Monitoring and Reducing Seat Belt Violations and Distracted Driving with Countermeasures

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Introduction

- Seat belt use is essential for road safety, but Commercial Motor Vehicle (CMV) drivers continue to have lower use rates compared to the national average. Despite improvements in seat belt compliance nationwide, CMV drivers remain at higher risk.
- The aim is to measure any possible change in behavior by using new technologies via camera monitoring systems that will collect data on seat belt use and distracted driving practices before and after a period of enforcement.
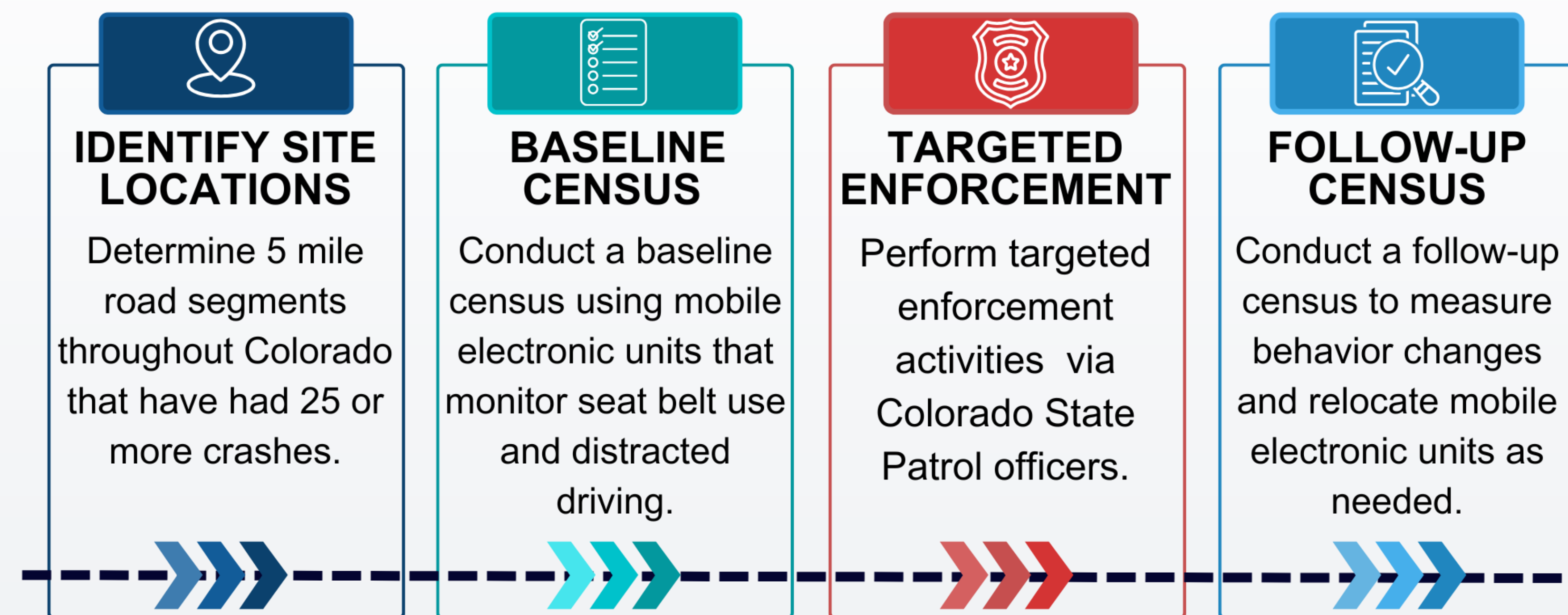
Background

- Fastening seat belt is a law and the violation of this law results in a Class B traffic infraction with a penalty of $71.
- In 2021, 26,325 passenger vehicle occupants were killed. About 50% of those killed were not buckled. Seat belts saved an estimated 14,955 lives and could have saved an additional 2,549 people if they had been wearing seat belts, in 2017 alone.
- National seat belt use rate was at 91.6% in 2022.
- CMVs have historically had the lowest seat belt usage rates, and usage is still at 79.2% (Figure 1).

Cell Phone Violations

Table 1. CMV Drivers Violations

Cell Phone Violations	2018	2019	2020	2021	2022
Using Mobile Device While Driving	130	97	72	79	67
Texting and Driving	3	3	4	2	1
Using Additional Equipment that Decreases Safety	11	10	20	17	12
Total	144	110	96	98	80

Methodology

IDENTIFY SITE LOCATIONS
Determine 5 mile road segments throughout Colorado that have had 25 or more crashes.

BASELINE CENSUS
Conduct a baseline census using mobile electronic units that monitor seat belt use and distracted driving.

TARGETED ENFORCEMENT
Perform targeted enforcement activities via Colorado State Patrol officers.

FOLLOW-UP CENSUS
Conduct a follow-up census to measure behavior changes and relocate mobile electronic units as needed.

Past Analysis and Results

Table 2. Seat Belt Usage Percentage by County

County	% Counted	County	% Counted
Adams	90.1	Grand	96.3
Arapahoe	93.8	Jefferson	80.8
Boulder	92.9	La Plata	87.7
Chaffee	69.2	Larimer	88
Delta	87.6	Las Animas	87.8
Denver	93.6	Mesa	92.1
Douglas	87.2	Montezuma	86.1
Eagle	93.6	Montrose	87.8
El Paso	86.7	Park	88.6
Garfield	96	Pueblo	67.6

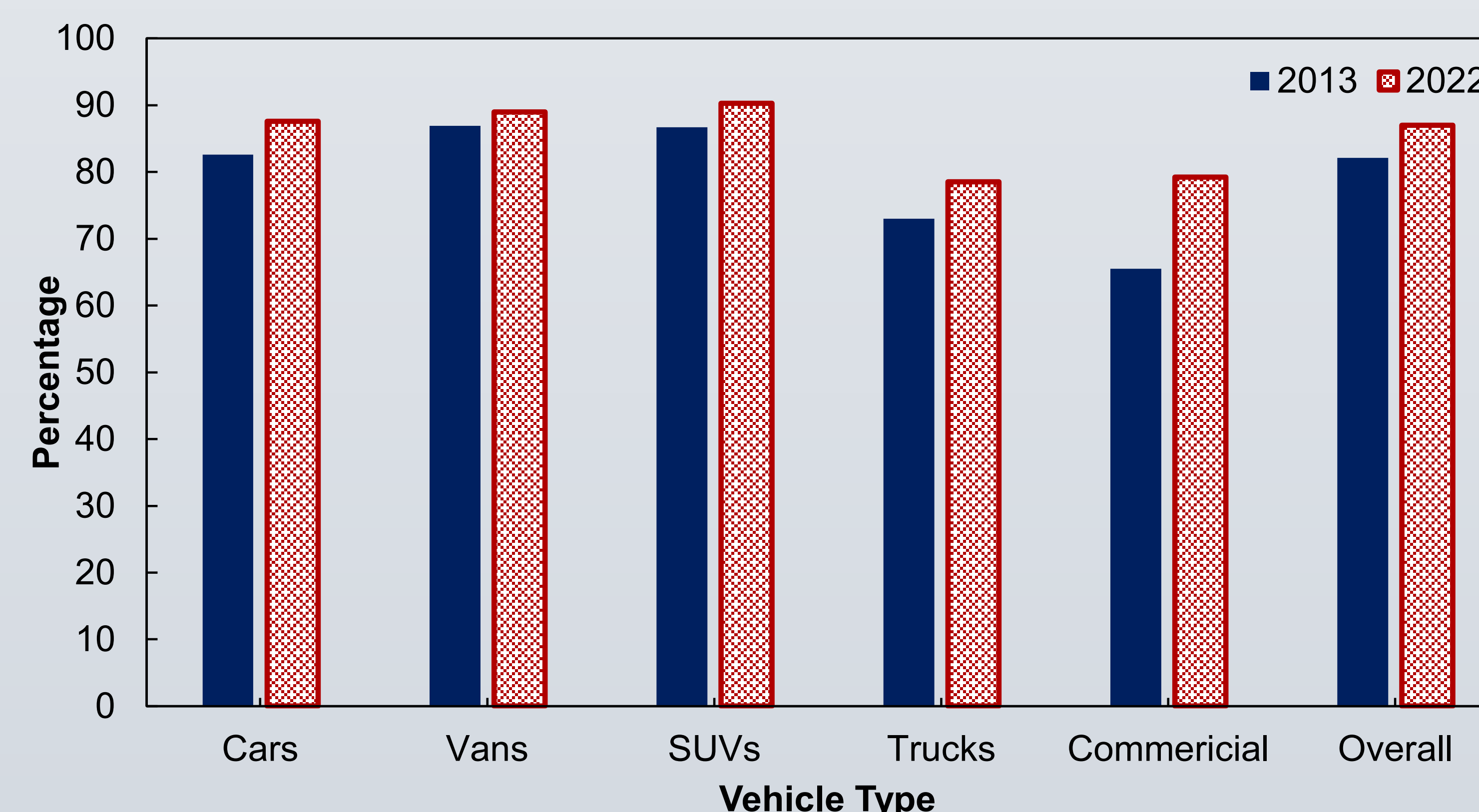Figure 1. 2013 and 2022 statewide seatbelt usage by vehicle type
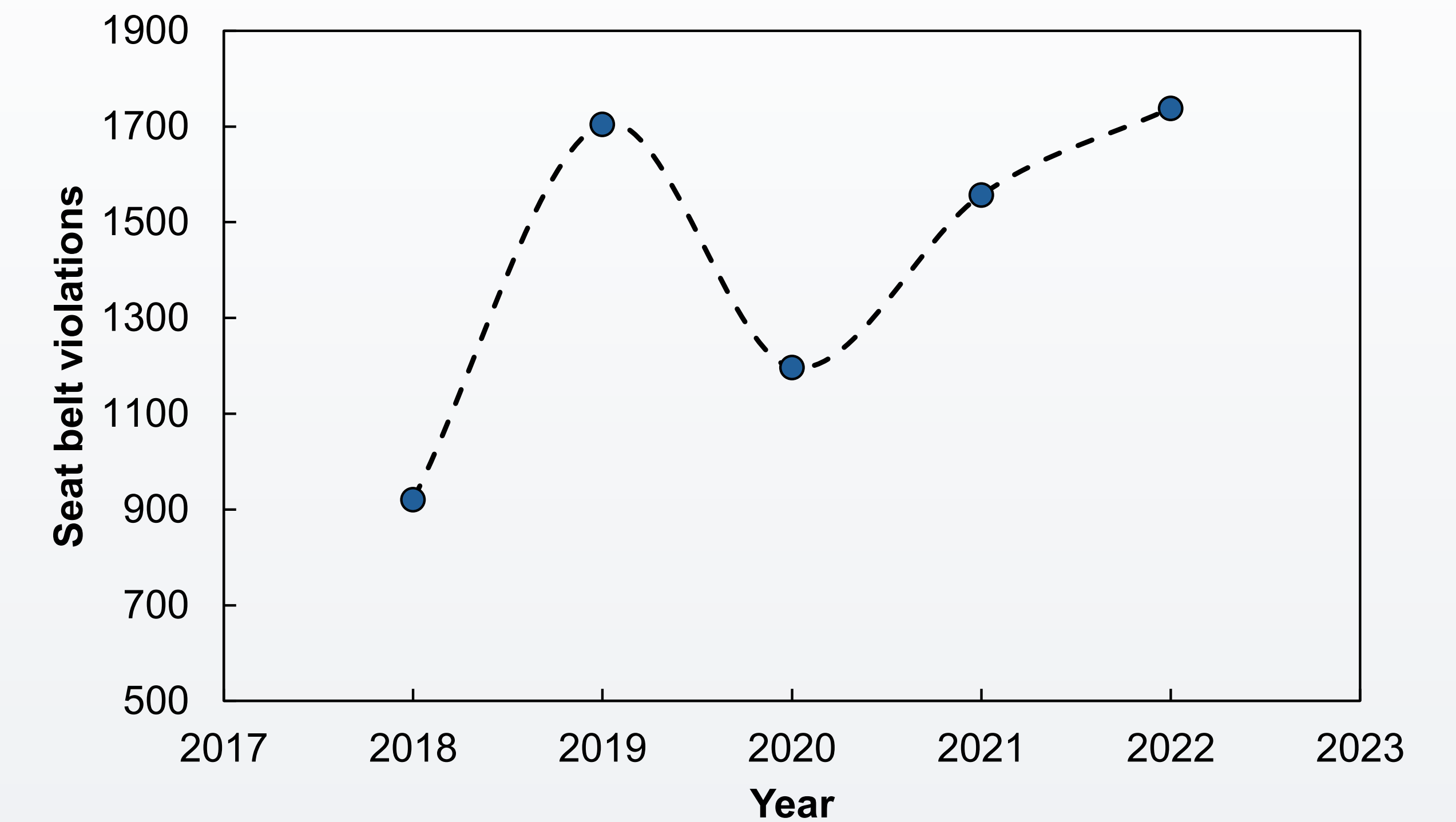
Seat Belt Violations

Figure 2. Amount of violations per year

Example Photos

Photos A,B,C: Smart Roadside Technology Photographs
(Courtesy: Drivewyze)

Conclusions and Future Work

- The outcome should identify methods in which technology can be used to assist law enforcement in reducing the amount of distracted driving and lack of seat belt use in the state.
- If behavior changes, this study aims to monitor to what extent is the behavior changed and for how long.

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