

# CTM Tool for Automobile to Decrease Car Accidents

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*Our Goal is to focus on improving driving behaviors rather than providing the driver with tools that will only assist when the driver is making errors.*

# Goal

# Traffic Accidents and What Do The Numbers Say

In 2020, the U.S. Department of Transportation (DoT) reported 5,215,071 police-reported crashes.



Speed-related crashes increased by 17%.



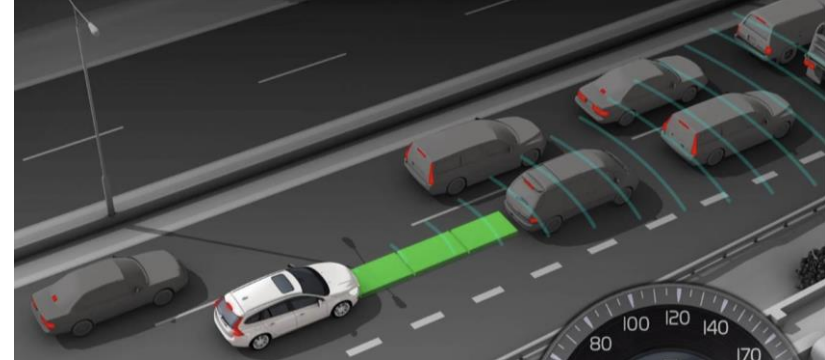
Alcohol-impaired driving crashes increased 14%.

# Solutions Presented Before this Tool

- One solution is to detect if the driver is sleeping or beginning to fall asleep using the input obtained by a webcam using image processing tools
- Ultrasonic sensors that use sound waves to determine the distance to an object. This proposition is similar to most intelligent braking systems in newer vehicles.
- Monitoring the driver's heartbeat, when spiked or performed, abnormal rhythms paired with the ultrasonic sensors will cause the car to decelerate and brake.

# Other Solutions

*Current attention is channeled to solutions that react to users driving actions, not driving behaviors.*



# CTM Tool

The Commute Tracking Mentor (CTM) tool studies drivers' patterns and suggests improving their driving. In addition, the tool is tasked with understanding driving habits and behaviors.

## Our Goal with CTM:

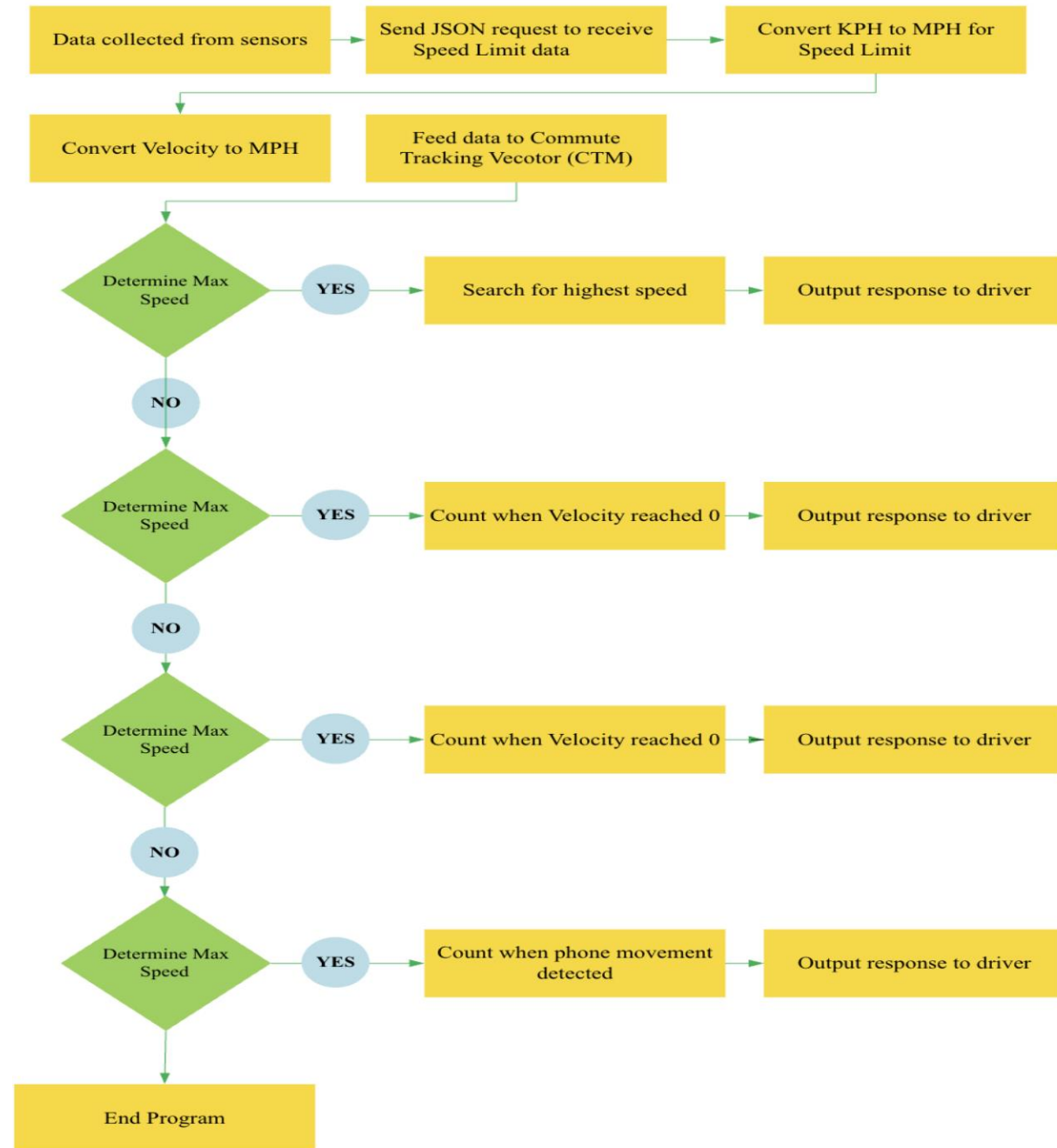
The goal was to study driving patterns from the driver and detect different drivers' behaviors while they drive.

CTM address driver's behaviors from the data collected from the driver's mobile devices.

Behaviors observed were the following four data metrics: **Exceeded Speed Limit Count, Max Speed, Total Stops, and Total Abrupt Stops.**



# How Does It Work



# Results and Review

Test Samples	Max Speed	Total Stops	Total Abrupt Stops	Above Speed Limit	Phone Movement
1	64	10	5	271	8
2	57	8	3	301	7
3	60	7	4	246	5
4	57	8	4	279	12
5	58	40	2	232	7



# Conclusion and Future Works



This knowledge emphasizes the urgency of finding innovative and practical solutions to improve drivers' skills and behaviors.



Car companies cannot continue to focus solely on the equipment and features that will react or assist drivers but focus on improving the drivers' driving capabilities.



CTM can adapt over time to understand their drivers and how to improve their behaviors.



Bundle the mobile device's sensors, data analysis, and an attractive user interface that allows a descriptive and straightforward overview of results into a mobile app.