

MAG Strategic Transportation Safety Plan

Strategies & Performance Measures Workshop

March 25, 2014

Work Plan Tasks

1. Crash Analysis – Current State & Resources
2. Establish Regional Vision and Goals
- 3. Develop Action Areas, Strategies, and Performance Measures**
4. Network Screening Methodologies for Prioritization of Road Safety Needs
5. Incorporating Safety in the Regional Transportation Plan
6. Develop a Strategy to Incorporate Safety Enhancements in Road Infrastructure Projects
7. Improving Safety via Traffic Operations and Technology Solutions
8. Monitoring and Reporting on System Performance and Program Effectiveness
9. Implementation Plan 2015 – 2025
10. Draft Final Report, Executive Summary and Presentations

Purpose

1. Identify a set of regional road safety Action Areas to be adopted and promoted by MAG
 - “Data Driven” – linked to crash history
 - Reduce to 4 or 5 Action Areas
2. Identify a realistic set of performance measures that will be used by MAG to report on progress
 - Data currently available or can be obtained
 - Good measure of an Action Area

Reduce the Number of Action Areas

- Eleven potential Action Areas
- Reduce to four or five that will be adopted and promoted by MAG
- Utilize Constant Sum Paired Comparison methodology

Potential Action Areas

- Eliminate impaired driving
- Eliminate death and injury from speeding and aggressive driving behavior
- Eliminate death and injury related to intersections
- Eliminate death and injury for vulnerable road users (pedestrians, bicyclists, persons with disabilities)
- Improve data collection, quality, availability, integration, and analysis for decision making

Potential Action Areas (continued)

- Increase use of safety devices (helmets, restraints, safety wear)
- Improve safety and mobility for older road users
- Eliminate distracted driving
- Eliminate death and injury involving young road users
- Eliminate death and injury as a result of lane departures
- Eliminate death and injury for motorcycle riders

Constant Sum Paired Comparison

- Each potential Action Area randomly paired with other ten potential Action Areas (55 pairs)
- Compare the two Action Areas to each other based on your opinion of their relative importance to each other
- Divide 20 points between the two Action Areas for each pair (do not use zero)
- Consider relevant crash history

Constant Sum Paired Comparison Cont.

- For example, if you feel that eliminating *Impaired Driving* is three times more important than eliminating *Speeding and Aggressive Driving*:

| | | | |
|------------------|----|---|---------------------------------|
| Impaired Driving | 15 | 5 | Speeding and Aggressive Driving |
|------------------|----|---|---------------------------------|

- For example, if you feel that eliminating *Speeding and Aggressive Driving* is nineteen times more important than eliminating *Impaired Driving*:

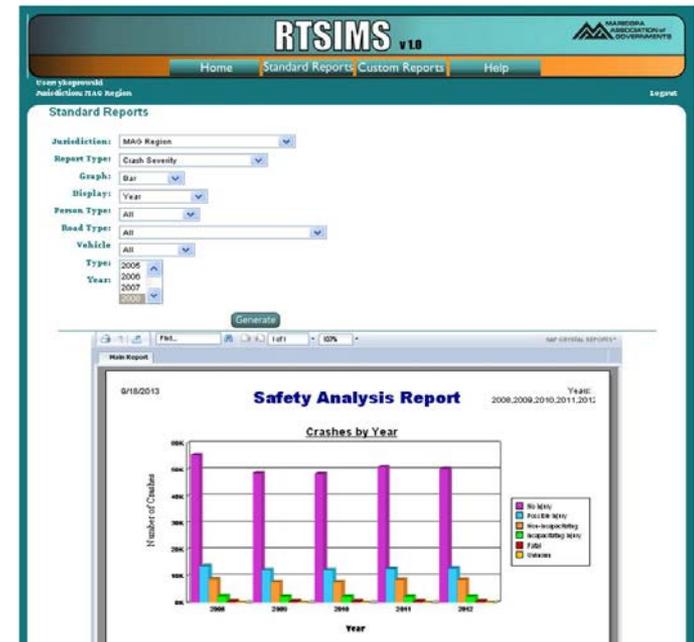
| | | | |
|------------------|---|----|---------------------------------|
| Impaired Driving | 1 | 19 | Speeding and Aggressive Driving |
|------------------|---|----|---------------------------------|

Constant Sum Paired Comparison (cont.)

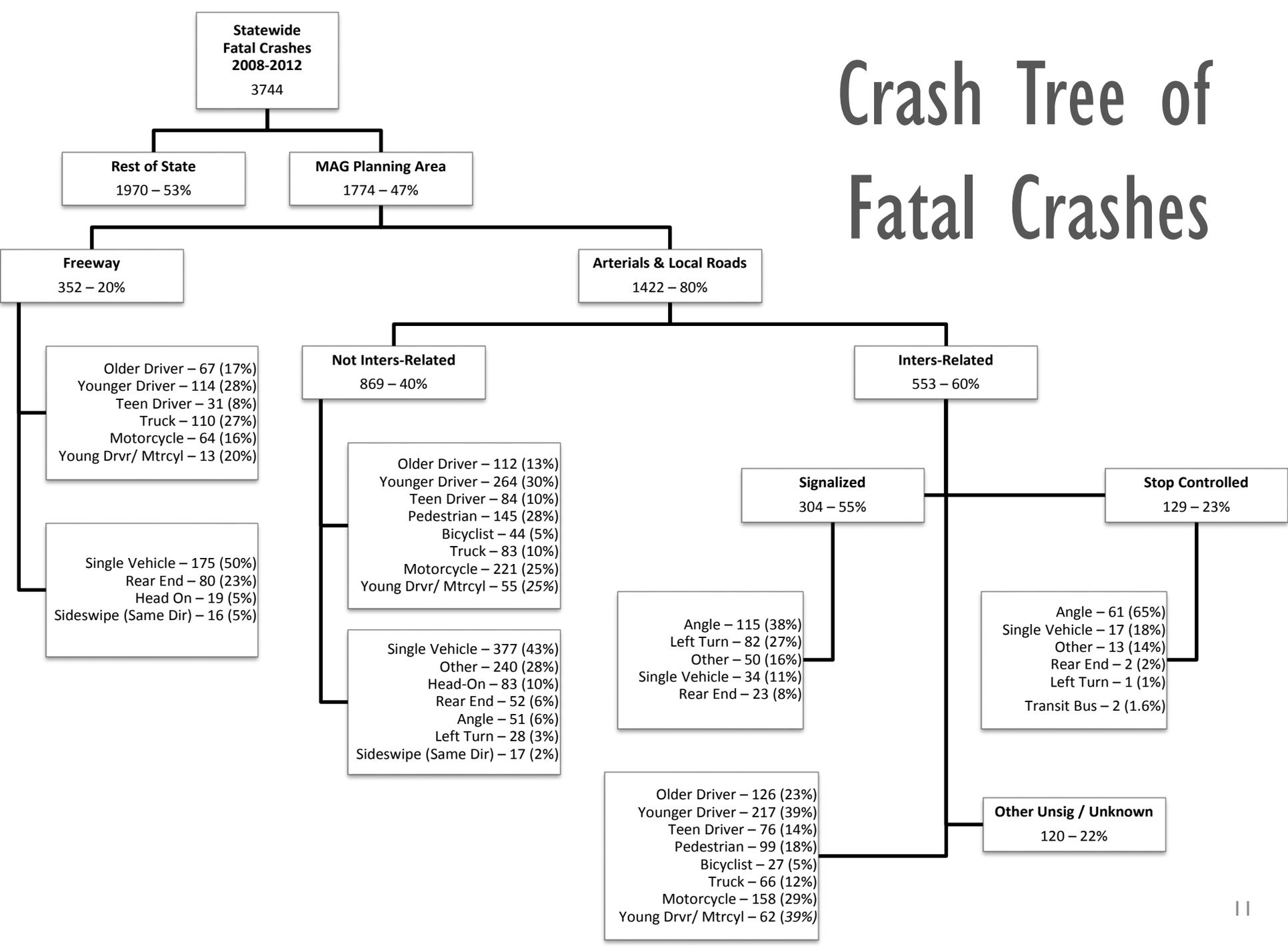
- All participant input will be tabulated together
- Results will show the relative importance of each of the eleven Action Areas
- Look for logical break in the rankings at about 4th or 5th highest ranked
- Discuss this initial list and allow participants to move to replace Action Areas (i.e. replace Action Area 5 with 7 because...)
- Consider whether data for the Action Areas can be successfully measured

Current State of Transportation Safety

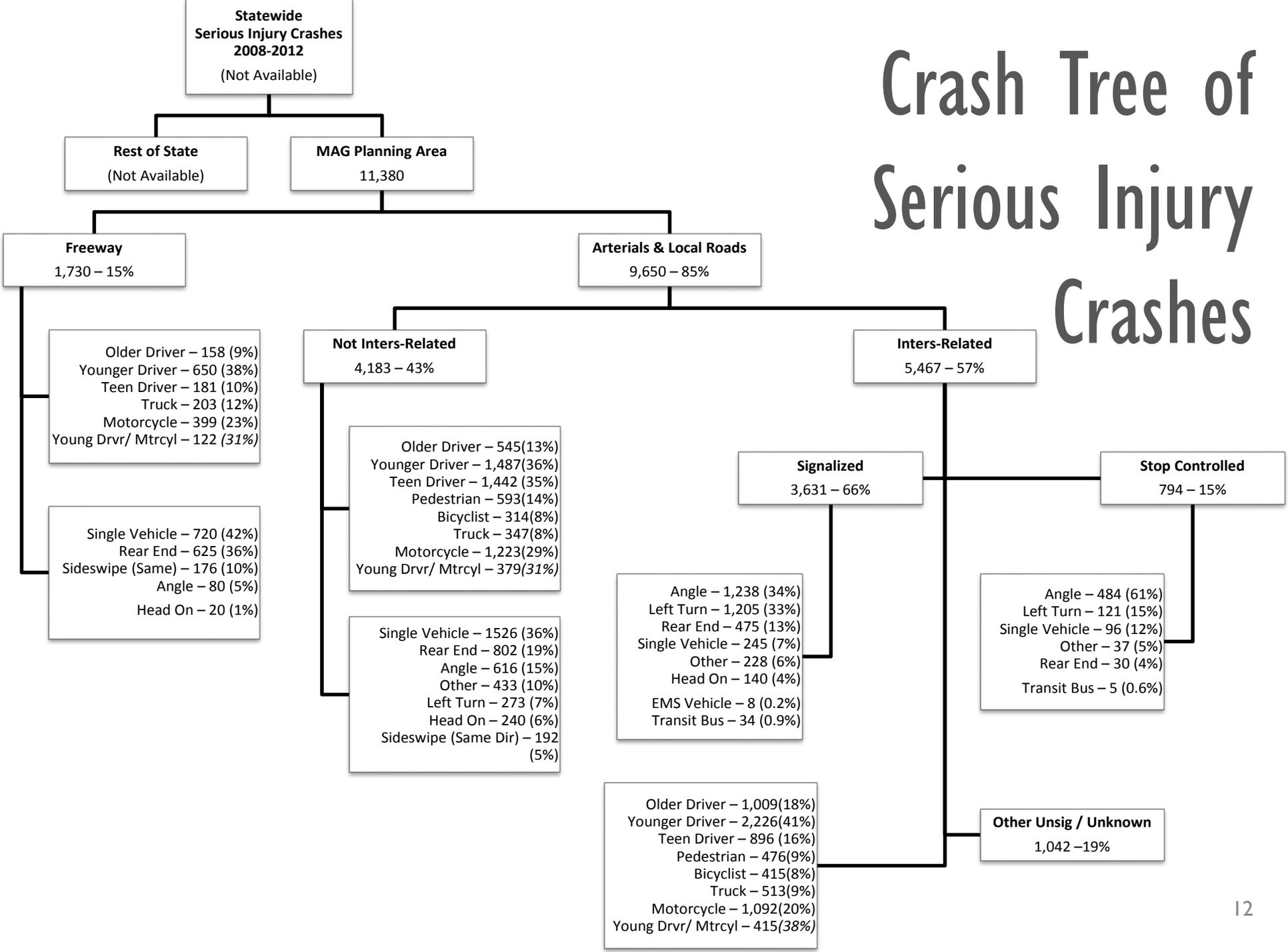
- Analysis of 2008 – 2012 crash data
- Focus on fatal (K) and serious injury (A)
- Regional Transportation Safety Information Management System (RTSIMS)
 - Key analytical tool
 - Free for any local agency in the MAG planning area
- Crash Tree
 - Visual tool to help identify the locations where target crash types occur most frequently



Crash Tree of Fatal Crashes



Crash Tree of Serious Injury Crashes



Eliminate Impaired Driving

MAG Planning Area
Fatal (K) & Serious Injury (A)

Involving Alcohol, Drugs, Meds

2,622

19.9% of all K+A crashes
42.4% of all K crashes
16.4% of all A crashes

**42.4%
of all K crashes**

Freeway

407(15.5%)

Arterial & Local Roads

2,215 (84.5%)

Inters Related

951 (42.9%)

Non-Inters Related

1,264 (57.1%)

Signalized

560 (58.9%)

Unsignalized

391 (41.1%)

MAG Planning Area
Fatal (K) & Serious Injury (A)
Fell Asleep/Fatigued Crashes
2008-2012

228

1.7% of all K+A crashes
1.3% of all K crashes
1.8% of all A crashes

Freeway

76 (33.3%)

Arterial & Local Roads

152(66.7%)

Inters Related

43 (28.3%)

Non-Inters Related

109 (71.7%)

Signalized

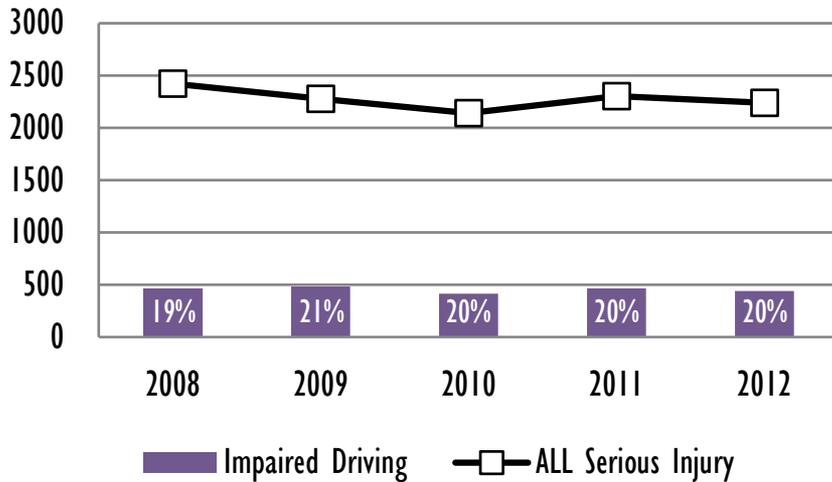
23 (53.5%)

Unsignalized

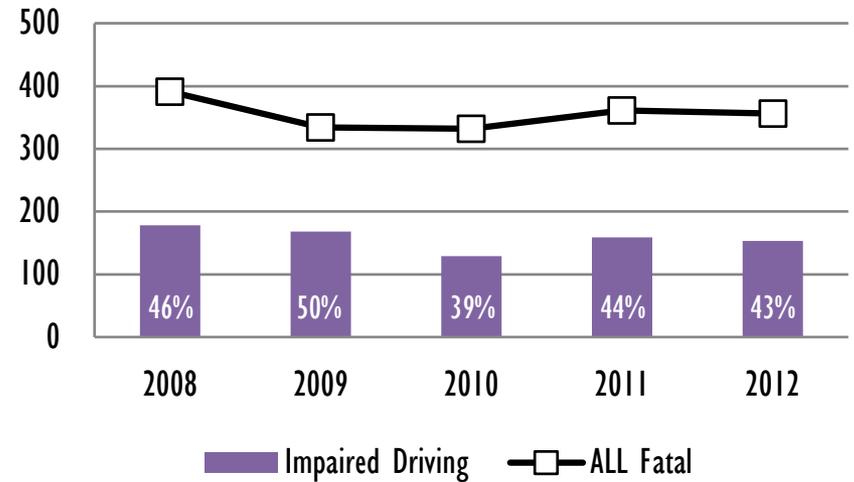
20 (46.5%)

Eliminate Impaired Driving Continued

Serious Injury Crashes



Fatal Crashes



Eliminate Death & Injury from Speeding & Aggressive Driving

MAG Planning Area
Fatal (K) & Serious Injury (A)

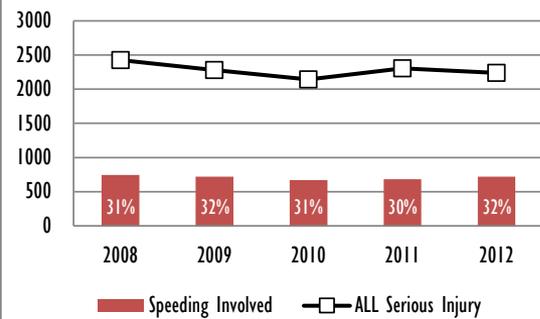
Involving Speeding Driver

4,127

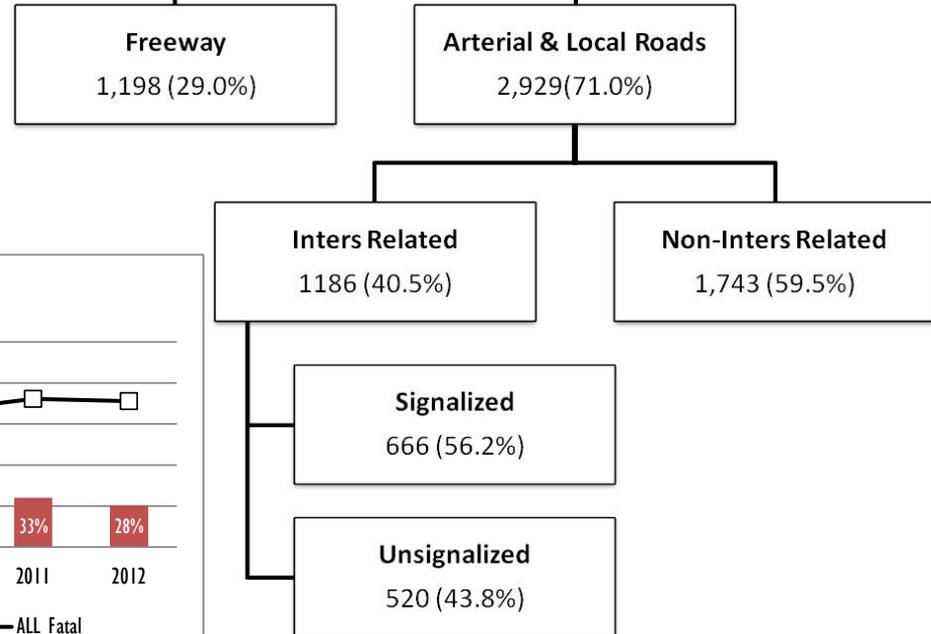
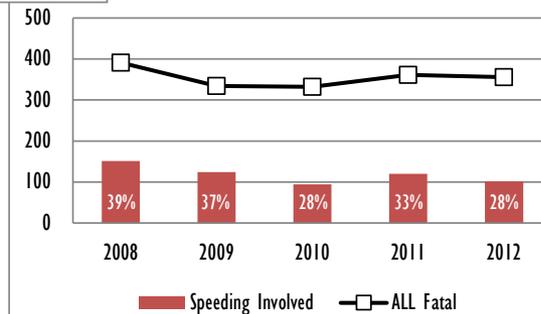
31.4% of all K+A crashes
33.3% of all K crashes
31.1% of all A crashes

33.3% of all K crashes
31.1% of all A crashes

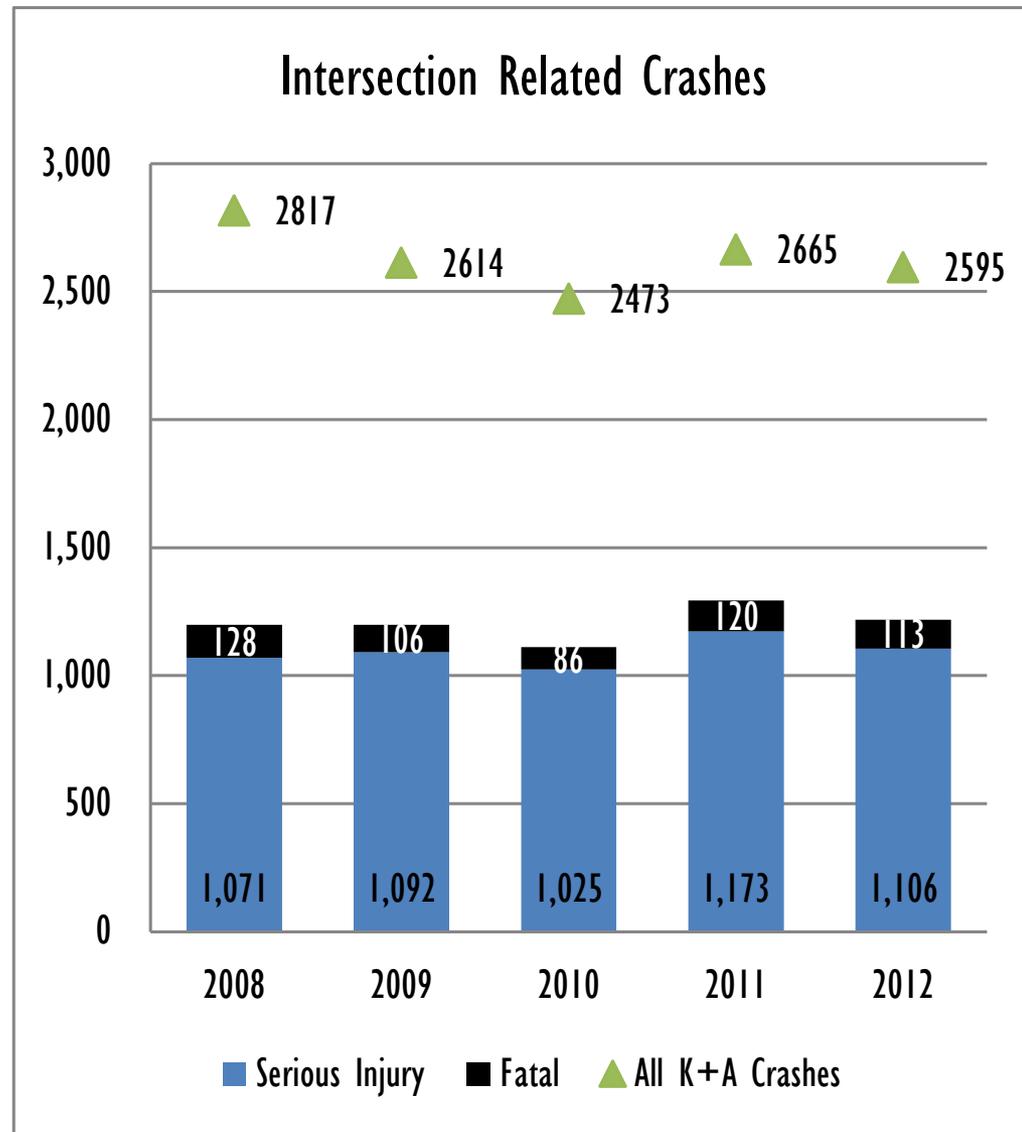
Serious Injury Crashes



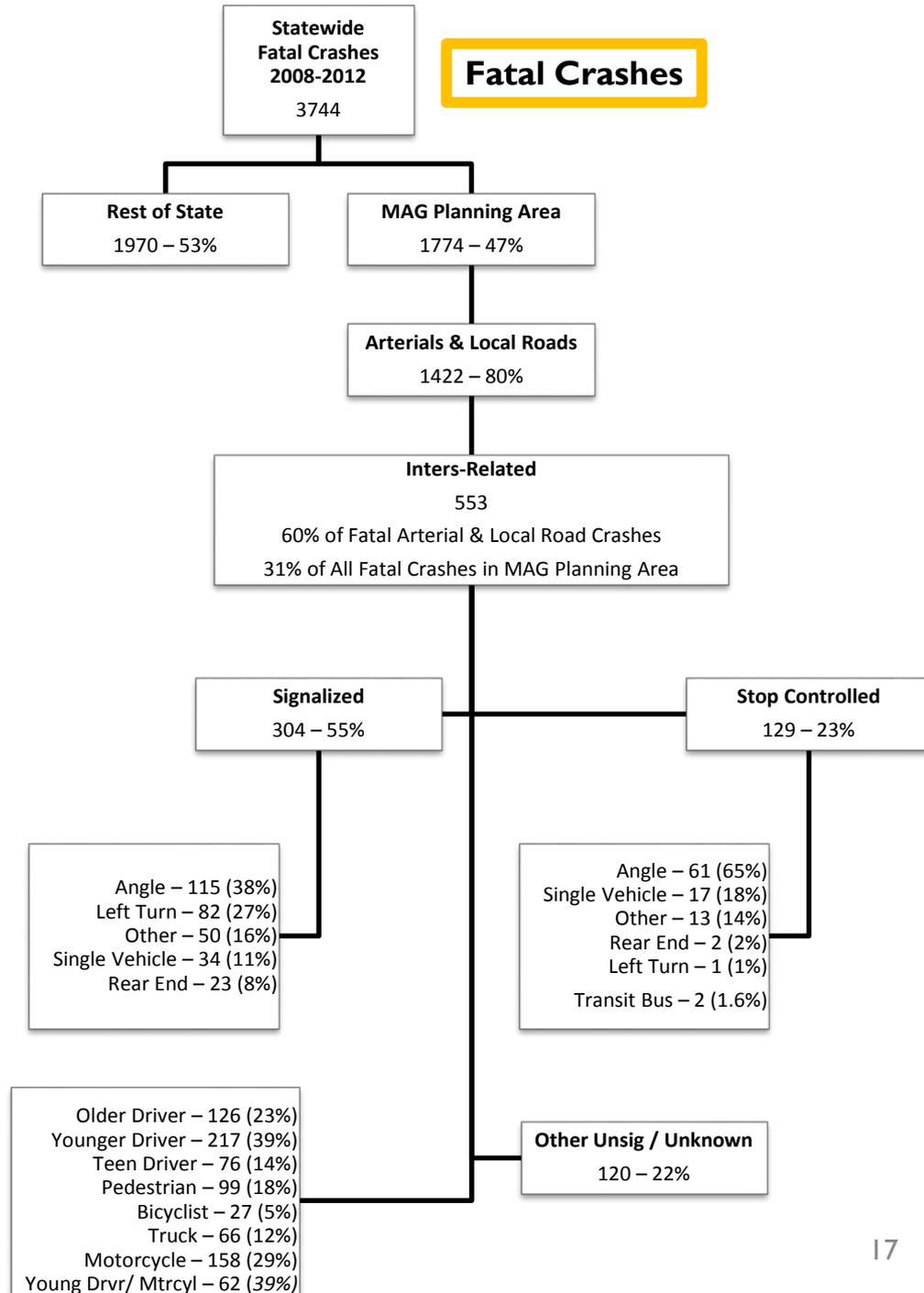
Fatal Crashes



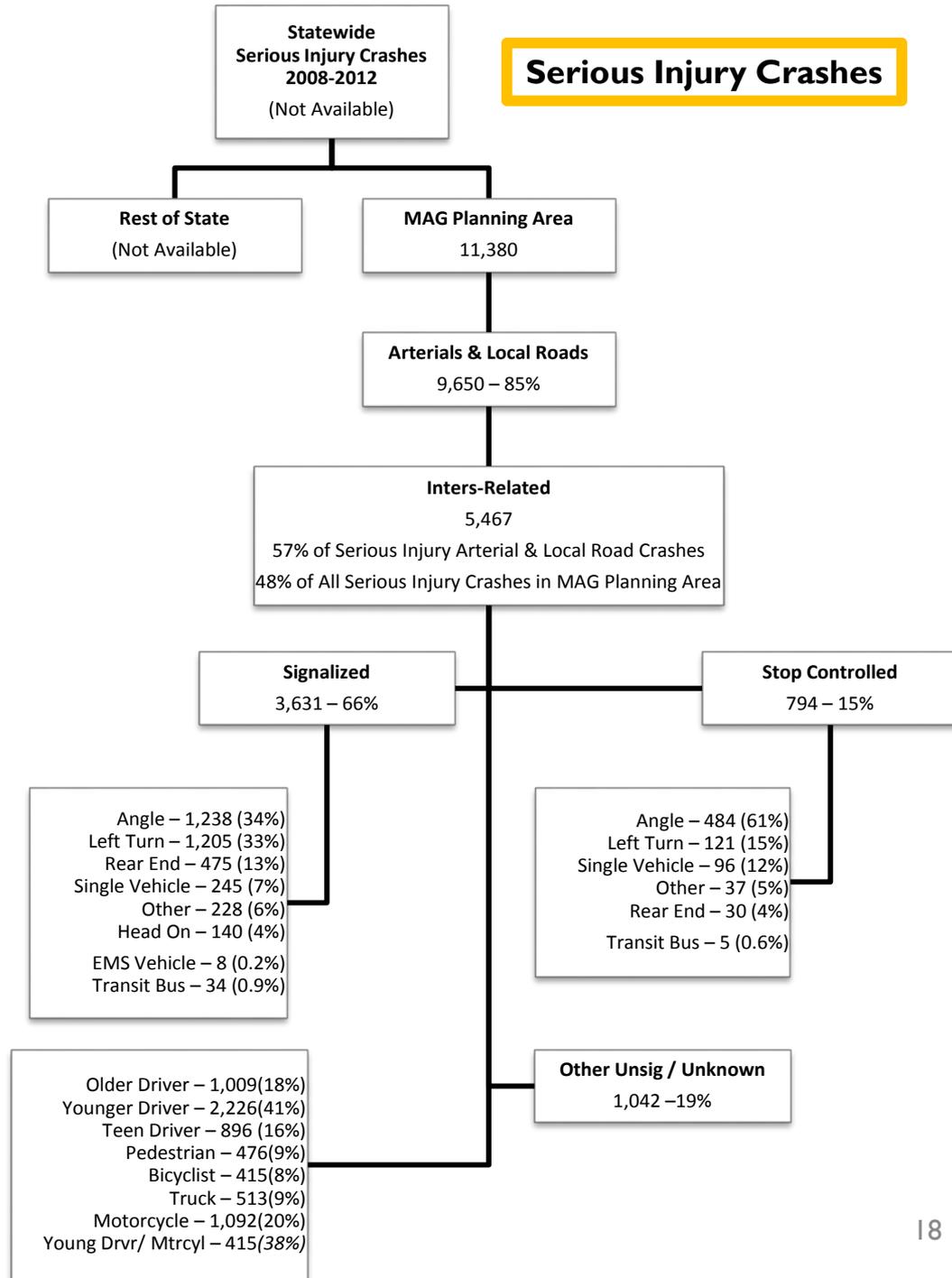
Eliminate Death & Injury Related to Intersections



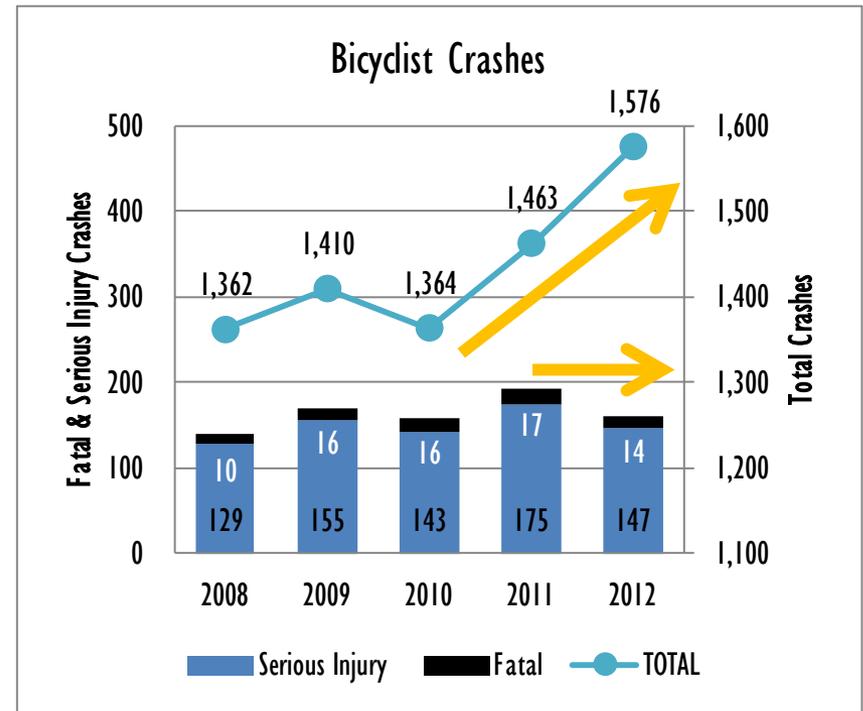
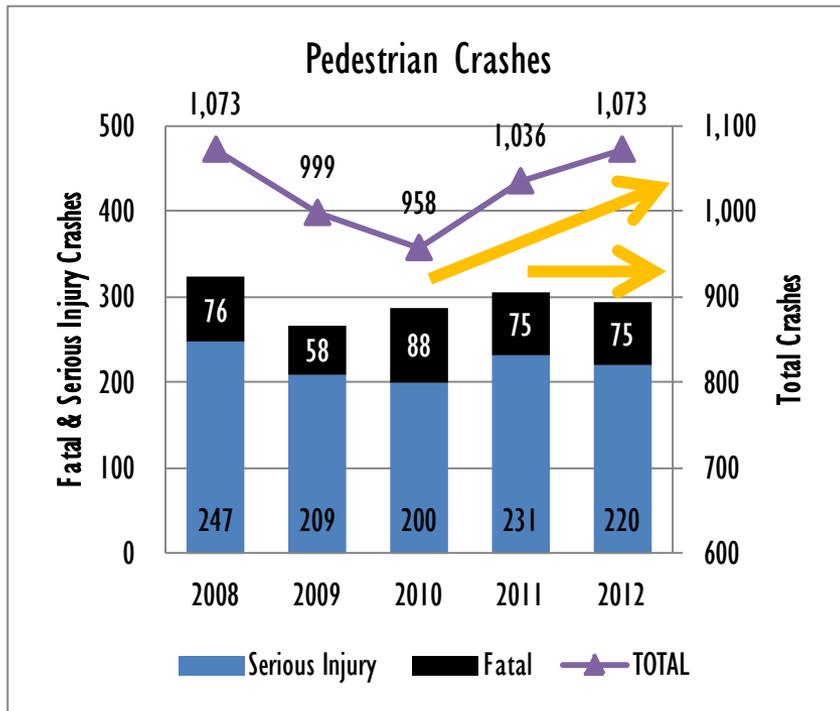
Eliminate Death & Injury Related to Intersections Continued



Eliminate Death & Injury Related to Intersections Continued



Eliminate Death & Injury for Vulnerable Users (Pedestrians, Bicyclists, Persons with Disabilities)



Inters Related
575 (40.7%)

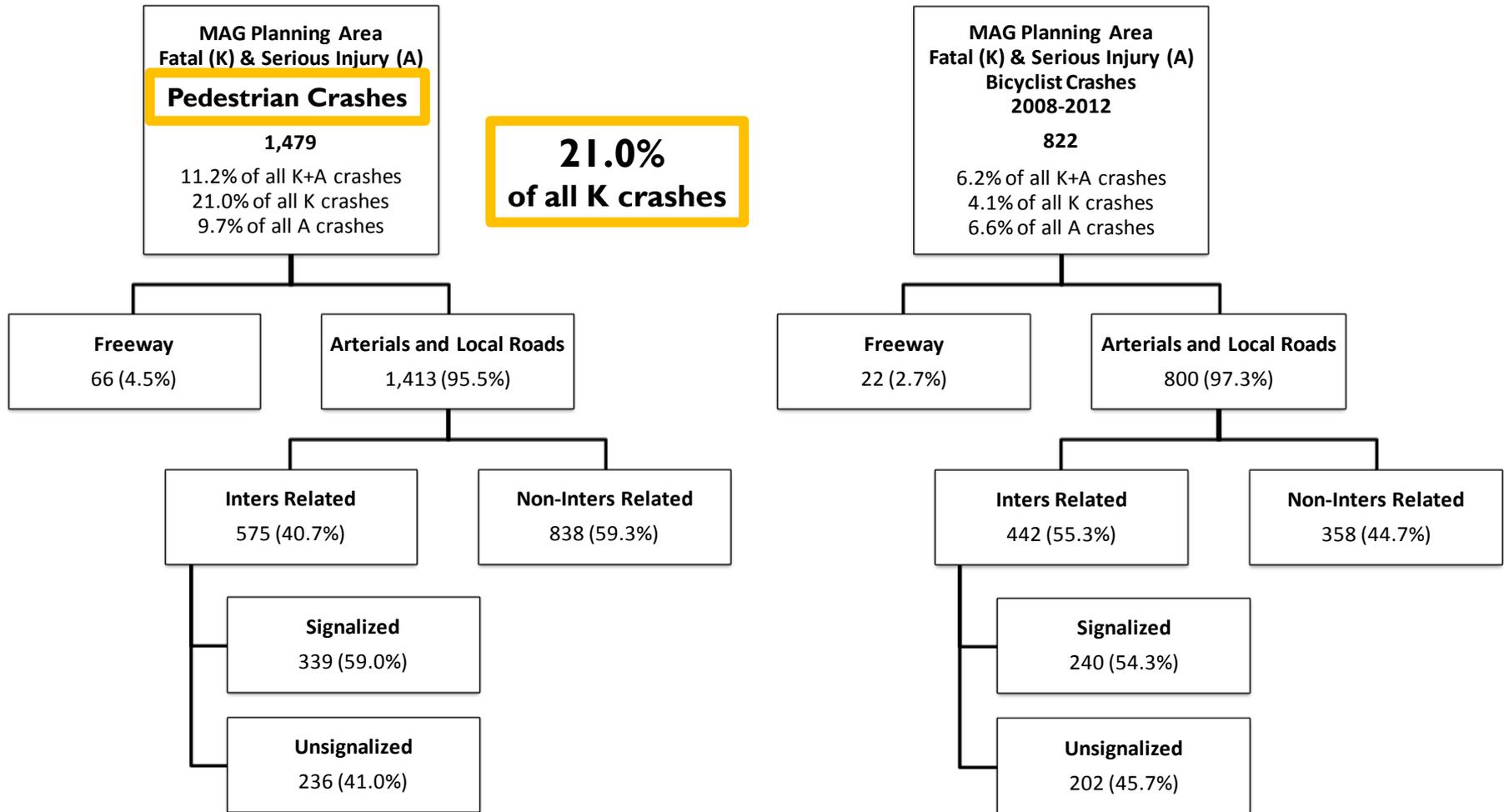
Non-Inters Related
838 (59.3%)

Inters Related
442 (55.3%)

Non-Inters Related
358 (44.7%)

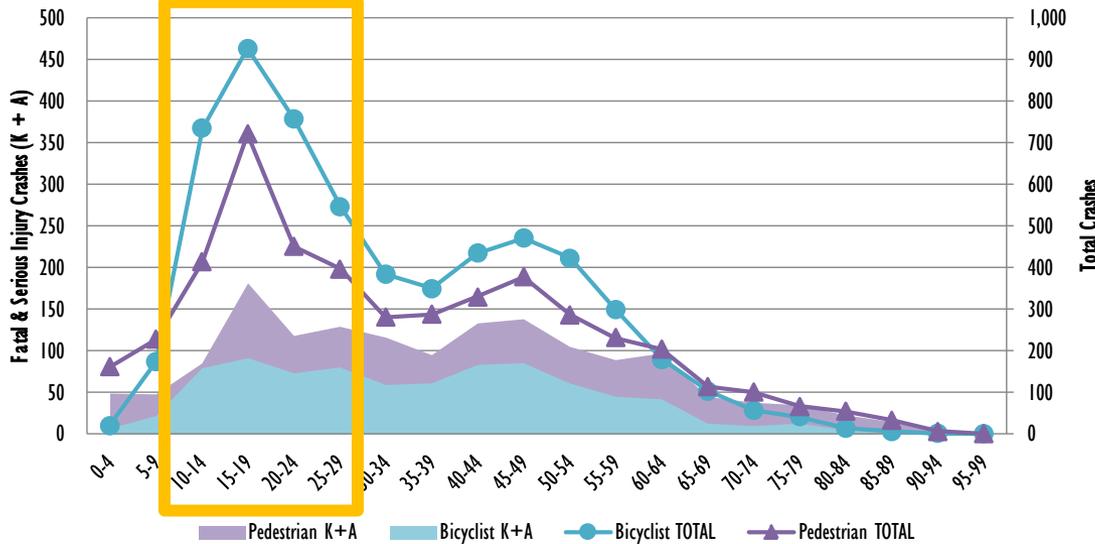


Vulnerable Users Continued

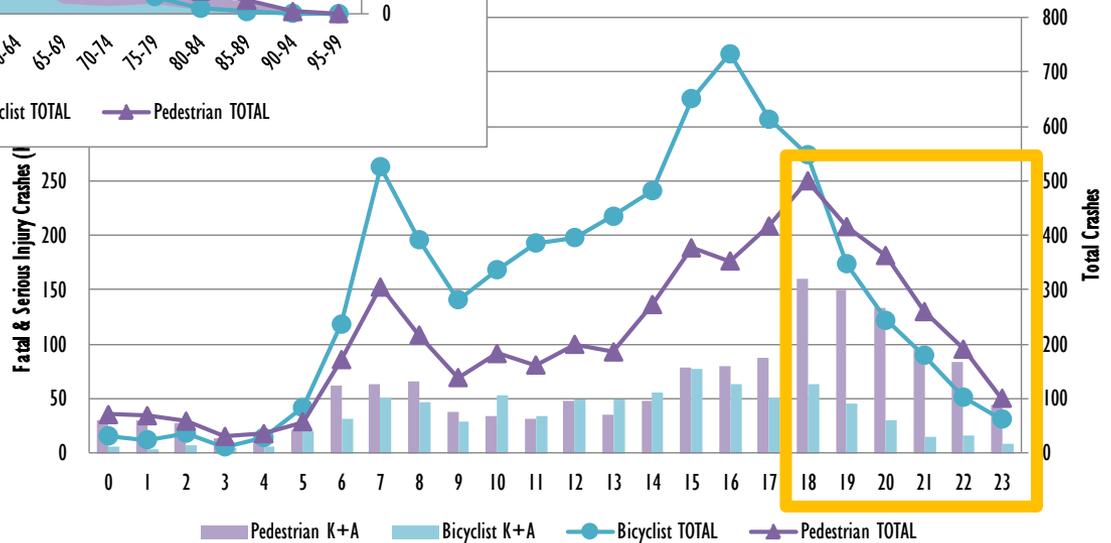


Vulnerable Users Continued

Vulnerable User Crashes by Age



Crashes by Hour of the Day



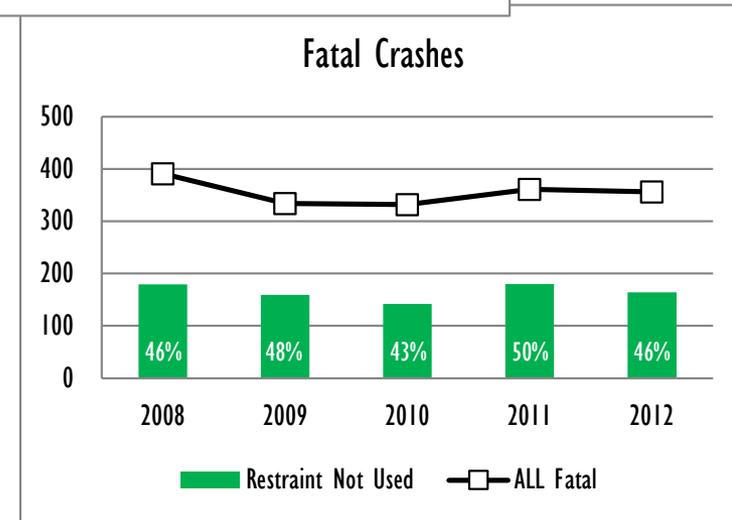
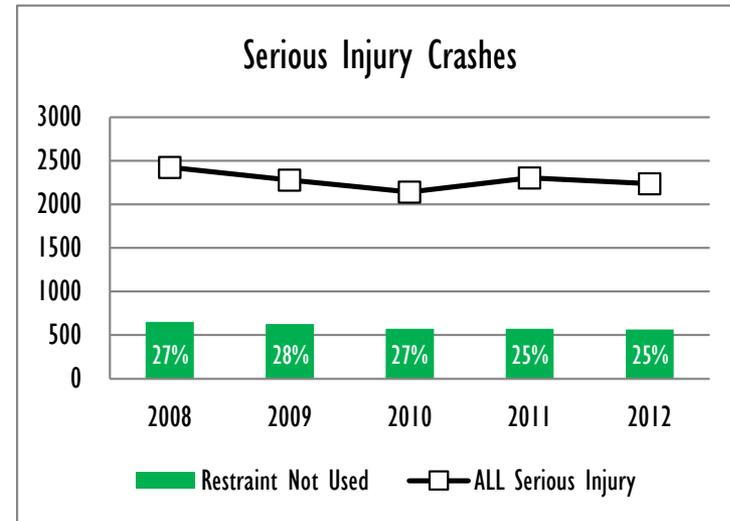
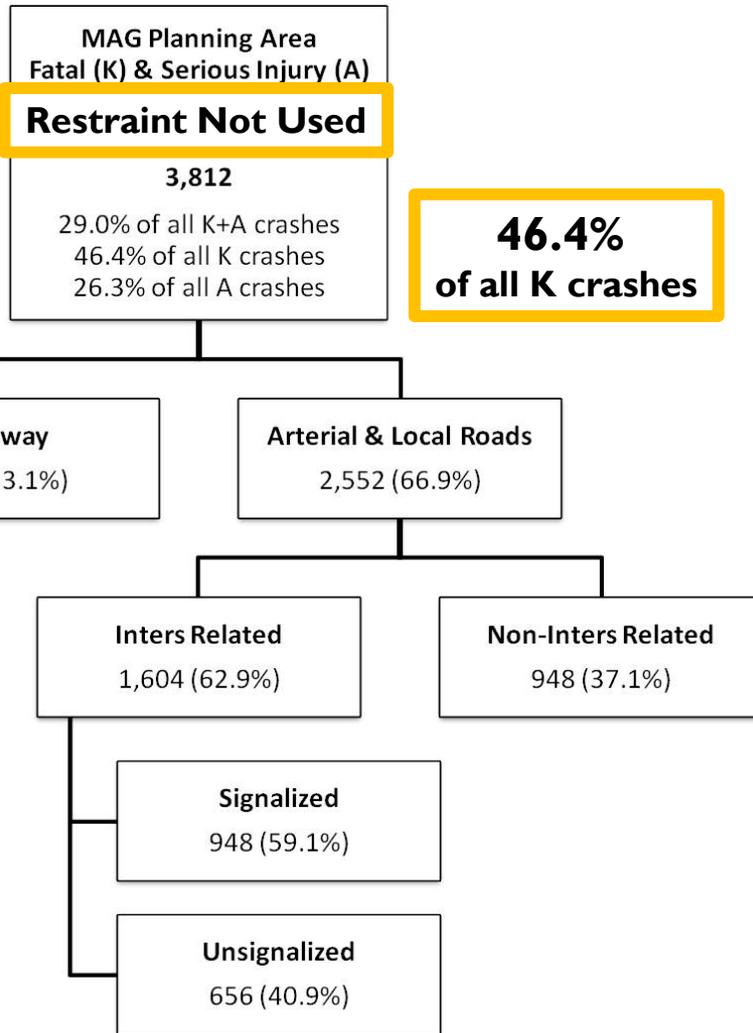
Improve Data Collection, Quality, Availability, Integration, and Analysis for Decision Making

- The following list provides possible data needs for the MAG Planning Area:
 - Data on licensed drivers by age for MAG Planning Area/Maricopa County
 - Volumes for crash rates (including pedestrian and bicyclist volumes)
 - Ensure data systems can accurately capture aggressive driving as a specific safety issue
 - Improve ability to reveal more detail in crash data using the Regional Transportation Safety Information Management System (RTSIMS) software and its Standard Reports graphical user interface

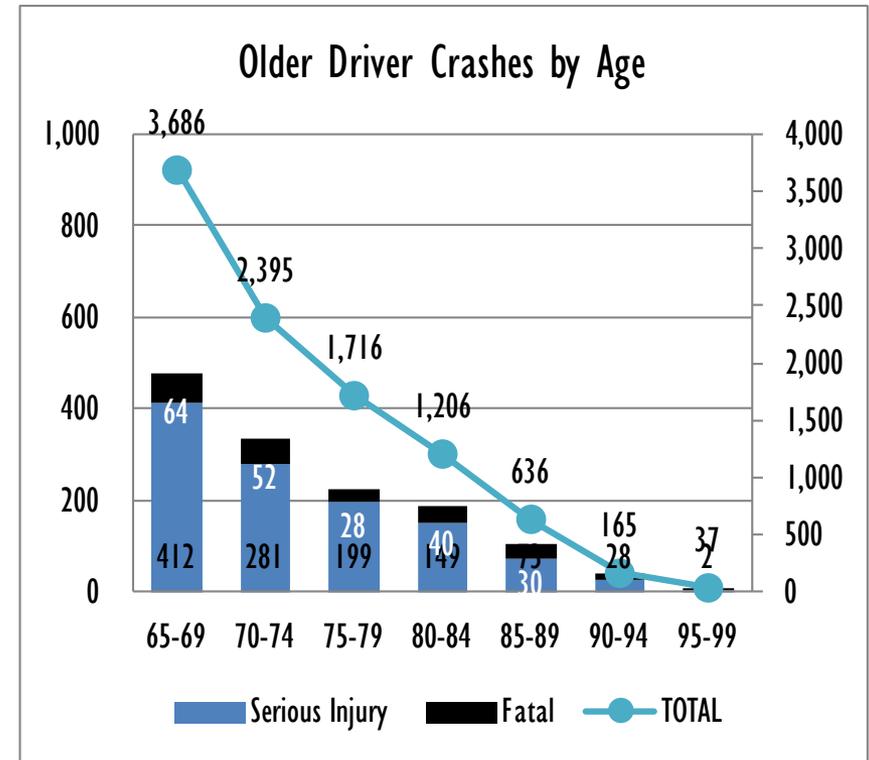
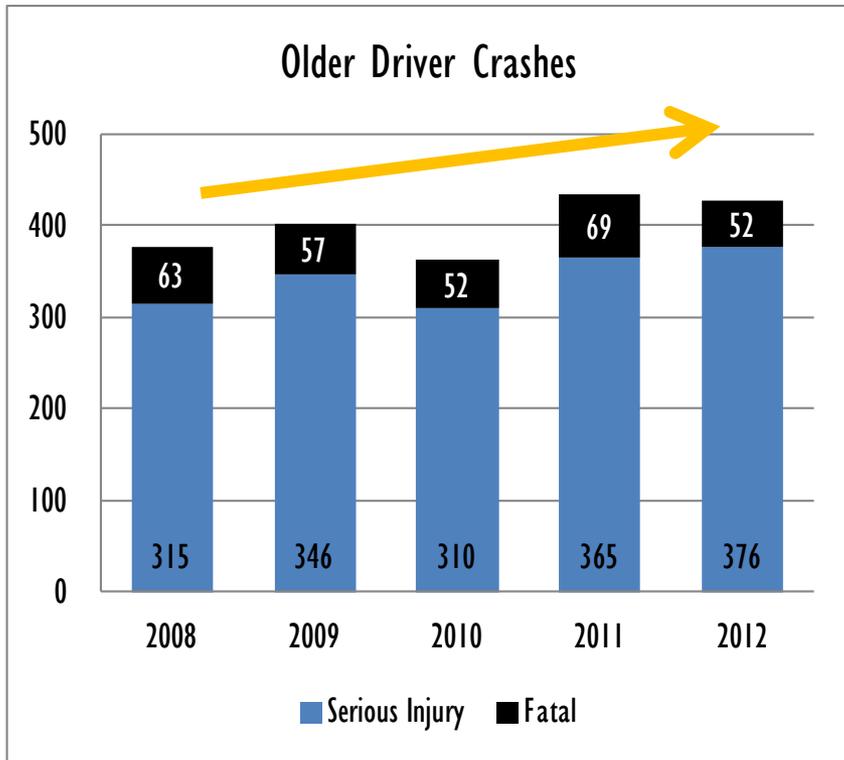
Improve Data Collection, Quality, Availability, Integration, and Analysis for Decision Making (continued)

- The following list provides possible data needs for the MAG Planning Area:
 - Improved reporting of pedestrian and bicyclist crashes related to using bus or light rail transit
 - Data on distracted driving crash reporting (checking box for electronic communication device)
 - Improved Pedestrian/Bicycle crash reporting
 - Online Self Reporting in lieu of having a crash report completed by a law enforcement officer for property damage only crashes that result in no injuries and where all involved vehicles are operable

Increase Use of Safety Devices



Improve Safety & Mobility for Older Road Users



119 Serious Injury Ped/Bike Crashes involving 65+ year olds
84 Fatal Ped/Bike Crashes involving 65+ year olds

Eliminate Distracted Driving

**MAG Planning Area
Fatal (K) & Serious Injury (A)
Distracted/Comm Device
Crashes 2008-2012**

2,446

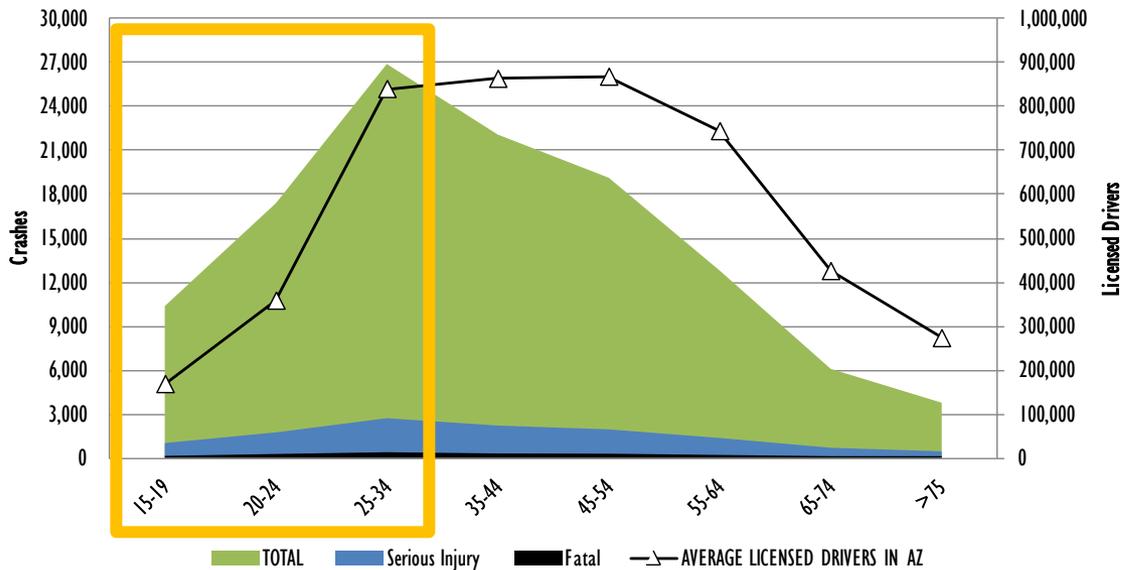
18.6% of all K+A crashes

12.9% of all K crashes

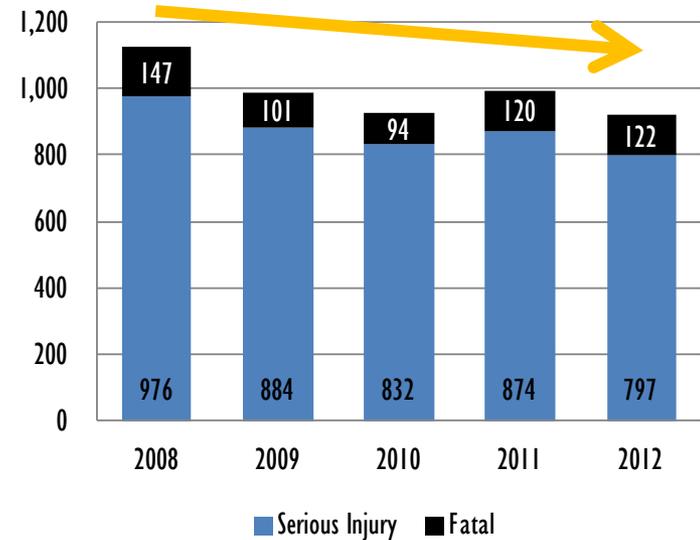
19.5% of all A crashes

Eliminate Death and Injury Involving Young Road Users

Crashes in the MAG Planning Area by Driver Age Compared to Licensed Drivers in Arizona

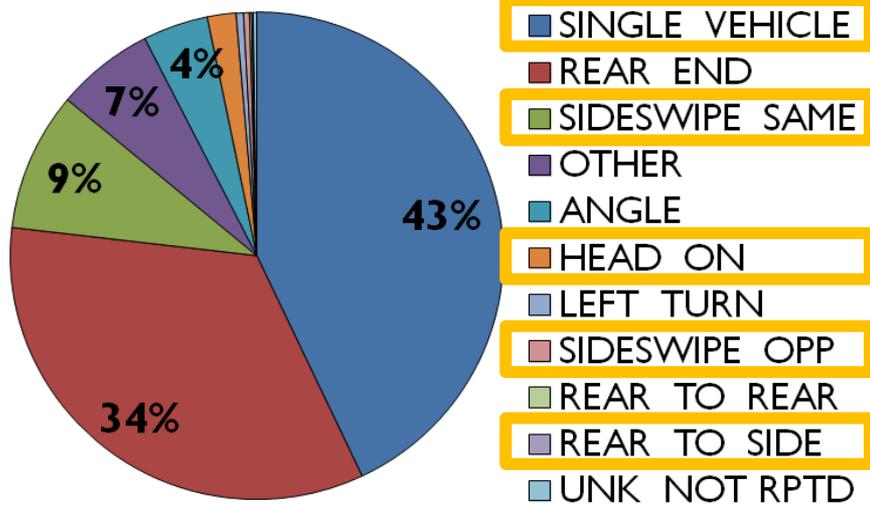


Younger Driver Crashes

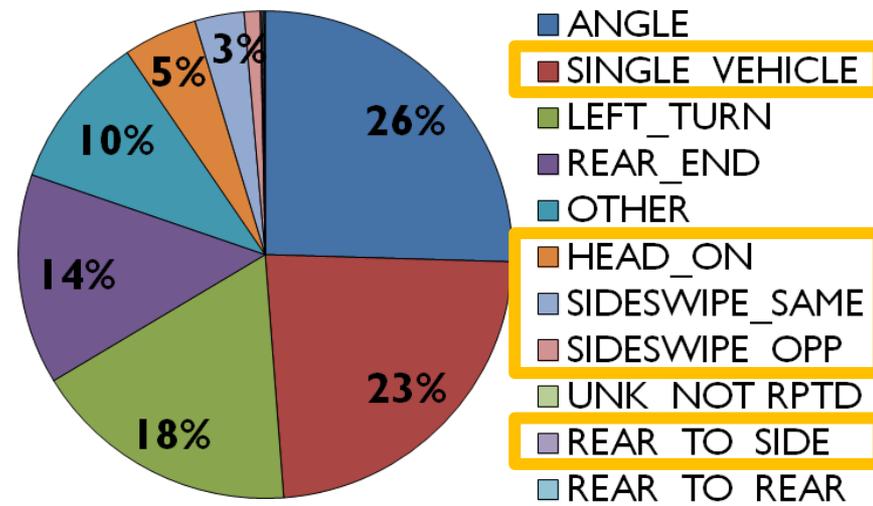


Eliminate Death & Injury as a Result of Lane Departures

**Freeway K + A Crashes
by Collision Manner**

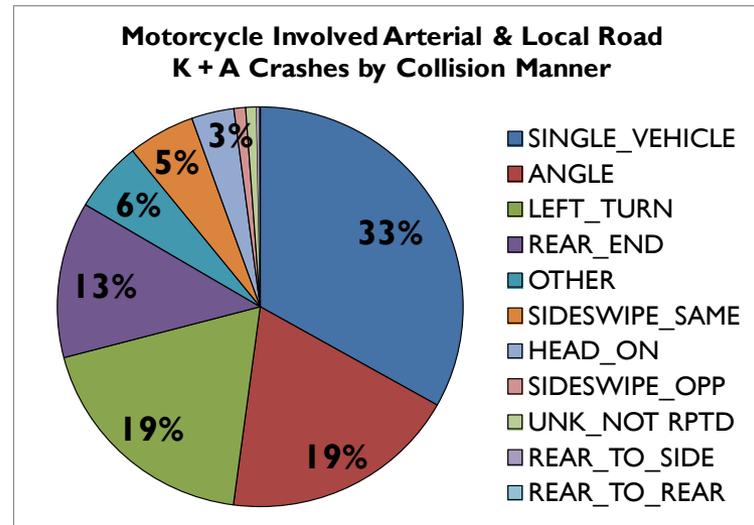
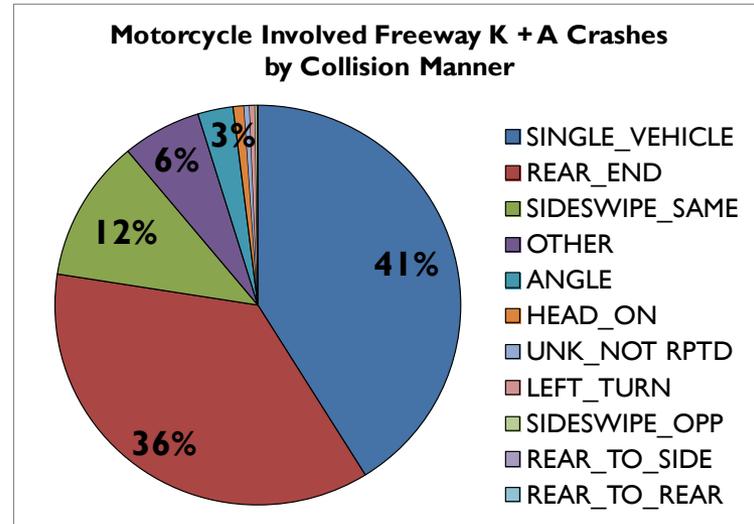
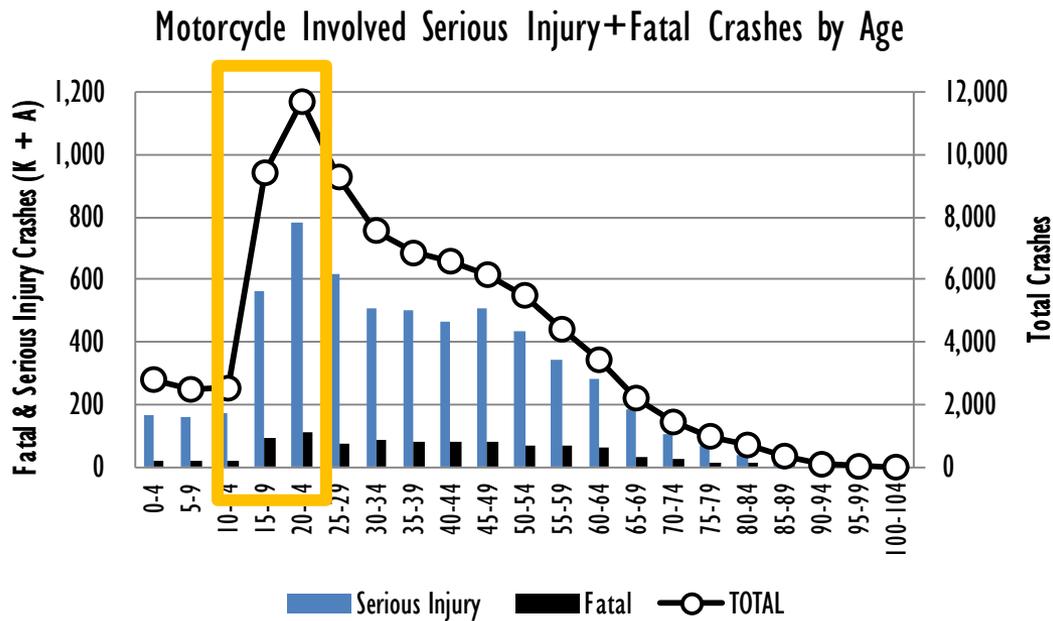


**Arterial & Local Road K + A Crashes
by Collision Manner**



K + A crashes on arterials is about 5 times as that on freeways

Eliminate Death & Injury for Motorcycle Riders



2008-2012 Crash Analysis Summary

| Action Areas | % of <u>All</u> Serious Injury (A) | % of <u>All</u> Fatal (K) |
|-------------------------------|------------------------------------|---------------------------|
| Impaired Driving | 18 | 44 |
| Speeding & Aggressive Driving | 31 | 33 |
| Intersections | 48 | 31 |
| Peds, Bikes, Disabled | 17 | 25 |
| Data | - | - |
| Safety Devices | 26 | 46 |
| Older Road Users | 21 | 16 |
| Distracted Driving | 20 | 13 |
| Young Road Users | 38 | 33 |
| Lane Departures | 34* | 46* |
| Motorcycle Riders | 25 | 24 |

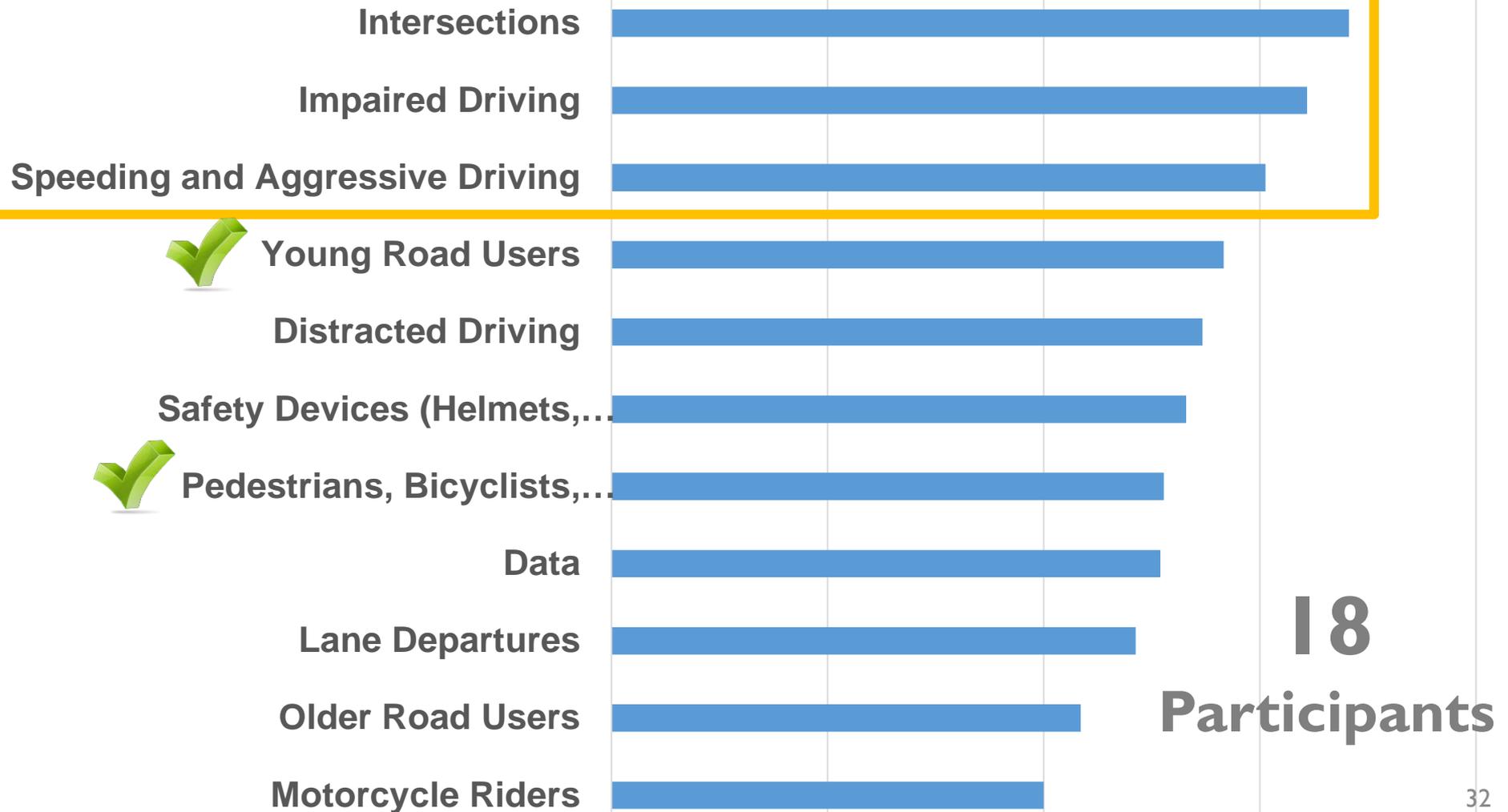
* Assumes ALL Single Vehicle, Head On, Sideswipe, and Rear to Side crashes are attributed to lane departure

Your Turn!

- *Divide a total of 20 points between each pair*
- *Use a combination that adds up to 20*
 - *1, 19*
 - *15, 5*
 - *7, 13*
 - *10, 10*
- *Do not use zero in any combination*
- *Consider the crash history as you assign your points*

Constant Sum Paired Comparison Results

0.00 0.50 1.00 1.50 2.00



Final Action Areas

- Eliminate death and injury related to **intersections**
- Eliminate **impaired driving**
- Eliminate death and injury from **speeding and aggressive driving** behavior
- Eliminate death and injury involving **young road users**
- Eliminate death and injury for **vulnerable road users** (pedestrians, bicyclists, persons with disabilities)

Potential Performance Measures

- Edit / Comment
- Suggest New
- Reduce (Delete)

Eliminate Death and Injury Related to Intersections

Implementation progress measurement (output)

- # of MAG member agencies **that** ~~using screening methods to identify high crash risk intersections~~ **annually**
- # of systemic improvement projects targeting intersections with high crash risk **in the past year**
- ~~# or % of MAG member agencies with systemic safety programs~~
- ~~# of innovative projects (note: must be defined)~~
- # of RSA's conducted at intersections with high crash risk
- # of high crash intersections equipped with automated enforcement systems
- ~~Public Safety Announcements related to intersection safety broadcast via local media during the calendar year~~
- ~~% of region's population reached via the PSAs (estimated)~~
- ~~Self-reported changes in behavior related to intersection safety via surveys~~
- ~~\$ spent on safety-related intersection improvements~~

Eliminate Death and Injury Related to Intersections

Continued

- **Goal-oriented measurement (outcome)**
- ~~Annual Reduction (3-yr moving avg) in Serious Injury and Fatal Crashes and/or Crash Rates~~ at intersections including:
 - Crashes at all intersections
 - Crashes at signalized intersections
 - Crashes at STOP-controlled intersections
- # of Deaths and Injuries at Intersections per 100,000 population

Eliminate Driving Under the Influence of Alcohol, Recreational Drugs, Medications or Fatigued Impaired Driving

Implementation progress measurement (output)

- ~~# of officer-hours per calendar year spent on high visibility patrols for all jurisdictions in the region~~
- % or # of MAG member agencies ~~adopting~~ **conducting** high visibility patrols **targeting driving under the influence of alcohol, recreational drugs, medications, or fatigued in the past year**
- ~~# of citations/arrests during high visibility patrols~~
- ~~# of mass media references (earned media income)~~
- ~~% of population aware of campaign~~
- ~~Self-reported changes in behavior via surveys~~

Eliminate Driving Under the Influence of Alcohol, Recreational Drugs, Medications or Fatigued Impaired Driving Continued

Goal-oriented measurement (outcome)

- ~~Annual Reduction (3-yr moving avg) in Serious Injury and Fatal Crashes and/or Crash Rates~~ involving driver impairment where the physical description one or more drivers involved in the crash indicated alcohol, **recreational** drugs, ~~or~~ medications, **or fatigued** as reported by the investigating officer.
- # of Deaths and **Serious** Injuries associated with ~~Impaired driving~~ **under the influence of alcohol, recreational drugs, medications, or fatigued**
- ~~# of Citations/Arrests issued for Impaired Driving (this measure will probably need to be adjusted to reflect increased enforcement activity (e.g. citations/arrests per enforcement man-hour)~~
- ~~# and % of Impaired Driving Convictions (if available — this may be difficult for MAG to obtain)~~

Eliminate Death and Serious Injury from Speeding & Aggressive Driving Behavior

Implementation progress measurement (output)

- # of ~~red-light~~ automated enforcement cameras operating in MAG Planning Area
- # or % of MAG member agencies with ~~red-light~~ automated enforcement cameras
- # of ~~red-light~~ automated enforcement **speeding and aggressive driving** citations issued (note: this goes down if cameras are successful)
- ~~# of fixed speed automated enforcement zones~~
- ~~# or % of MAG member agencies with fixed speed automated enforcement zones~~
- ~~# of fixed speed automated enforcement citations issued (note: this goes down if cameras are successful)~~
- ~~% of mode-share (transit, ride sharing, walking, biking)~~
- ~~# or % of MAG member agencies with design and traffic control policies/procedures that support safe speeds~~

Eliminate Death and Serious Injury from Speeding & Aggressive Driving Cont.

Goal-oriented measurement (outcome)

- ~~Annual Reduction (3-yr moving avg) in Serious Injury and Fatal Crashes and/or Crash Rates involving speeding or aggressive driving behavior including:~~
 - Crashes where data entered by the reporting officer as: “speed too fast for condition” or “exceeded lawful speed”.
 - Crashes where data entered by the reporting officer as: “speed too fast for condition” or “exceeded lawful speed” and improper or excessive lane changing: failing to signal intent, failing to see that movement can be made safely, or improper passing.
 - Crashes where data entered by the reporting officer as: “aggressive driving” (if modification is made to crash report form).
- ~~# of Deaths and Injuries associated with Speeding and Aggressive Driving~~
- ~~# of Deaths and Injuries in Jurisdictions with Automated Enforcement~~

Eliminate Death and Serious Injury Involving Young Road Users

Implementation progress measurement (output)

- % of MAG jurisdictions with legal restrictions on cell phone talking/texting
- ~~# and % of schools with driver education programs~~

Goal-oriented measurement (outcome)

- ~~Annual Reduction (3-yr moving avg) in Serious Injury and Fatal Crashes and/or Crash Rates involving drivers younger than 25~~
- # of Deaths and **Serious** Injuries involving drivers younger than 25

Eliminate Death and Serious Injury for Vulnerable Road Users — Pedestrians & Persons with Disabilities

Implementation progress measurement (output)

- ~~# of elementary-age children trained~~
- ~~# or % of elementary schools reached~~
- ~~# of pedestrian safety zones established~~
- ~~# or % of MAG member agencies with programs to integrate safety and multimodal connectivity~~
- ~~# of sidewalk gap projects completed and resulting effective sidewalk length~~
- **# of pedestrian crossing enhancements enhanced crossings installed such as a HAWK, crossing island, etc. (not marked crossings)**

Goal-oriented measurement (outcome)

- ~~Annual Reduction (3-yr moving avg) in Serious Injury and Fatal Crashes and/or Crash Rates involving a pedestrian~~
- **# of Pedestrian Deaths and Injuries**

Eliminate Death and Serious Injury for Vulnerable Road Users - Bicyclists

Implementation progress measurement (output)

- ~~Number and percent of jurisdictions with child helmet laws~~
- # or % of jurisdictions with wrong-way riding and sidewalk riding prohibitions
- ~~# of children trained~~
- ~~# or % of elementary schools reached~~
- ~~# or % of jurisdictions with safety and multimodal connectivity reviews~~
- ~~# and length of bike lanes, cycle tracks, etc...~~
- ~~# or % of jurisdictions with complete streets policies~~
- # or % of traffic signals with bicycle compliant detection

Goal-oriented measurement (outcome)

- ~~Annual Reduction (3-yr moving avg) in Serious Injury and Fatal Crashes and/or Crash Rates involving a bicyclist~~
- # of Bicyclist Deaths and Injuries