Tesla Death Analysis Updated

**Introduction:**

It seems that Tesla has been in the center of debate when it comes to the safety of its drivers and pedestrians. Many people tend to think the autopilot is fool-safe and is safe when it is not. Although these deaths may not be as common, I think it is best to try and investigate whether Tesla’s are indeed safe. The National Highway Traffic Safety Administration has reported on these many times because it is a reoccurring issue. Many other manufacturers are also cracking down on this safety aspect of electric cars as well to push their product past Tesla. The NHTSA also states that majority of the automated car crashes are involving a Tesla while other agencies and articles brag about Tesla being the safest cars on the planet.

I am investigating this question: Are Teslas as safe as everyone says they are? There are inconsistencies that need to be put to the test by using data analysis and visualization to see whether Tesla crashes are fatal and whether the car was assisted in driving automatically.

I believe the dataset I chose from Kaggle.com will absolutely help me on my endeavors because it not only shows if the deaths were in an auto-pilot driving car, but it separates each case by time, date, whether autopilot was claimed or not, whether the autopilot was confirmed, and whether the pedestrian, driver, or passenger was injured or killed. The dataset gives an abundance of detail regrading each case which I can figure out to use to the best of my ability to answer the question. Overall, I think the dataset will do wonders in answering the question I posed due to the sheer details included.

I think this question is very important because as Tesla continues to hold a monopoly in the electric car industry, it is important to try and find its flaws so other companies can compete properly and fix these issues in their makes. I think there is a genuine misconception when it comes to Teslas and safety. Since I do not personally own a Tesla, I will drive in a few of the models my friends have just to get a feel of the vehicle before jumping into the data and performing statistical inferences and data visualizations. I think that because I am strictly using the dataset, I think I can get away with just doing analysis on the data without physically having to go and drive Teslas or observe when they crash. This dataset’s detail alone is enough to conduct several statistical analyses regarding Tesla’s safety. This question is important also because it holds Tesla accountable for their vehicles and the claims they make. Just because they are the first ones in the business and hold a sort of monopoly, it does not excuse them from normal safety protocol when it comes to developing and delivering a vehicle for the public.

**Literature Review:**

Upon researching Tesla and deaths associated with its cars, I found a few resources that have kept a record of crashes in the past few years. Some of these records go back as early as 2013. Tesladeaths.com has an archive of every incident since 2013 with a source link to the news article or news segment that confirms the death along with the causes and other important details. An analysis with the data was not done to make any claims on the population of all Tesla cars and their involvements in deaths. Edward Helmore wrote about a study done that claimed that the Full Self-Driving (FSD) was linked to hitting children. This study seemed very biased as it brought in the fact that Elon hates the news agency. It felt politicized and did not seem to be an accurate representation of data. I would like to conduct a thorough analysis to find out which variables in the dataset I found are significant and then model a visualization around those variables. I will not bring politics into the study and will just use data analysis techniques and good ethics pertaining to data analysis.

**Exploratory Data Analysis:**

This dataset was chosen because it has many components that can be analyzed. The dataset includes critical information such as the country, and state in which the accident had occurred. I think these two will be the most important variables in the study because my thesis is leaning towards the fact that certain states have more relaxed driving laws which leads to more accidents in general. I think Tesla is somewhat to blame for improper rollout of certain safety features, but overall, I think that states that have less severe laws for drivers, see the greatest number of accidents. By focusing on the locations of the accidents, I can pinpoint if a certain country is involved in higher crash rates. Then, if it’s the United States, I would look at everything by state and see which state has higher crash rates. If there is no true outlier or state that has significant number of crashes, I will move onto another variable such as the victim’s profile. The dataset has many columns in it that are coded by using 1’s. These variables include information such as whether the victim who was hit/killed was a pedestrian or a driver. I can try to investigate if there is a possibility that other drivers may have been responsible for the crashes vs the Tesla owners being at fault. Overall, the dataset gives me a plethora of analysis options to take and to really answer the question of whether Teslas are as safe as they claim to be or not. Some things I wish the dataset included were articles linked to each case, instead if I need certain information I will have to try and pinpoint it using the information given from the dataset. This is not something that will prevent me from continuing the analysis.

**Exploratory Data Analysis (Updated):**

I first started off by creating a scatterplot of the data because I wanted to find out where exactly the most deaths involving Tesla cars was happening.

This is the result:

Chart, scatter chart

Description automatically generated

This was a very rudimentary plot and did not give me too many insights as to what was going on.

So I used the geom\_bind\_2d() function to create a plot that gave me a better visual.

Chart, scatter chart

Description automatically generated

This plot is much better because it is showing me where the most concentrated number of accidents involving Tesla cars is occurring. That place happens to be the United States. I then wanted to somehow check if Auto Pilot was engaged, so I used the fill() command to add that variable to a heatmap and see if I could gain clues. This did not help me at all because it seemed the place I suspected the most, the United States, was a country where Auto Pilot was not claimed.

Chart, waterfall chart

Description automatically generated

I then created this plot to see whether there were even accidents involving Auto Pilot were happening in the United States. So the result was that there were accidents in the United States involving Auto Pilot.

Scatter chart

Description automatically generated with medium confidence

Chart, waterfall chart

Description automatically generatedThis leads me to my last plot for my Exploratory Data Analysis.

This plot shows the concentration of accidents in each state while also showing how many deaths occurred in each case. I think that these plots will definitely help me as I can still analyze the ‘Auto Pilot Confirmed’ column of the data so see the true results

# Bibliography

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