

The ADOT logo is a white, stylized, italicized font on a blue rectangular background. The background of the entire slide is a photograph of a concrete wall with a large, intricate mural. The mural features a large circular design with spiral patterns on the left, and a long, winding, blue and white pattern that resembles a river or a path on the right. The wall is under a concrete overpass structure.

**ADOT**

**Arizona Tribal Transportation and Injury Prevention Summit  
Closing Session**

# **Where We Go From Here: 2024 Arizona Strategic Highway Safety Plan and Tribal Safety**

**Kerry Wilcoxon, PE. PTOE, RSP<sub>1</sub>**

**ADOT Traffic Safety**

**August 10, 2023**

# 2022 Crash Data\*

120,180 Crashes

52,493 Injuries

**1288 Fatalities**

Including:

**50 Bicyclists**

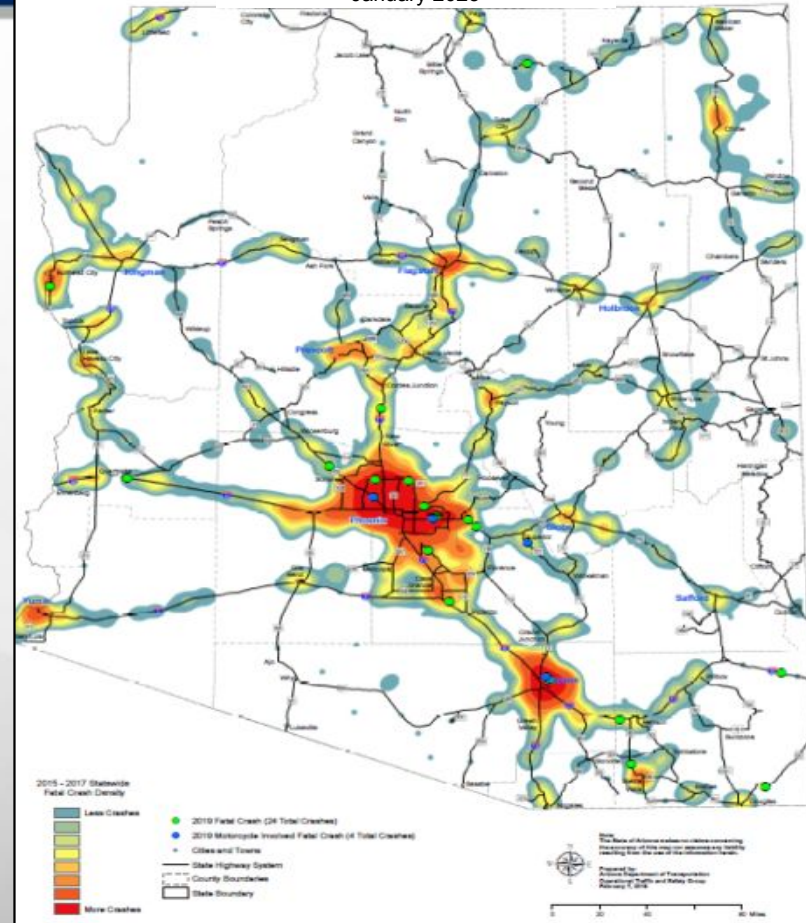
**209 Motorcyclists**

**310 Pedestrians**

**719 Vehicle Occupants**

\*2022 data as of 8/1/23

2022 All Fatal Crashes  
in Arizona  
January 2023



# Preliminary 2023 Crash Data\*

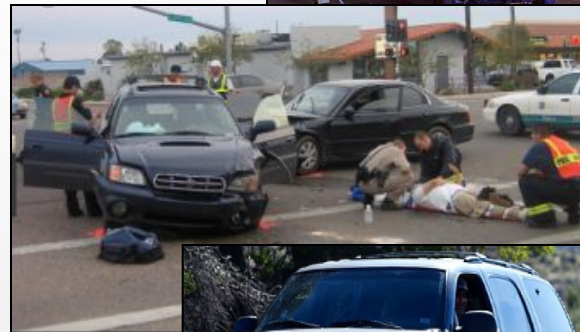
66,780 Crashes

29,374 Injuries

**650 Fatalities**

**On Track with 2022**

\*2022 data as of 8/1/23





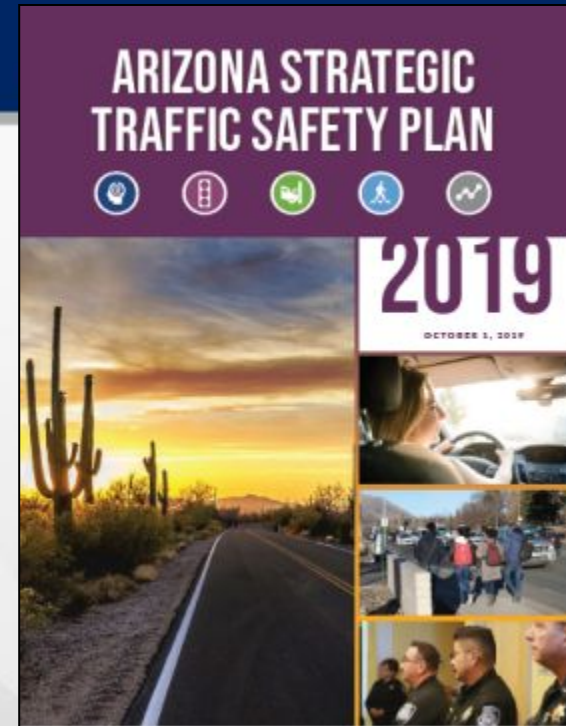
How Do We Break the Status Quo?

# Agenda

- Current Strategic Traffic Safety Plan
- Safe System Approach
  - What it is
  - How it would work
- Arizona 2024 STSP Update
- Tribal Traffic Safety Involvement

# Arizona Strategic Traffic Safety Plan (STSP)

- States must update their strategic safety plan every five years
- Most recent Arizona update, 2019
- The plan sets the traffic safety priorities for the state
- Next scheduled update, October 2024



# 2019 Arizona STSP

The Executive Committee established an over-arching goal to save lives—reduce traffic fatalities on Arizona’s roadways.

Engineers, law enforcement, public health and education professionals, and the public, all play

Ultimately, to eliminate all traffic fatalities and serious injuries, engineers must design safe roads and the public must make good choices and drive defensively and safely.

to be re-addressed and updated through regular evaluation of results.

## VISION

*Toward Zero Deaths by Reducing Crashes for a Safer Arizona*

## GOAL

*fatalities on roadways*

**ENT  
US**

*In 2018 there were 1011 traffic related deaths on Arizona’s roadways*

# Safety Priorities



HIGHWAY SAFETY  
(BEHAVIOR RELATED)



**INTERSECTIONS**



LANE DEPARTURE



**PEDESTRIANS**



**CRASH DATA  
(DDSA)**

High Fatality Emphasis Areas

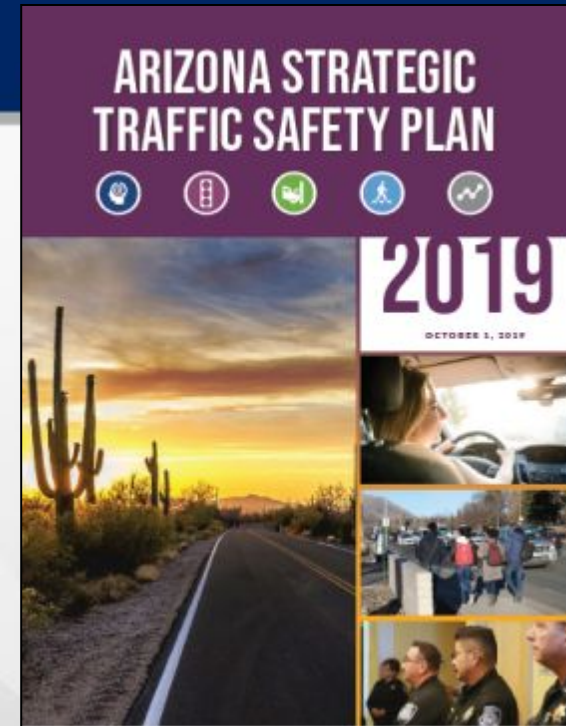
# Data Driven Safety





# 2019 Arizona STSP Problems

- Plan focuses mainly on **infrastructure**
- Although “statewide”, plan primarily run by ADOT and local adoption not required
- Three of the intended five years have been driven by pandemic traffic
- **It didn't change anything!**



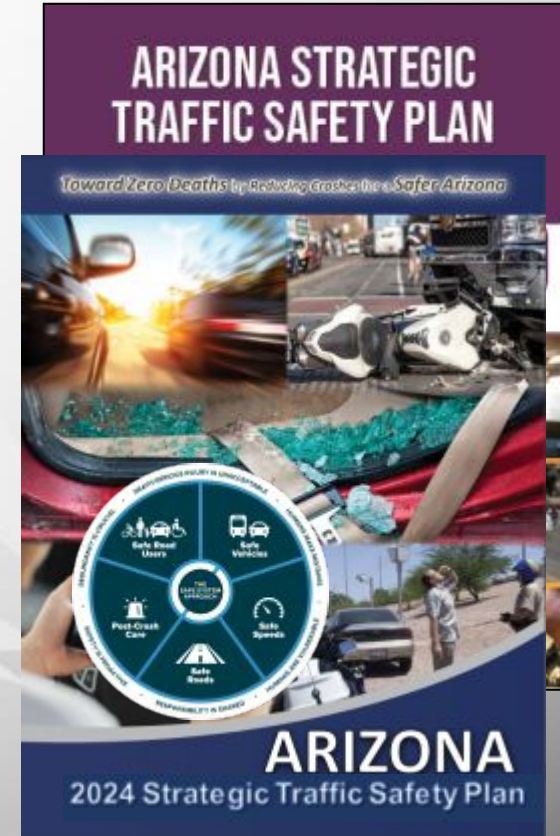
# Post-Pandemic Opportunities

- Traffic patterns
  - Pandemic disruptions may be permanent
  - Capacity versus demand
- Roadway users
  - Who is typical road user?
- Public expectations
  - Greater awareness of traffic complexities
  - How long will public put up with existing crash numbers?

# 2024 SHSP Update

ADOT is updating the Strategic Highway Safety Plan in 2024. The state is making a major shift in how we approach traffic safety. Primarily through:

- **Expanded focus**
- **Inclusion**



Expanded Focus

# The Safe System Approach

A new systemic approach aims to eliminate fatal and serious injuries for all road users by:



**Accommodating human mistakes**



**Keeping impacts on the human body at tolerable levels**



# The Safe System Approach

What is it?

- Resilience

- Building systems for the known characteristics of the known users
- Moving from **NOMINAL** to **SUBSTANTIVE** safety

- Forgiveness

- Building systems that reduce the consequences of mistakes

- Change

The screenshot displays the Arizona Department of Transportation's 'SAFE SYSTEM' webpage. At the top, it states 'Zero Deaths - Saving Lives through a Safety Culture and a Safe System'. A central circular diagram illustrates the 'SAFE SYSTEM' approach, with 'SAFE SYSTEM' at the center, surrounded by four pillars: 'Safe Road Users', 'Safe Vehicles', 'Safe Speeds', and 'Safe Roads'. Below this diagram, the 'SAFE SYSTEM PRINCIPLES' section is detailed:

- Death/Serious Injury is Unacceptable:** While no system can eliminate the human factor, a safe system must be designed to prevent or minimize the consequences of human error.
- Humans Make Mistakes:** People will occasionally make mistakes that can lead to crashes, but the transportation system can be designed and operated in a way that minimizes the consequences of human error.
- Humans Are Vulnerable:** People are vulnerable to the consequences of a crash. Therefore, it is critical to design and operate the transportation system in a way that minimizes the consequences of a crash.
- Responsibility is Shared:** All participants in the transportation system, including drivers, pedestrians, and cyclists, have a responsibility to share the road and to be aware of their own and others' actions.
- Safety is Proactive:** Proactive measures should be used to identify and address safety issues before they become a problem.
- Redundancy is Crucial:** Redundancy is a key principle of a safe system. It means having multiple layers of protection to prevent a crash.

# THE SAFE SYSTEM APPROACH

- 6 Principles
- 5 Elements
- 1 Result:
  - 0 Deaths & Serious Injuries



# THE 6 SAFE SYSTEM PRINCIPLES

- Death/serious injury is unacceptable
- Humans make mistakes
- Humans are vulnerable
- Responsibility is shared
- Safety is proactive
- Redundancy is crucial



# THE 5 SAFE SYSTEM ELEMENTS

- Safe road users
- Safe vehicles
- Safe speeds
- Safe roads
- Post-crash care





# THE 6 SAFE SYSTEM PRINCIPLES



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**Death/serious injury  
is unacceptable**



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**Humans make  
mistakes**



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**Humans are  
vulnerable**



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**Responsibility is  
shared**



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**Safety is proactive**



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**Redundancy  
is crucial**

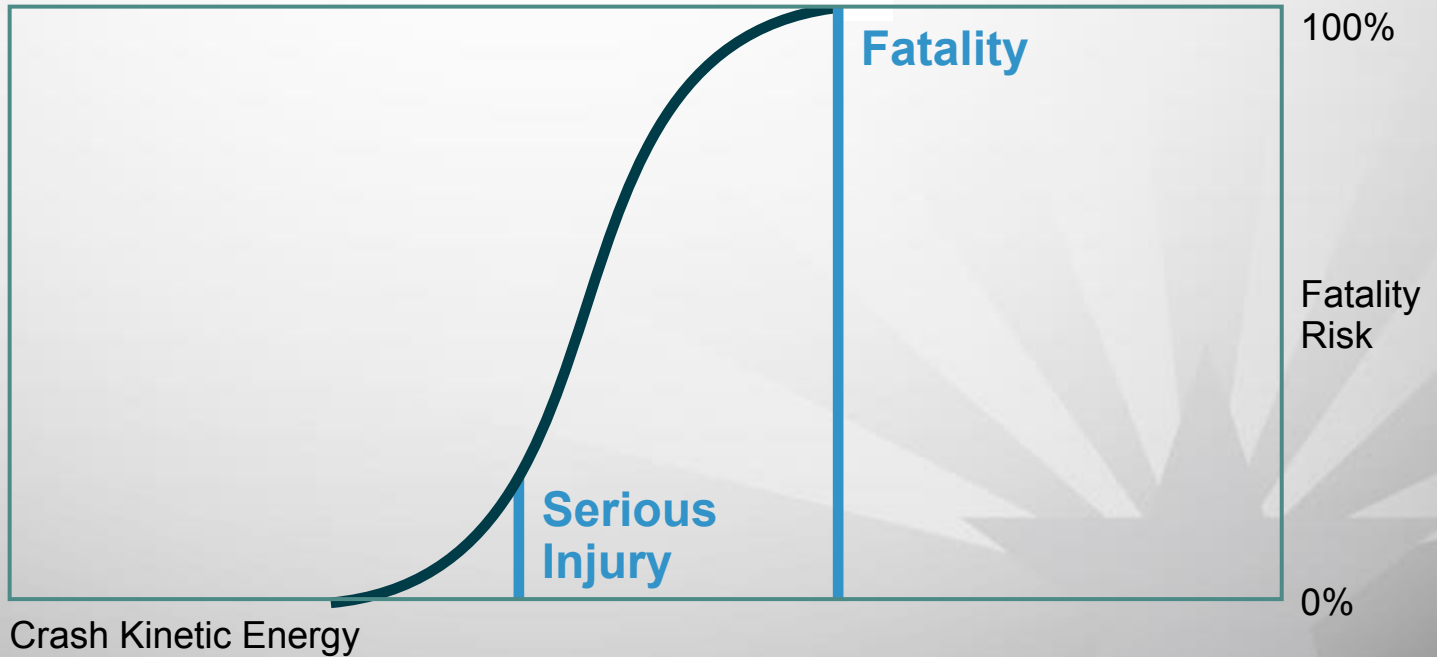
# DEATH/SERIOUS INJURY IS UNACCEPTABLE



# HUMANS MAKE MISTAKES



# HUMANS ARE VULNERABLE



# RESPONSIBILITY IS SHARED



## System managers

Planners, designers, builders, operators,  
maintenance workers



## Vehicle manufacturers



## Law enforcement personnel

## Post-crash personnel



## System users



# SAFETY IS PROACTIVE



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**Identify risks**



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**Mitigate risks**

# REDUNDANCY IS CRUCIAL



Safe road users



Safe vehicles



Safe speeds



Safe roads



Post-crash care

# THE 5 SAFE SYSTEM ELEMENTS



---

Safe road users



---

Safe vehicles



---

Safe speeds



---

Safe roads



---

Post-crash care



# SAFE ROAD USERS



**Walk**



**Bike**



**Drive**



**Transit**



**Accessible**



**Not distracted  
or impaired**



**Follow rules  
(including safety  
equipment)**



**Act within limits  
of the your skill  
& environment**

# SAFE VEHICLES



## Passive safety

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Protective systems for when crashes do occur

- Seatbelts and airbags
- Crash-absorbing vehicle crumple zones
- Vehicle size and design

## Active safety

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Measures to reduce the chance of a crash occurring

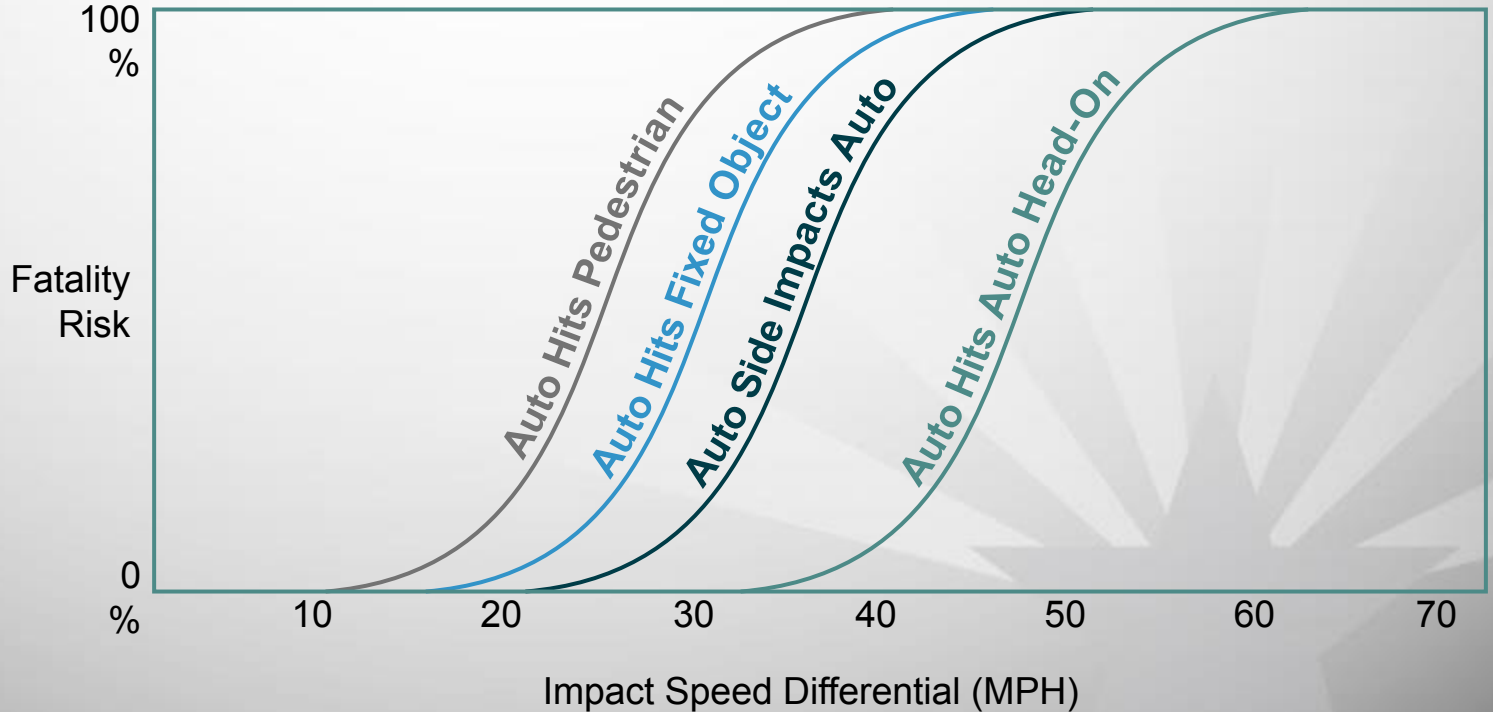
- Lane departure warning
- Autonomous emergency braking
- Bicycle and pedestrian detection

## New technology

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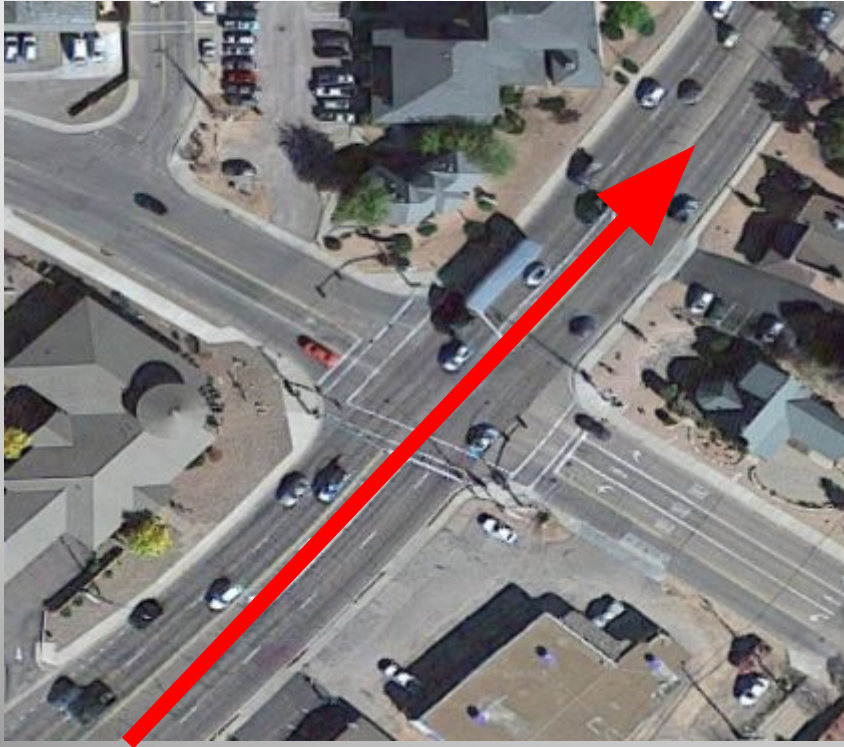
Leveraging connected and automated vehicle (CAV) technology to improve safety

# SAFE SPEEDS: FATALITY RISKS



# SAFE SPEED: TREATMENTS THAT MINIMIZE INJURIES

Speed through typical intersection



Source: Google Maps

Speed through Safe System intersection



Source: ADOT

# SAFE ROADS: ALL ASPECTS



Safe roads are designed and operated to:



1. Prevent crashes



2. Keep impacts on the human body at tolerable levels



Design



Construction



Maintenance



Operation

# SAFE ROADS: AVOIDING CRASHES



Avoiding crashes involves:



**Separating users in space**



**Separating users in time**



**Increasing attentiveness and awareness**

# SAFE ROADS: CRASH KINETIC ENERGY



Managing crash kinetic energy involves:



**Managing speed**



**Manipulating mass**



**Manipulating crash angles**

# POST-CRASH CARE



Vital post-crash actions include:



First responders



Medical care



Crash investigation



Traffic incident management



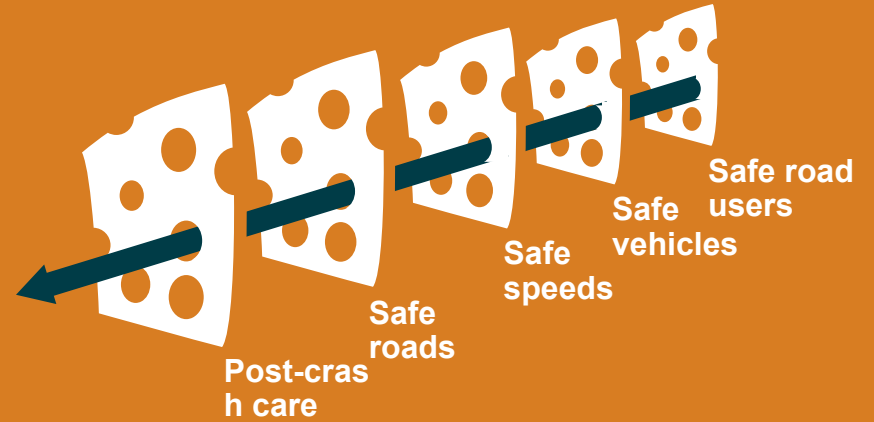
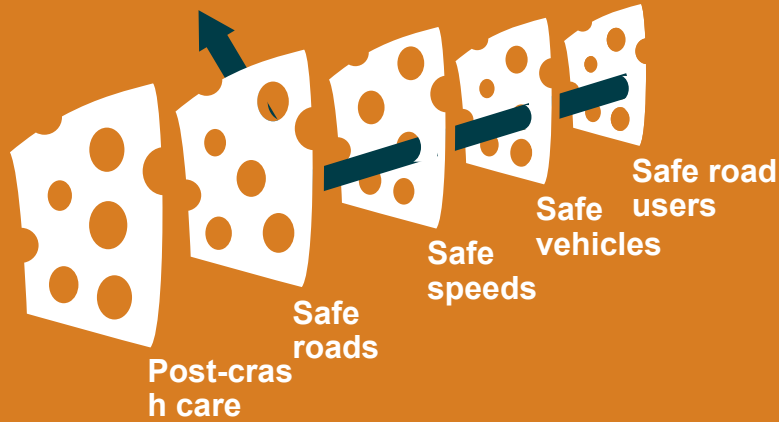
Justice



# REDUNDANCY IS CRITICAL

The “Swiss Cheese Model” of redundancy creates layers of protection

Death and serious injuries only happen when all layers fail



# 2024 Arizona Strategic Traffic Safety Plan

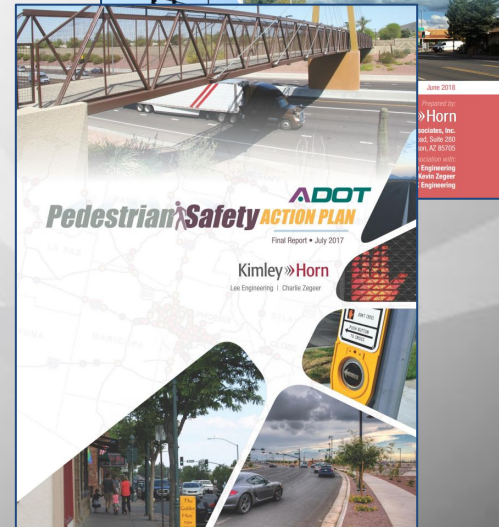
Arizona Department of Transportation will recommend adoption of the Safe System Approach as the foundation for our 2024 Strategic Traffic Safety Plan update.

If approved the Safe System Approach will become *guiding principle* for traffic safety in Arizona.

Expanded Focus

# Active Transportation Plan

As part of the 2024 SHSP update, ADOT will also combine the previous Pedestrian and Bicycle Safety Action Plans into a new 2024 Active Transportation Safety Action Plan or ATSAP which will be published (and updated) at the same time as the SHSP.



Inclusion

# Safety Culture

The Safe System Approach requires a change in Safety Culture within many organizations. Shared values, actions, and behaviors that demonstrate a **commitment to safety over competing goals and demands**. This includes both within the organization (ADOT) and within the public.

The ADOT Safety Culture is reflected our True North:  
***SAFELY HOME***

## Safety Priorities



BEHAVIOR RELATED



INTERSECTIONS



LANE DEPARTURE



VULNERABLE ROAD USERS



CRASH DATA  
(DDSA)

## Additional Priorities

Update will include 2-3 new safety Emphasis Area (EA) including:

### ***Tribal Emphasis Area***

- EA team will be consultant led but composed of tribal representatives
- Team will recommend goals and objectives for tribal safety

# Tribal Emphasis Team

Emphasis Area status will provide better visibility of tribal traffic safety issues at ADOT and allow more opportunities for Highway Safety Improvement Program (HSIP) funding. The Tribal EA team will:

- Meet quarterly and develop annual update on progress towards safety goals
- Focus on Tribal traffic safety issues statewide

# Tribal Safety Round Table

As part of the SHSP update, and as a follow up to the Tribal Safety Summit, the state along with FHWA and NHTSA will sponsor a **tribal round table discussion in early 2024**

# Round Table Goal

The round table is intended as a listening session to generate ideas from tribal safety partners on:

- Current traffic safety challenges
- Resource and training needs
- Future partnering opportunities

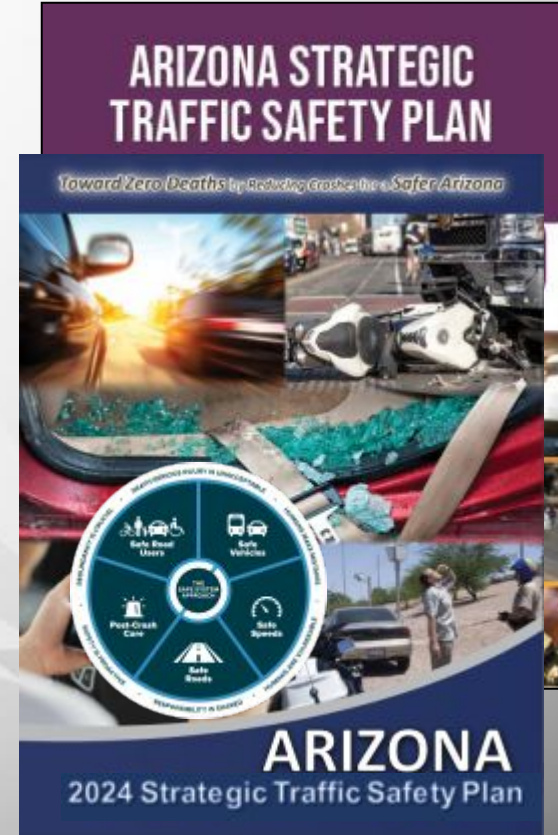


# Round Table Outcome

The results of the round table will form the basis of the initial goals and objectives for the Tribal Emphasis Area of the 2024 Strategic Highway Safety Plan

# Outcome

What ever comes out of the final plan,  
**ADOT must make sure the plan and  
 resulting implementation works for all  
 of Arizona!**



# Questions?

**Traffic Safety Starts at and Ends at Home,  
*Drive, bike and walk safely!***

**Kerry Wilcoxon**, PE, PTOE, RSP<sub>1</sub>

State Traffic Safety Engineer

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**Safe System Materials**

Find more resources at:

[safety.fhwa.dot.gov/zerodeaths](https://safety.fhwa.dot.gov/zerodeaths)