**The S Word and what to do about it:**

The first few paragraphs of this article discuss how naming a magazine "Significance" triggered an unexpected reaction. Even statistical organizations were involved in asking the writers to change the name of the magazine, and they were receiving a lot of emails about this issue. Writers were receiving a lot of suggestions to synonymies the word Significance, which made them think that if they had to do so, they'd have to rework the entire magazine where the word is used all over. After reading, I believe that using the word Significance is inappropriate, but this should not be the case because it is simply a way for the writer to express his or her statistical knowledge, and the word should be used freely.

As stated in the following paragraph, the term "statistically significant" should not be misinterpreted in the sense that something that is statistically significant does not necessarily mean that it is very important; it can also be taken in the sense that it is adequate for further investigation. As a data Science student, I used to believe that if p 0.05, the model had not performed well; however, as I learned more, models can underperform based on a variety of criteria, such as feeding in unclean data to the model, ignoring outliers, and so on; these things confuse the algorithms and become the cause of model underperformance. Now I know that thinking p 0.05 is statistically significant is incorrect; instead, it should be considered that the model is performing that way due to other variables.

Using the word statistical significance and understanding that something statistically significant is just a case to be considered for future statistical explorations is not the solution to this problem. The three lines above are an explanation of the article's concluding paragraphs. Again, misunderstanding and confusion should be avoided by believing that anything statistically significant is extremely important.

**Statistical Intervals, not statistical significance:**

The first section of the article focuses on how few things in the statistical industry need to be changed to allow for meaningful interpretations of the findings. Two elements discussed in making this possible are modifying statistics courses, as these courses will have a large impact on making the changes because many early career beginners will learn it from the beginning. Another challenge is attracting experienced industry personnel. Then, at the end, there is a discussion about the twofold approach, which discusses how statistical significance, practical significance, and statistical intervals are different approaches.

The very next section discusses the inadequacy of the significance tests; here, they differentiate statistical significance from practical importance, stating that depending on the large and small sample sizes, statistical significance and practical importance will vary. Following that is an example of a factory that manufactures glass products, where the situation is to replace the current furnace, but doing so will have an impact on the tensile strength of the glass products. There will be a deterioration in glass quality, and the probability varies depending on the size of the samples; if the size is 1000, p is 0.96; if the size is 10, p is 0.72; and if the size is 75, p is > 0.05. This example is self-explanatory in that it shows that the probability that glass quality will deteriorate varies depending on the sample size. Looking at this, we can conclude that not everything will be statistically significant unless and until accurate values are obtained in order to draw conclusions.

Now, let's look at how to build a statistical interval; it provides a better analysis than statistical significance, as demonstrated by the example discussed earlier in the article, where there was a 95% confidence that the glass quality will improve when there are many samples; in this case, there were 1000 samples, so it was simple to reach a conclusion. This is known as the confidence interval, and it is essentially a statistical interval with a very small difference in megapascals. As a result, in another case, only 10 samples were considered, and based on the data, the tensile strength varied greatly, leading to the conclusion that more data is required to get closer to the results.

The final section discusses how useful the confidence interval, or any other statistical interval is in obtaining results quickly; one example given to support this is a TV news network in which viewers are invited to call in their opinions on a political issue. A lot of things need to be considered in this example because there will be a lot of random samples available, and it will be uncertain, so various assessments should be performed before doing such things. Finally, it is made clear that practitioners should be able to understand that significance testing is not the only option for dealing with statistical issues; statistical inference is also useful, and new approaches must be implemented to make it easier to work with existing ones.

**What does it all mean?**

As already stated in the paragraphs above the opening line itself talks about the misunderstanding of the word Significance which needs to be changed.

The first section of this article discusses abandoning or minimizing the use of the word Significance, particularly in statistics. The author emphasizes once more that statistical significance and practical significance are completely different and vary depending on the effect sizes. The other argument is that statistical significance is flawed and does not deliver what one expects it to deliver; the first, as mentioned by the author, is a programming argument, but the second is a methodology argument.

Following that is an example of an average camel and other mythical beasts; initially, the explanation is about what different averages are used for research purposes, such as mean median and mode, but using them in a sensible way is a good practice; then, the discussion is about how these averages are used to explain how living things are categorized. For example, according to Google, there are two categories of camels, six percent of which are Bactrians, and the rest are dromedaries. Now, the three statements following this paragraph make no sense to me because grouping two different categories of one thing and getting an average of that group is not a correct way to calculate this because both groups may have different characteristics, as previously stated. Instead, to improve on the examples given, I can say that The Bactrian Camels have so and so number of lumps and Dromedaries have so and so number of lumps; this is the best we can do. According to the last line of the following paragraph, these are the statements that are commonly used in academia (I understand because students make mistakes and learn from them), but in media, which I am not a big fan of, 80% of what they show is scripted and meaningless (which is completely a different argument).

Going further, statements like "average women" and "average households" do not make sense to me; they can never be like that. Instead, one can say, "Women in Britain on average have 1.9 children by the age of 45," I know that number 1.9 does not sound right in this context, but it is the best we can write when compared to the provided statement; being honest, one should be able to communicate clearly and accept clarification from someone who knows. Then there are statements about what an average family consists of, and so on. As far as I can tell, how can we convey the information being shared can be like, all the calculations being shared are based on the available data with the person who has done the calculation, there are many cases, but clear communication is the key to avoiding all of this. Then, in the criminal average example, it is pointless to calculate crime on the entire county's population; instead, consider the population that has committed crime. After reading this, I realize that using statistics alone is not enough; using them responsibly and where they are needed is the right thing to do.

In the subsequent paragraph, the author has provided a very nice example of conducting an experiment in his class about the coins produced at the Royal Mint, which is self-explanatory. The class can correctly answer the questions here, but when the topic shifts to clinical trials, there is confusion because the calculation does not fit in correctly in this case, as explained in the paragraph following the example. Reading on, we learn that statisticians use the word Significant only in a statistical sense, and they do not believe that something significant means that it will happen for sure. How I would like to connect this statement is that misunderstandings by the media create situations like this and make it worse.

**Overall Understanding:**

Using the word significant is not an issue here; however, misrepresenting the word Significant is.