



## Pima Association of Governments Bicycle Crash Analysis 2001 thru 2008 Overview

May 2009



## Analysis Parameters

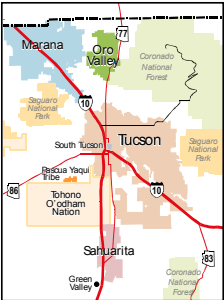
- Analysis covers all jurisdictions in Pima County
- Covers calendar years 2001 thru 2008
- Analysis of Arizona Dept. of Transportation (ADOT) data received from law enforcement agencies:
  - Arizona Dept. of Public Safety (AZDPS)
  - Marana (Marana Police)
  - Oro Valley (Oro Valley Police)
  - Pascua 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?

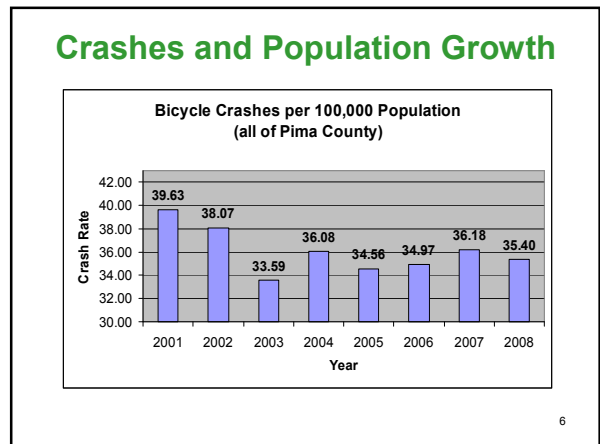
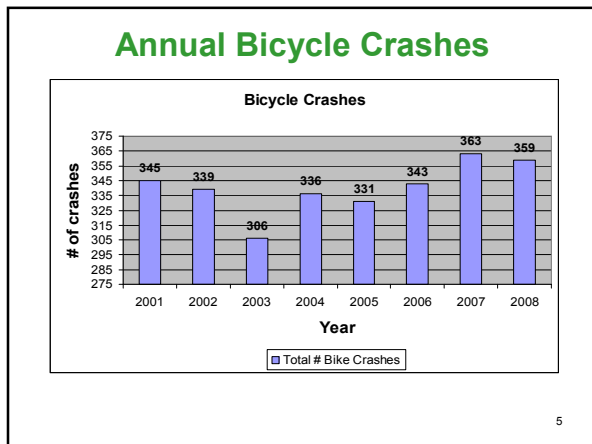
**Pedalcycle (a.k.a. Bicycle)**

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

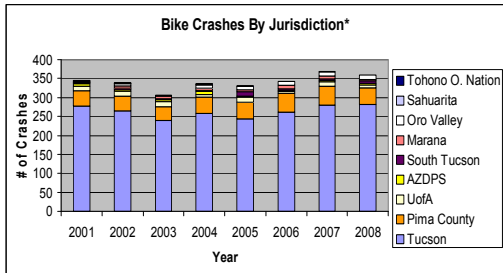
**Crash**

- 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.



## Crashes By Jurisdiction

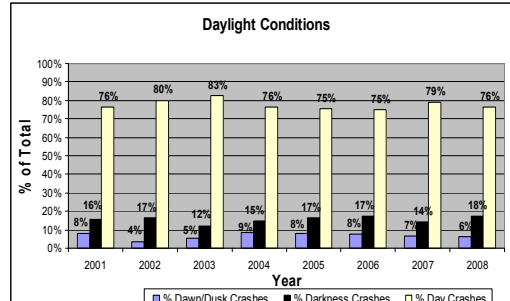


\*Jurisdictions are defined here as law enforcement jurisdictions  
 \*\*There were no crashes reported for Pascua Yaqui Tribe or Pima College in the 8-year study period

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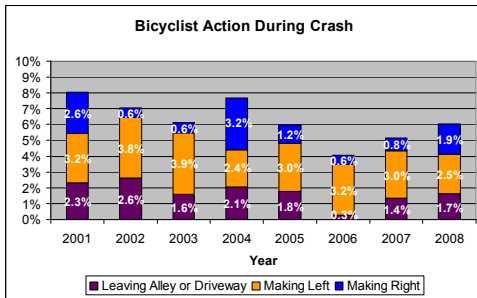
## Daylight Conditions

(when crashes occur)



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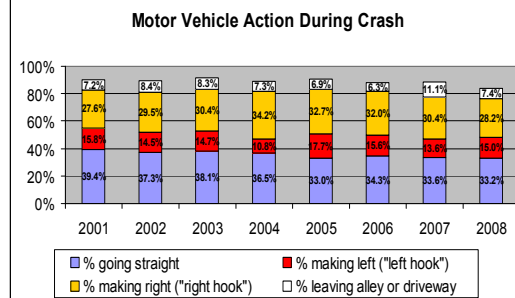
## Bicyclist Actions



Remaining actions are Going Straight, Other or Unknown

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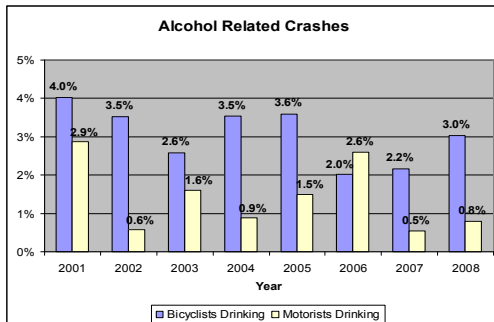
## Motor Vehicle Actions



Remaining actions are Other or Unknown

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## Alcohol-Related Crashes



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## Violations Reported (2001 thru 2008)

all entries, including "no improper driving"

### Motor Vehicles

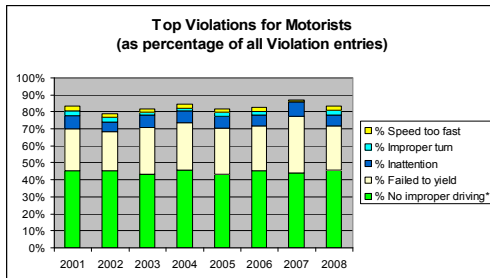
- Failed to yield right-of-way (#1)
- Inattention (#2)
- Made improper turn (#3)
- Speed too fast for conditions (#4)
- Disregarded traffic signal
- Drove in opposing traffic lane
- Exceeded lawful speed
- Followed too closely
- Other unsafe passing
- Ran stop sign
- Other
- Unknown
- No improper driving

### 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

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## Top Violations for Motorists

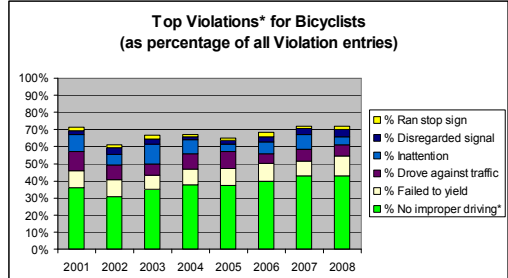


Refer to slide #12 for other violations

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

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## Top Violations for Bicyclists



Refer to slide #12 for other violations

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

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## Wrong-Way Riding

(2001 thru 2008)

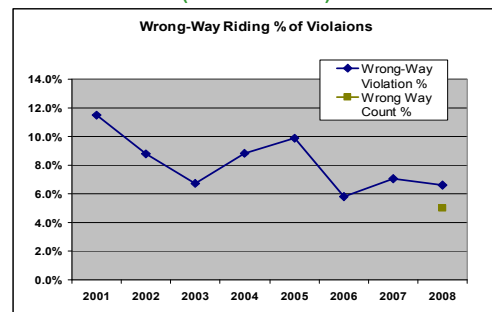
225 total bicyclists reported for "driving in opposing traffic lane" (wrong-way riding); Average of 28 per year

- 16% in darkness
- 2 fatalities (<1%), 21 with serious injuries (9%), 104 with minor injuries (46%)
- 77% are male with average age of 31
- Top corridors (in order): Grant, Speedway, Broadway, Alvernon, 1<sup>st</sup> Avenue, Oracle, Pima, Stone, Campbell, Flowing Wells

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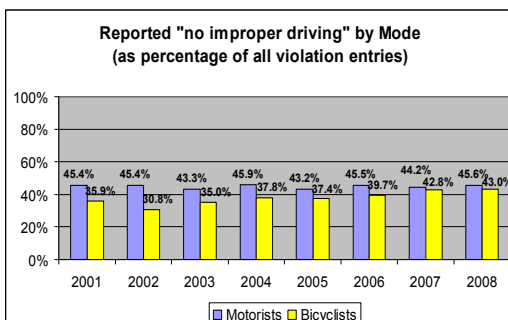
## Wrong-Way Riding

(2001 thru 2008)



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## Reported "No Improper Driving"



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## 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 his/her own power.

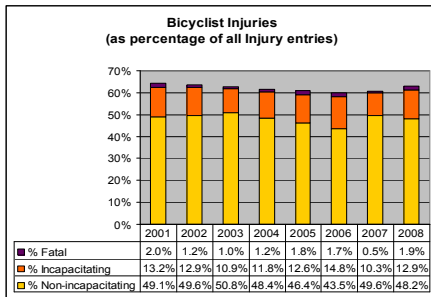
**Possible Injury:** Any injury reported or claimed which is not a fatal, incapacitating, or non-incapacitating evident injury. Includes such situations as nausea, hysteria, complaint of pain, and injuries not evident.

**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)

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## Bicyclist Injuries



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

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## Fatal Crashes

(2001 thru 2008)

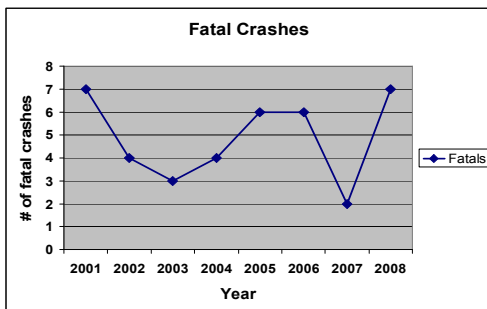
**39 total bicyclist fatalities; 5 per year average**

- 14 (36%) in darkness
- 11 (28%) alcohol-related (4 cyclists, 7 motorists)
- 28 "going straight ahead" (2 against traffic)
- 14 confirmed cyclist violations
- 11 cyclists "no improper driving"
- 12 confirmed motorists violations
- 20 motorists "no improper driving"
- Occurred at random locations throughout Tucson region
- 35 (90%) were males with average age of 40

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## Fatal Crashes

(2001 thru 2008)



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## Incapacitating Crashes

(2001 thru 2008)

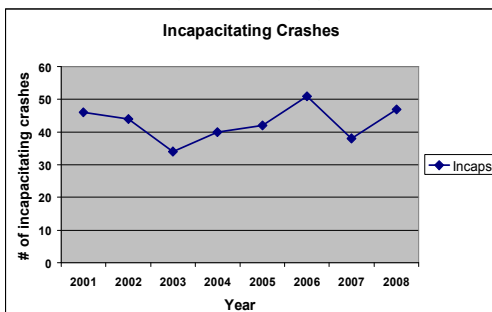
**342 total bicyclists incapacitated; 43 per year average**

- 71 (21%) in darkness
- 40 (12%) alcohol-related (29 cyclists, 11 motorists)
- 258 "going straight ahead" (20 against traffic)
- 127 confirmed violations
- 135 "no improper driving"
- 295 (86%) were males with average age of 35
- Occurred at random locations within Tucson region

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## Incapacitating Crashes

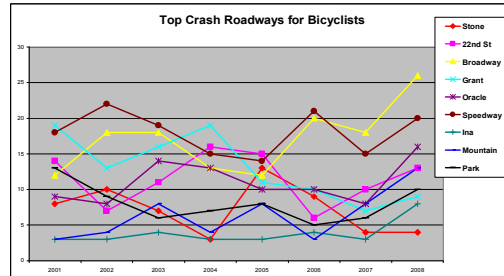
(2001 thru 2008)



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## Top Crash Roadways

(2001 thru 2008)

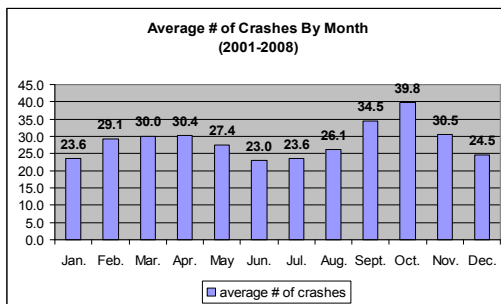


\*Roadways vary in length, number of lanes and traffic volumes

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

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## Crashes By Month (2001 thru 2008)



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## Summary Findings

- Rate of crashes compared to population has declined slightly.
- Most crashes occur during daylight hours.
- Most crashes occur while bicyclists are "going straight ahead." Wrong-way riding is also a concern.
- Alcohol is not a major factor in overall crashes, but a significant factor in fatal crashes (28%).
- Beyond alcohol, there is no distinct cause or circumstance for fatal crashes.
- Most cyclists involved in crashes are males with an average age of 35.
- More analysis is needed as to specific crash causes and locations.



## Next Steps

- Continue to analyze data to isolate specific crash causes and locations
- Work with regional cycling community to enhance education and enforcement efforts
- Continue to work with local jurisdictions on bicycle facility improvements and crash prevention
- Continue Annual Regional Bicycle Count

For more information contact  
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