# Safe Speeds Save Lives
# Vision Zero

## Public Meeting

Tempe

# Why are we here?

Look to the person sitting next to you.

How would you feel if that person died in a car crash?

Look again at the person sitting next to you.

How would you feel if you were the driver responsible for killing that person?

# Performance Measures – Tempe Cares!

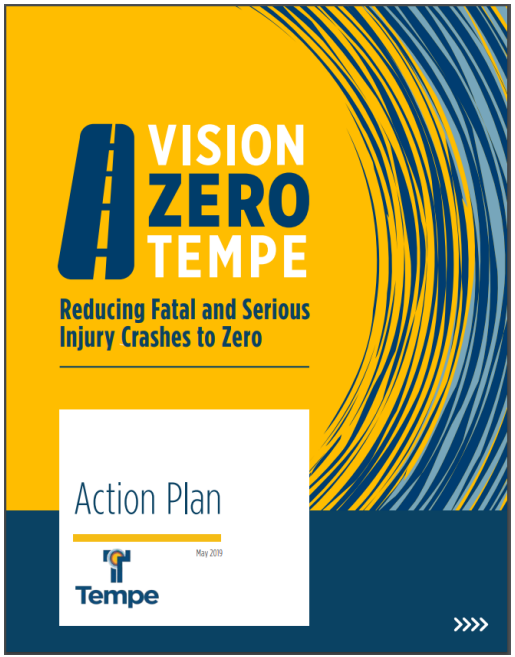
## Safe & Secure Communities

1.08: Achieve a reduction in the number of fatal and serious injury crashes to zero.

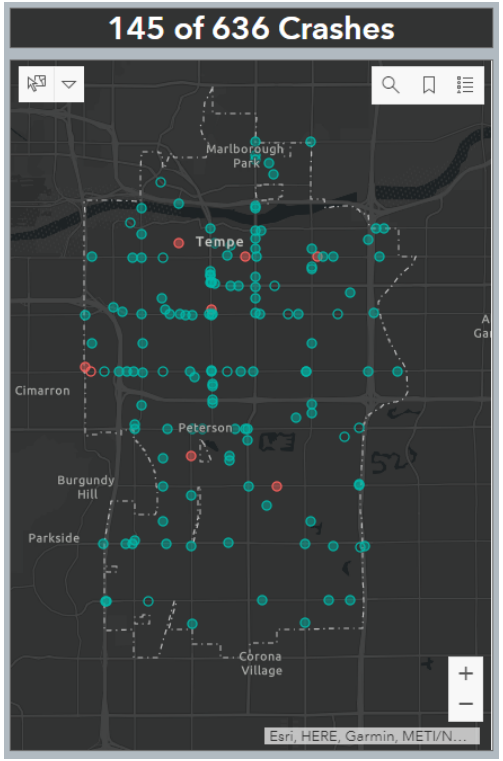
VISION ZERO TEMPE

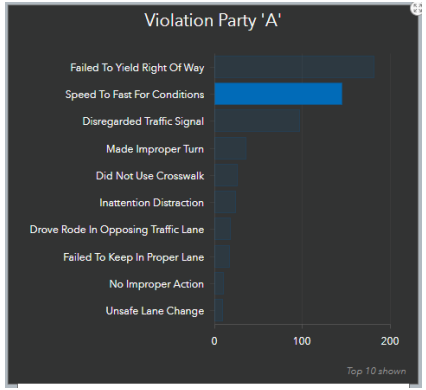
# Tempe Vision Zero

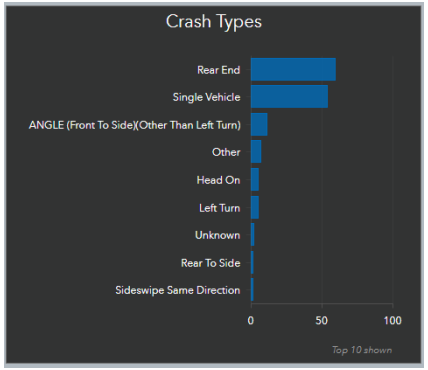
- Between May 2018 and June 2019, staff and the community worked collaboratively to develop a Vision Zero Action Plan.
- The Vision Zero Action Plan is data driven.
- As crash data was reviewed, it became apparent early on that there would need to be strategies related to speeding in the action plan.

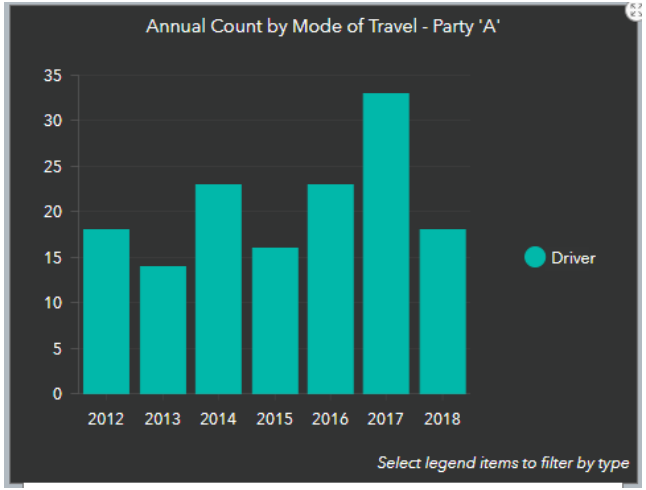


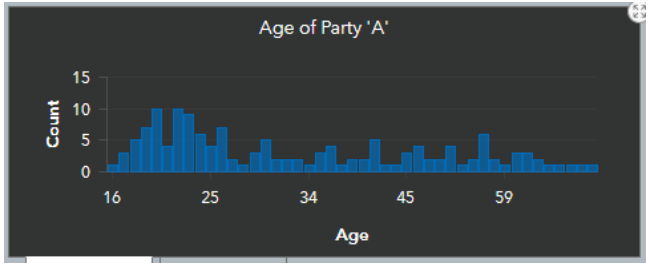
# “High Severity” Speed Related Crashes – Tempe



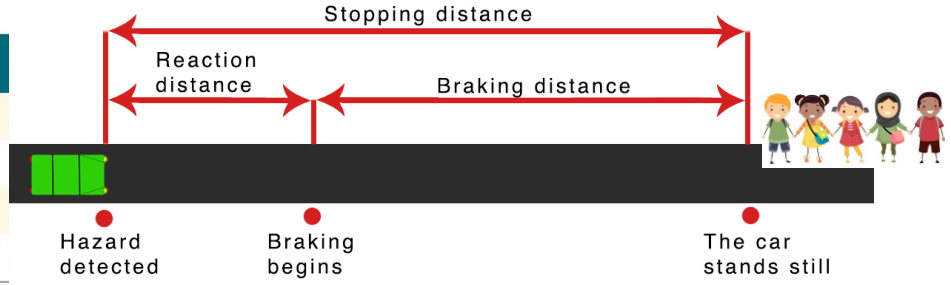

Tempe Crash Data (2012-2018), available at tempe.gov/visionzero

# How Does Speed Effect Safety? PHYSICS!

## As speed increases:

1. It takes longer to stop.
2. Crashes have more force.

| SPEED (MPH) | STOPPING DISTANCE (FT)* |
|---|---|
| 10–15 | 25 |
| 20–25 | 40 |
| 30–35 | 75 |
| 40+ | 118 |




* Stopping Distance includes perception, reaction, and braking times.

† Source: Traditional Neighborhood Development: Street Design Guidelines (1999), ITE Transportation Planning Council Committee 5P-8.

Source: NACTO Urban Street Design Guide

Initial Kinetic Energy $\frac{1}{2}mv^2$

# How Does Speed Effect Safety?

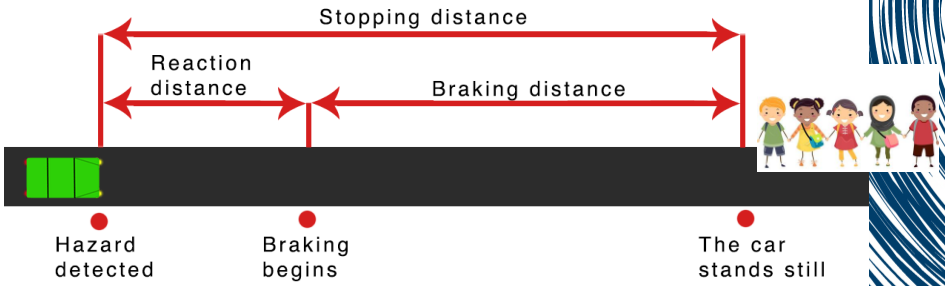
## As speed increases:

1. There is a greater chance of being injured.
2. The injuries are likely to be more severe or fatal.

| SPEED (MPH) | STOPPING DISTANCE (FT)* | CRASH RISK (%)† | FATALITY RISK (%)† |
|---|---|---|---|
| 10–15 | 25 | 5 | 2 |
| 20–25 | 40 | 15 | 5 |
| 30–35 | 75 | 55 | 45 |
| 40+ | 118 | 90 | 85 |

* Stopping Distance includes perception, reaction, and braking times.

† Source: Traditional Neighborhood Development: Street Design Guidelines (1999), ITE Transportation Planning Council Committee 5P-8.



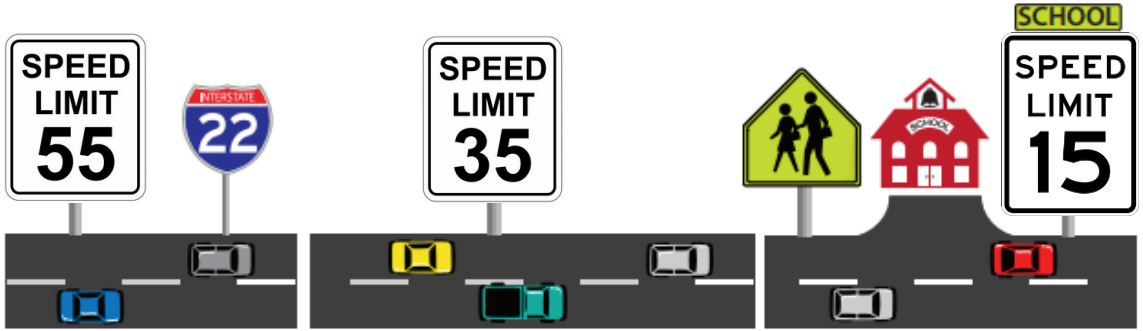

Source: NACTO Urban Street Design Guide

# A Little History on Speed Limits

- First gasoline-powered automobiles traveled a maximum speed of 13 mph.
- First posted speed limits were in England (5 mph outside of towns and 2 mph in towns).
- Automobiles were required to have three operators for each vehicle (two traveling in the vehicle and one walking ahead and carrying a red flag to warn pedestrians and equestrians).

# Speed Limits

- Speed limits **frame expectations** for drivers and other roadway users.
- Properly set speed limits provide a **safe, consistent, and reasonable speed** to protect **drivers, pedestrians, and bicyclists** along the roadway.



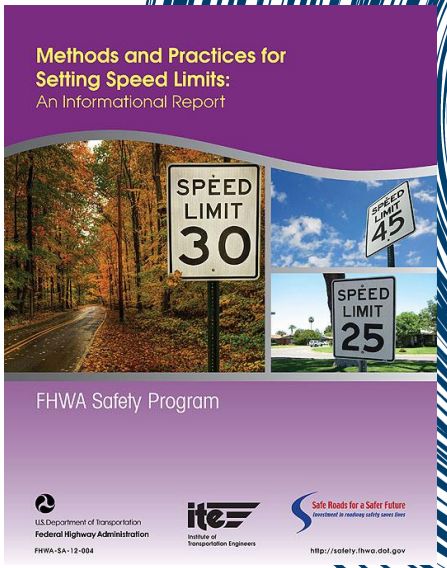
# Setting Speed Limits

There are four general approaches for setting speed limits:

1. **Engineering Approach** (85th percentile vehicular speed with minor adjustments)
2. **Expert System Approach** (computer program)
3. **Optimization** (minimize the total societal costs of transport)
4. **Safe Systems Approach** (injury minimization)

**Approach #1** is the most common method in the US.

**Approach #4** is the most consistent with Vision Zero.



# Safe Systems

A safe systems approach is “human-centered” in that it:

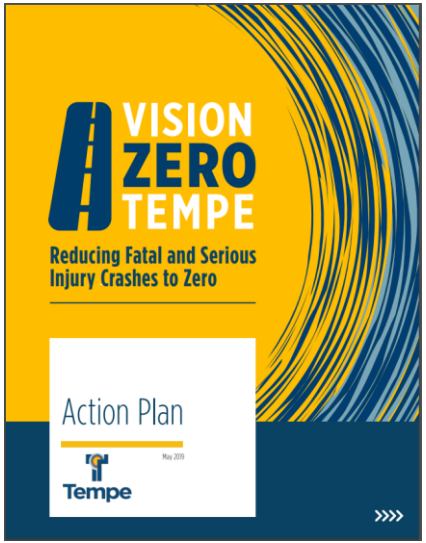
- Fully integrates the needs of ALL users.
- Anticipates human error.
- Accommodates human injury tolerance.

# Safe Systems

# Safe Systems

Tempe's Vision Zero Action Plan identifies two "Safe Systems" strategies related specifically to speeding:

1. Initiate a **citywide speed limit evaluation** with the safe systems approach to incorporate other critical factors, such as crash history and the safety of people walking and bicycling.
2. Improve **driver compliance** by converting "24 hour" 35 MPH high school zones to time-of-day with flashing warning lights.



# Setting Speed Limits – Engineering Approach

## What do Tempe's speed limits currently look like?

Speed limits set by 85th percentile with minor modifications (+/- 5 mph) for special conditions:

- **Maximum arterial speed limits = 35-45 mph**
- **Maximum collector speed limits =25-35 mph**
- **Maximum local/neighborhood speed limits = 25 mph**

# Setting Speed Limits – Safe Systems Approach

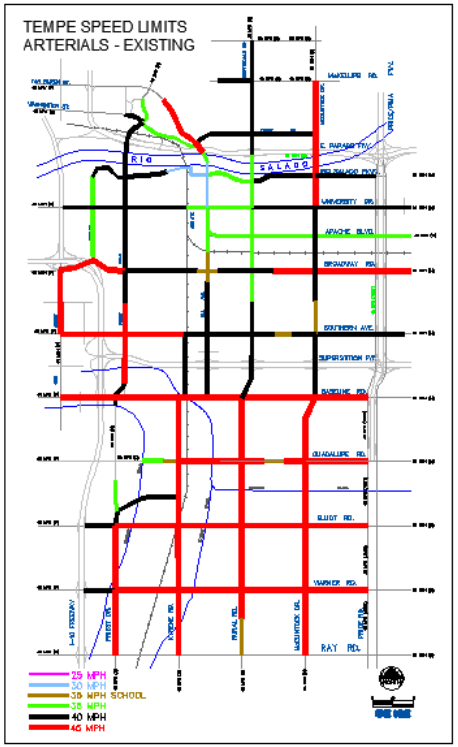
## What should Tempe's speed limits look like?

Speed limits set according to the crash types that are likely to occur, the impact forces that result, and the tolerance of the human body to withstand these forces:

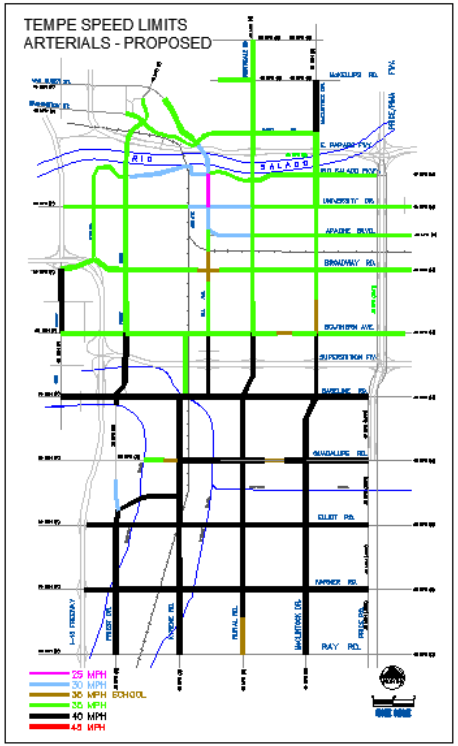
- Maximum arterial speed limits (low bike/ped activity) = 40 mph
- Maximum arterial speed limits (medium bike/ped activity) =35 mph
- Maximum arterial speed limits (high bike/ped activity) = 30 mph
- Maximum arterial speed limits (very high bike/ped activity) = 25 mph
- Maximum collector speed limits = 25-30 mph
- Maximum local/neighborhood speed limits = 20-25 mph

# Setting Speed Limits – Safe Systems Approach

## EXISTING




## PROPOSED




25 MPH
30 MPH
35 MPH SCHOOL
35 MPH
40 MPH
45 MPH

# Dispelling Common Misconceptions: Increased Congestion/Pollution

Lower speed limits should **not** result in increased congestion.

- Congestion is mainly a function of **delay**, not speed.
- Traffic signals are timed for a progression speed.
  - Exceeding the posted speed limits results in "Racing to the next red light"
- Most recurring delay occurs at intersections and is a function of demand exceeding capacity and non-ideal signal spacing.
- Most non-recurring delay is a result of crashes, work zones and other "blockage".
  - Lower speeds should result in less crashes.
  - Low speed crashes are usually less severe and can be moved quickly.
  - Tempe already limits construction work to between 8:30am and 3:30pm.
  - Lower speeds allow vehicles to safely maneuver around debris, disabled vehicles, etc.

# Dispelling Common Misconceptions: Significantly Increased Travel Times

Lower speed limits should **not** result in significant increases to travel times.

- A five (5) mile trip traveling at a constant speed (no stops or delay) takes:
  - 6.7 minutes at 45 mph
  - 7.5 minutes at 40 mph
  - The difference is only **48 seconds**

# Dispelling Common Misconceptions: Increased Revenue

Lower speed limits should **not** result in increased revenue.

- Ticketing (enforcement) is not necessary if there is **voluntary compliance**.
- Drivers risk getting ticketed if they **choose** to exceed the posted speed limits.
  - If nobody exceeds the posted speed limits, there are no tickets (zero revenue).

# Dispelling Common Misconceptions: There's No Enforcement

For the entire city:

- There are 11 active motor officers dedicated to traffic enforcement.
  - Provide coverage for the full city (40+ square miles).
  - Schedules are staggered.
  - Schedules are based on data driven analyses (ex: more officers on Fridays).
  - A typical traffic stop takes 15-20 minutes.
- The Police Department is on pace to respond to 6,000 crashes this year.
  - A typical property damage only (fender bender) crash necessitates ~1 hour.
  - Injury crashes (minor to serious) hours vary significantly (hospital visits, contacts, etc.)
  - A typical fatal crash necessitates ~4+ hours.

Less time responding to crashes = more time for proactive enforcement!

# Dispelling Common Misconceptions: Nobody Cares/Behavior Will Not Change

Many drivers **are** concerned about safety.

- Many drivers do choose to voluntarily comply with speed limits.
- Many drivers choose their speed based on the posted speed limits.

Pedestrians and bicyclists are **very** concerned about safety.

# Next Steps

- Received Council support on setting speed limits using the “safe systems” approach.
- Hosting four public meetings to receive community feedback.
  - Public comment period is from November 16th to December 28th.
- Report back to council (scheduled for March 19, 2020).
- Develop a “Request for Council Action” to amend the City Code.
- There will be two public hearings (as required for any modifications to the City Code).
- Work with Neighborhood Services and PIOs to educate our residents of any changes.
- Fabricate and install new speed limit signs.
- Continue to educate our residents.

VISION ZERO TEMPE