Bernalillo County Pedestrian and Bicycle Crash Data Analysis 2010-2014

September 2016

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Overall Results

This report provides additional detail about pedestrian and bicycle crashes in Bernalillo County collected by the New Mexico Department of Transportation Traffic Safety Bureau. These data provide the best information available about the quantity and severity of crashes along with the details such as location, time, date and basic information about the people involved in the crash. To the best extent possible, details underlying the cause of the crash are also provided by the reported top contributing factor to the crash.

The following key findings are included in this report and described in further detail:

- In 2014, New Mexico was ranked 1st in the nation for pedestrian fatalities per capita. Because bicycle fatalities are relatively rare events, New Mexico's bicycle crash ranking fluctuates significantly from year to year.
- Not surprisingly, pedestrian and bicycle fatalities are far more likely to result in death or injury than crashes involving motor vehicles alone. In Bernalillo County, pedestrian crashes are 39.9 times more likely to be fatal and bicyclist crashes are 5.9 time more likely to be fatal than crashes involving only motor vehicles.
- Of the 89 fatal pedestrian crashes in the 2010-2014 time period, 55.5 percent involved a pedestrian who was intoxicated.
- Although it is difficult to determine the cause of the crash, in 47.1 percent of pedestrian crashes and 45.8 percent of bicyclist crashes, the officer reporting on the crash indicated that the pedestrian or bicyclist behavior did not contribute to the crash.
- East Central Ave has the highest number of combined pedestrian and bicyclist crashes in the region with 284 crashes over 10.8 mile (23 ped/bike crashes per mile). Following far behind, the second and third corridors with the most combined pedestrian and bicyclist crashes are Lomas Blvd (93 total) and San Mateo Blvd (82 total).
- A large proportion of bicycle crashes (43.3 percent) occur on roadways with no bikeway infrastructure (no bicycle lanes or adjacent path).
- Pedestrian crashes and to a lesser extent, bicyclist crashes, are correlated with areas with major transit lines, UNM, Downtown and the International District.

Background

This report was created by the Mid-Region Council of Governments (MRCOG) with support from Bernalillo County as part of the Healthy Here: Communities Leading Healthy Change initiative. This report supports MRCOG's Regional Safety Report as part of an effort to improve the region's understanding of pedestrian and bicycle safety.

The data from crashes come from reported crashes described in the New Mexico Uniform Crash Report. In order for a crash to be entered into the crash database, it must have occurred on a public roadway, involved at least one motor vehicle, and resulted in $500 of damage or personal injury. If a crash occurred on a trail or if it did not involve a motor vehicle, it would not be included in this report. These data were collected by the New Mexico Department of Transportation Traffic Safety Bureau and geocoded by the University of New Mexico Geospatial and Population Studies Traffic Research Unit.

National Rankings

At the national level, pedestrian fatalities make up 14% of all traffic fatalities. For Bernalillo County, pedestrian fatalities make up 34.8% of all traffic fatalities. Likewise, nationally, bicyclist fatalities make up 2% of all traffic fatalities. Although Bernalillo County's bicyclist fatalities make up 3.9% of all traffic fatalities, these numbers are highly volatile due to the low numbers of bicyclist fatalities in general.

Unfortunately, New Mexico has lead the nation in the number of traffic fatalities per capita several times. In the years 2001, 2002, 2004, 2006, and most recently in 2014, New Mexico ranked first in the nation in the number of pedestrian fatalities per 100,000 people. This has led the Federal Highway Administration (FHWA) to designate Albuquerque as a "Focus City" – a city targeted for pedestrian safety improvements. As a Focus City, Albuquerque is eligible for technical support from the FHWA Resource Center to address pedestrian safety. This support enabled MRCOG and member agencies to complete the West Central Road Safety Assessment, Central Ave and San Mateo Road Safety Assessment as well as hold a series of workshops related to pedestrian safety.

Table 1: Pedestrian Crash Comparison

Year	NM National Rank for Highest Bicyclist Fatalities per 100K Population	NM Fatal Bicyclist Crashes	Bernalillo County Fatal Bicycle Crashes	Bernalillo County Bicyclist Fatalities as a Percent of Total NM Bicyclist Fatalities[1]
2010	14	33	9	27%
2011	5	41	9	22%
2012	2	61	20	33%
2013	4	49	21	43%
2014	1	74	30	41%

Table 2: Bicyclist Crash Comparison

Year	NM National Rank for Highest Bicyclist Fatalities per 100K Population	NM Fatal Bicyclist Crashes	Bernalillo County Fatal Bicycle Crashes	Bernalillo County Bicyclist Fatalities as a Percent of Total NM Bicyclist Fatalities[1]
2010	2	8	4	50%
2011	18	1	1	100%
2012	4	7	4	57%
2013	21	4	0	0%
2014	14	5	1	20%

[1] Bernalillo County makes up 32.3% of New Mexico's total population based on the 2010-2014 American Community Survey.

SEVERITY

Crashes involving pedestrians and bicyclists are often more severe than motor vehicle crashes. Pedestrian crashes are 39.9 times more likely to result in a fatality and 7.9 times more likely to result in an incapacitating injury than crashes involving a motor vehicle only. Bicyclist crashes are 5.9 times more likely to result in a fatality and 4.3 times more likely to result in an incapacitating injury than crashes involving a motor vehicle only. An incapacitating injury is one where the pedestrian, bicyclist or driver needed to be taken away by an ambulance from the crash.

Table 3 details the larger proportion of more severe crashes for pedestrians and bicyclists versus crashes that involve only motor vehicles.

TABLE 3: CRASH SEVERITY

Pedestrian Crash Severity				
	Fatal	Incapacitating Injury	Injury Crash (Not Incapacitating)	Property Damage Only
2010	9	29	119	22
2011	9	37	150	14
2012	20	31	130	17
2013	21	48	135	35
2014	30	58	201	17
2010-2014 Total Crashes	**89**	**203**	**735**	**105**
Percent	**7.9%**	**17.9%**	**64.9%**	**9.3%**

Bicyclist Crash Severity				
	Fatal	Incapacitating Injury	Injury Crash (Not Incapacitating)	Property Damage Only
2010	4	16	115	41
2011	1	19	117	39
2012	4	18	122	48
2013	0	15	117	28
2014	1	16	112	34
2010-2014 Total Crashes	**10**	**84**	**583**	**190**
Percent	**1.2%**	**9.7%**	**67.2%**	**21.9%**

Motor Vehicle Only Crash Severity				
	Fatal	Incapacitating Injury	Injury Crash (Not Incapacitating)	Property Damage Only
2010-2014 Total Crashes	**157**	**1,803**	**19,356**	**58,424**
Percent	**0.2%**	**2.3%**	**24.3%**	**73.3%**

ALCOHOL/DRUG INVOLVEMENT

In general, crashes involving some form of intoxication are much more likely to be fatal. Likewise, crashes involving pedestrians are more likely to be fatal. Combined together further increases the likelihood of the crash to be fatal. As a key means of intervention, it is important to understand if the pedestrian or the motorist involved in the crash was intoxicated. Of the 89 fatal pedestrian crashes, 49 (55%) involved an intoxicated pedestrian.

The ages of the pedestrians killed ranged from 1 to 90 years. Of the impaired pedestrians killed, the ages ranged from 14 to 72 years.

The ages of the bicyclists killed in a fatal crash ranged from 17 to 64. Of the impaired bicyclists killed, the ages of ranged from 17 to 56 years old.

TABLE 3: ALCOHOL/DRUG INVOLVEMENT

Total Crashes 2010-2014	**81,736**
Crashes involving Alcohol or Drugs	3,456
Percent of Total Crashes involving Alcohol or Drugs	4.2%
Total Fatal Crashes 2010-2014	**256**
Fatal Crashes involving Alcohol or Drugs	129
Percent of Total Fatal Crashes involving Alcohol or Drugs	50.0%
Total Fatal Pedestrian Crashes 2010-2014	**89**
All Fatal Pedestrian Crashes involving an impaired Pedestrian	49
Percent of Total Fatal Pedestrian Crashes involving an impaired Pedestrian	55.1%
All Fatal Pedestrian Crashes involving an impaired Driver	4
Percent of Total Fatal Pedestrian Crashes involving an impaired Driver	4.5%
Total Fatal Bicyclist Crashes 2010-2014	**10**
All Fatal Bicyclist Crashes involving an impaired Bicyclist	4
Percent of Total Fatal Bicyclist Crashes involving an impaired Bicyclist	40.0%
All Fatal Bicyclist Crashes involving an impaired Driver	0
Percent of Total Fatal Bicyclist Crashes involving an impaired Driver	0.0%

Top Contributing Factors

The tables below show the top contributing factor for bicycle and pedestrian crashes on the part of the pedestrian or bicyclist. The most common factor was "None" indicating the officer filling out the crash report felt the pedestrian's or bicyclist's behavior did not contribute to the crash. "No Error" and "Does Not Apply" also imply that the officer could not determine what the pedestrian or bicyclist was doing that may have led to the crash.

The officer completing a crash report chooses the top contributing factor from a limited, predefined list. This sometimes leads to confusing top contributing factors such as "Improper Backing" on the part of the pedestrian. In order to determine some of the more confounding contributing factors, the narrative or diagram in the original police report would need to be reviewed.

Table 5: Top Contributing Factor to the Crash on the Part of the Pedestrian or Bicyclist

Pedestrian: Top Contributing Factor to the Crash	Number of Pedestrians	Percent
None, No Error, Does Not Apply	550	47.1%
Pedestrian Error	230	19.7%
Alcohol/Drug Involved	187	16.0%
Inattention	64	5.5%
Missing Data	53	4.5%
Failed to Yield Right of Way	34	2.9%
Red Light Running	11	0.9%
Avoid Vehicle, Pedestrian, Etc.	10	0.9%
Disregarded Traffic Signal	9	0.8%
Improper Backing	3	0.3%
Poor Driving	3	0.3%
Cell Phone	2	0.2%
Made Improper Turn	2	0.2%
Passed Stop Sign	2	0.2%
Speed Too Fast for Conditions	2	0.2%
Empty Vehicle	1	0.1%
Excessive Speed	1	0.1%
Following too Close	1	0.1%
Improper Overtaking	1	0.1%
Mechanical Defect	1	0.1%
Other Improper Maneuver	1	0.1%
Total	1,168	100%

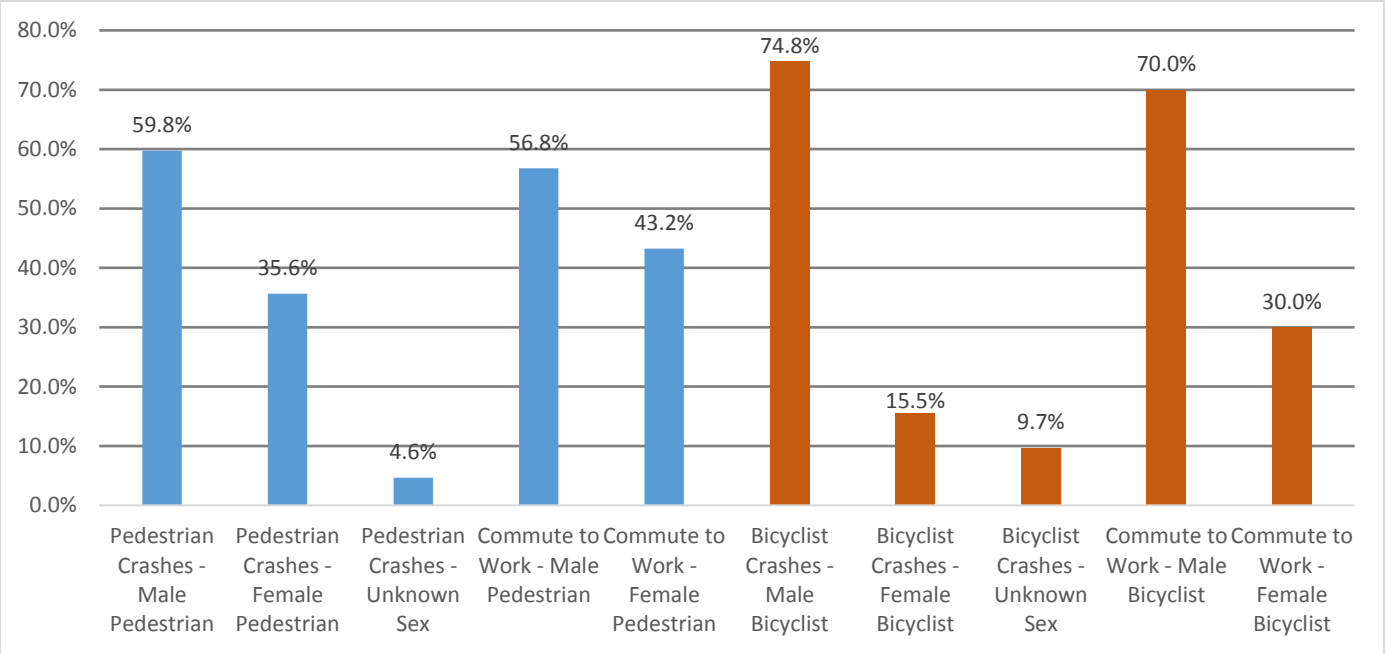
Bicyclist: Top Contributing Factor to the Crash	Number of Bicyclists	Percent
None, No Error, Does Not Apply	402	45.8%
Inattention	115	13.1%
Bicyclist Error	76	8.7%
Failed to Yield Right of Way	67	7.6%
Alcohol/Drug Involved	38	4.3%
Poor Driving	29	3.3%
Missing Data	37	4.2%
Red Light Running	27	3.1%
Avoid Vehicle, Pedestrian, Etc.	21	2.4%
Disregarded Traffic Signal	17	1.9%
Passed Stop Sign	11	1.3%
Other Improper Driving	10	1.1%
Excessive Speed	6	0.7%
Improper Turn	6	0.7%
Left Of Center	5	0.6%
Improper Passing	3	0.3%
Follow Too Close	2	0.2%
Speed Too Fast for Conditions	2	0.2%
Defective Tires	1	0.1%
Improper Backing	1	0.1%
Improper Lane Change	1	0.1%
Total	877	100%

DEMOGRAPHICS

The gender of pedestrians and bicyclists involved in crashes was compared to American Community Survey Data collected for the same time frame between 2010-2014 for people 16 years and older who commute to work by walking or bicycling. In general, a little more men than women walk to work and significantly more men than women bike to work. This gender imbalance will also be reflected in the number of men and women involved in crashes as pedestrians and bicyclists. Also reflected is the general trend that men tend to be involved in crashes more frequently than women.

National data on fatal crashes is available and can be used as a comparison with caution. At the national level, men make 70 percent of fatal pedestrian crashes and men make up 88 percent of fatal bicyclist crashes.

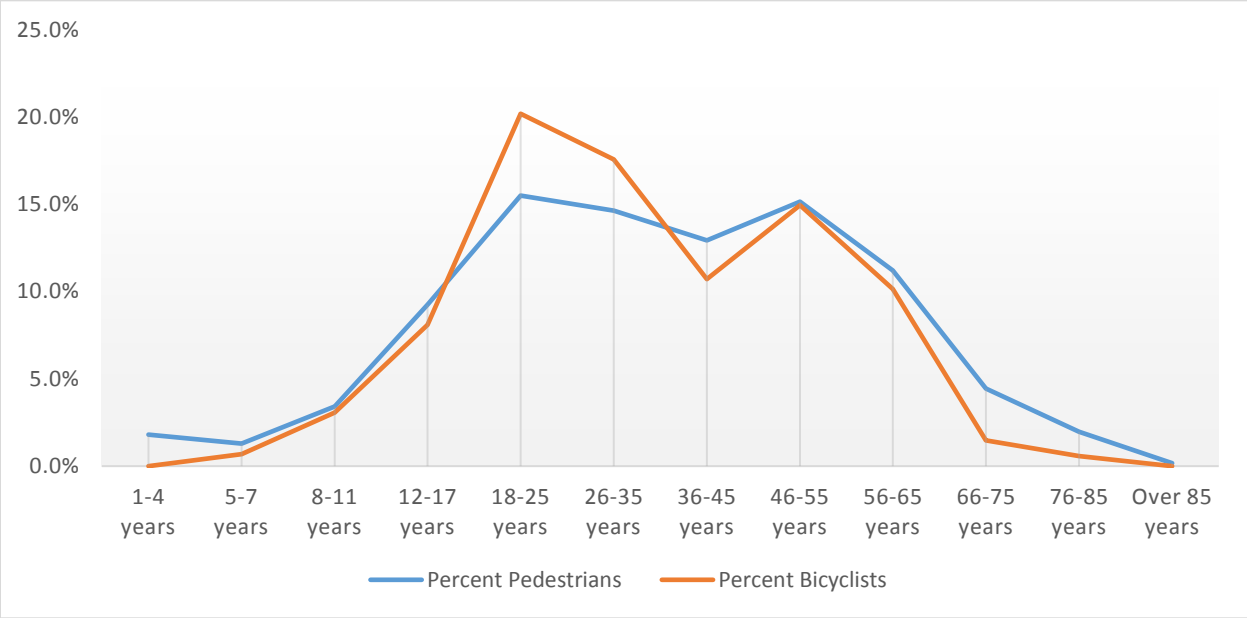
CHART 1: PEDESTRIAN AND BICYCLIST GENDER COMPARISON WITH AMERICAN COMMUNITY SURVEY COMMUTE TO WORK



Not surprisingly, the most common age of pedestrians and bicyclists involved in crashes is from 18-25 years old. There is a second, lesser peak age from 45-55 years for both pedestrians and bicyclists. This has no clear explanation except that there is a slightly larger proportion of the population in that age group. Unfortunately, American Community Survey Data for commute to work by age is limited and it is not possible to compare with local crash data.

National data shows a similar trend with most fatal and injury crashes occurring in the 20-24 age group followed by a lesser peak in the 55-59 age group.

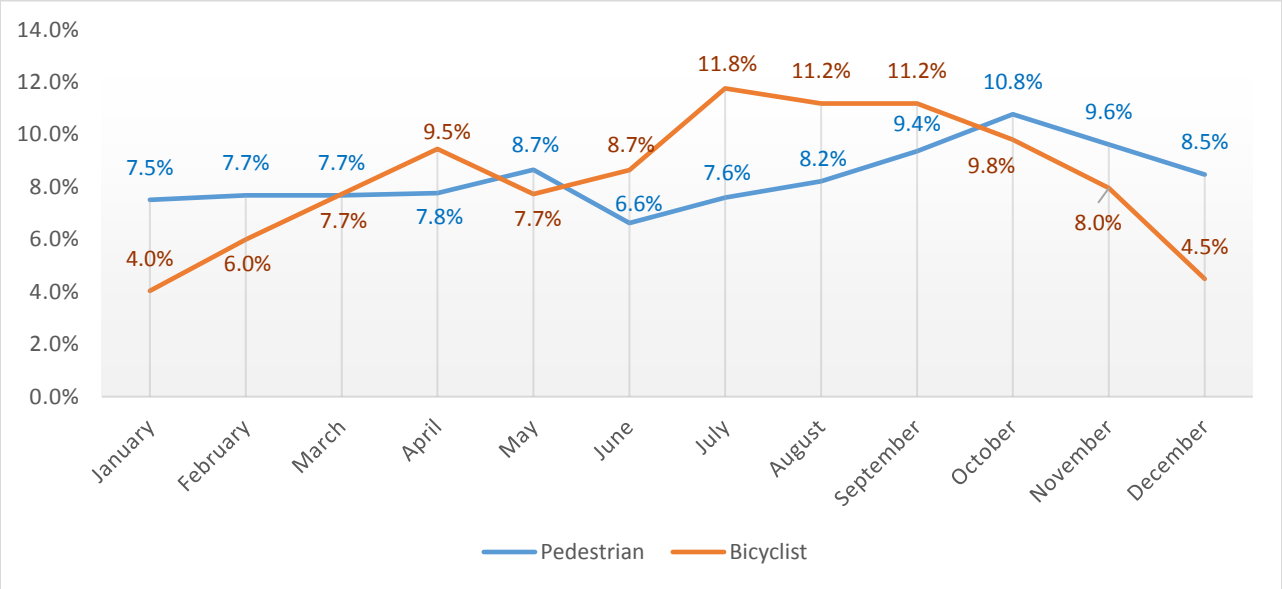
CHART 2: AGE DISTRIBUTION OF PEDESTRIANS AND BICYCLISTS INVOLVED IN CRASHES



Time and Date of the Crash

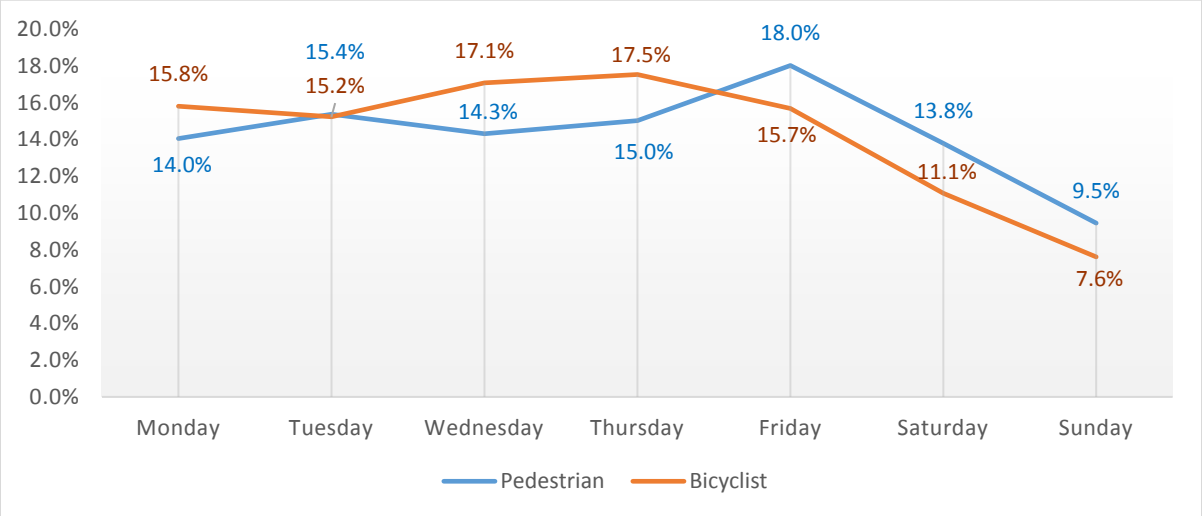
The month crashes occur does not vary much, particularly for pedestrians. This is interesting because bicycle travel on trails varies substantially by season with high usage in the summer months and low usage during winter months. Some of this variation for bicycle crashes is reflected in the crash data, but not to as large an extent.

Chart 3: Percent of Pedestrian and Bicyclists Crashes by Month



During the week, in general, most crashes tend to occur on Friday. This is reflected in the pedestrian crash data, but not the bicyclist data.

Chart 3: Percent Pedestrian and Bicyclist Crashes by Day of Week



Examining the time of the day crashes occur helps to provide some explanation why crashes on Friday are higher than other days of the week. During weekdays, crashes peak during morning and evening commuting times as well as around noon. During weekends crashes have a smaller peak in the later evening. In general, Fridays shares the all the peak crash periods of both weekdays and weekends.

CHART 4: PERCENT PEDESTRIAN CRASHES BY TIME OF DAY AND DAY OF WEEK

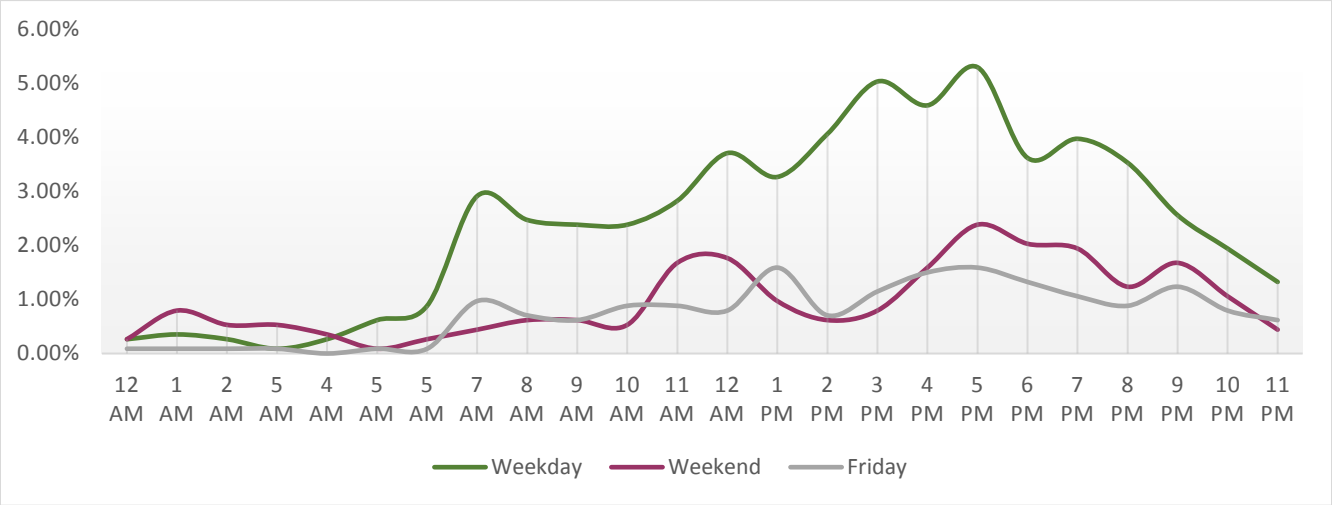
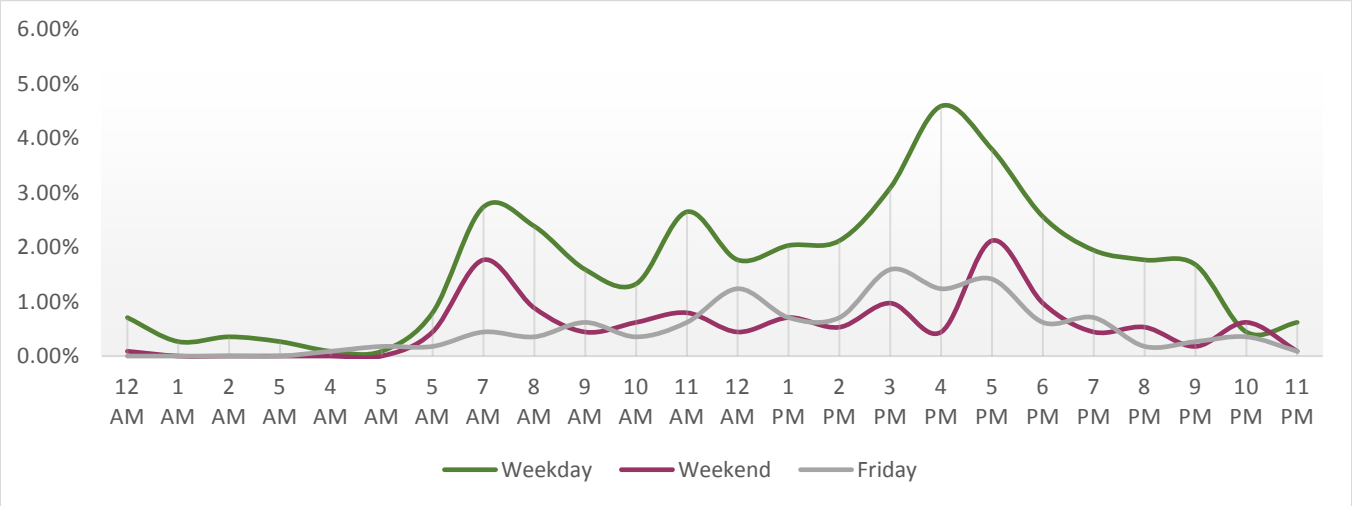


CHART 5: PERCENT BICYCLIST CRASHES BY TIME OF DAY AND DAY OF WEEK



LOCATION

There are several locations in Bernalillo County that have high concentrations of pedestrian and/or bicycle crashes. A serious limitation to evaluating these areas is the inability to calculate a true crash rate; that is, the number of crashes per the number of pedestrians or bicyclists for a given location. This is due to the lack of data on the volume of pedestrian and bicyclist traffic. Despite this limitation, it is helpful to identify these crash concentration locations.

The high crash areas include several major corridors, as well as areas of concentrated pedestrian and bicycle activity, including the UNM area and Downtown, (see MAP 1: PEDESTRIAN CRASH DENSITY and MAP 2: BICYCLE CRASH DENSITY). Of special note is the International District, which had a disproportionate amount of crashes (including fatalities) relative to other neighborhoods in Bernalillo County.

Table 6 shows the corridors with 35 or more combined pedestrian and bicyclist crashes. Most notable is Central Ave east of the Rio Grande River with 248 crashes and 23 crashes per mile, (see MAP 3: CORRIDORS WITH 35 OR MORE COMBINED PEDESTRIAN AND BICYCLIST CRASHES).

TABLE 6: CORRIDORS WITH THE HIGHEST NUMBER OF PEDESTRIAN AND BICYCLIST CRASHES

Corridor	Pedestrian Crashes	Bicyclist Crashes	Total	Miles	Ped/Bike Crashes per Mile
Central Ave East of Rio Grande River	165	83	248	10.8	23.0
Lomas Blvd	43	50	93	10.2	9.1
San Mateo Blvd	46	36	82	6.6	12.4
Wyoming Blvd	41	23	64	8.4	7.6
Montgomery Blvd	35	21	56	6.8	8.2
Louisiana Blvd	34	21	55	7.8	7.1
Coors Blvd North of Central Ave	35	17	52	10	5.2
Central Ave West of Rio Grande River	28	23	51	6.1	8.4
Menaul Blvd	23	28	51	10.5	4.9
Eubank Blvd N. of Academy	31	20	51	6.8	7.5
Juan Tabo Blvd N. of Eubank	28	22	50	7.7	6.5
4Th St	18	26	44	10.3	4.3
San Pedro Dr	23	15	38	8.6	4.4
Carlisle Blvd	19	18	37	5	7.4
University Blvd N. of Cesar Chavez	16	20	36	3.3	10.9

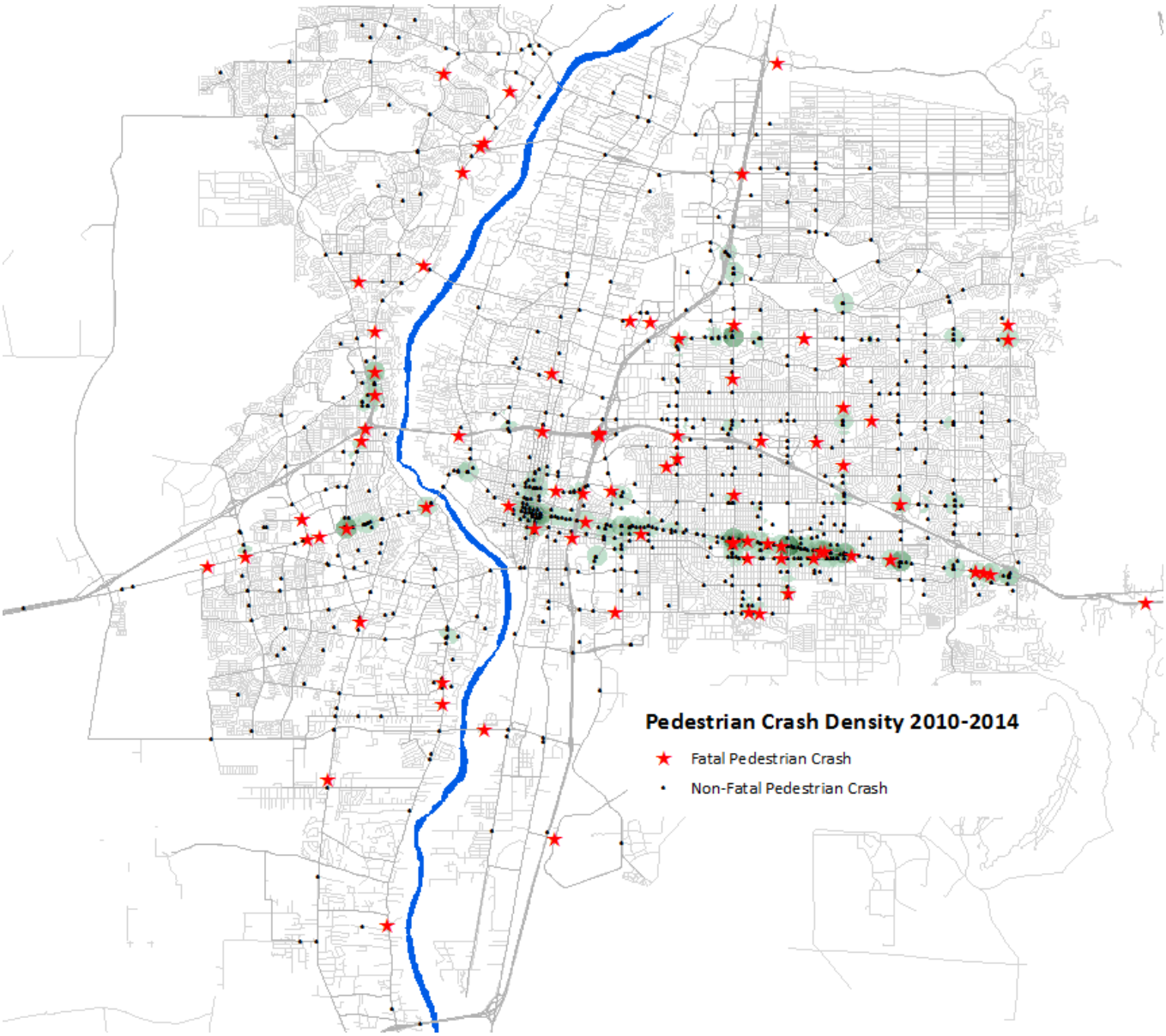
In addition to a pedestrian crash density map, map 4: PEDESTRIAN COMPOSITE INDEX AND PEDESTRIAN CRASHES, shows pedestrian crashes along with the Pedestrian Composite Index. The Pedestrian Composite Index, a tool to help prioritize roadways for pedestrian improvement and address the need to reduce pedestrian crashes. The Pedestrian Composite Index uses regional data to compare aspects that would deter pedestrian travel (crashes, speeds, volume, number of lanes) to aspects that generate pedestrian activity (transit, schools, retail densities, residential densities). Roadways with both high

deterrent and high generator scores indictate that the location would benefit more from pedestrian improvements compared to places that either have low deterrent and/or low generator scores. This tool helps to compare roadways in the region, and it provides a wide variety of pedestrian-related data for segments of roadways. However, it does not provide details such as the presence and width of sidewalks, which is necessary to calculate pedestrian level of service. Nor does it provide information on future demand for walking.

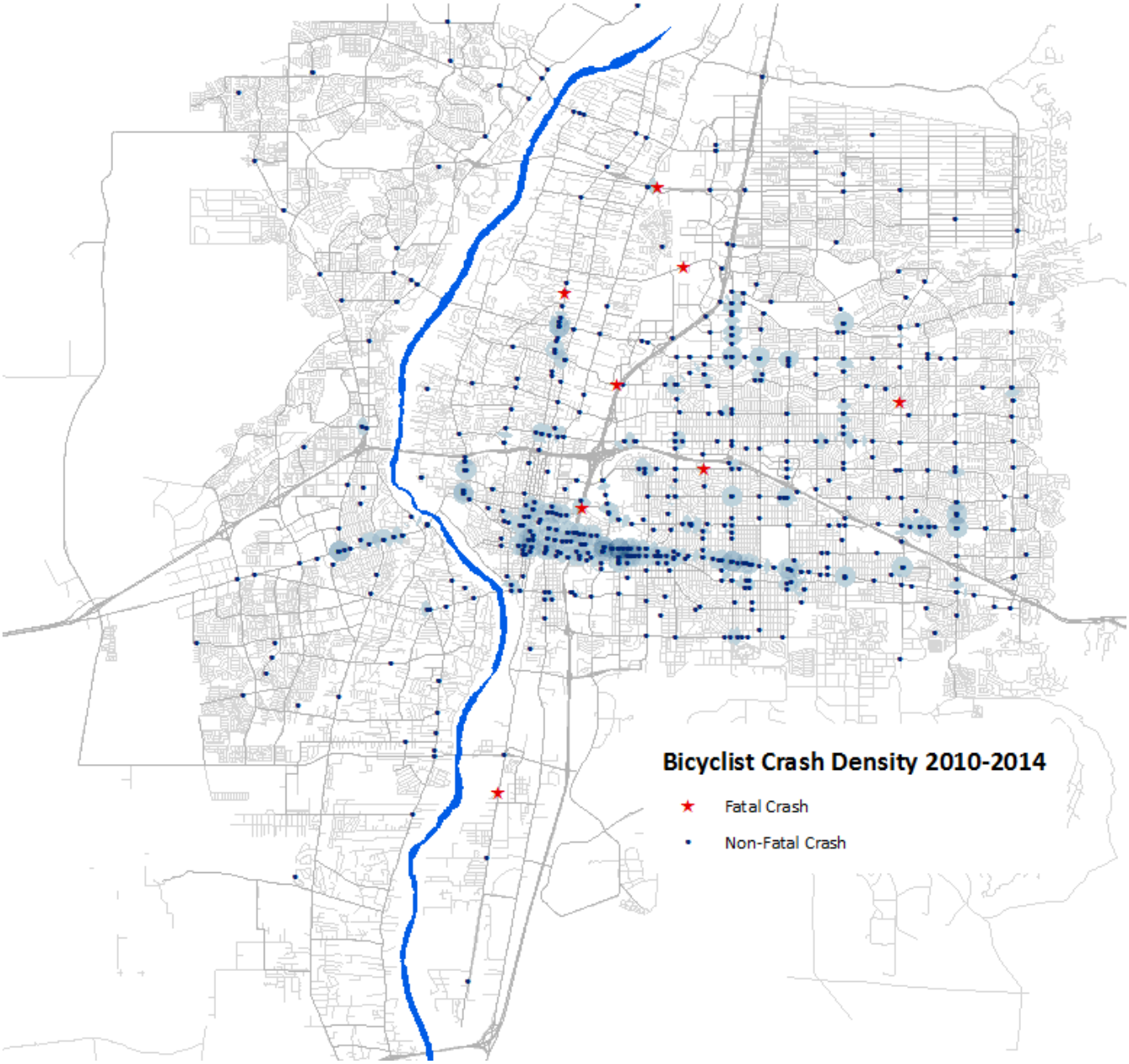
Pedestrian Deterrent Data	Pedestrian Generator Data
• Pedestrian crashes • Number of lanes • Average weekday traffic • Observed off-peak speeds	• Proximity to schools • Proximity to bus stops and high volume bus stops • Proximity to parks, recreational facilities, cultural centers, community centers, and libraries • Density of restaurants, coffee shops, grocery stores, and entertainment • Roadway connectivity - number of four-leg intersections per square mile • Percent of population 16 years+ who walk or take transit to work (ACS 2009-2013) • Percent of households with 0 vehicles or fewer vehicles than workers (ACS 2009-2013) • Transit ridership • Net residential density • Land use mix

Finally, MAP 5: BICYCLE CRASHES IN RELATION TO BIKEWAYS AND TRAILS shows the bicyclist crashes that occurred on roadways without bicycle infrastructure. Of the bicycle crashes in Bernalillo County 43.3% occur on roadways without bike lanes or an adjacent path.

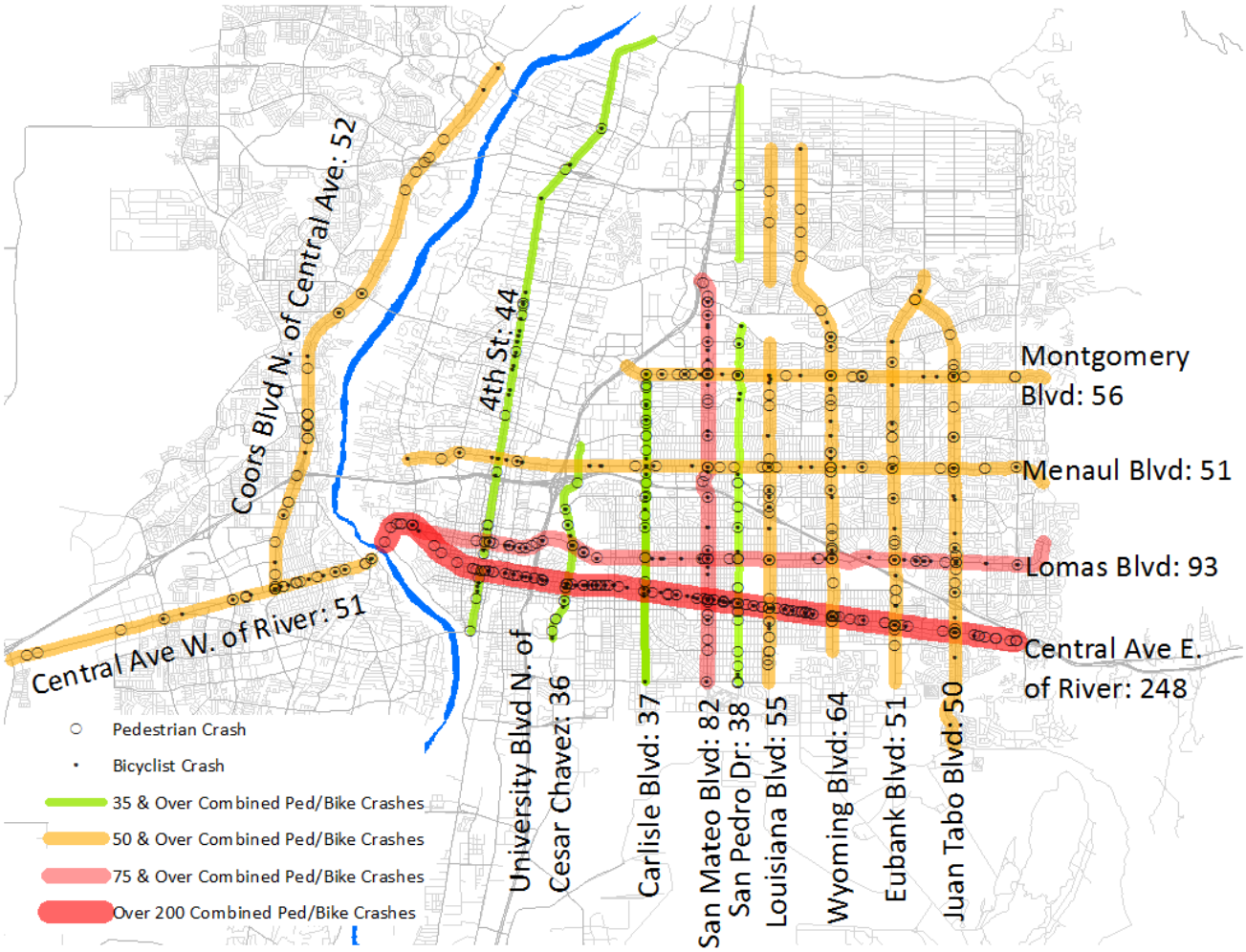
MAP 1: PEDESTRIAN CRASH DENSITY



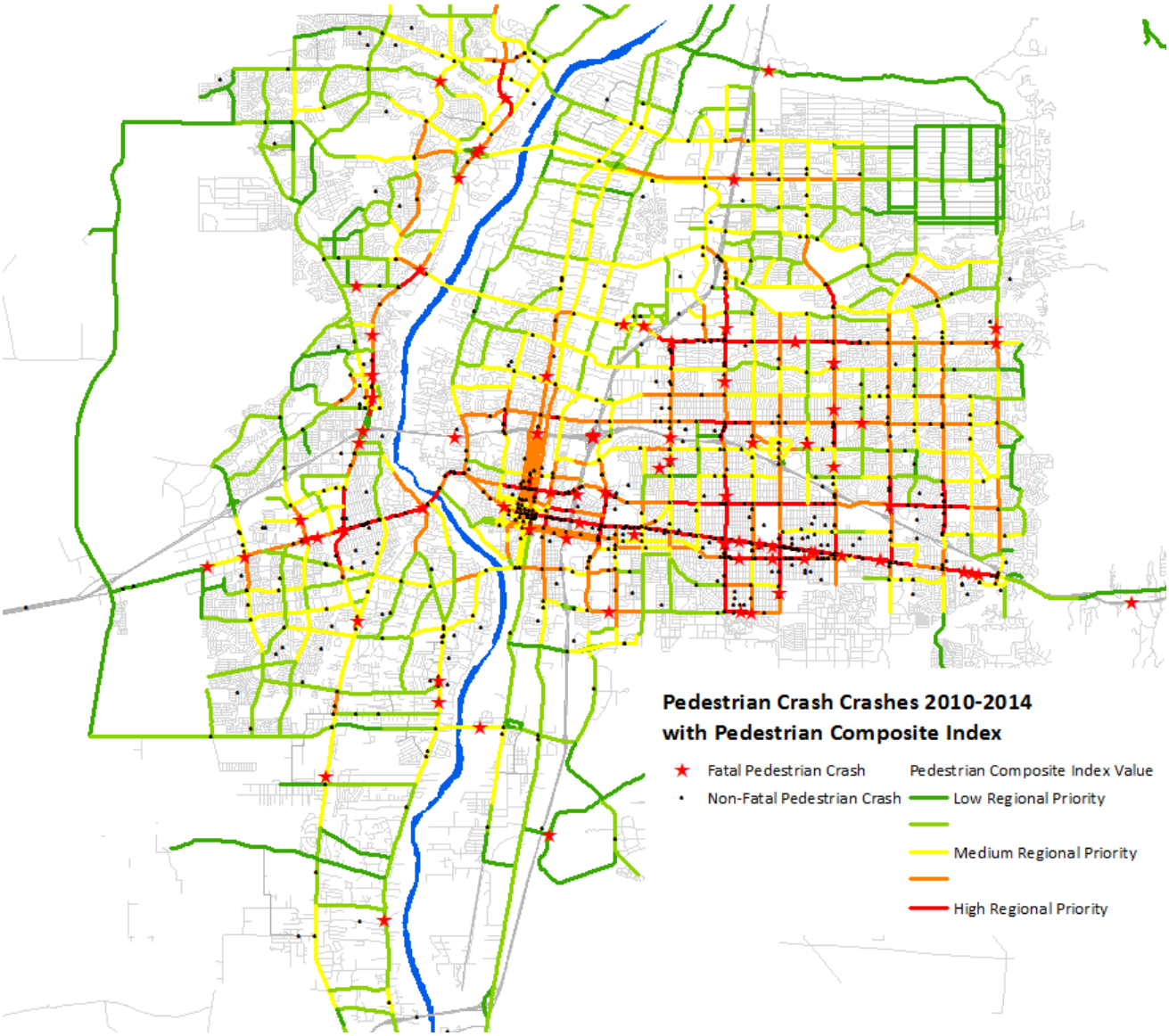
MAP 2: BICYCLE CRASH DENSITY



MAP 3: CORRIDORS WITH 35 OR MORE COMBINED PEDESTRIAN AND BICYCLIST CRASHES



MAP 4: PEDESTRIAN COMPOSITE INDEX AND PEDESTRIAN CRASHES



MAP 5: BICYCLE CRASHES IN RELATION TO BIKEWAYS AND TRAILS