

Petra Pribula

Grace Kohl

# C.A.R. BOX

## Cell-Phone Automotive Restriction

Sophia Tang

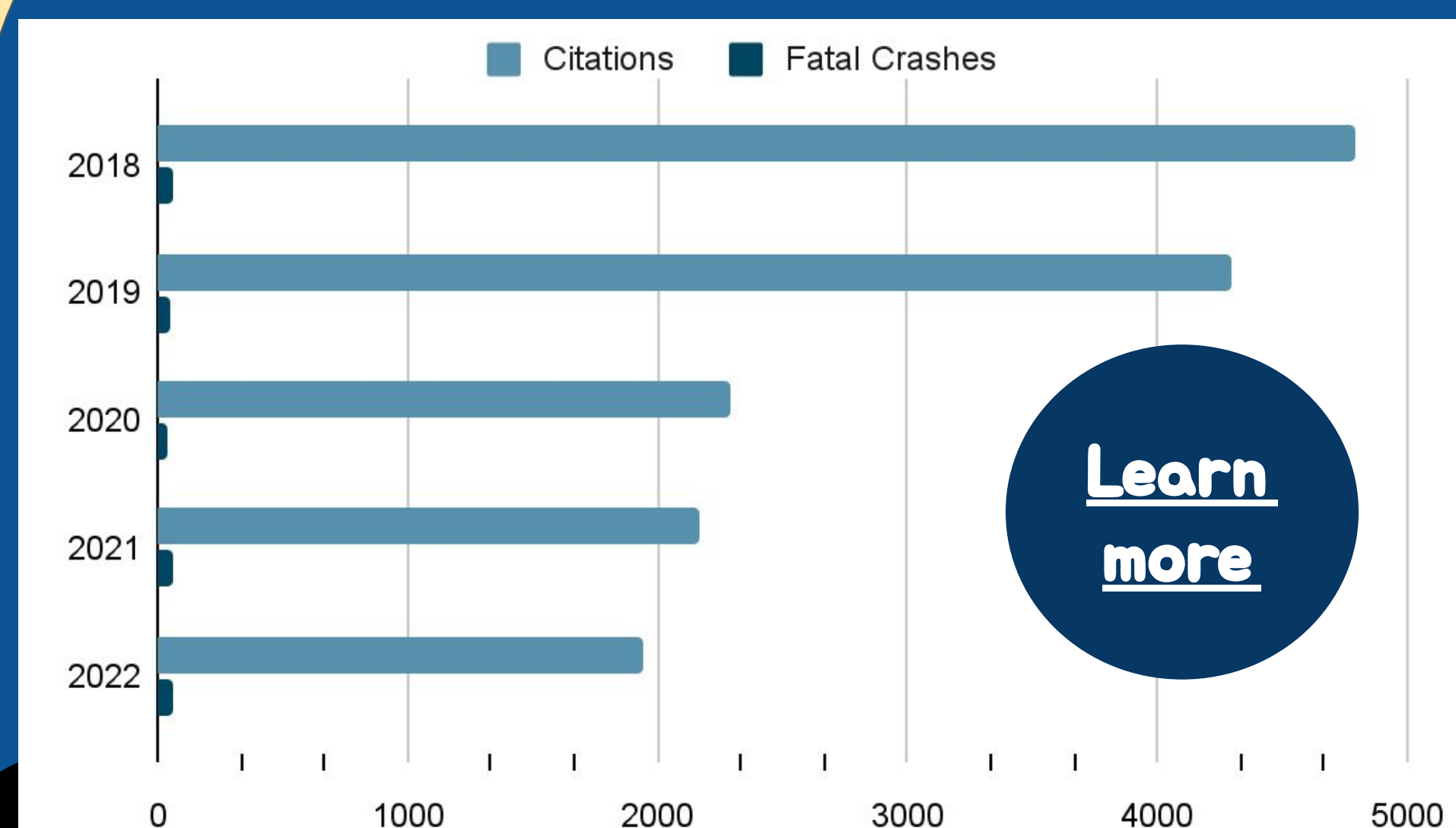
Zhiwen Tang

### Universal Design Principles

Cell-phones are a significant component of everyday life. However, when driving they can create a dangerous threat. Our prototype, the C.A.R. Box, can help eliminate that threat for cars made in 2013 and after. Even though distracted driving citations have decreased throughout 2018-2023, the number of fatalities has increased to over 50 deaths in the state of PA last year. Across the nation, distracted driving accounts for more than 3,000 deaths in one year. This design is human-centered and built for all individuals on the road in mind.

*"In 2023, there were 11,262 crashes involving a distracted driver in Pennsylvania, resulting in 65 fatalities and 409 suspected serious injuries."*

### DD Citations and Fatal Crashes in PA 2018-2022



Note: Number of fatalities might be higher than the number fatal crashes

### Engineering Design Process

#### Identify the Problem or Challenge

- Decrease distracted driving to save lives of PA residents

#### Identify Design Requirements and Limitations

- Design must be compatible with cars while also blocking phone usage in vehicles

#### Brainstorm Possible Solutions to the Problem

- Design a 3D-Printed box that blocks ignition until phone is locked inside

#### Explore Possibilities and Pros and Cons

- Pros: Combats distracted driving, preventing accidents and saving lives
- Cons: Driver can put burner phone inside and still drive distracted

#### Select an Approach by Identifying the Design

- Constructed using universal design principles and original that does not conflict with current copyrighted products

#### Build a Model or Prototype

- Box that can deter cell-phone usage and be used in cars built in 2013 and after

#### Refine the Design by Identifying Changes that need to be Made and Improving the Prototype

- One modification is to personalize the box
- Reduce to 2 hinges to better fit the dashboard
- An alternative modification is to create a system to detect if the driver's phone is in the box by using either a phone number or phone serial number
- Creating inserts to adapt to all phone models
- Available for both judicial and commercial use

Engineering Design Journal

WA SECONDARY CENTER STEM TEAM



Budget



Partner



Prototype

References