



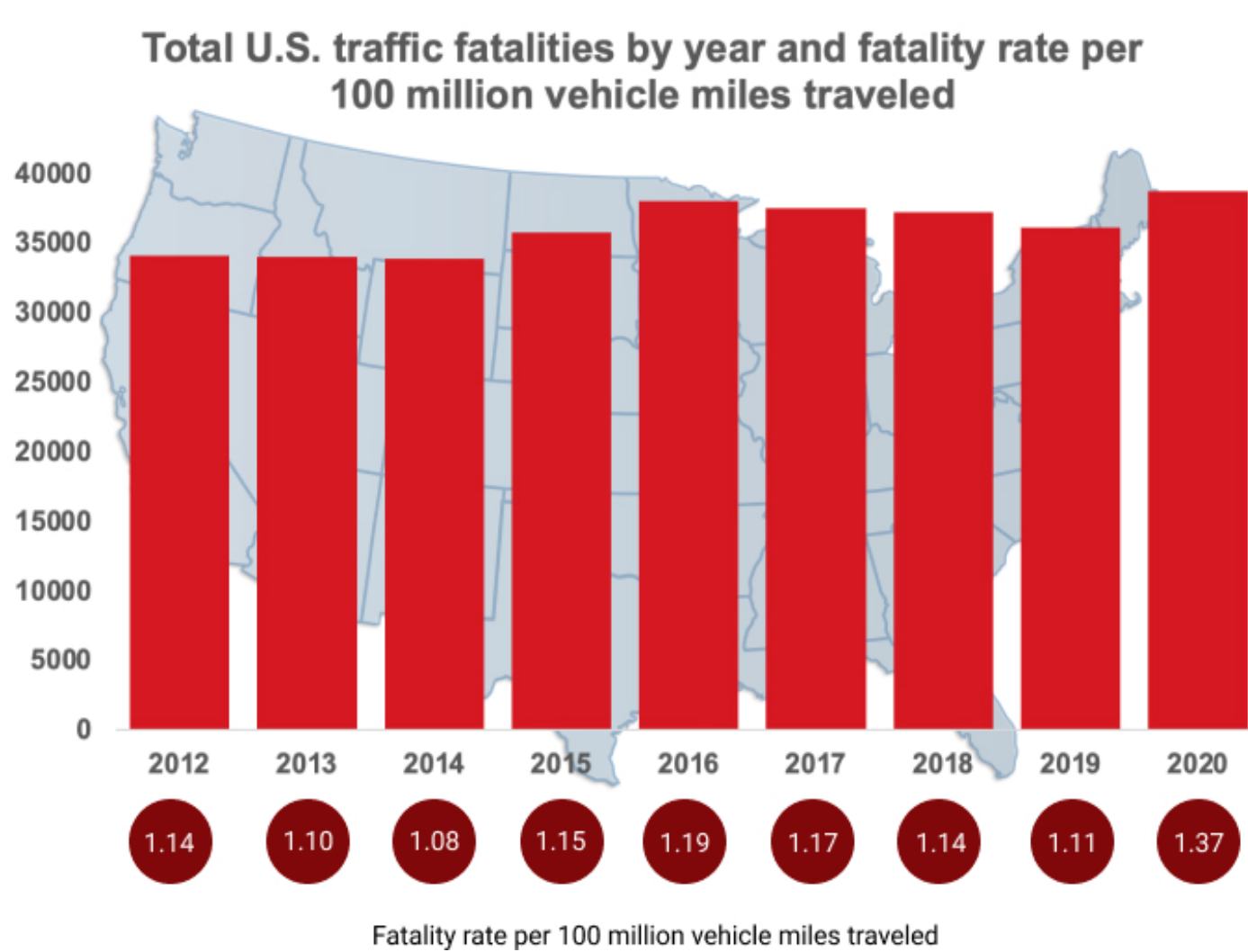
Crash Alert System

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Abstract

There is a growing number of fatalities due to car accidents in the United States. An influential indicator of survival rates is the time between the occurrence of the accident and the arrival of emergency responders to the scene. Reductions in this time may decrease the numbers of fatalities. Therefore, we want to build an Arduino-based warning system that gives visual and audio warning to drivers before collision. If the driver fails to avoid collision, the alert system is triggered and will alert authorities. Sensors and the accelerometer will determine if an accident occurred via text, email or phone call. With rising deaths associated with car accidents, responding swift can curve this alarming trend.

Motivation

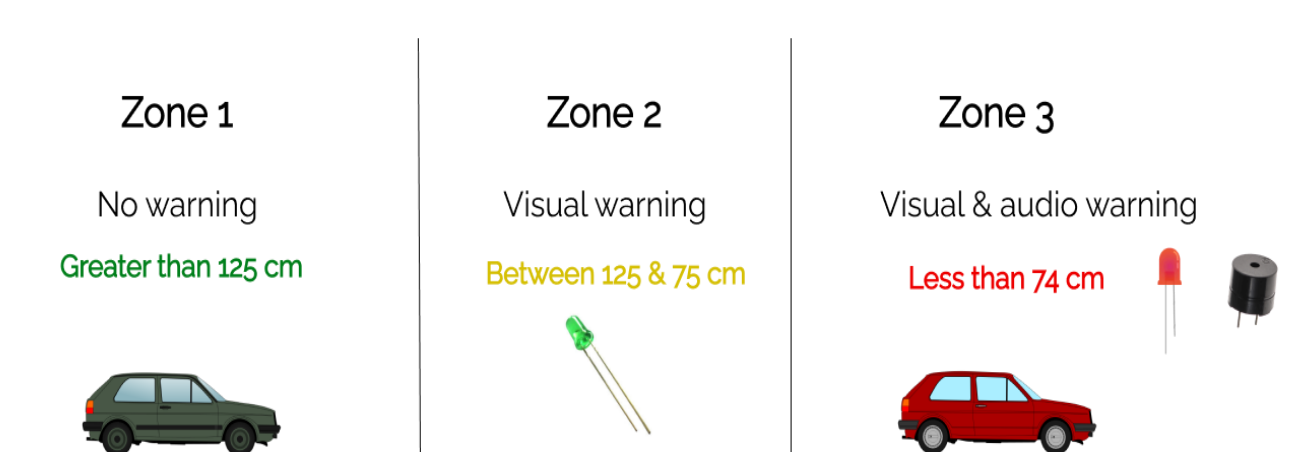


National Highway Traffic Safety Administration data shows that an estimated 38,680 people died in motor vehicle crashes in 2020, a 7.2 percent increase on the 36,096 fatalities in 2019 despite the number of vehicle miles traveled declined by 13.2 percent.



How it Works?

A. Warning System



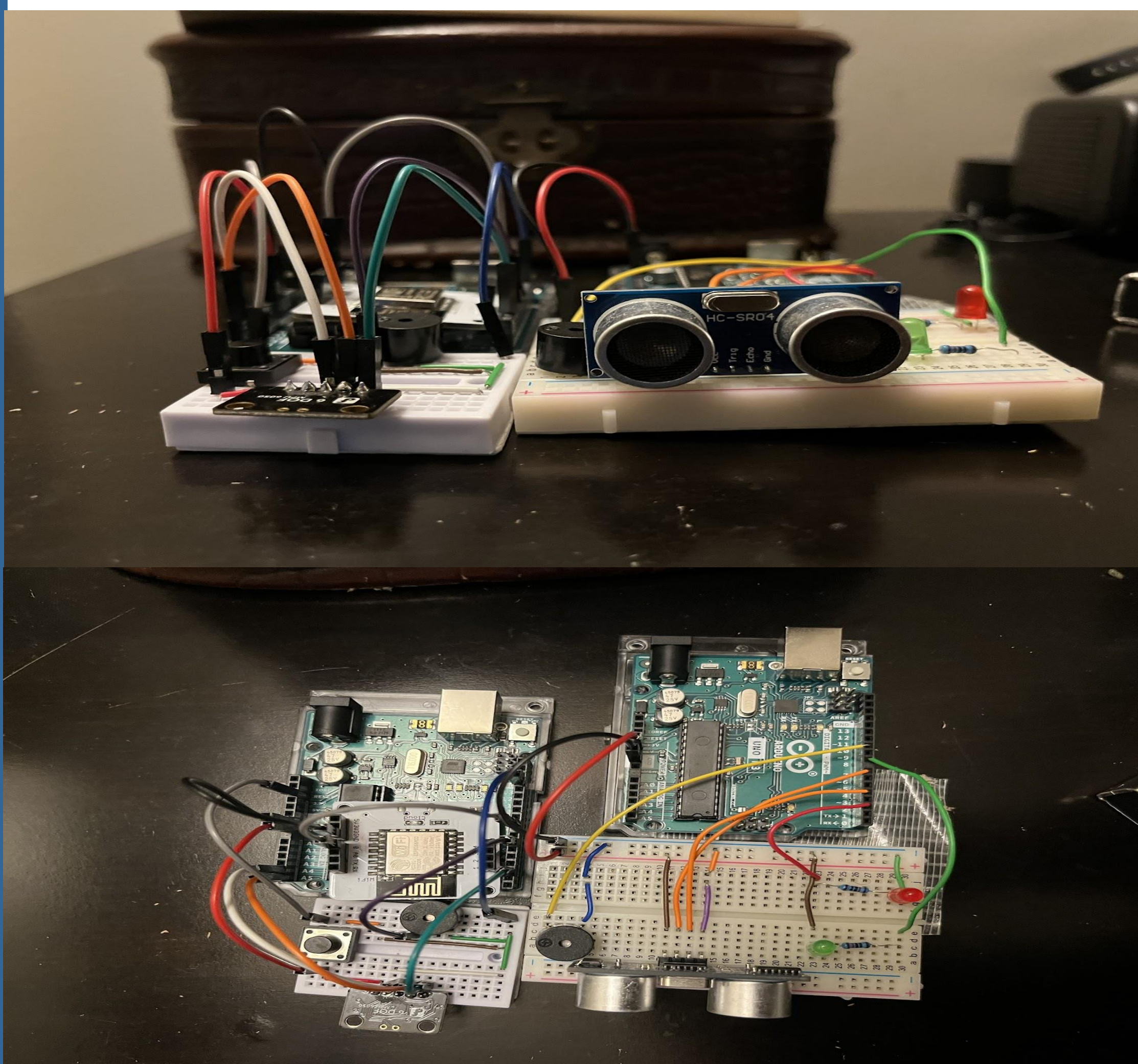
B. Crash Alert System

- 1 The accelerometer will monitor any sudden change of acceleration received from sensors
- 2 As acceleration impact exceed programmed threshold, accident is detected
- 3 As accident is detected, buzzer will blow for 10 seconds. If driver fails to press button to reset system, then emergency responders will be contacted

Market Value

With technology vastly improving especially with crash detection systems there is a big market value for these systems. The automotive collision avoidance systems market was valued at USD 41 billion in 2020 and is expected to reach USD 82 billion by 2026, registering a CAGR of 12.11% during the forecast period. But what makes our project different is what happens after a crash is detected. Very few car companies incorporate alert systems with the exceptions of a few companies.

Results



Conclusion

For the end result we want to implement a system that will decrease time for first responders to respond to an accident scene which in turn might be able to save countless lives. Our motivation is to save as many lives as possible with this relatively new technology. Since this system is implemented by very few companies, we want to make it available to the vast majority of the public.

References

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