The Overall Effects of Self-Driving Cars

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INTRODUCTION

- Newer cars are being made with more and more driver-assisting features.
- If technology continues to progress as it is, cars may eventually drive themselves.
- I hypothesize that self-driving cars will be much more safe overall.

Abstract

Talking to the people around me- family, peers, and professional associates- I came to realize that the idea of self-driving cars in the future of our society is more controversial than I first believed. Many people are all for cars that will drive themselves, after all -or so I have heard- there will be no more human error in driving, no more careless accidents and lives lost. Yet, there are still others that are hesitant to allow machines to take them where they need to go. They seemed to fear a malfunction that they could not control, or the lack of control in general, so I decided to do some research on the topic. After all, I really did not know how plausible any of these situations were. I started researching both the potential benefits and costs of owning a self-driving car, and overall, it appeared to be more advantageous to own one. The only large disadvantage of a self-driving vehicle seemed to be the potential six-figure price. However, when one compares this to the advantages- a potential reduction of the four fifths of car accidents that are caused by driver error, for instance- it is easy to see how the benefits outweigh the costs in this matter. Ideally, this research will help individuals better understand the pros and cons of self-driving vehicles, so that they may make up their minds, even if they do not share my enthusiasm for this future of automatically-operated transportation.
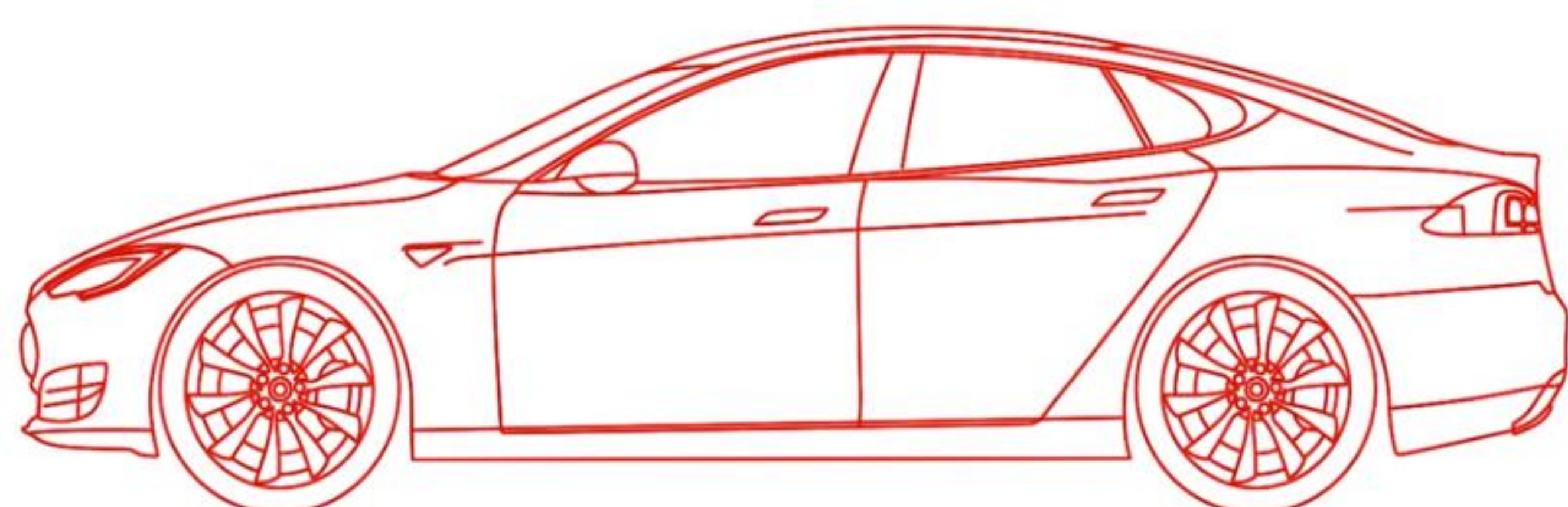
Figure 1. Tesla Model S Drawing.

OBJECTIVES

With this research project, I sought to find if driverless transportation in the form of self-driving cars was safer than manually-driven vehicles.

METHODS

- Tesla models S and X were separated by whether they had had autosteer capabilities installed or not.
- The number of traffic collisions suffered by drivers of each type of car were recorded, along with how far they had driven the Tesla.
- These results were then averaged, recorded, and compared graphically below.

RESULTS

- Tesla Models S and X drivers that had the autosteer capability installed experienced 0.8 crashes per million miles driven.
- This is opposed to the 1.3 crashes per million miles experienced by drivers without the autosteer capability.
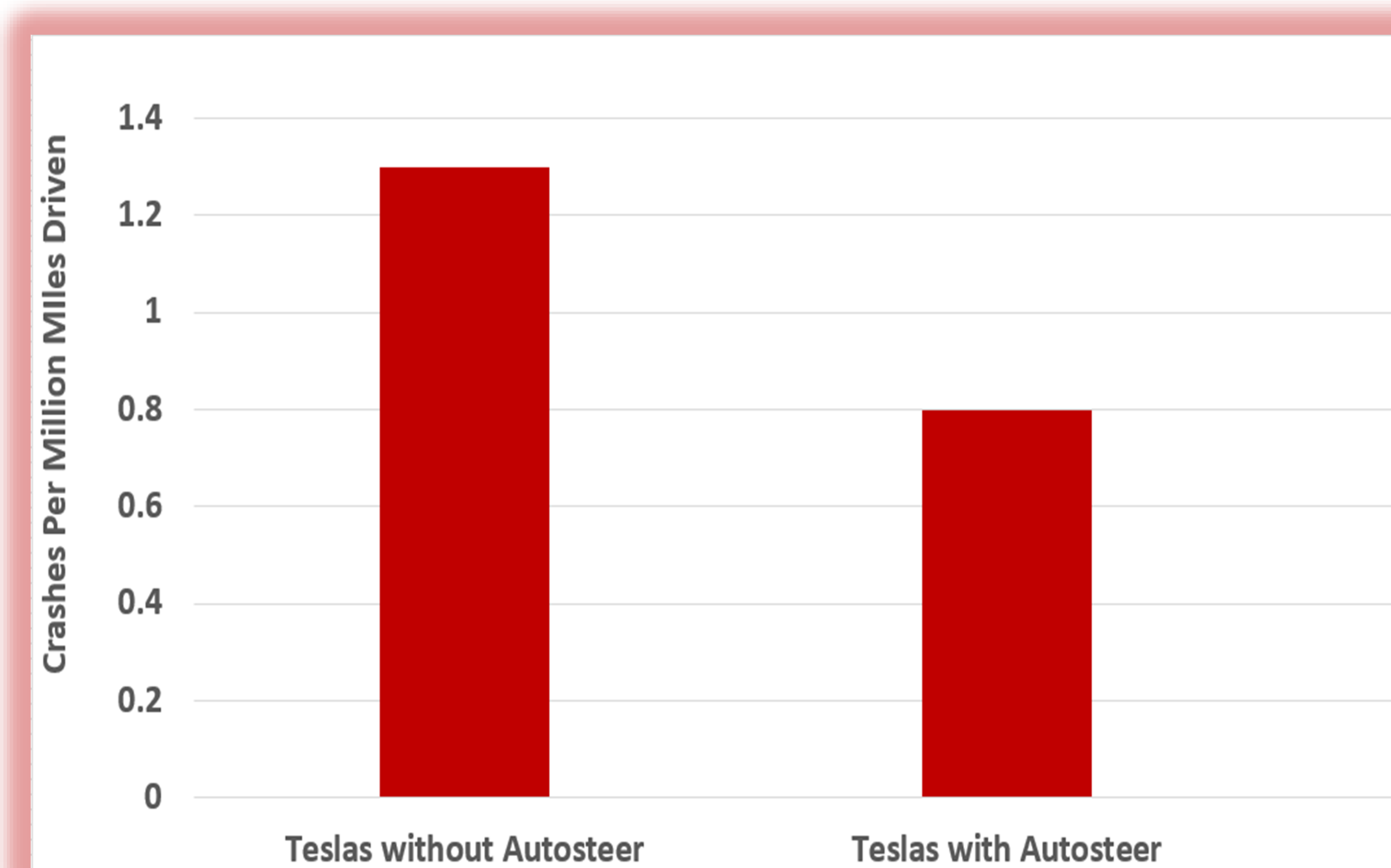- This is a decrease of just under forty percent of crashes per million miles driven.

Figure 2. Average Crashes per Million Miles Driven in Tesla Vehicles with and without Autosteer Capabilities

Acknowledgments

CONCLUSIONS

- Driving a vehicle with even partially automated driving capabilities shows a strong correlation with reduction in accidents.
- It would therefore follow that there is no reason to fear riding in a driverless vehicle, and that it is, in fact, even safer than driving on one's own.
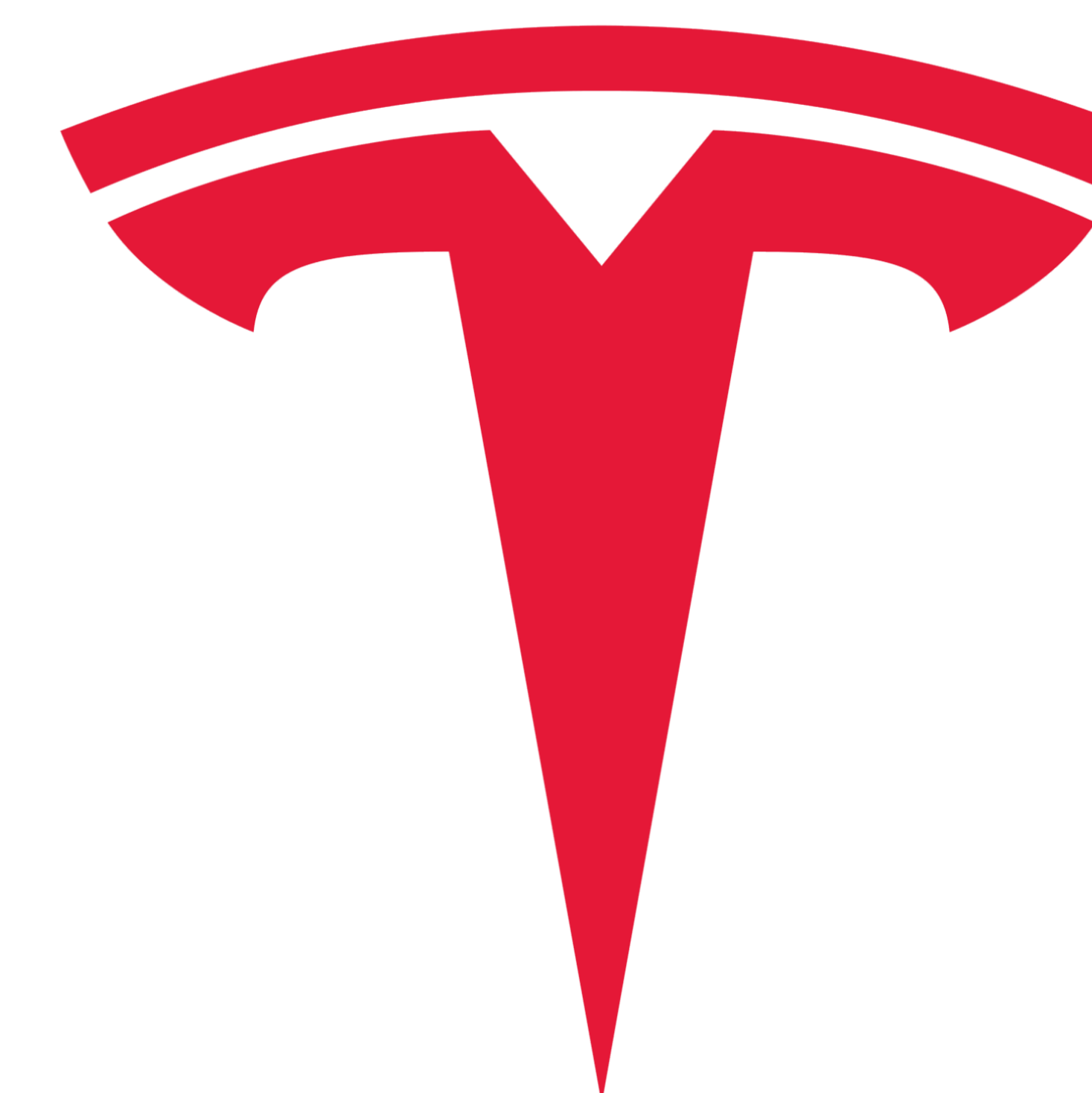
Figure 3. Tesla Logo

FUTURE WORK

- Tesla vehicles still rely heavily upon the driver, even with the automated capabilities. They are simply one of the only automated forms of transportation currently available.
- How would greater forms of automation impact the safety of transportation?
- According to the NHTSA, as much as ninety-four percent of crashes are caused by human error.

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