

# *BICYCLE CRASH ANALYSIS*

*2006*



*TRANSPORTATION DEPARTMENT  
TRAFFIC STUDIES GROUP*

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## **INTRODUCTION**

The **2006 Pedalcycle Crash Analysis** is a statistical review of the 181 pedalcycle crashes and the 181 pedalcyclists involved in crashes on the City of Mesa streets in 2006. It focuses on crashes involving pedalcycles and motor vehicles identified in the 2006 Police Accident Reports (PARs) investigated and reported by the City of Mesa Police Department. Crashes occurring on the Superstition Freeway (US 60), the Price Freeway (Loop 101) and the Red Mountain/San Tan Freeway (Loop 202), which are under the jurisdiction of the Arizona Department of Public Safety, were not included in the analysis.

The database used to prepare this report was compiled and maintained by the Traffic Records Section of the Arizona Department of Transportation. Definitions and terms were extracted from the Arizona Traffic Accident Report Instruction Manual and Glossary, 7th Edition, dated 2000.

The purpose of analyzing pedalcycle traffic crashes is to better understand the underlying causes of collisions between pedalcycles and automobiles. Analysis of the crashes reveals facts about the types of streets where crashes happened, behavior of pedalcyclists and motorists that caused the crashes, the times of day and year crashes occur, and age and gender of bicyclists involved in pedalcycle/motor vehicle collisions. Once an understanding of the root causes of pedalcycle crashes is gained, the Transportation Department can do further analysis to determine if the traffic environment in the City of Mesa can be made safer for pedalcyclists. Analysis of pedalcycle crashes also helps in developing appropriate messages for educating the public on safer pedalcycling habits and how pedalcyclists and motorists can best share the streets in the City of Mesa.

Pedalcycle crashes that were not traffic related, that is, crashes that occurred at a location other than a public roadway or adjacent sidewalk and for which no PAR was submitted, are not included in this report. Based on national studies, the majority of non-fatal pedalcycle crashes are not traffic related and anyone seeking to fully understand pedalcycle crash causes and patterns should not rely solely on this report.

The percentages shown in certain tables may not add up to 100% due to rounding.

Questions or comments concerning this report should be directed to City of Mesa, Transportation Department, P.O. Box 1466, Mesa, Arizona, 85211-1466, (480) 644-2160.

## **EXECUTIVE SUMMARY**

Pedalcycle crashes decreased in frequency from 2005, and were at its lowest level for the past five years.

There were five fatal pedalcycle crashes.

The number of incapacitating injuries increased to 9.9% of all crashes.

Pedalcyclists were considered most at fault in 74.6% of all crashes involving pedalcycles and motor vehicles.

Pedalcyclists riding against traffic on sidewalks, in crosswalks or in bike lanes were a contributing factor in 48.6% of all pedalcycle crashes.

When the data is normalized, the 10 to 14 year old age group had the highest over representation in crashes of all age groups.

The average age of all pedalcyclists involved in a crash was 31.9 and the median age was 31.

Male pedalcyclists were involved in 83.4% of all pedalcycle crashes.

Of all pedalcycle related crashes occurring within the city limits of Mesa, 46.4% occurred within a 2-1/2 mile radius of downtown Mesa. Pedalcycle crashes occurring west of or on Gilbert Road accounted for 66.3% of all crashes. Broadway Road had the highest frequency of all streets with total of 25 crashes.

Pedalcycle crashes occurring on arterial streets or intersections having at least one arterial approach accounted for 78.5% of all crashes.

Pedalcycle crashes occurring on weekdays accounted for 74.6% of all crashes.

The hour of 3:01 to 4:00 PM had the highest frequency of pedalcycle crashes.

Protective helmet usage was 6.6% for pedalcyclists involved in crashes.

Alcohol was associated with 7 crashes, or 3.9% of all pedalcycle related crashes.

## **DEFINITIONS**

**Head-On.** A collision involving vehicles traveling in opposite directions wherein at least one of the vehicles crosses the roadway centerline.

**Hit Pedalcyclist.** A traffic accident that occurs when a vehicle collides with any other vehicle that is operated by pedals and propelled by human power.

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

**Intersection Related Crash.** A traffic crash where the first harmful event (1) occurs on an approach to, movement through or exit from an intersection and (2) has resulted from an activity, behavior, or control related to the intersection.

**Left-Turn.** A traffic crash that occurs when a left-turning vehicle collides with a through vehicle on the opposite approach of the left-turning vehicle.

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

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

**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.

**Rear-End.** A collision with the rear of another vehicle, either moving or stopped (excluding parked vehicles).

**Sideswipe, Same Direction.** A collision with another vehicle or bicyclist traveling in the same direction.

**Traffic Unit.** A traffic unit is a vehicle, pedestrian, pedalcyclist, or rider on an animal involved in a motor vehicle traffic crash. Traffic unit number is used as an identifier for each involved unit (i.e. U1, U2, U3, etc.). It is preferred that police jurisdictions assign traffic unit number 1 (U1) to the vehicle, pedestrian, pedalcyclist, or animal rider causing the collision, however, this procedure is not mandatory.

**Unit Action.** The action at the moment of and/or which most directly affected the crash.

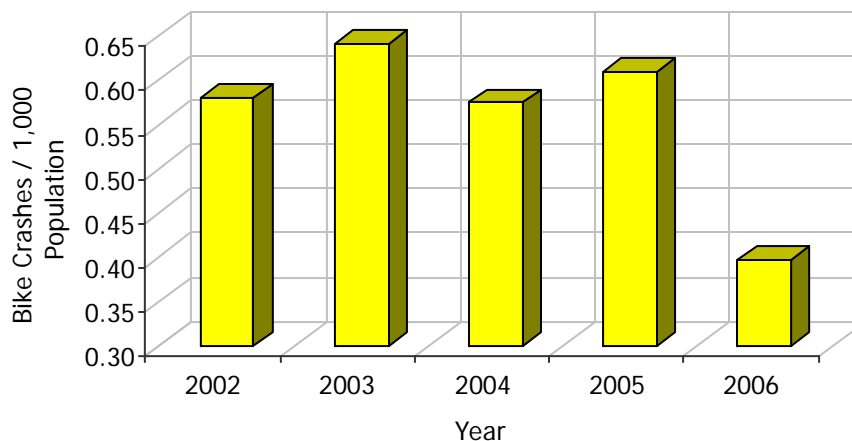
## **PEDALCYCLE CRASH RATE**

Compared to previous years, Mesa’s frequency of pedalcycle crashes in 2006 was considerably lower. When the number of crashes is normalized by looking at how many pedalcycle crashes occur per every 1,000 people in Mesa’s population in a given year, the crash rate in 2006 was 0.40. Normalization puts into perspective an increase or decrease in the number of pedalcycle crashes when there is a concurrent rise in the number of drivers, cyclists and automobiles due to population growth (and a consequent increase in opportunities for pedalcycle/motor vehicle conflicts).

**TABLE 1: PEDALCYCLE CRASH RATE—FIVE YEAR TREND**

Year	Bicycle Crashes	All Traffic Crashes	Bicycle Crashes as Percent of All Crashes	Bicycle Crashes Per 1,000 Population	Estimated Population
2002	254	9,155	2.8%	0.58	438,181
2003	282	8,520	3.3%	0.64	440,404
2004	258	9,184	2.8%	0.57	449,017
2005	276	9,205	3.0%	0.61	452,856
2006	181	8,522	2.1%	0.40	455,984

**CHART 1: PEDALCYCLE CRASH RATE—NORMALIZED BY 1,000 POPULATION**



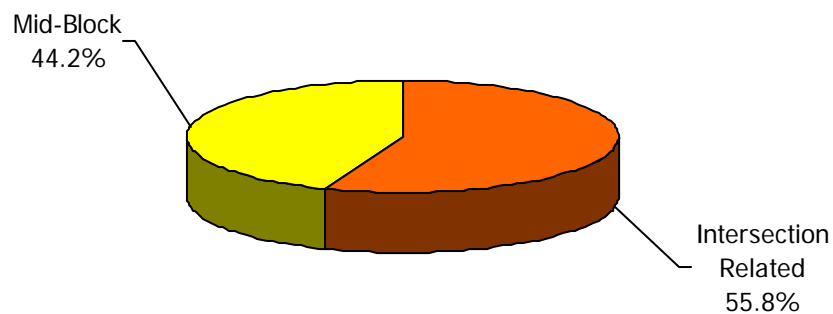
## **LOCATION - INTERSECTION vs MID-BLOCK**

All crashes are categorized as either intersection related or mid-block. Mid-block crashes accounted for 44.2% of all pedalcycle crashes. Although the percent of mid-block crashes remained the same as in 2005, the injury severity of the pedalcyclists increased slightly. See Table 14, page 23. This increase could be attributed to the increase in percent of crashes on arterial streets. See Table 3, page 10.

**TABLE 2: LOCATION - INTERSECTION vs MID-BLOCK**

Location	Number of Crashes	Percent of Total Pedalcycle Crashes
Intersection Related	101	55.8%
Mid-Block	80	44.2%
<b><i>TOTAL</i></b>	<b><i>181</i></b>	<b><i>100.0%</i></b>

**CHART 2: LOCATION - INTERSECTION vs MID-BLOCK**



## **STREET CLASSIFICATION**

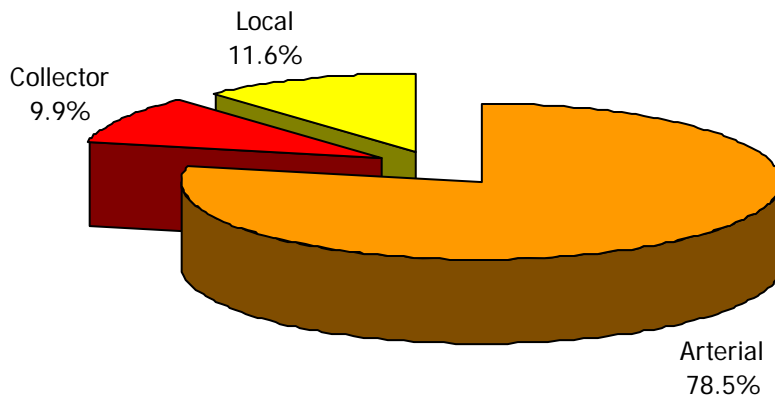
In 2006, 78.5% of all pedalcycle crashes occurred on arterial streets or at intersections having at least one arterial street. Arterial streets are roadways that often extend across city boundaries, carry large volumes of traffic, and may have limited access to properties along the roadway. Country Club Drive and Southern Avenue are examples of arterial streets. The remainder of pedalcycle crashes occurred on collector or local streets. Collector streets typically funnel traffic from local streets. Examples of collector streets are Longmore, Alta Mesa and 8th Street. Local streets are low volume streets in residential and commercial areas.

Percent of pedalcycle crashes increased on arterials from 73.9% in 2005 to 78.5% in 2006, while decreasing on local streets from 26.1% in 2005 to 21.5% in 2006. As mentioned earlier, injury severity to the pedalcyclists also increased.

**TABLE 3: STREET CLASSIFICATION**

On Street	Number of Crashes	Percent of All Pedalcycle Crashes
Arterial	142	78.5%
Collector	18	9.9%
Local	21	11.6%
<b><i>TOTAL</i></b>	<b><i>181</i></b>	<b><i>100.0%</i></b>

**CHART 3: STREET CLASSIFICATION**



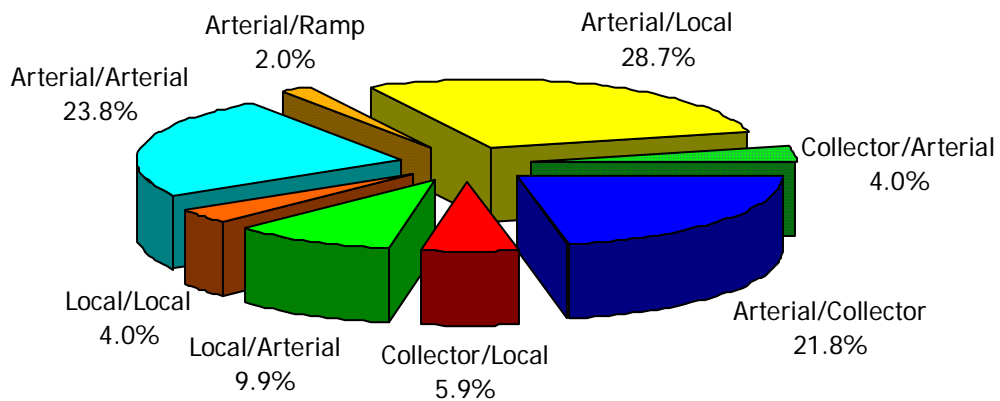
## **INTERSECTION CLASSIFICATION**

**TABLE 4: INTERSECTION CLASSIFICATION**

As previously stated, 101 crashes were intersection related. The intersections where these crashes occurred are classified by on street (approach where crash occurred) and cross street.

Type of Intersection	Number of Crashes	Percentage of Intersection
Arterial/Arterial	24	23.8%
Arterial/Collector	22	21.8%
Arterial/Local	29	28.7%
Arterial/Ramp	2	2.0%
Collector/Arterial	4	4.0%
Collector/Local	6	5.9%
Local/Arterial	10	9.9%
Local/Local	4	4.0%
<b>TOTAL</b>	<b>101</b>	<b>100.0%</b>

**CHART 4: INTERSECTION CLASSIFICATION**



## **LOCATION AND DIRECTION OF PEDALCYCLIST TRAVEL**

When pedalcyclists riding off the sidewalk into the travelway are added to the number of pedalcyclists already in the travelway, 82.9% of all pedalcycle related crashes occurred in the roadway. The remaining 17.1% involved the collision of pedalcyclists on sidewalks with motor vehicles primarily entering or exiting private driveways.

The percent of all pedalcyclists involved in crashes traveling against the flow of traffic - either in the traffic way, bicycle lane, crosswalk or sidewalk is 48.6. This number is down from 56.8% in 2005.

Pedalcyclists riding on the sidewalk against the flow of traffic continued to be the category with the highest percentage, 13.8%, of all crashes. Pedalcyclists traveling in roadway following the flow of traffic at an intersection had the second highest frequency.

**TABLE 5: LOCATION AND DIRECTION OF PEDALCYCLIST TRAVEL**

Location and Direction	Number of Crashes	Percent of Total Crashes	Sum of Location
Midblock			
Across Roadway	7	3.9%	3.9%
Sidewalk			
Private Drive - Against Traffic	25	13.8%	28.7%
Intersection - Against Traffic (Ride out)	17	9.4%	
Private Drive - With Traffic	6	3.3%	
Intersection - With Traffic (Ride out)	4	2.2%	
In Crosswalk			
Against Traffic	11	6.1%	18.2%
With Traffic	22	12.2%	
In Bike Lane			
With Traffic	3	1.7%	15.5%
Against Traffic	2	1.1%	
Private Drive - Against Traffic	5	2.8%	
Intersection - Against Traffic	7	3.9%	
Private Drive - With Traffic	5	2.8%	
Intersection - With Traffic	6	3.3%	
In Roadway			
With Traffic	12	6.6%	33.7%
Against Traffic	0	0.0%	
Private Drive - Against Traffic	7	3.9%	
Intersection - Against Traffic	14	7.7%	
Private Drive - With Traffic	5	2.8%	
Intersection - With Traffic	23	12.7%	
<b>TOTAL</b>	<b>181</b>	<b>100.0%</b>	

## **UNIT 1 ACTION PRIOR TO CRASH**

Pedalcyclists were the unit most at fault, U1, in 52.5% of all pedalcycle/motor vehicle crashes. This number is down from 68.1% in 2005. Pedalcyclists most at fault were most frequently going straight when the crash occurred. Motor vehicle operators were most at fault most frequently when they were executing right turns.

**TABLE 6: UNIT 1 - MOTORIST vs PEDALCYCLE**

Unit 1 Action	Number of Crashes	Percent of Total Crashes
Going Straight Ahead		
Pedalcyclist	75	41.4%
Motorist	20	11.0%
Making Right Turn		
Pedalcyclist	0	0.0%
Motorist	36	19.9%
Making Left Turn		
Pedalcyclist	5	2.8%
Motorist	19	10.5%
Other Action		
Pedalcyclist	11	6.1%
Motorist	3	1.7%
Changing Lanes		
Pedalcyclist	1	0.6%
Motorist	4	2.2%
Unknown		
Pedalcyclist	3	1.7%
Motorist	4	2.2%
<b>TOTAL</b>	<b>181</b>	<b>100.0%</b>
PEDALCYCLIST	95	52.5%
MOTORIST	86	47.5%

## **MOTOR VEHICLE ACTION PRIOR TO CRASH**

Almost half, 43.6%, of all motor vehicles, both Unit 1 and Unit 2, involved in pedalcycle crashes were either executing or starting to execute a right turn. Couple the driver's primary attention to the left with the pedalcyclist's approach from the right (against the flow of traffic), and the probability of a crash is significantly increased.

**TABLE 7: MOTOR VEHICLE ACTION PRIOR TO CRASH**

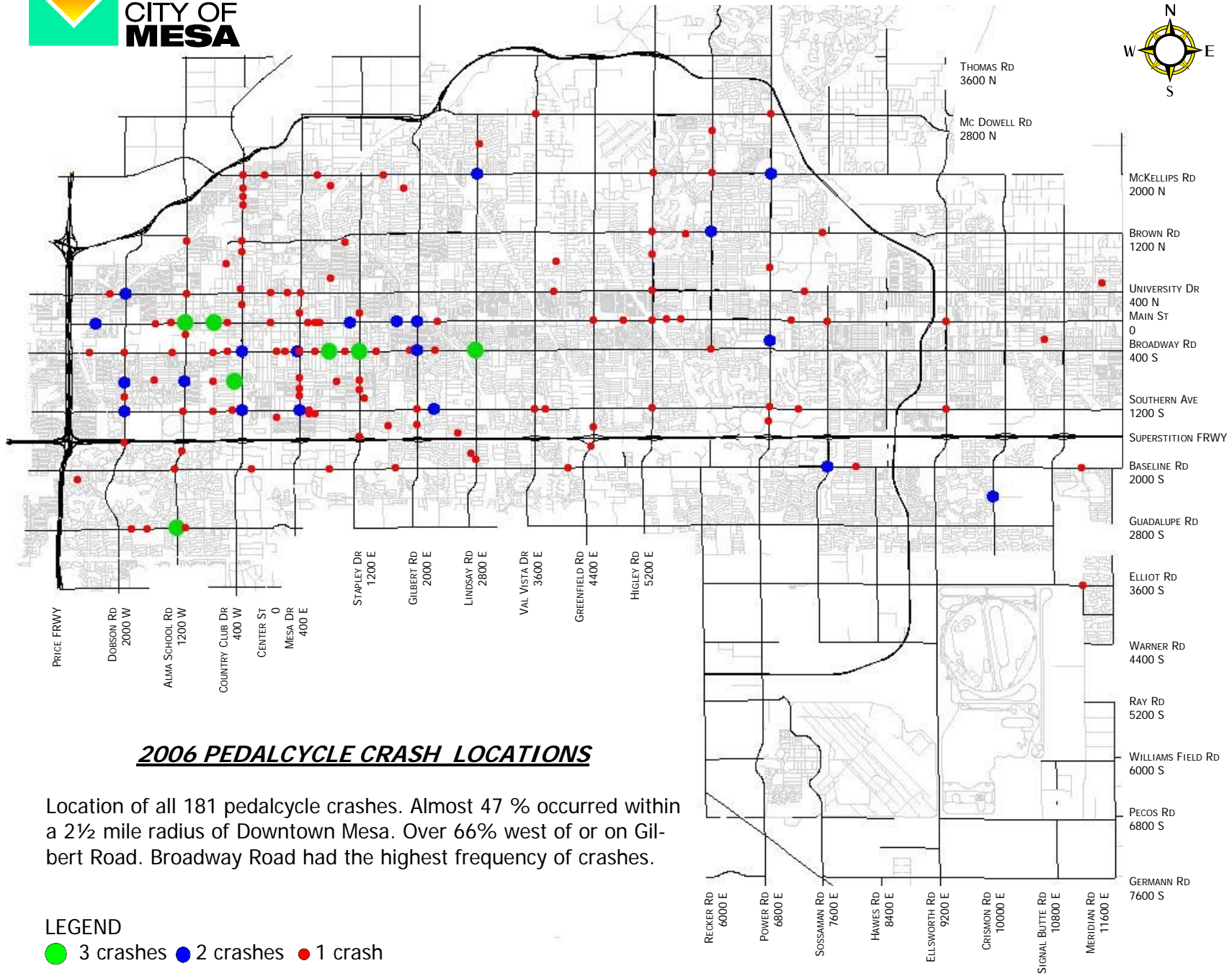
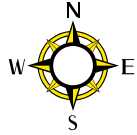
Motor Vehicle Action Prior to Crash	Number of Instances	Percentage of Total
Making Right Turn	79	43.6%
Going Straight*	59	32.6%
Making Left Turn	33	18.2%
Other	2	1.1%
Changing Lanes	2	1.1%
Slowing in Traffic	2	1.1%
U-Turn	1	0.6%
Unknown	3	1.7%
<b><i>TOTAL</i></b>	<b><i>181</i></b>	<b><i>100.0%</i></b>

\*Includes motor vehicles leaving alleys or driveways with action that could not be determined.

## **GEOGRAPHIC LOCATION**

Of all pedalcycle related crashes occurring within the city limits of Mesa, 46.4% occurred within a 2-1/2 mile radius of downtown Mesa. One hundred twenty, 66.3%, occurred on or west of Gilbert Road. Broadway Road had the highest frequency of any single street with 25 or 13.8%. Main Street had the second highest frequency with 18 or 9.9%.

All of the above numbers involving geographic location were down slightly from 2004 as Mesa's population center continues to move to the east.



## **AGE AND GENDER OF PEDALCYCLISTS**

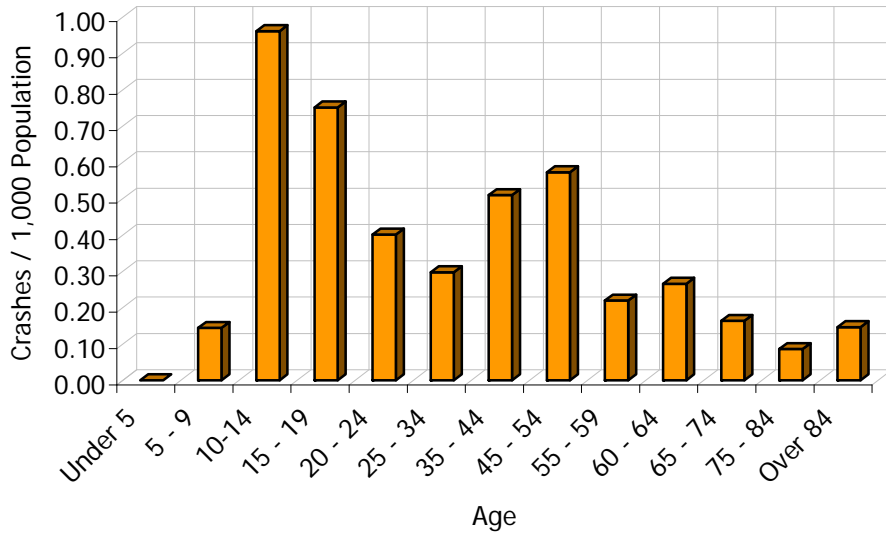
Certain groups of pedalcyclists, defined by age and sex, have a greater probability of being involved in pedalcycle crashes. When the number of crashes is normalized by looking at how many pedalcycle crashes occur per every 1,000 people in each age group, it is readily apparent that the 10 - 14 year old group is over represented. This group is followed by the 15 - 19 year olds. These are the same age groups that were over represented in 2003, 2004 and 2005.

**TABLE 8: AGE OF PEDALCYCLISTS**

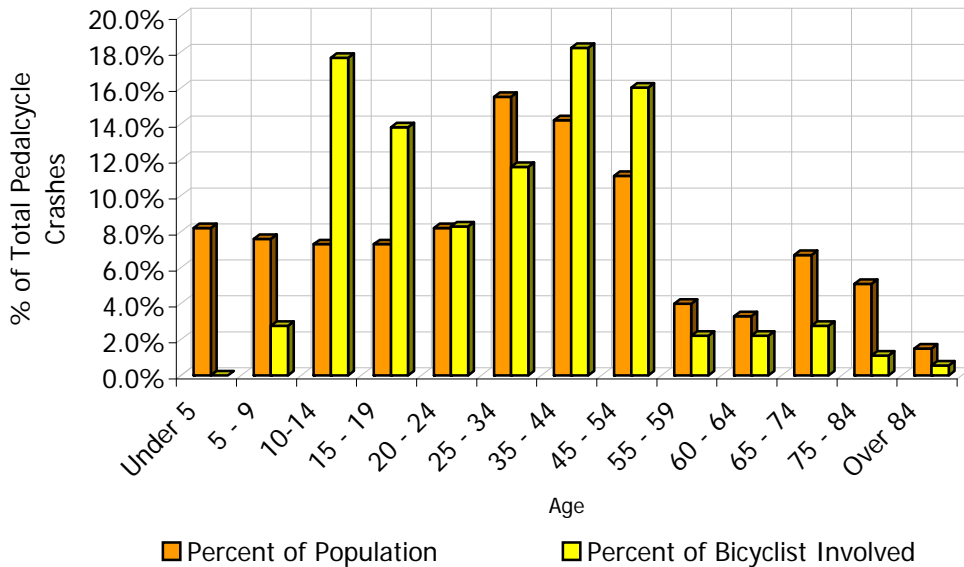
Age	Population*	Percent of Total Population	No. of Pedalcyclists Involved	% of Total Pedalcycle Crashes	Pedalcycle Crashes/ 1,000 Persons
Under 5	37,391	8.2%	0	0.0%	0.00
5 - 9	34,655	7.6%	5	2.8%	0.14
10-14	33,287	7.3%	32	17.7%	0.96
15 - 19	33,287	7.3%	25	13.8%	0.75
20 - 24	37,391	8.2%	15	8.3%	0.40
25 - 34	70,678	15.5%	21	11.6%	0.30
35 - 44	64,750	14.2%	33	18.2%	0.51
45 - 54	50,614	11.1%	29	16.0%	0.57
55 - 59	18,239	4.0%	4	2.2%	0.22
60 - 64	15,047	3.3%	4	2.2%	0.27
65 - 74	30,551	6.7%	5	2.8%	0.16
75 - 84	23,255	5.1%	2	1.1%	0.09
Over 84	6,840	1.5%	1	0.6%	0.15
<b>Total</b>	<b>455,984</b>	<b>100.0%</b>	<b>176</b>	<b>97.2%</b>	
Not Reported			5	2.8%	
<b>Total</b>	<b>455,984</b>		<b>181</b>	<b>100.0%</b>	

\* Estimated population information provided by the City of Mesa Planning Division.

**CHART 5: NORMALIZED CRASHES BY AGE PER 1,000 POPULATION**



**CHART 6: PERCENTAGE OF POPULATION vs PERCENTAGE OF CRASHES**



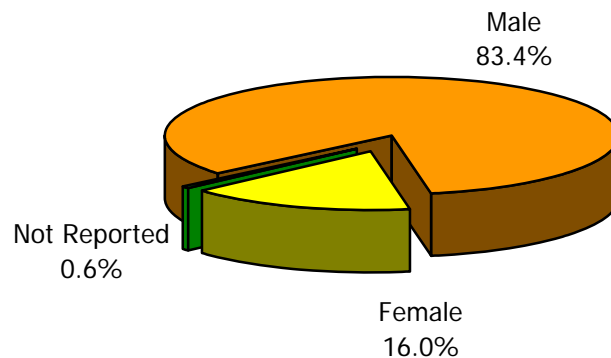
**AVERAGE and MEDIAN AGE.** The average age of pedalcyclists involved in crashes in 2006 was 31.9 vs 28.6 in 2005, and the median age was 31 in 2006 vs 23 in 2005. The average age of the motor vehicle operator was 39.1 and the median age was 38.

**GENDER.** Males have a much greater rate of involvement in pedalcycle crashes than do females. Mesa's male population only comprises 49.5% of the total population, but males were involved in 83.4% of all pedalcycle crashes. See Table 9 on page 18.

**TABLE 9: GENDER OF PEDALCYCLIST**

Gender	No. of Pedalcyclists Involved	Percent of Total Crashes	Percent of Reported Gender	Percent of Estimated Population
Male	151	83.4%	83.9%	49.5%
Female	29	16.0%	16.1%	50.5%
Not Reported	1	0.6%		
<b>Total</b>	<b>181</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.00%</b>

**CHART 7: GENDER OF PEDALCYCLIST**



**CAUSE OF PEDALCYCLE /MOTOR VEHICLE CRASHES**

This analysis is based on the premise that in all Police Accident Reports (PAR), the unit that caused the collision or was most at fault is identified as Unit 1 as outlined in the *Arizona Traffic Accident Report Instruction Manual & Glossary*.

**FAILURE TO YIELD.** This violation was cited as the leading cause of pedalcycle crashes. The motor vehicle operator was cited 20.4% of the time and the pedalcyclist 11.0%.

**OTHER.** A review of the PARs seemed to indicate that this was a catch-all classification. If there appeared to be a question as to which operator was at fault, this violation was identified and attributed to the pedalcyclist 14.9% of the time.

**UNKNOWN.** The unknown violation accounted for 16.0% of all Unit 1 violations and ranked third.

**TABLE 10: UNIT 1 VIOLATION**

Violation - Unit 1	Number of Crashes	Percent of Total Crashes
Failure to Yield Right-of Way	57	31.5%
Pedalcyclist	20	11.0%
Motorist	37	20.4%
Other	32	17.7%
Pedalcyclist	27	14.9%
Motorist	5	2.8%
Inattention	16	8.8%
Pedalcyclist	5	2.8%
Motorist	11	6.1%
Drove in Opposing Traffic Lane	20	11.0%
Pedalcyclist	20	11.0%
Motorist	0	0.0%
Unknown	29	16.0%
Pedalcyclist	6	3.3%
Motorist	23	12.7%
Disregarded Traffic Signal or Sign	13	7.2%
Pedalcyclist	13	7.2%
Motorist	0	0.0%
Speed Too Fast for Conditions	4	2.2%
Pedalcyclist	1	0.6%
Motorist	3	1.7%
Made Improper Turn or Unsafe Lane Change	9	5.0%
Pedalcyclist	2	1.1%
Motorist	7	3.9%
Knowingly Operated with Faulty or Missing Equipment	1	0.6%
Pedalcyclist	1	0.6%
Motorist	0	0.0%
<b>TOTAL</b>	<b>181</b>	<b>100%</b>

## **TIME OF CRASHES**

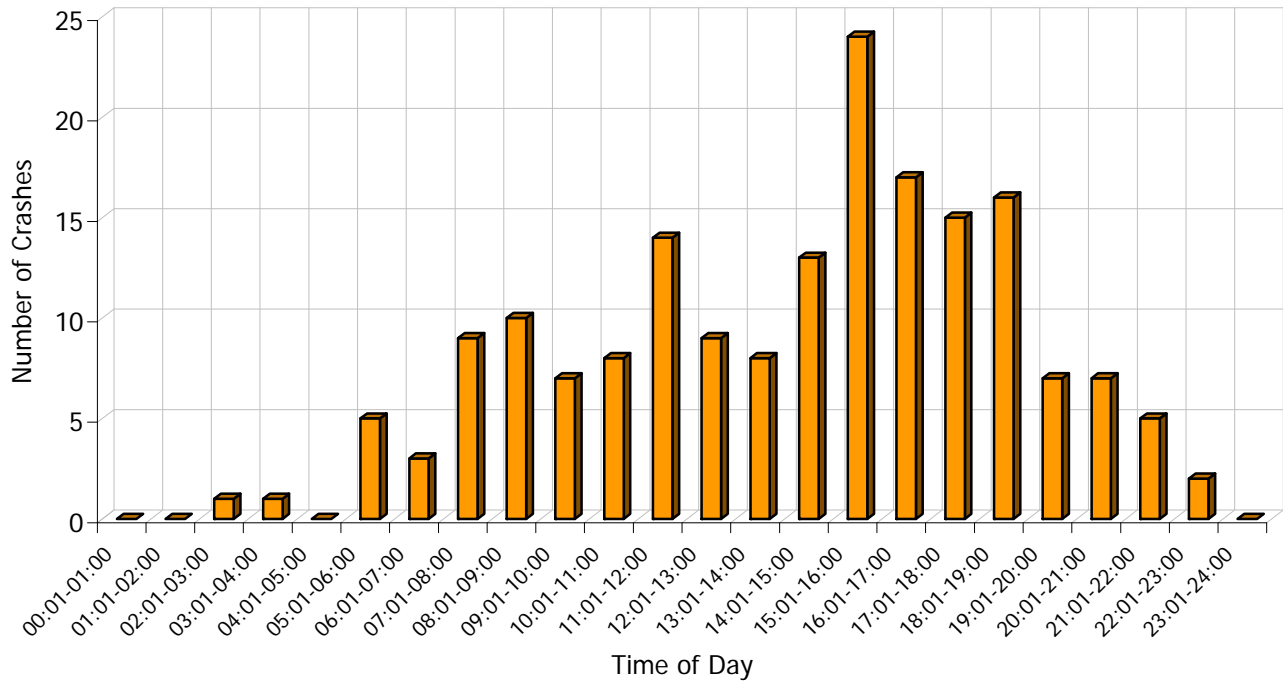
**TIME OF DAY.** The number of vehicles on Mesa's streets at any given time of day has a direct correlation to the likelihood of being involved in a pedalcycle traffic crash. As can be seen below, 3:01 - 4:00 PM had the highest frequency of crashes. The five hour period between 2:01 and 7:00 PM experienced 47.0% of all crashes. See Chart 8 on page 21.

**TABLE 11: TIME AND DAY**

Time \ Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total	% of Crashes by Time
00:01-01:00	0	0	0	0	0	0	0	0	0.0%
01:01-02:00	0	0	0	0	0	0	0	0	0.0%
02:01-03:00	0	0	0	0	0	0	1	1	0.6%
03:01-04:00	0	0	1	0	0	0	0	1	0.6%
04:01-05:00	0	0	0	0	0	0	0	0	0.0%
05:01-06:00	0	1	0	1	1	1	1	5	2.8%
06:01-07:00	1	0	0	1	0	1	0	3	1.7%
07:01-08:00	0	2	2	1	2	2	0	9	5.0%
08:01-09:00	0	2	0	3	3	2	0	10	5.5%
09:01-10:00	0	2	1	0	0	2	2	7	3.9%
10:01-11:00	1	2	1	0	1	1	2	8	4.4%
11:01-12:00	1	0	1	4	1	3	4	14	7.7%
12:01-13:00	2	1	2	1	1	1	1	9	5.0%
13:01-14:00	0	2	2	0	1	1	2	8	4.4%
14:01-15:00	1	5	1	2	2	1	1	13	7.2%
15:01-16:00	1	4	3	3	5	3	5	24	13.3%
16:01-17:00	2	3	2	3	3	1	3	17	9.4%
17:01-18:00	1	6	3	0	3	0	2	15	8.3%
18:01-19:00	1	1	3	3	3	4	1	16	8.8%
19:01-20:00	2	1	2	0	0	0	2	7	3.9%
20:01-21:00	0	2	0	1	1	2	1	7	3.9%
21:01-22:00	3	0	0	0	0	2	0	5	2.8%
22:01-23:00	1	0	0	0	0	0	1	2	1.1%
23:01-24:00	0	0	0	0	0	0	0	0	0.0%
<b>TOTAL</b>	<b>17</b>	<b>34</b>	<b>24</b>	<b>23</b>	<b>27</b>	<b>27</b>	<b>29</b>	<b>181</b>	<b>100.0%</b>

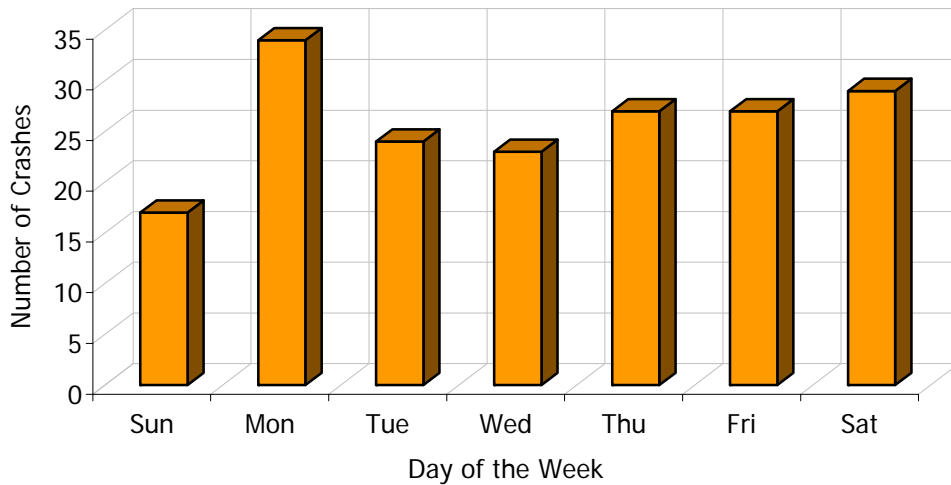
○ = Hour with highest crash frequency for that day.

**CHART 8: TIME OF THE DAY**



**DAY OF THE WEEK and MONTH OF THE YEAR.** Pedalcycle crashes occurring on weekdays accounted for 74.6% of all crashes. February had the highest number of crashes, while September had the fewest. See Table 12 and Chart 10 on page 22.

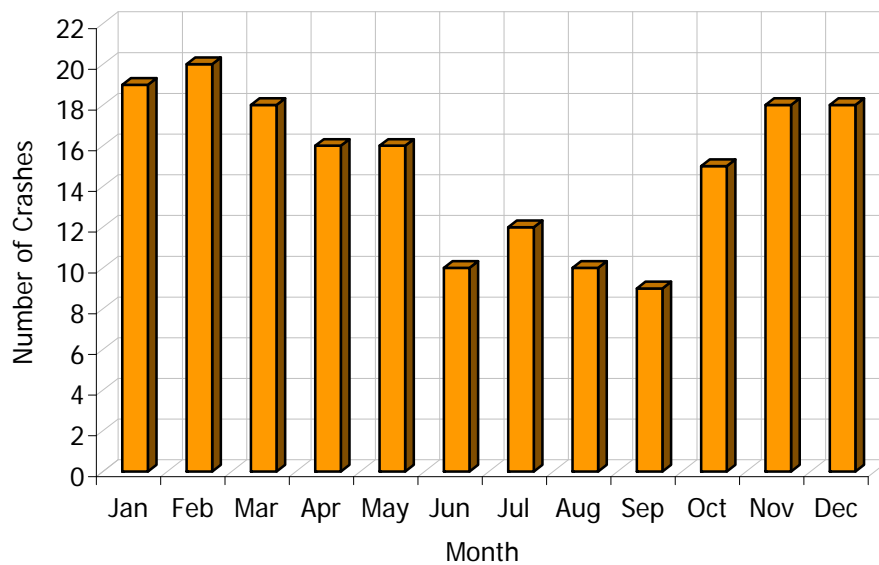
**CHART 9: DAY OF THE WEEK**



**TABLE 12: MONTH OF THE YEAR**

Month	Number of Crashes	Percent of All Crashes
January	19	10.5%
February	20	11.0%
March	18	9.9%
April	16	8.8%
May	16	8.8%
June	10	5.5%
July	12	6.6%
August	10	5.5%
September	9	5.0%
October	15	8.3%
November	18	9.9%
December	18	9.9%
<b>TOTAL</b>	<b>181</b>	<b>100.0%</b>

**CHART 10: MONTH OF THE YEAR**



## **FATALITIES AND INJURIES TO PEDALCYCLISTS**

There were five pedalcycle fatalities in 2006. Four out of five fatalities occurred on arterial streets. This is the highest number of pedalcycle fatalities in the past five years.

**TABLE 13: PEDALCYCLE FATALITIES—FIVE YEARS**

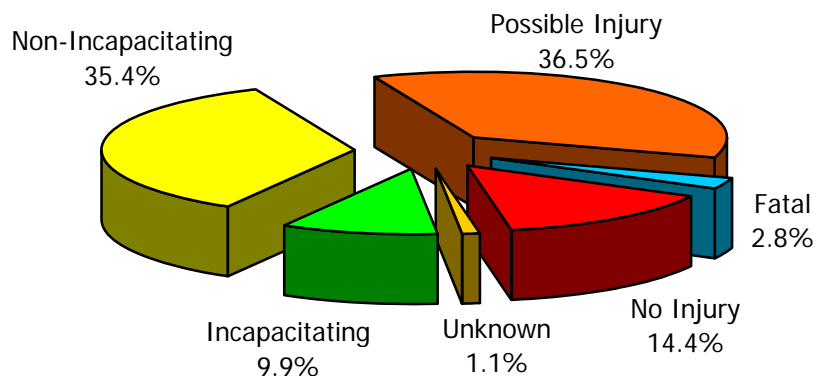
Year	Number of Pedalcycle Fatalities	Number of Fatalities - All Traffic Crashes	Percent of All Traffic Fatalities
2002	1	23	4.3%
2003	4	31	12.9%
2004	2	27	7.4%
2005	4	67	6.0%
2006	5	50	10.0%

**INJURIES:** Incapacitating and fatal injuries comprised 9.7% of all pedalcyclists' injuries. This percentage increased from 8.6% in 2005. The slow speeds associated with motor vehicles exiting private driveways, starting to make right turns from stops, or pedalcyclists riding off a sidewalk into a motor vehicle, are typical actions that result in minor or no injuries.

**TABLE 14: SEVERITY OF INJURIES SUFFERED IN BICYCLE CRASHES**

Severity of Injury	Number of Occurrences	Percent of Total
Fatal	5	2.8%
Incapacitating	18	9.9%
Non-Incapacitating	64	35.4%
Possible	66	36.5%
No Injury	26	14.4%
Unknown	2	1.1%
<b>TOTAL</b>	<b>181</b>	<b>100.0%</b>

## CHART 11: SEVERITY OF INJURIES



### **HIT AND RUN**

There were 30 hit-and-run related pedalcycle crashes in 2006. This represented 16.6% of all pedalcycle related crashes and was up from the 13.8% in 2005.

### **HELMET USAGE**

Of the 181 documented pedalcycle crashes, only 6.6% of the pedalcyclists were reported as wearing a protective helmet; however, this number may not reflect the actual numbers of pedalcyclists wearing helmets. A review of the PARs revealed that the design of the PAR could contribute to this statistic being reported as so low. Helmet usage is reported in the "Safety Device Code" block of the PAR. It was observed that on numerous PARs a "n/a" or "-" was entered in the Safety Device Code block instead of an appropriate device/restraint code. As stated, this administrative procedure could skew the helmet usage numbers; however, the narrative section of the PAR appears to substantiate low helmet usage.

## **PEDALCYCLE EQUIPMENT**

In part the *Arizona Revised Statutes, Title 28*, states "A bicycle that is used at nighttime shall have a lamp on the front that emits a white light visible from a distance of at least five hundred feet to the front." Forty-one of the 181 bicycle crashes that occurred in 2006 occurred during the hours of dusk, dawn or darkness. In one, or 0.6%, of these crashes the pedalcycle operator was noted as not having a headlight.

## **ALCOHOL RELATED**

Alcohol was associated with 7 crashes or 3.9% of all pedalcycle/motor vehicle crashes. Of these 7 crashes, the pedalcyclist had been drinking or was under the influence of drugs in 86.7% of the crashes which was up from 73.3% in 2005.