

Pima Association of Governments
Bicycle Crash Analysis
2001 thru 2005

Overview

June 2007



Analysis Parameters

- Analysis covers all jurisdictions in Pima County
- Covers calendar years 2001 thru 2005
- Analysis of Arizona Dept. of Transportation (ADOT) data received from law enforcement agencies:
 - Arizona Dept. of Public Safety (AZDPS)
 - Marana (Marana Police)
 - Oro Valley (Oro Valley Police)
 - Pascua Yaqui Tribe (P.Y. Police)
 - Pima College (Pima College Police)
 - Pima County (Pima County Sheriff's Dept)
 - South Tucson (South Tucson Police)
 - Tohono O'odham Nation (T.O. Police)
 - Tucson (TPD)
 - U of A (UAPD)

The Tucson Region (eastern Pima County)

All bike crashes reported occurred in Tucson Region

Tucson
South Tucson
Sahuarita
Marana
Oro Valley
Pascua Yaqui Tribe
Tohono O'odham Nation
Pima County



What is a Bicycle Crash?

Pedacycle (a.k.a. Bicycle)

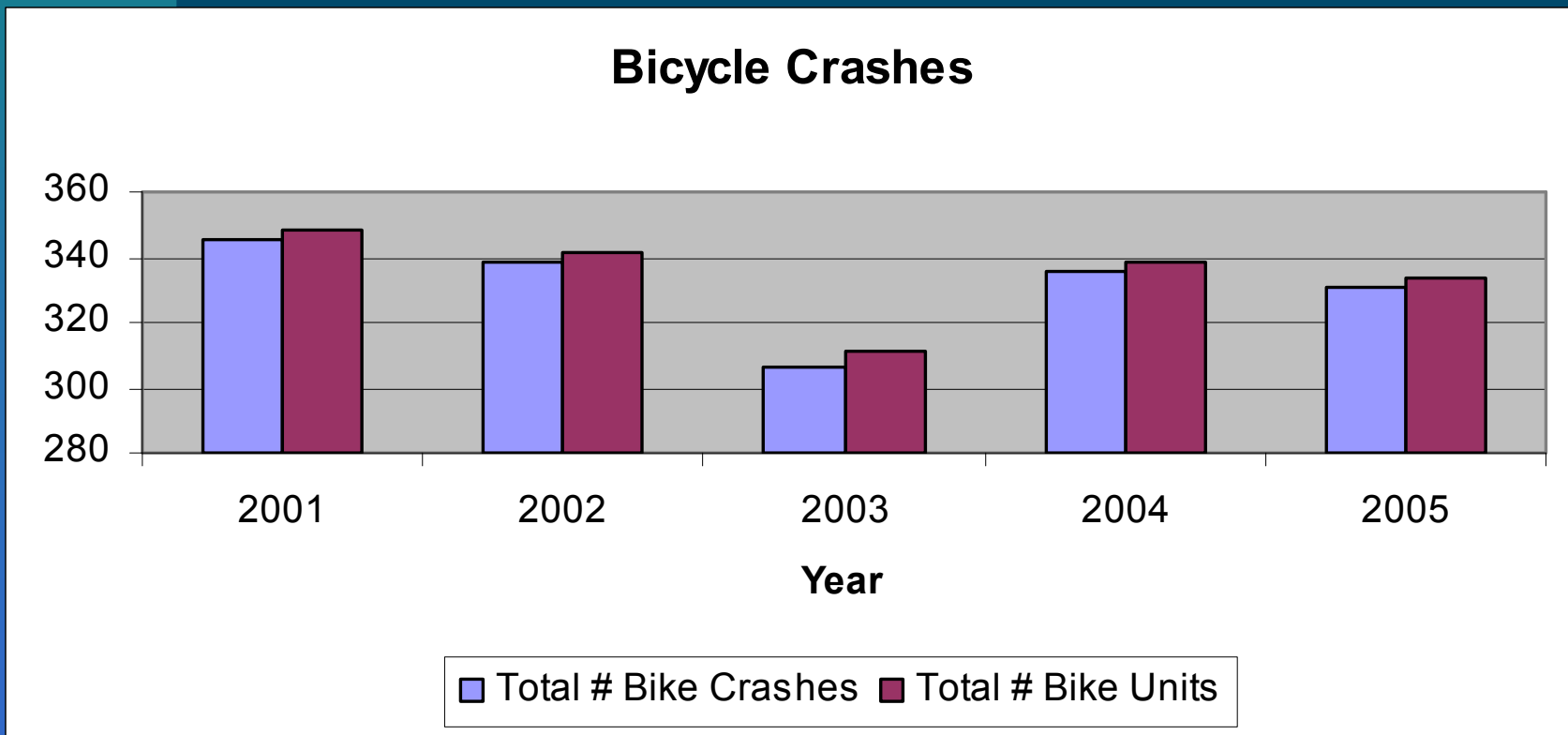
- Non-motorized vehicle operated by pedals and propelled by human power. Includes: bicycles, tricycles, unicycles, pedal cars, etc.

Crash

- A traffic collision originating on a roadway (“trafficway”) that results in property damage and/or personal injury

Source: simplified from Arizona Traffic Accident Report Instruction Manual & Glossary, 2000.

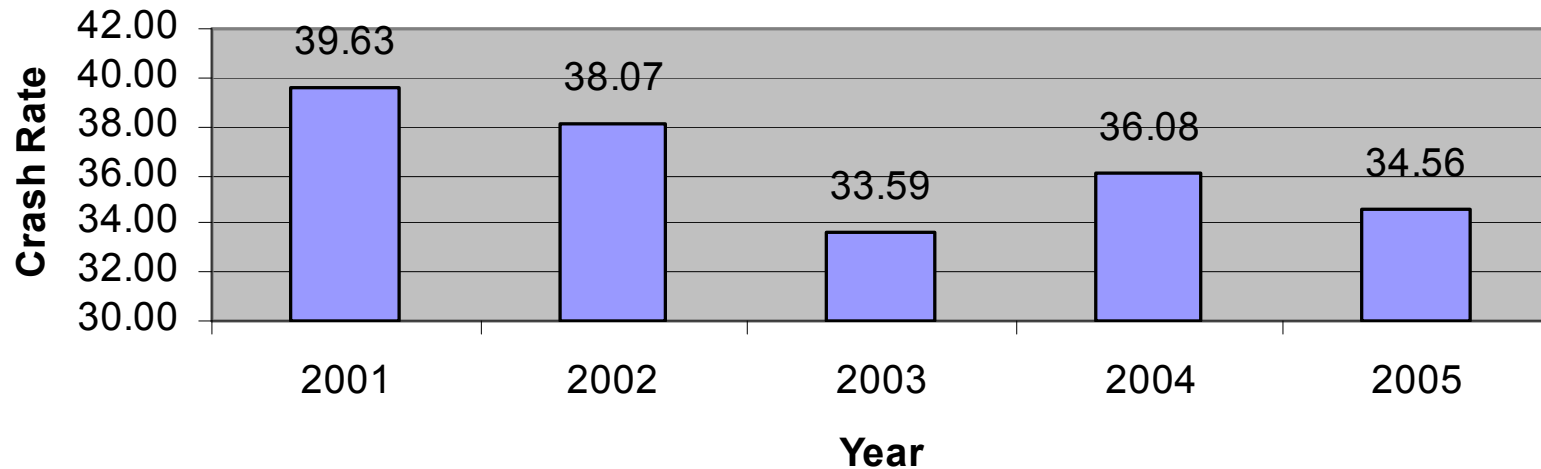
Annual Bicycle Crashes



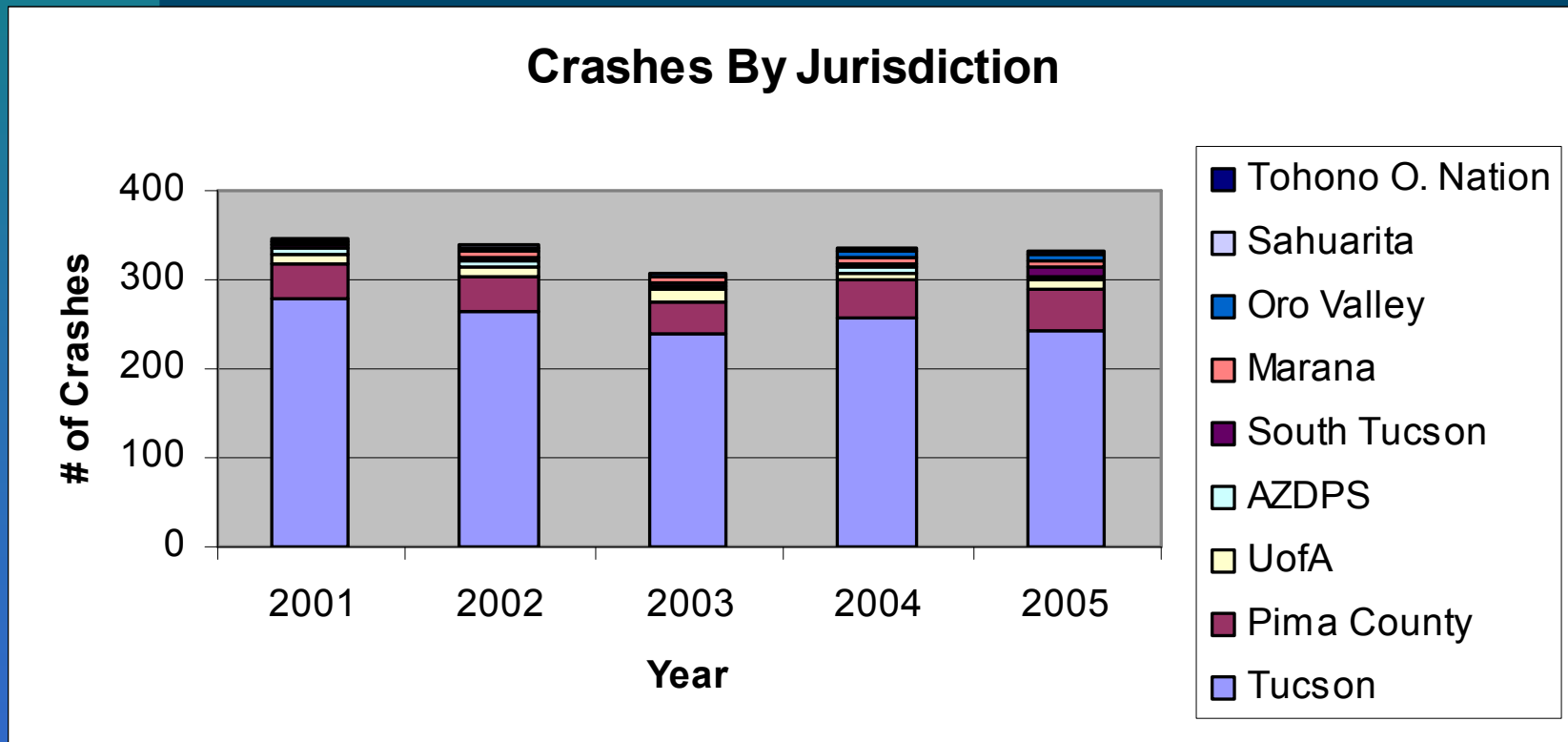
Bike Unit = each bicyclist involved in crash

Crashes and Population Growth

**Bicycle Crashes per 100,000 Population
(all of Pima County)**



Crashes By Jurisdiction

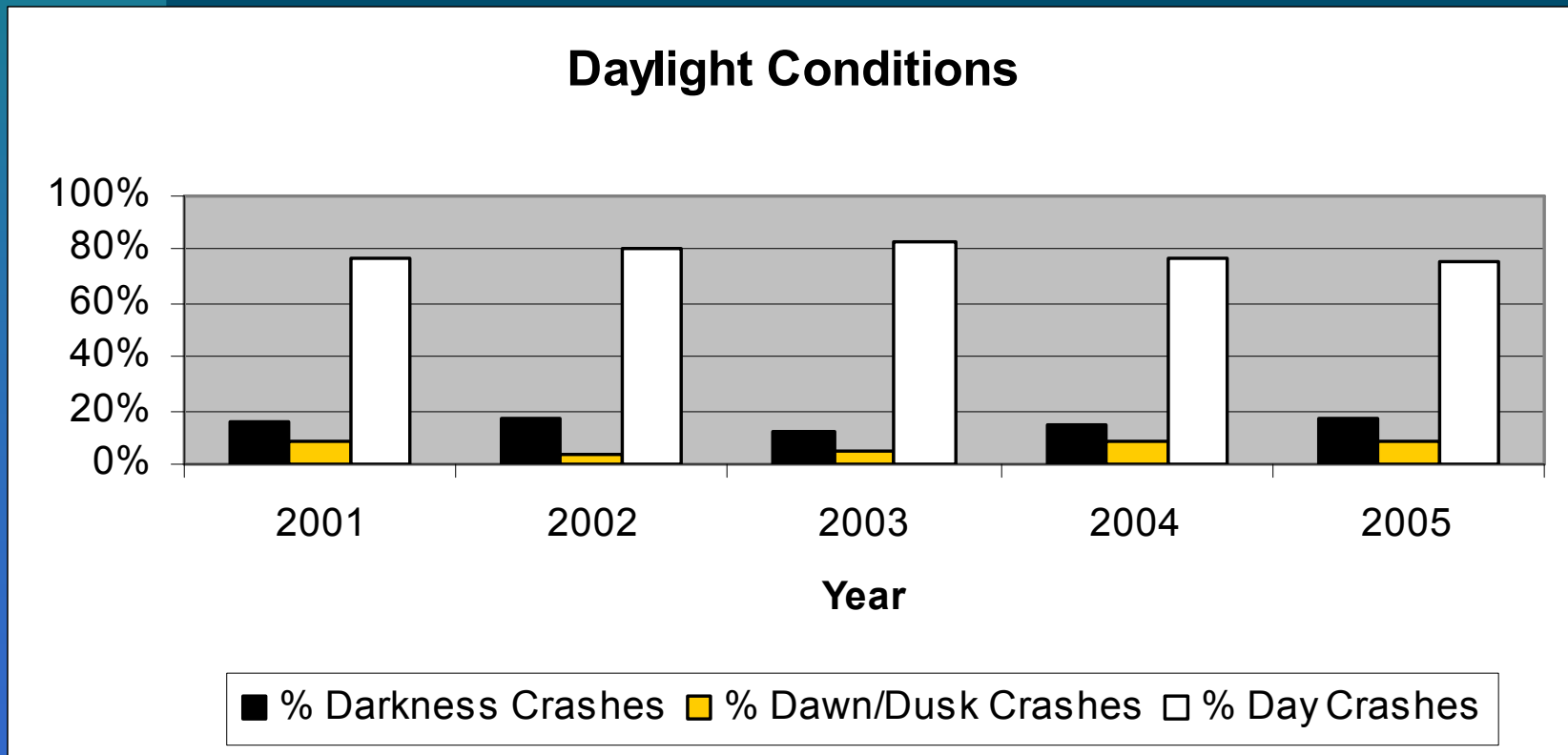


*Jurisdictions are defined here as law enforcement jurisdictions

**There were no crashes reported for Pascua Yaqui Tribe or Pima College in the 5-year study period

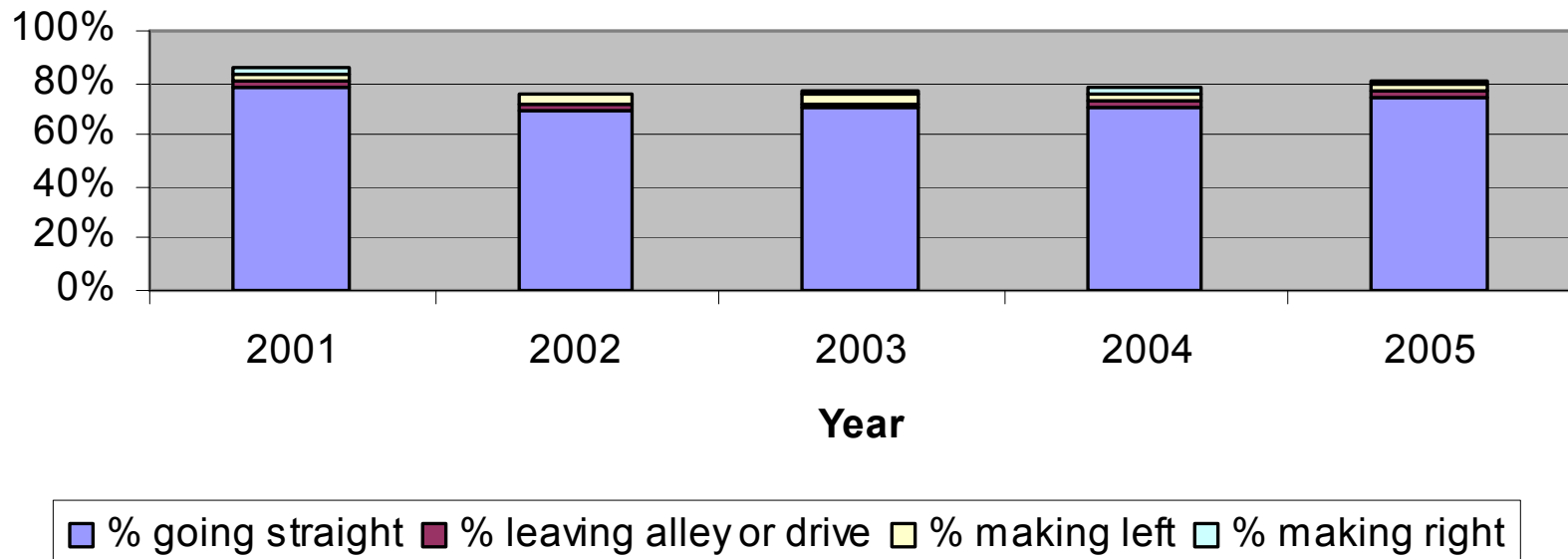
Daylight Conditions

(when crashes occur)



Bicyclist Actions

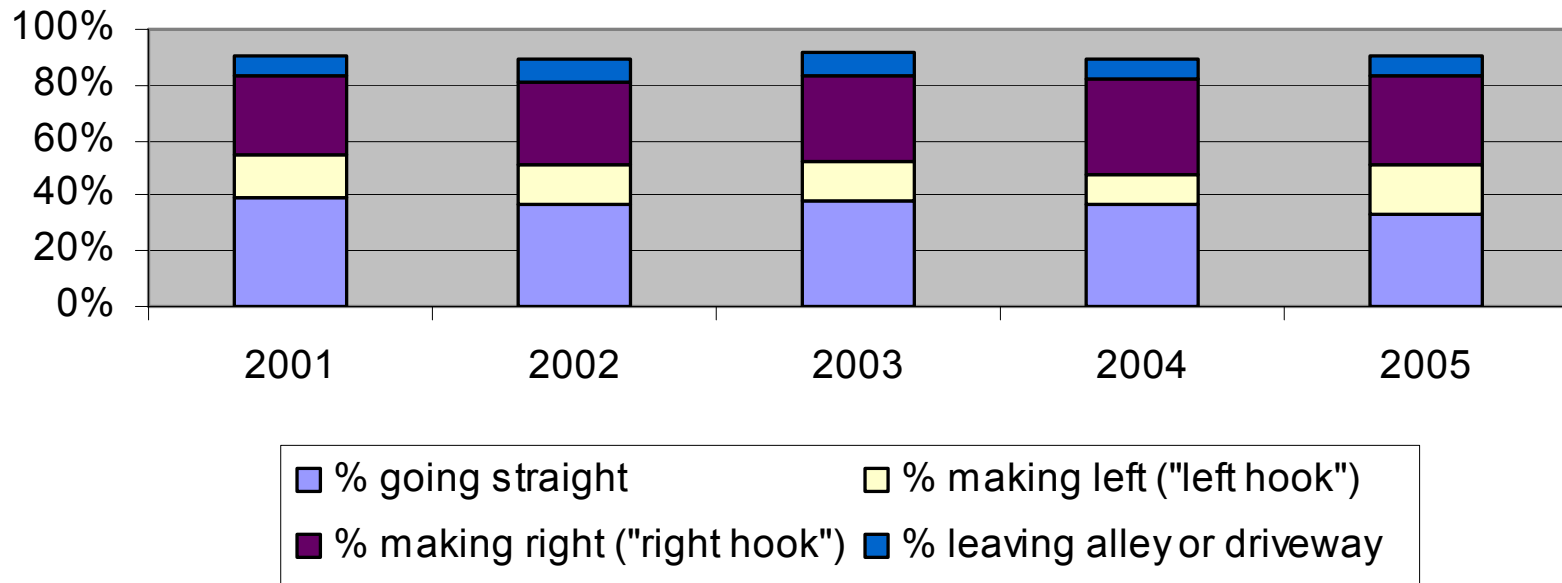
Bicyclist Actions During Crash



Remaining actions are Other or Unknown

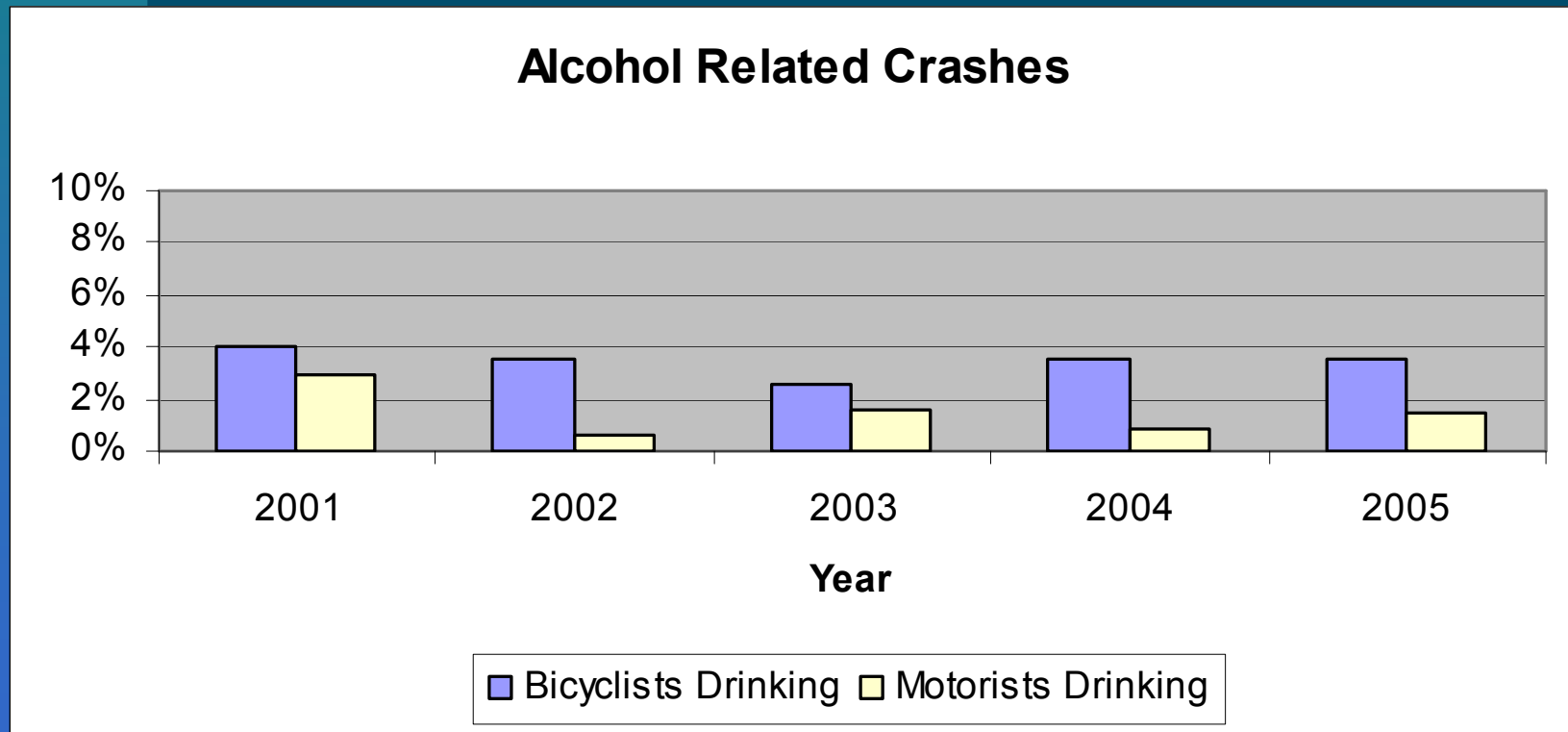
Motor Vehicle Actions

Motor Vehicle Actions During Crash



Remaining actions are Other or Unknown

Alcohol-Related Crashes



Violations Reported (2001 thru 2005)

all entries, including “no improper driving”

Motor Vehicles

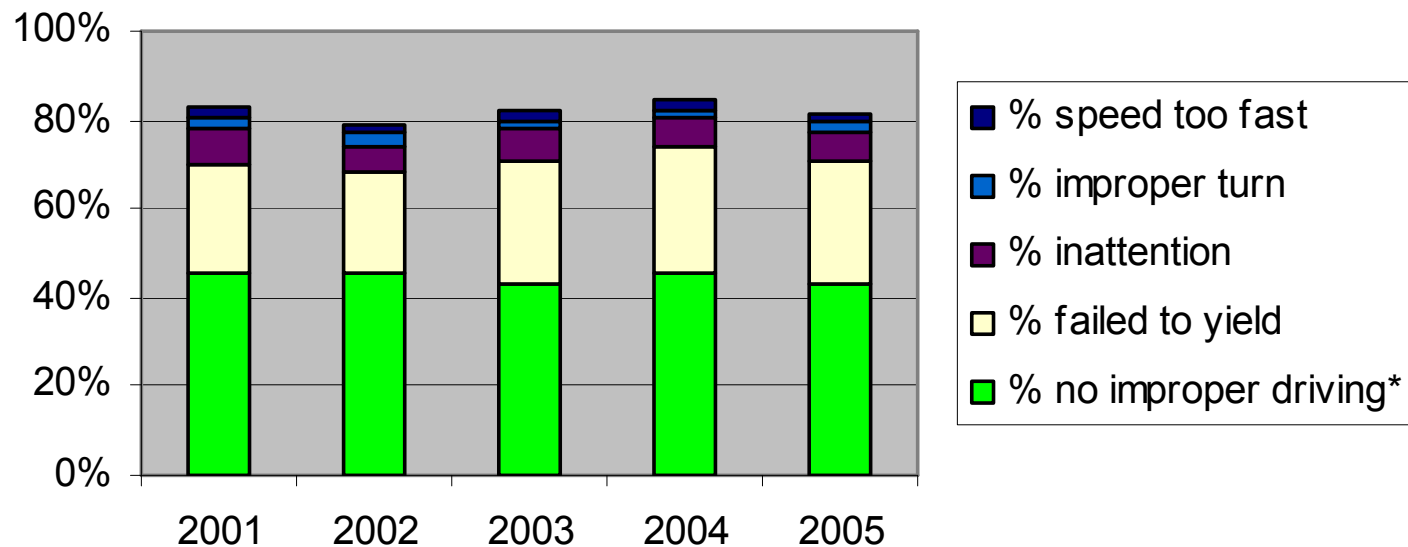
- Failed to yield right-of-way (#1)
- Inattention (#2)
- Made improper turn (#3)
- Speed too fast for conditions (#4)
- Disregarded traffic signal
- Drove in opposing traffic lane
- Exceeded lawful speed
- Followed too closely
- Other unsafe passing
- Ran stop sign
- Other
- Unknown
- No improper driving

Bicycles

- Failed to yield right-of-way (#1)
- Drove in opposing traffic lane (#2)
- Inattention (#3)
- Disregarded traffic signal (#4)
- Ran stop sign (#5)
- Exceeded lawful speed
- Followed too closely
- Faulty or missing equipment
- Made improper turn
- Speed too fast for conditions
- Other
- Unknown
- No improper driving

Top Violations for Motorists

Top Violations for Motorists
(as percentage of all Violation entries)

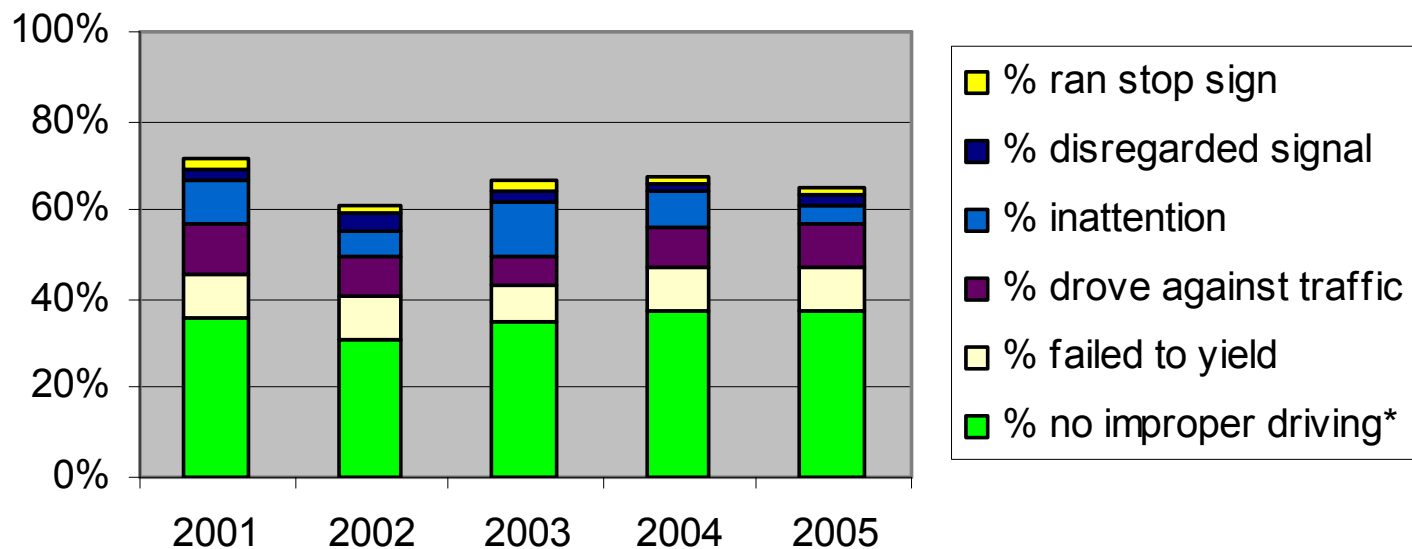


Refer to slide #12 for other violations

*No evidence at time of crash/report to show violation

Top Violations for Bicyclists

**Top Violations for Bicyclists
(as percentage of all Violation entries)**



Refer to slide #12 for other violations

*No evidence at time of crash/report to show violation

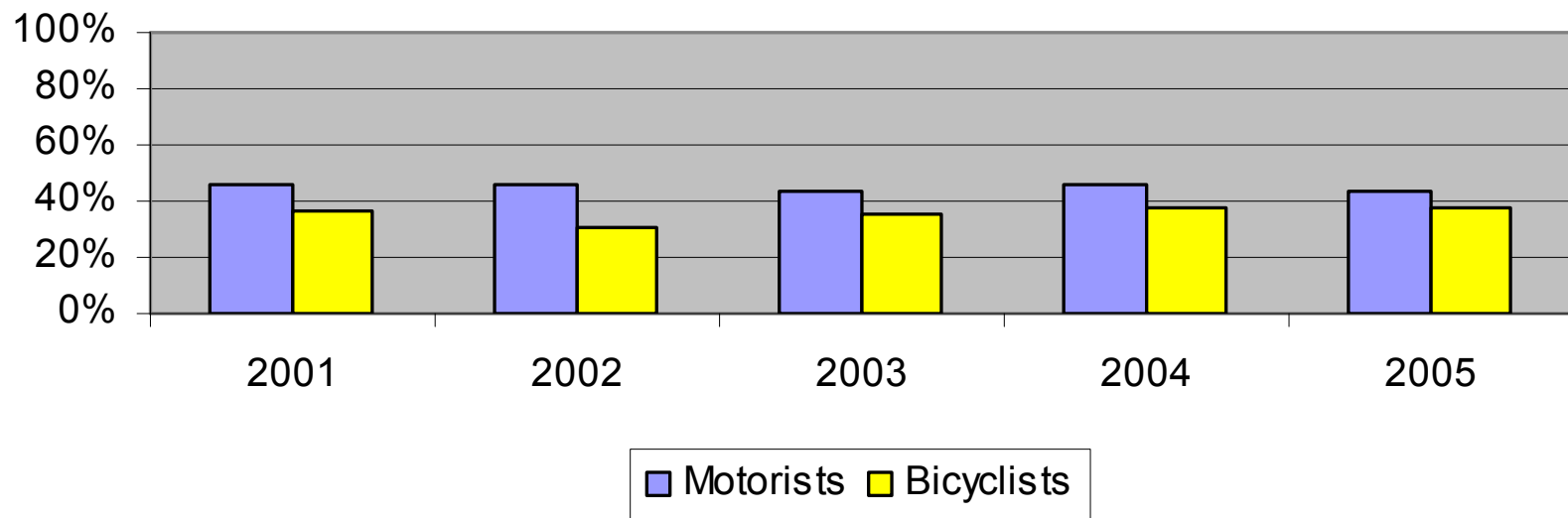
Wrong-Way Riding (2001 thru 2005)

155 total bicyclists reported for “driving in opposing traffic lane” (wrong-way riding)

- 22 in darkness
- 137 (88%) alcohol-related, most “apparent influence”
- 1 fatality, 16 with serious injuries, 75 with minor injuries
- 120 are male with average age of 30
- Top corridors include 1st Avenue, Alvernon, Broadway, Campbell, Flowing Wells, Grant, Oracle, Pima, Speedway, Stone

Reported "No Improper Driving"

Reported "no improper driving" by Mode
(as percentage of all violation entries)



Injury Definitions

Fatal: Death.

Incapacitating Injury: An injury, other than a fatal, which prevents the injured person from walking, driving, or normally continuing the activities which he/she was capable of performing prior to the motor vehicle traffic accident. Includes severe lacerations, broken or distorted limbs, unconsciousness, inability to leave accident scene without assistance.

Non-Incapacitating Injury: Any injury other than fatal and incapacitating which is evident to any observer at the scene of the accident. Includes bumps, abrasions, bruises, and minor lacerations. The person receiving these injuries is still able to leave the scene under their own power.

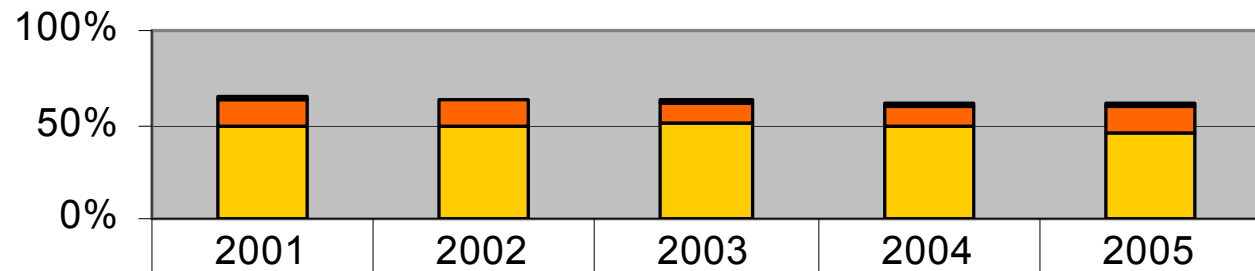
Possible Injury: Any injury reported or claimed which is not a fatal, incapacitating, or non-incapacitating evident injury. Includes such situations as nausea, hysteria, complaint of pain, and injuries not evident.

No Injury: A situation where there is no reason to believe that the person received any bodily harm from the motor vehicle traffic accident in which they were involved.

(Source: Arizona Traffic Accident Report Instruction Manual & Glossary, 2000)

Bicyclist Injuries

**Bicyclist Injuries
(as percentage of all Injury entries)**



■ % Fatal	2.01%	1.17%	0.96%	1.18%	1.80%
■ % Incapacitating	13.22%	12.90%	10.93%	11.80%	12.57%
■ % Non-incapacitating	49.14%	49.56%	50.80%	48.38%	46.41%

Remaining entries of Possible Injuries, No Injuries or Unknown bring total to 100%

Fatal Crashes (2001 thru 2005)

24 total bicyclist fatalities

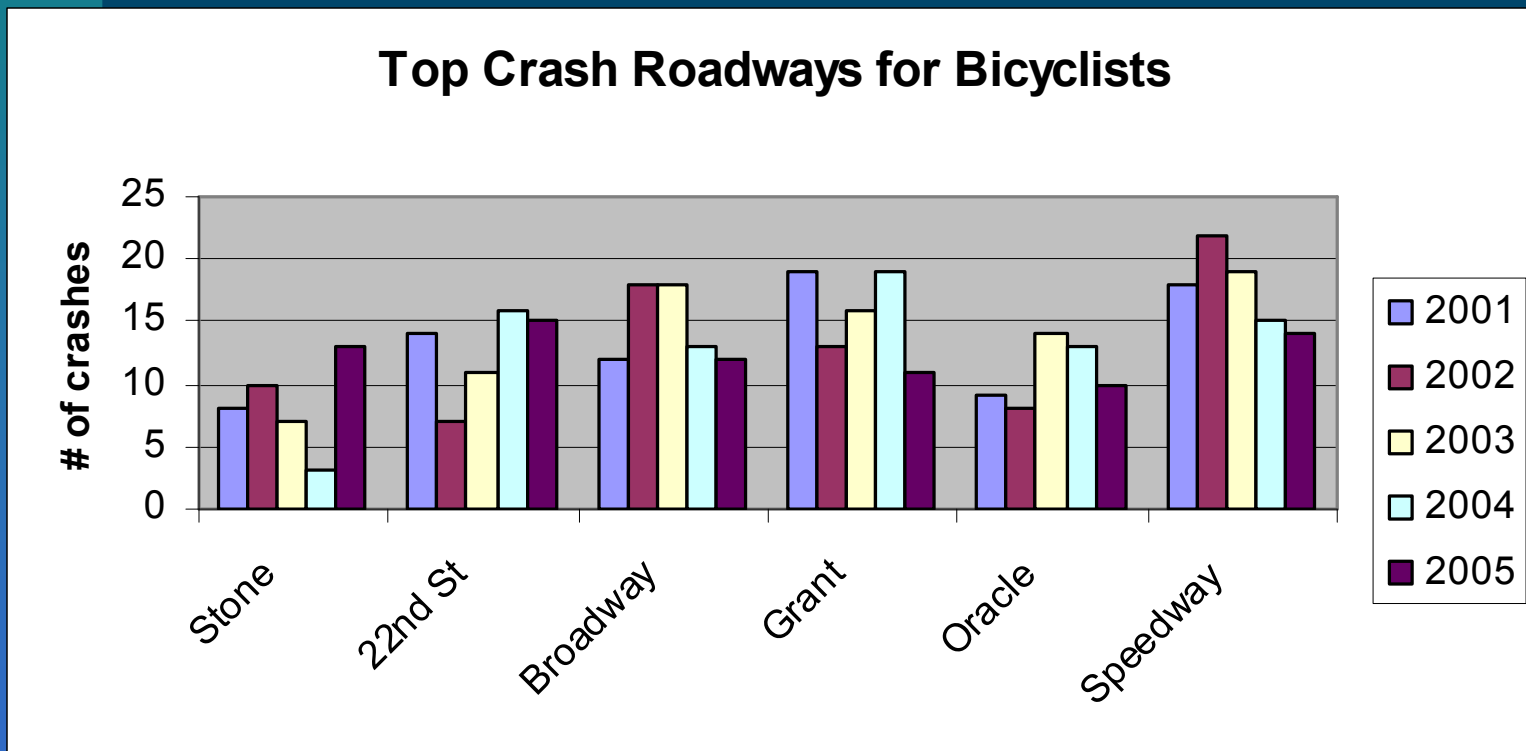
- 7 in darkness
- 9 (38%) alcohol-related
- 19 “going straight ahead” (1 against traffic)
- 11 confirmed violations
- 4 “no improper driving”
- 21 were males with average age of 40
- occurred at random locations within Tucson region

Incapacitating Crashes (2001 thru 2005)

206 total bicyclists incapacitated

- 45 in darkness
- 22 alcohol-related
- 155 “going straight ahead” (15 against traffic)
- 77 confirmed violations
- 78 “no improper driving”
- 175 were males with average age of 35
- occurred at random locations within Tucson region

Top Crash Roadways (2001 thru 2005)

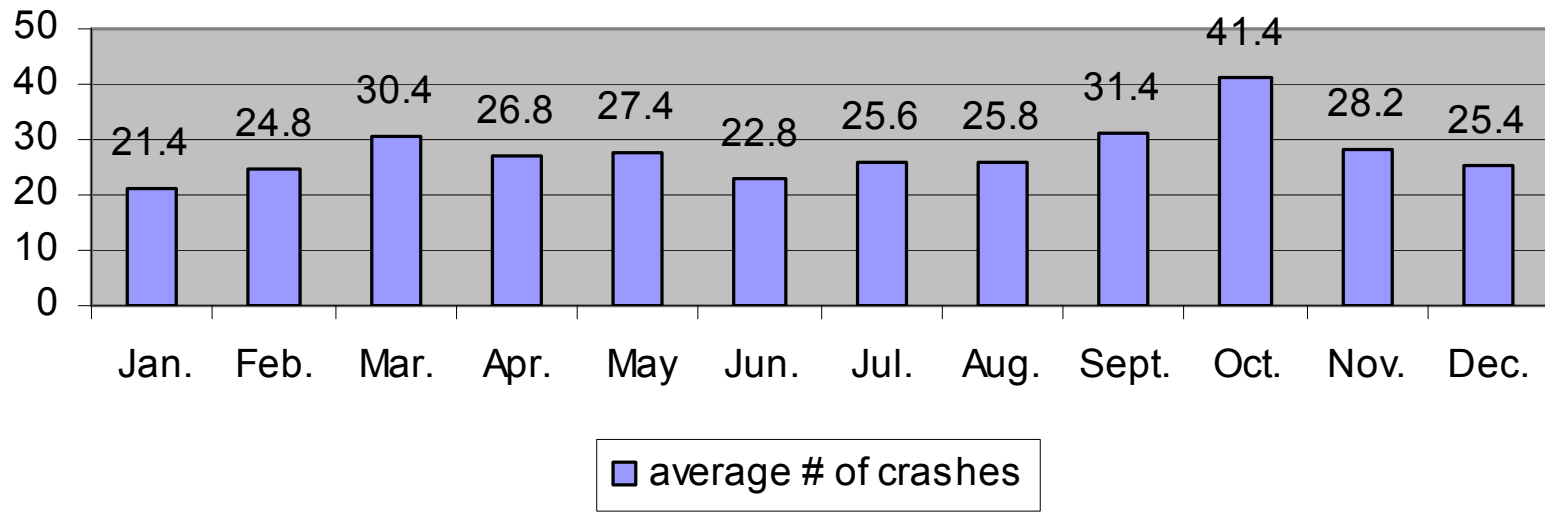


*Roadways vary in length, number of lanes and traffic volumes

**Other high-crash roadways include 1st Ave., Alvernon, Campbell, Craycroft, Euclid, Golf Links, and Park Ave.

Crashes By Month (2001 thru 2005)

**Average # of Crashes By Month
(2001-2005)**



Summary Findings

- Rate of crashes based on population has declined slightly, however, there is still a problem.
- Most crashes occur during daylight hours. Crashes during darkness are not as numerous as previously thought.
- Most crashes occur while bicyclists are “going straight ahead”. Wrong-way riding is prevalent.
- Alcohol is not a major factor in crashes.
- There is no distinct cause or circumstance for fatal crashes.
- Most cyclists involved in crashes are males with an average age of 31.
- More analysis is needed as to specific crash causes and locations.

Next Steps

- Continue to analyze data to isolate specific crash causes and locations
- Brainstorm with regional bike/ped safety committee to enhance education and enforcement efforts
- Continue to work with local jurisdictions on bicycle facility improvements and crash prevention

**For more information contact
Gabe Thum, PAG Senior Transportation Planner
(520) 792-1093 or gthum@pagnet.org**