a junior at Princeton High School in NJ. I am conducting a research project in the political science field and would be grateful if you could take just TWO MINUTES to complete my ANONYMOUS survey with honest answers. Please SHARE it with others as well. The link is public, and I am trying to get at least 500 responses. Thank you.

* Required

Consent: Please click "yes" to indicate you agree to take this anonymous survey. This survey is completely optional and any responses not submitted will not be saved. You can stop taking this survey at any time. *

Yes, I agree

No, I do not want to take this survey

Background/Demographics

What is your current age? *

- 18-20
- 21-30
- 31-40
- 41-50
- 51-60
- 61-64
- 65+

What is your gender identification? *

- Female
- Male
- Prefer not to say
- Other: _____

What is your race or ethnicity? *

- Caucasian
- Hispanic or Latino
- African American
- Native American
- Asian or Pacific Islander
- Other: _____

What is your gross annual household income? *

- <\$20,000
- \$20,001 - \$40,000
- \$40,001 - \$65,000
- \$65,001 - \$150,000
- \$150,001 - \$300,000
- >\$300,000
- Prefer not to answer

In what state are you registered to vote? If you are not registered, please write N/A. *

Your answer _____

How do you identify politically? *

- Strong Democrat
- Moderate Democrat
- Independent
- Moderate Republican
- Strong Republican
- Other: _____

** If Independent was chosen:

⋮

Would you say you lean democrat or lean republican?

- Lean democrat
- Lean republican

Statements

Please tell me how much you agree or disagree with each of the following statements on a 1-5 scale, with 1 indicating strong disagreement and 5 indicating strong agreement.

The death penalty should be abolished. *

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

There should be universal background checks for all gun purchases. *

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

Abortion should be illegal. *

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

The government should do more to address climate change. *

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

The wealthiest people and largest corporations should not bear an increased portion of the overall tax burden. *

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

The government should help provide affordable healthcare to all citizens. *

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

The trade war with China is justified. *

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

How often do you look at news sources? * ⋮

- Never
- Once a week
- Multiple times per week
- Every day
- Multiple times per day

What news sources do you pay attention to on a regular basis? Please check all that apply. *

- The Sean Hannity Show
- The Glenn Beck Program
- MSNBC
- CBS News
- ThinkProgress
- The Economist
- NBC News
- BuzzFeed
- Bloomberg
- Mother Jones
- The New York Times
- The Colbert Report
- Yahoo News
- The Ed Shultz Show
- Option 16
- Google News
- CNN

- The Huffington Post
- BBC
- ABC News
- The Daily Show
- The Wall Street Journal
- PBS
- The Blaze
- Politico
- Al Jazeera America
- USA Today
- Fox News
- The New Yorker
- The Drudge Report
- The Washington Post
- Slate
- Breitbart
- NPR
- Daily Kos
- The Rush Limbaugh Show

Appendix 2

Tukey HSD results			
treatments pair	Tukey HSD Q statistic	Tukey HSD p-value	Tukey HSD inference
A vs B	0.4989	0.8999947	insignificant
A vs C	0.6026	0.8999947	insignificant
A vs D	4.3098	0.0381290	* p<0.05
A vs E	4.9147	0.0095614	** p<0.01
A vs F	4.2902	0.0397278	* p<0.05
A vs G	2.4185	0.5941106	insignificant
B vs C	0.2322	0.8999947	insignificant
B vs D	9.0564	0.0010053	** p<0.01
B vs E	6.0053	0.0010053	** p<0.01
B vs F	5.6562	0.0013248	** p<0.01
B vs G	2.6301	0.5062820	insignificant
C vs D	9.1611	0.0010053	** p<0.01
C vs E	6.0664	0.0010053	** p<0.01
C vs F	5.7295	0.0010734	** p<0.01
C vs G	2.6588	0.4940910	insignificant
D vs E	2.6768	0.4861547	insignificant
D vs F	1.6051	0.8999947	insignificant
D vs G	1.2277	0.8999947	insignificant
E vs F	1.0971	0.8999947	insignificant
E vs G	0.0578	0.8999947	insignificant
F vs G	0.6205	0.8999947	insignificant