

**Bicycle and Pedestrian Crash Analysis  
for Brown County  
2010 to 2014**

**Brown County Planning Commission/Green Bay MPO  
October 2016**



# Brown County Planning Commission Green Bay MPO

## Bicycle and Pedestrian Crash Analysis for Brown County 2010 to 2014

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Village of Allouez  
Village of Ashwaubenon  
Village of Bellevue  
Village of Hobart  
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Town of Green Bay (part)  
Town of Lawrence (part)  
Town of Ledgeview (part)  
Town of Rockland (part)  
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Town of Little Suamico (part)

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U.S. Department  
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U.S. Department  
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## Introduction

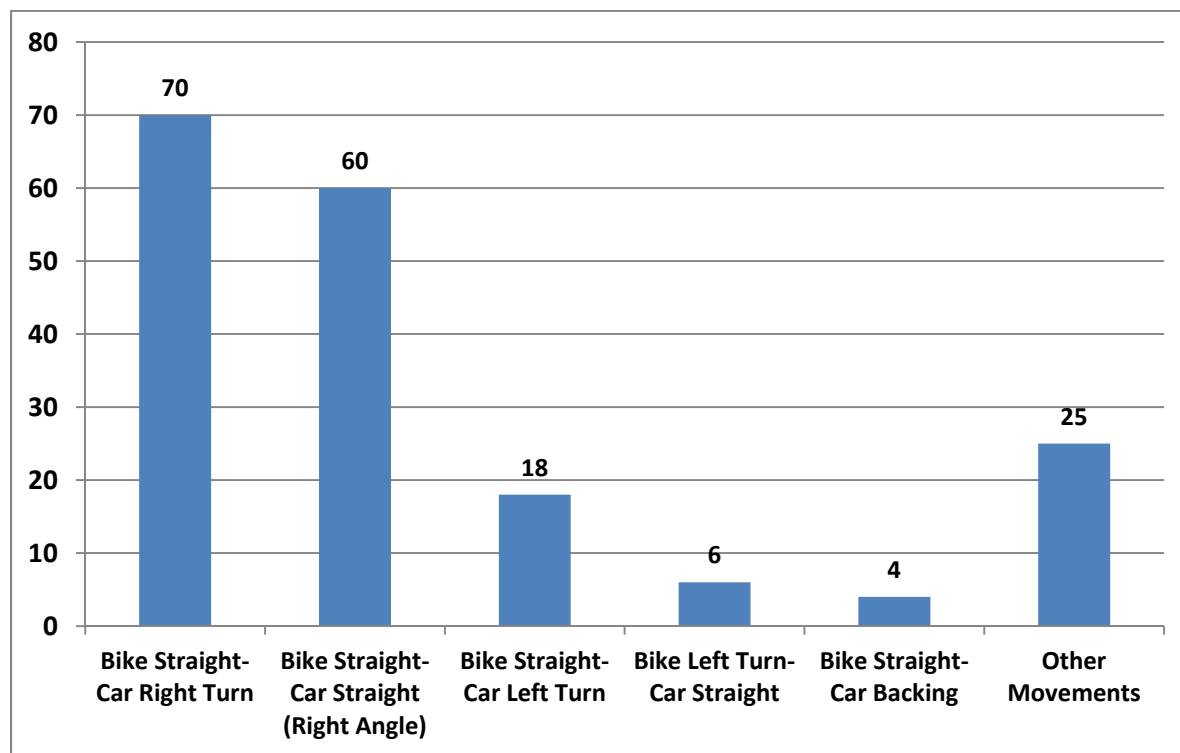
The primary purpose of this analysis is to find and examine bicycle and pedestrian crash locations, factors, and patterns in order to identify potential strategies for reducing the number and severity of crashes in Brown County. The results of the analysis will also be used by Brown County Planning Commission/Green Bay MPO (BCPC/MPO) staff to identify specific locations that should be studied in greater detail in future analyses. The analysis results can also be used by school districts, communities, and others as they develop Safe Routes to School plans, bicycle and pedestrian plans, and other plans or programs that address bicycle and pedestrian safety.

To complete this analysis, BCPC/MPO staff used data from the Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database. The TOPS Laboratory records provide a summary of the information provided on the forms completed by law enforcement officers at the scene of every reported bicycle and pedestrian crash, and this information was sufficient to enable BCPC/MPO staff to develop the conclusions and recommendations in this analysis. But to thoroughly understand the reasons for many of the reported bicycle and pedestrian crashes, it will be necessary to review the crash forms because the forms include narratives, diagrams, and other information that is not provided in the TOPS Laboratory crash summaries.

## Reported Bicycle Crashes in Brown County between 2010 and 2014

During the five-year period between 2010 and 2014, there were 183 reported bicycle crashes in Brown County. The reported bicycle crashes in Brown County by vehicle movements are summarized in the following figure.

**Figure 1: Vehicle Movements when Bicycle Crashes Occurred in Brown County: 2010-2014**



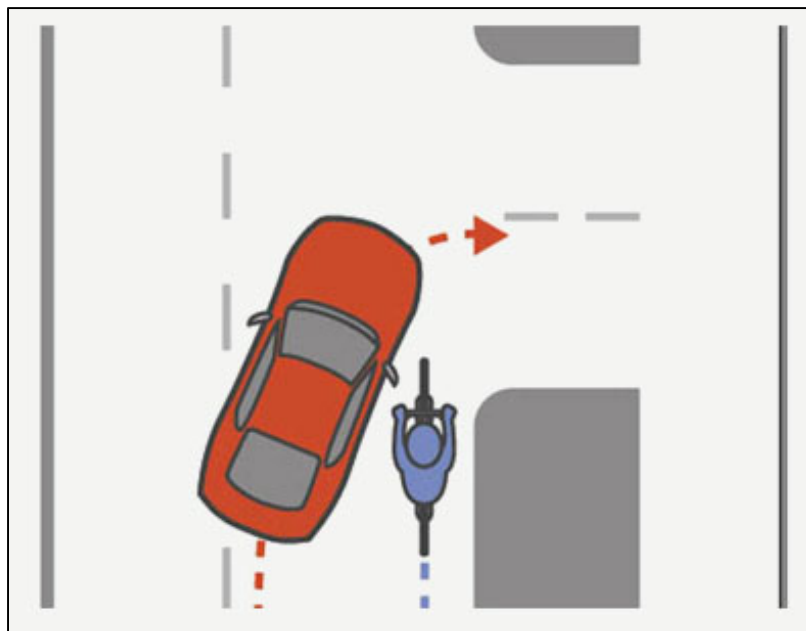
**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 1 shows, 130 (71.0%) of the 183 bicycle crashes in Brown County during the five-year study period involved bicyclists traveling straight and cars (and other motorized vehicles) turning right and traveling straight. Some of the characteristics of these crashes are summarized below.

### *Bicyclist Traveling Straight - Motorist Turning Right Crashes*

Crashes that occur between a bicyclist traveling straight and a motorist making a right turn are commonly called “right hook” crashes. These types of crashes often occur at street intersections when motorists overtake bicyclists just prior to making their right turns, but they also happen when bicyclists overtake motorists on the street or enter crosswalks from sidewalks at high speeds. An illustration of this type of crash is shown in Figure 2 below.

**Figure 2: Illustration of a “Right-Hook” Crash between a Bicyclist and Motorist**



The records for this type of crash in Brown County between 2010 and 2014 indicate that the county's 70 “right hook” crashes:

- Resulted in 6 (33.3%) of the county's 18 serious bicyclist injuries, 36 (40.4%) of the county's 89 minor bicyclist injuries, and 28 (37.8%) of the county's 74 “possible” bicyclist injuries.
- Occurred at street intersections 90.0% of the time (63 of 70 crashes).
- Resulted in motorists being cited for violations following 44 (62.9%) of the 70 crashes. The most common motorist violations were failure to yield and inattentive driving.
- Resulted in bicyclists being cited for violations following 31 (44.3%) of the 70 crashes. The most common bicyclist violation was entering the intersection from the sidewalk too quickly or in another manner that didn't enable motorists to avoid the crashes.

### *Bicyclist Traveling Straight - Motorist Traveling Straight Crashes (Right Angle Crashes)*

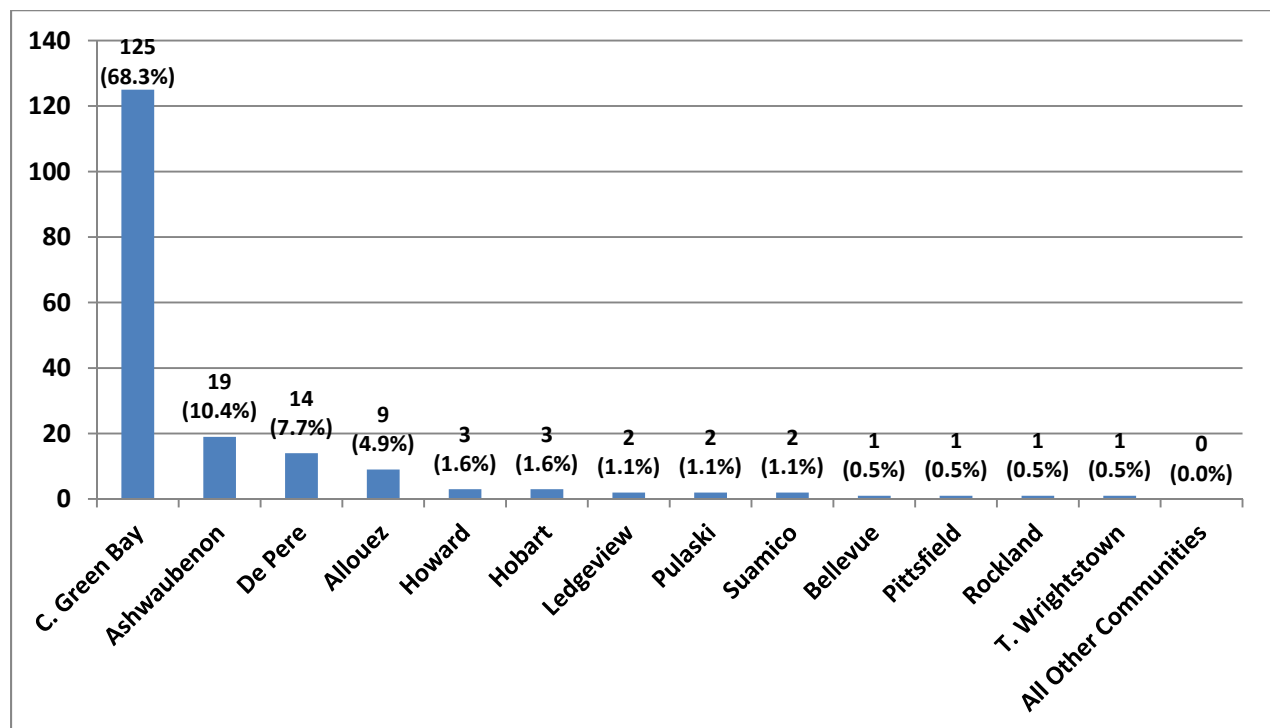
Right angle crashes that occur between a bicyclist traveling straight and a motorist traveling straight occur at street intersections, residential and commercial driveways, and a variety of other locations. The records for this type of crash in Brown County between 2010 and 2014 indicate that the county's 60 "straight-straight" crashes:

- Resulted in 7 (38.9%) of the county's 18 serious bicyclist injuries, 30 (33.7%) of the county's 89 minor bicyclist injuries, and 23 (31.1%) of the county's 74 "possible" bicyclist injuries.
- Occurred at street intersections 66.7% of the time (40 of 60 crashes).
- Resulted in motorists being cited for violations following 26 (43.3%) of the 60 crashes. The most common motorist violations were failure to yield and inattentive driving.
- Resulted in bicyclists being cited for violations following 32 (53.3%) of the 60 crashes. The most common bicyclist violations were failure to yield and inattentive driving.

### Bicycle Crashes by Brown County Community

The number and proportion of reported bicycle crashes by community are summarized in the following figure.

**Figure 3: Bicycle Crashes by Brown County Community: 2010-2014**



**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 3 shows, 125 (68.3%) of the 183 reported bicycle crashes in Brown County between 2010 and 2014 happened in the City of Green Bay. The number of bicycle crashes in Green

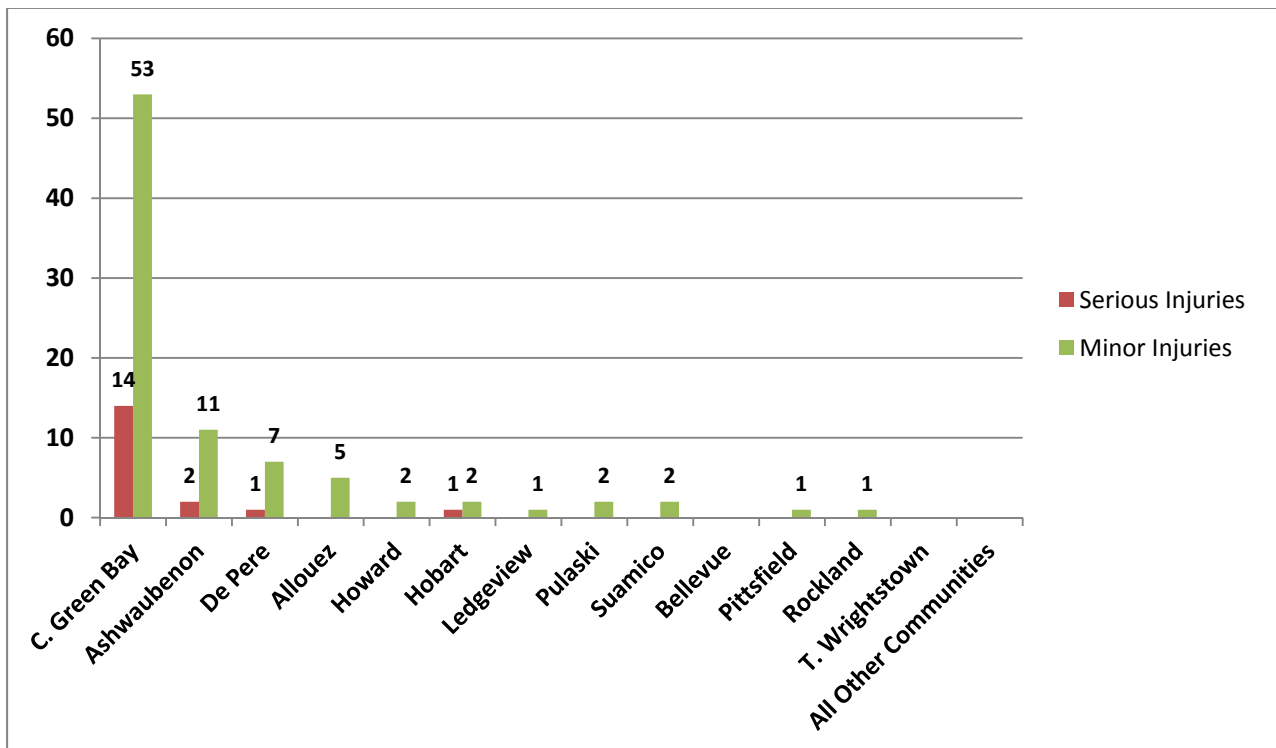
Bay during this five-year period was more than six times greater than the community with the next highest crash total.

Bicyclist Fatalities and Injuries in Brown County

Between 2010 and 2014, there was one bicyclist fatality in Brown County. This fatality occurred at a rural intersection when a motorist made a left turn and struck a bicyclist who was stopped at a stop sign.

In addition to this fatality, 18 bicyclists suffered serious injuries and 89 bicyclists suffered minor injuries during the five-year study period. There were also 74 bicyclists who suffered what were classified as “possible” injuries. The serious and minor bicyclist injuries are summarized for each Brown County community in Figure 4 below.

**Figure 4: Serious and Minor Bicyclist Injuries by Brown County Community: 2010-2014**



**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

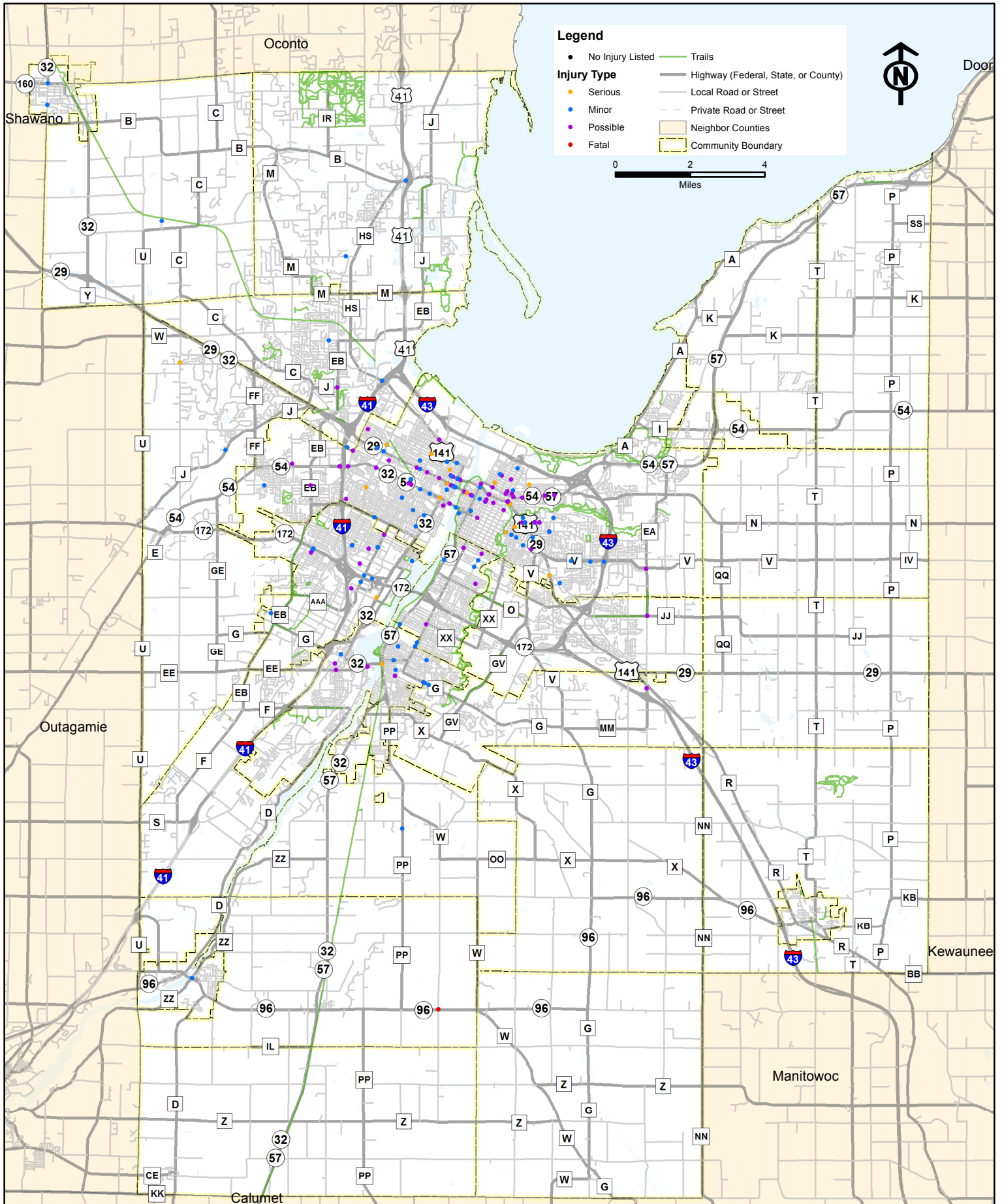
As Figure 4 shows, the bicycle crashes that occurred in the City of Green Bay resulted in 14 (77.8%) of the county’s 18 serious injuries and 53 (59.6%) of the county’s 89 minor injuries between 2010 and 2014.

The map on the following page shows where the fatal crash and the injury crashes occurred in Brown County between 2010 and 2014.

# Reported Bicycle Crashes by Injury Severity: 2010-2014

Brown County, WI

Date: 10/13/2016





### Bicycle Helmet Use in Brown County

The crash records indicate that 156 (85.2%) of the 183 bicyclists who were in reported crashes between 2010 and 2014 in Brown County were not wearing helmets. This suggests that most people choose not to wear a relatively inexpensive piece of equipment that has proven to reduce the likelihood of serious bicycling injuries.

The injury totals for bicyclists who were and were not wearing helmets are summarized in the following figure.

**Figure 5: Bicyclist Injuries in Brown County With and Without Helmets: 2010-2014**

	<b>Severe <u>Injuries</u></b>	<b>Minor <u>Injuries</u></b>	<b>"Possible" <u>Injuries</u></b>
Bicyclists Wearing Helmets	2	9	16
Bicyclists Not Wearing Helmets	16	80	58

**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

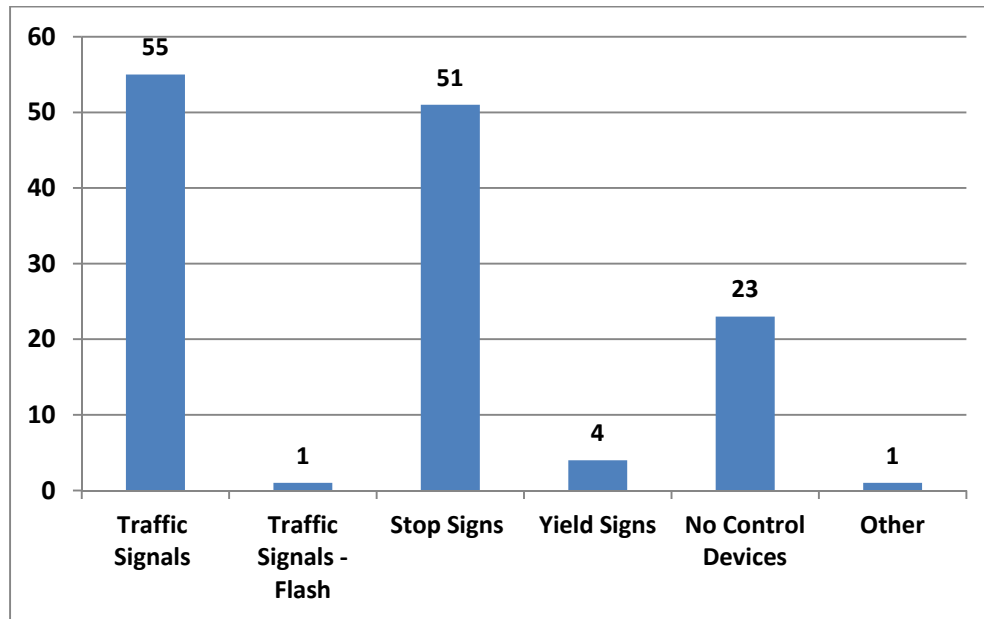
The county's single bicycling fatality during the five-year study period involved a bicyclist who was not wearing a helmet, but the information in the crash records database is not detailed enough to determine if a helmet would have prevented this bicyclist's death. The crash records database also does not provide enough information to determine if helmets could have reduced the severity of the serious and other injuries experienced by bicyclists during the study period.

Although the crash records database lacks the information necessary to determine the effectiveness of helmets, the difference in the severity of injuries sustained by bicyclists who were and were not wearing helmets suggests that helmet use could have reduced the severity of at least some of the injuries. However, the full report for each crash would have to be analyzed to determine if injury severity could have been reduced by helmet use.

### Bicycle Crash Locations (Intersection vs. Non-Intersection)

The crash records indicate that 135 (73.8%) of the 183 bicycle crashes in Brown County between 2010 and 2014 happened at intersections, and most of these intersections were equipped with traffic control devices. The devices that were controlling the intersections where crashes occurred are summarized in Figure 6 on the following page.

**Figure 6: Bicycle Crashes at Brown County Intersections by Traffic Control Device: 2010-2014**



**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 6 shows, 55 (40.7%) of the 135 intersection crashes in Brown County between 2010 and 2014 happened at signalized intersections when the signals were fully operational. There was also one crash that occurred when traffic signals were in flash mode. The signalized intersection crashes resulted in 8 serious bicyclist injuries, 25 minor bicyclist injuries, and 23 “possible” bicyclist injuries.

Figure 6 also shows that 51 (37.8%) of the 135 intersection crashes happened when stop signs were present at one or more of the intersection approaches. These crashes resulted in 3 serious bicyclist injuries, 22 minor bicyclist injuries, and 26 “possible” bicyclist injuries.

According to the crash records, there were 4 bicycle crashes at Brown County’s roundabouts between 2010 and 2014. These crashes resulted in 1 serious bicyclist injury, 1 minor bicyclist injury, and 2 “possible” bicyclist injuries.

### Bicycle Crash Citations

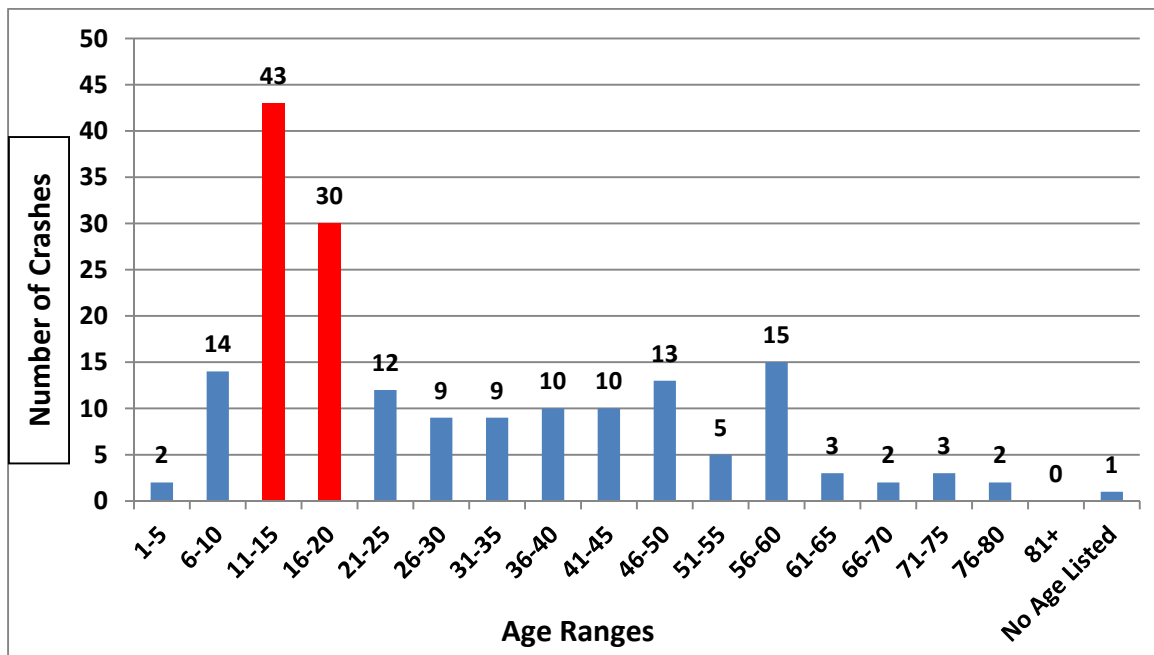
According to the TOPS Laboratory Crash Records Database, 102 (55.7%) of the 183 drivers involved in bicycle crashes between 2010 and 2014 were cited by the responding law enforcement officers. The crash records database also indicates that 93 (50.8%) of the 183 bicyclists were cited following the crashes. The total citation percentage exceeds 100.0% because drivers and bicyclists were cited following 12 of the 183 crashes.

### Bicycle Crashes by Age

The number of bicycle crashes in Brown County between 2010 and 2014 for each five-year age range is shown in Figure 7 on the following page.



**Figure 7: Bicycle Crashes in Brown County by Five-Year Age Ranges: 2010-2014**



**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 7 shows, 73 (39.9%) of the 183 bicycle crashes in Brown County during the five-year study period involved bicyclists who were between the ages of 11 and 20. However, the proportion of crashes was even higher for bicyclists between the ages of 10 and 19.

According to the crash records, bicyclists between the ages of 10 and 19:

- Were involved in 80 (43.7%) of the county’s 183 bicycle crashes between 2010 and 2014, and 57 (71.3%) of these 80 crashes occurred in the City of Green Bay.
- Suffered 8 (44.4%) of the county’s 18 serious injuries, 40 (44.9%) of the county’s 89 minor injuries, and 30 (40.5%) of the county’s 74 “possible” injuries between 2010 and 2014.
- Were cited for violations following 46 (57.5%) of the 80 crashes.
- Were not wearing bicycle helmets during 77 (96.3%) of the 80 crashes.

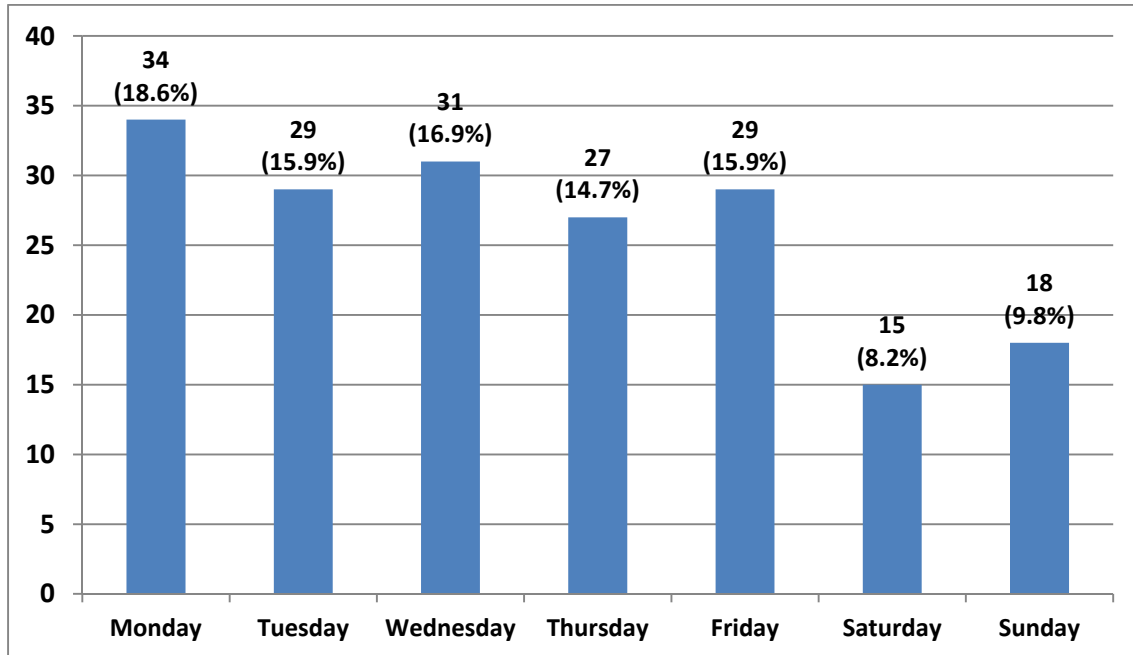
Bicyclists between the ages of 10 and 19 were also involved in:

- 32 (45.7%) of the county’s 70 “right hook” crashes.
- 28 (46.7%) of the county’s 60 crashes where a motorist traveling straight collided with a bicyclist traveling straight.

### Bicycle Crashes by Day of Week

Between 2010 and 2014, 150 (82.0%) of the 183 bicycle crashes in Brown County happened on weekdays. The number of bicycle crashes by day of week is summarized in Figure 8 on the following page.

**Figure 8: Bicycle Crashes in Brown County by Day of Week: 2010-2014**

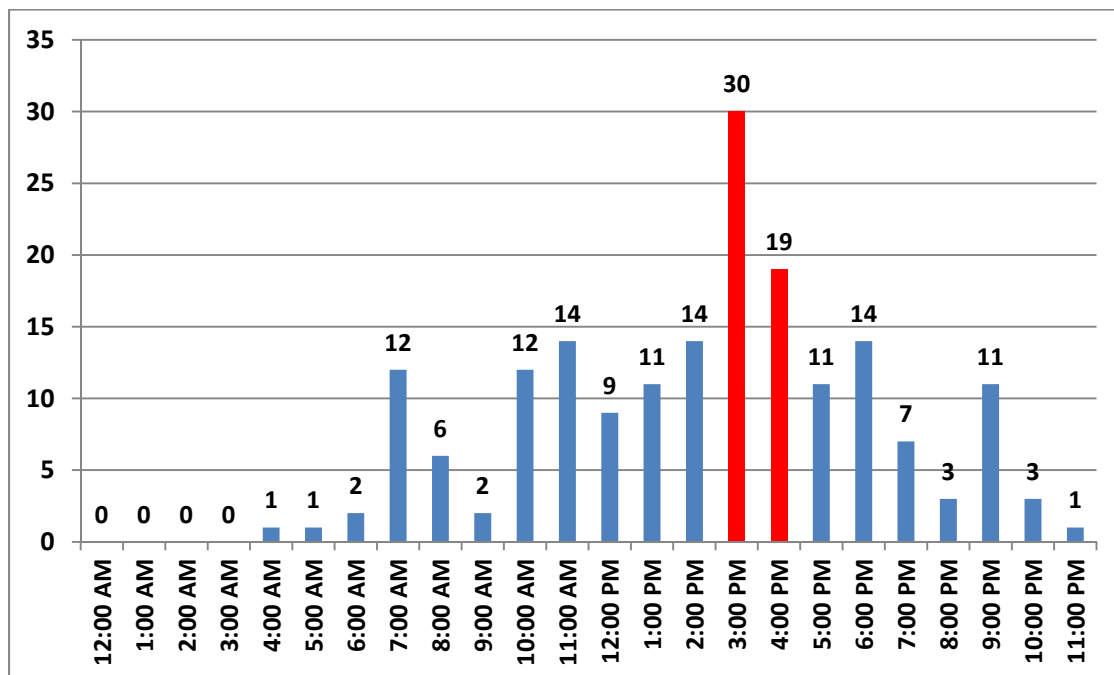


Source: Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

Bicycle Crashes by Time of Day

The number of reported bicycle crashes in Brown County between 2010 and 2014 by time of day is summarized in the following figure.

**Figure 9: Bicycle Crashes in Brown County by Crash Notification Hour: 2010-2014**



Source: Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 9 shows, more than a quarter (26.8%) of the 183 bicycle crashes in Brown County during the five-year study period happened between approximately 3:00 p.m. and 4:00 p.m. The crash data also indicate that:

- 43 (87.8%) of the 49 bicycle crashes that happened between approximately 3:00 p.m. and 4:00 p.m. occurred on weekdays.
- 18 (41.9%) of the 43 bicycle crashes that happened between approximately 3:00 p.m. and 4:00 p.m. on weekdays involved minors who were bicycling on days when the county's schools were in session.



## **Bicycle Crash Analysis Summary**

- There were 183 reported bicycle crashes in Brown County between 2010 and 2014.
- The most common reported bicycle crash in Brown County between 2010 and 2014 was a “right hook” crash (where right-turning motorists collided with bicyclists traveling straight in the same direction on the street or on an adjacent sidewalk).

The records indicate that the county’s 70 “right hook” crashes:

- Resulted in 6 (33.3%) of the county’s 18 serious bicyclist injuries, 36 (40.4%) of the county’s 89 minor bicyclist injuries, and 28 (37.8%) of the county’s 74 “possible” bicyclist injuries.
  - Occurred at street intersections 90.0% of the time (63 of 70 crashes).
  - Resulted in motorists being cited for violations following 44 (62.9%) of the 70 crashes. The most common motorist violations were failure to yield and inattentive driving.
  - Resulted in bicyclists being cited for violations following 31 (44.3%) of the 70 crashes. The most common bicyclist violation was entering the intersection from the sidewalk too quickly or in another manner that didn’t enable motorists to avoid the crashes.
- The second most common reported bicycle crash in Brown County between 2010 and 2014 involved motorists traveling straight colliding at right angles with bicyclists traveling straight. The records indicate that the county’s 60 right angle crashes:
    - Resulted in 7 (38.9%) of the county’s 18 serious bicyclist injuries, 30 (33.7%) of the county’s 89 minor bicyclist injuries, and 23 (31.1%) of the county’s 74 “possible” bicyclist injuries.
    - Occurred at street intersections 66.7% of the time (40 of 60 crashes).
    - Resulted in motorists being cited for violations following 26 (43.3%) of the 60 crashes. The most common motorist violations were failure to yield and inattentive driving.
    - Resulted in bicyclists being cited for violations following 32 (53.3%) of the 60 crashes. The most common bicyclist violations were failure to yield and inattentive driving.
  - 125 (68.3%) of the county’s 183 reported bicycle crashes happened in the City of Green Bay.
  - There was one bicyclist fatality in Brown County between 2010 and 2014. This fatality happened in a rural portion of the county.
  - There were 18 serious bicyclist injuries, 89 minor bicyclist injuries, and 74 “possible” bicyclist injuries in Brown County between 2010 and 2014.
  - 14 (77.8%) of the county’s 18 serious bicycling injuries and 53 (59.6%) of the county’s 89 minor bicycling injuries happened in the City of Green Bay.

- 156 (85.2%) of the 183 bicyclists involved in crashes were not wearing helmets when the crashes occurred. The bicyclists who were not wearing helmets suffered 16 (88.9%) of the county's 18 serious bicycling injuries and 80 (89.9%) of the county's 89 minor bicycling injuries.
- 135 (73.8%) of the county's 183 reported bicycle crashes occurred at intersections.
- 107 (79.3%) of the 135 intersection crashes happened when traffic signals or stop signs were present. There were 4 bicyclist crashes at Brown County's roundabouts during the five-year study period.
- 102 (55.7%) of the 183 drivers and 93 (50.8%) of the 183 bicyclists were cited for violations following the crashes.
- Bicyclists between the ages of 10 and 19:
  - Were involved in 80 (43.7%) of the county's 183 bicycle crashes, and 57 (71.3%) of these 80 crashes occurred in the City of Green Bay.
  - Suffered 8 (44.4%) of the county's 18 serious injuries, 40 (44.9%) of the county's 89 minor injuries, and 30 (40.5%) of the county's 74 "possible" injuries.
  - Were cited for violations following 46 (57.5%) of the 80 crashes.
  - Were not wearing bicycle helmets during 77 (96.3%) of the 80 crashes.

Bicyclists between the ages of 10 and 19 were also involved in:

- 32 (45.7%) of the county's 70 "right hook" crashes.
- 28 (46.7%) of the county's 60 crashes where a motorist traveling straight collided at a right angle with a bicyclist traveling straight.
- 150 (82.0%) of the 183 reported bicycle crashes happened on weekdays.
- 43 (23.5%) of the 183 crashes happened between approximately 3:00 p.m. and 4:00 p.m. on weekdays.
- 18 (41.9%) of the 43 crashes that happened between approximately 3:00 p.m. and 4:00 p.m. on weekdays involved minors who were bicycling on days when the county's schools were in session.

## Bicycle Crash Analysis Conclusions

Based on the results of the bicycle crash analysis, it appears that focusing on education and enforcement efforts for bicyclists between the ages of 10 and 19 could significantly reduce bicycle crashes in Brown County. For example, these bicyclists could be taught how to avoid situations where “right hook” crashes may occur. This includes:

- Being aware of and anticipating drivers making right turns in front of you.
- Not overtaking decelerating vehicles on the right.
- Understanding the danger associated with rapidly riding bicycles through intersections on sidewalks.

A possible educational campaign in schools and elsewhere could be “**Avoid the Right Hook!**”

These education and enforcement efforts should also focus on:

- The importance of bicyclists following the rules of the road (e.g. obeying traffic signs and signals to avoid crashes).
- Understanding the safety benefits of wearing a bicycle helmet.

In addition, **drivers need to be frequently reminded that they need to be alert because children and young adults are still developing their perceptual, attention, and decision-making abilities and may not be able to anticipate dangerous situations in order to avoid crashes.**

Education efforts for bicyclists between 10 and 19 could occur in gym classes, driver education courses, during special events, and through targeted enforcement efforts. Education for bicyclists and drivers above the age of 19 could be done using PSAs, billboards, and targeted enforcement efforts. **One of the primary purposes of these education and enforcement efforts should be to inform bicyclists and drivers that bicycles are considered by state law to be vehicles and that bicyclists are legally granted the same rights and responsibilities as operators of motor vehicles.**

The Green Bay Area Public School District received a federal transportation grant to complete four Safe Routes to School plans in the City of Green Bay in 2017. These planning efforts will be an opportunity to develop and implement effective bicycling safety education programs in the district’s schools.

The Brown County Bicycle and Pedestrian Plan, MPO Long-Range Transportation Plan, and many community plans include education, enforcement, and engineering recommendations that address the factors that resulted in crashes between 2010 and 2014.

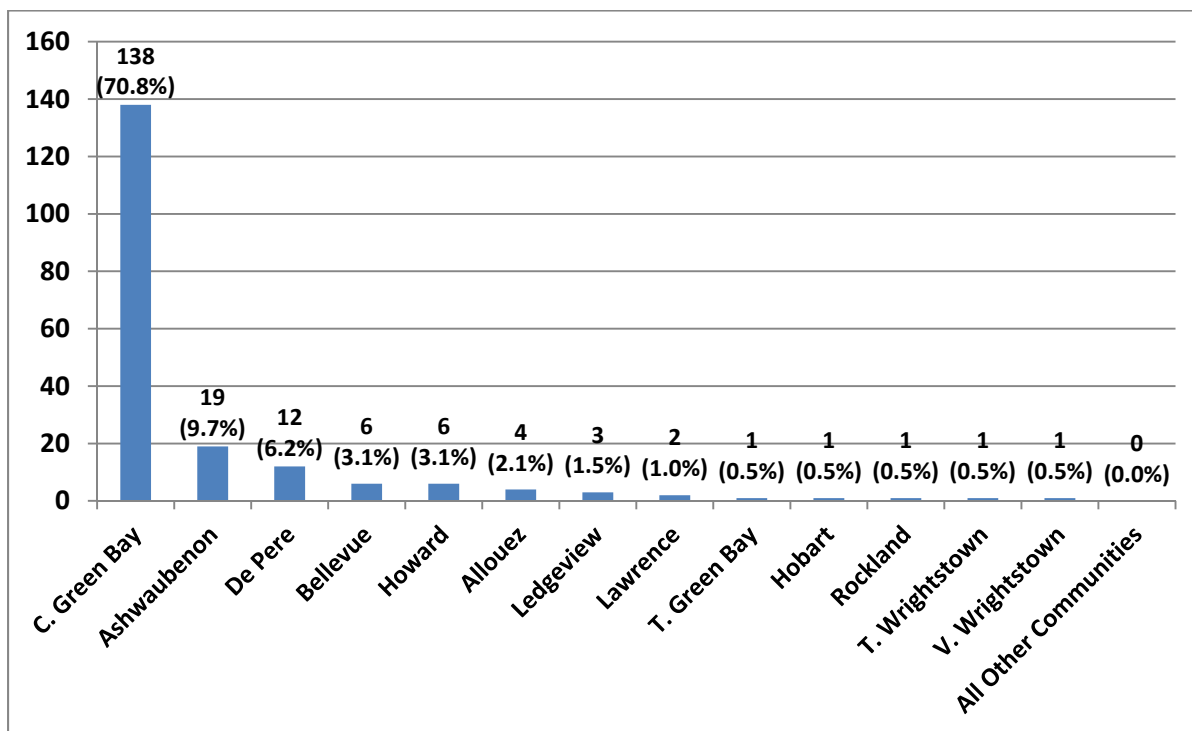




## Reported Pedestrian Crashes in Brown County between 2010 and 2014

During the five-year period between 2010 and 2014, there were 195 reported pedestrian crashes in Brown County. The number and proportion of reported pedestrian crashes by community are summarized in the following figure.

**Figure 10: Pedestrian Crashes by Brown County Community: 2010-2014**



**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 10 shows, nearly 71% of the 195 reported pedestrian crashes in Brown County between 2010 and 2014 happened in the City of Green Bay. The number of pedestrian crashes in Green Bay during this five-year period was more than seven times greater than the community with the next highest crash total.

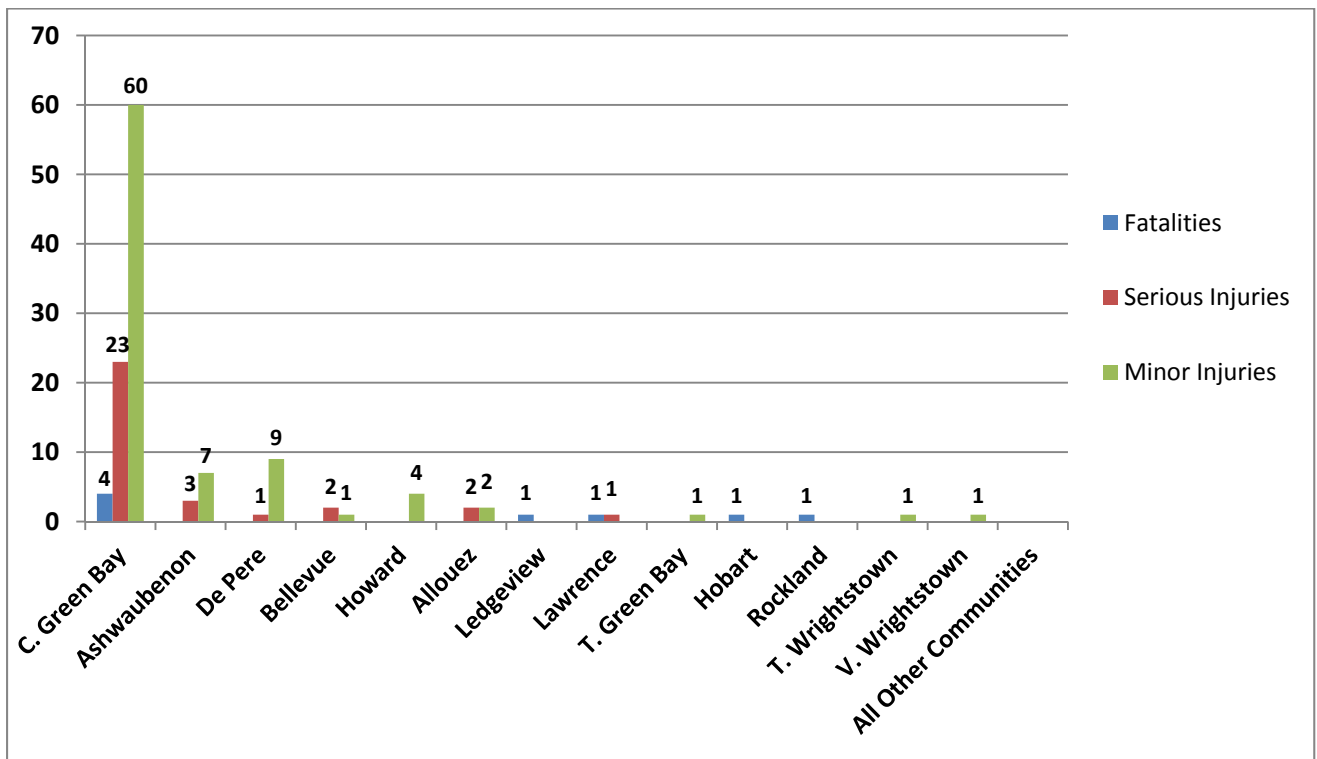
### Pedestrian Fatalities and Injuries in Brown County

Between 2010 and 2014, there were a total of 8 pedestrian fatalities in Brown County. According to the crash data:

- 7 of the 8 fatalities occurred at non-intersection locations.
- 6 of the 8 fatalities occurred on multi-lane highways or streets, and 1 of the 8 fatalities occurred on a high-speed two-lane highway.
- 6 of the 8 fatalities occurred when it was dark.
- 6 of the 8 drivers were found to have alcohol or another inebriant in their systems at the time of the crashes.

In addition to the 8 fatalities, 32 pedestrians suffered serious injuries and 86 pedestrians suffered minor injuries during the five-year study period. There were also 68 pedestrians who suffered what were classified as “possible” injuries. The pedestrian fatalities, serious injuries, and minor injuries are summarized for each Brown County community in Figure 11 on the following page.

**Figure 11: Pedestrian Fatalities and Injury Severity by Brown County Community: 2010-2014**



**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

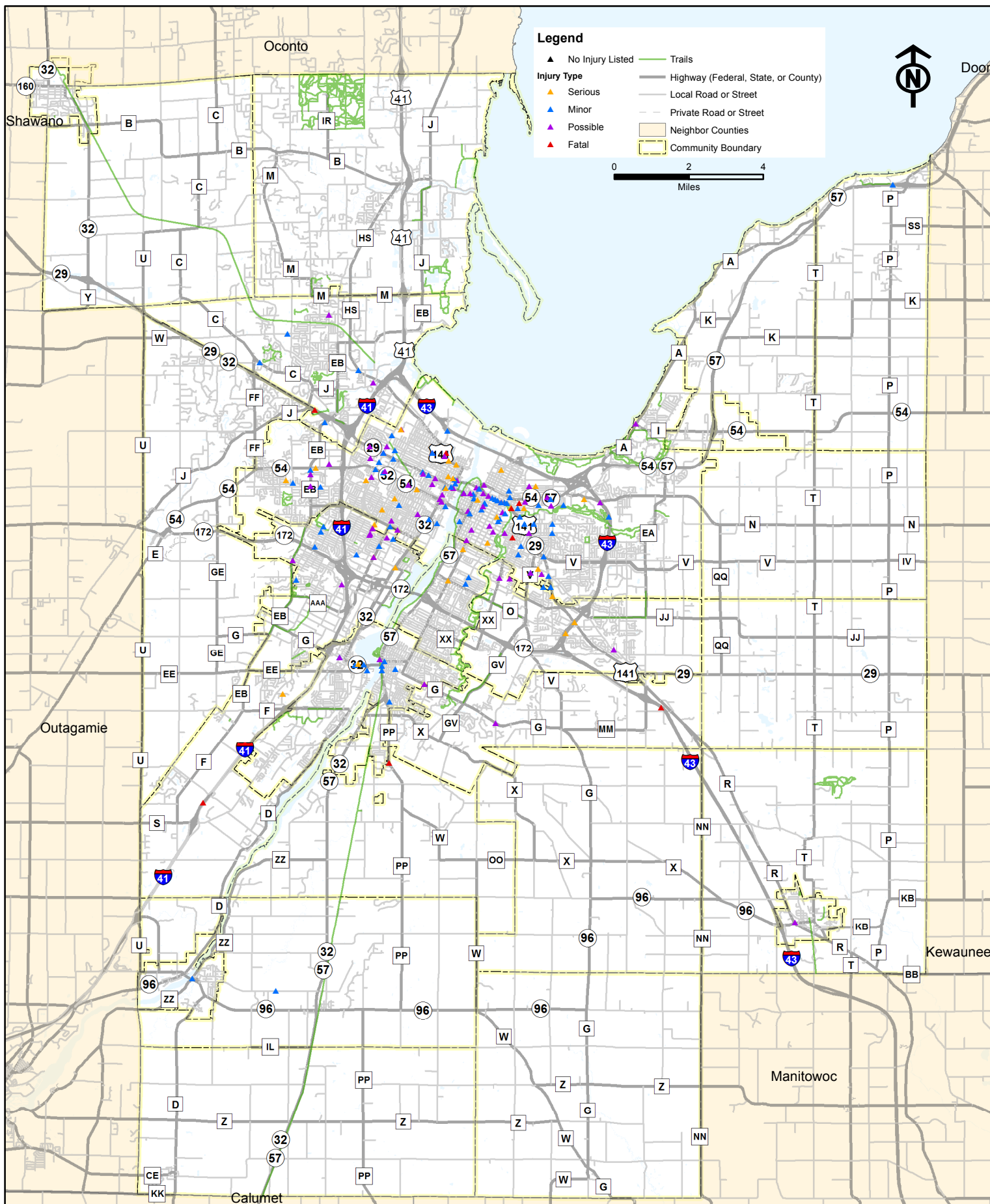
As Figure 11 shows, the pedestrian crashes that occurred in the City of Green Bay resulted in 4 (50.0%) of the county's 8 fatalities, 23 (71.9%) of the county's 32 serious injuries, and 60 (69.8%) of the county's 86 minor injuries. The 4 pedestrian fatalities in the City of Green Bay happened at or near street intersections within the city, while the fatalities that occurred in Ledgeview, Lawrence, and Hobart happened on freeways that run through the communities. The Rockland fatality occurred on County Highway PP.

The map on the following page shows where the fatal and injury crashes occurred in Brown County between 2010 and 2014.

# Reported Pedestrian Crashes by Injury Severity: 2010-2014

Brown County, WI

Date: 10/13/2016

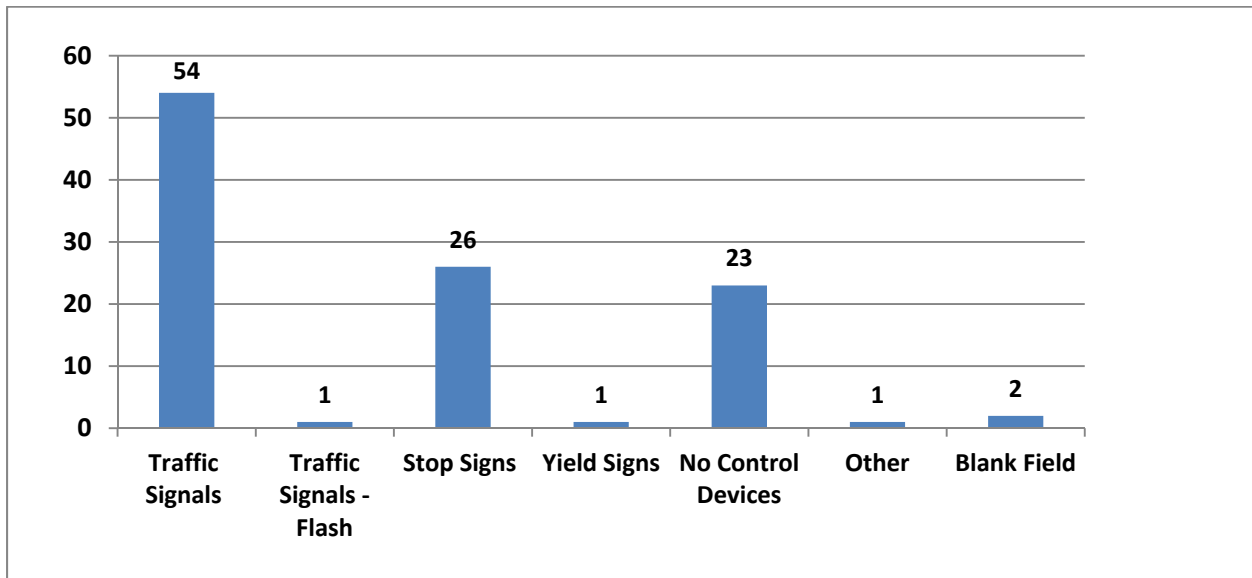




### Pedestrian Crash Locations (Intersection vs. Non-Intersection)

A slim majority (55.4%) of the pedestrian crashes in Brown County between 2010 and 2014 happened at intersections, and most of these intersections were equipped with traffic control devices. The devices that were controlling the movements of the cars and other vehicles that struck pedestrians at intersections are summarized in the following figure.

**Figure 12: Pedestrian Crashes at Intersections by Vehicle Traffic Control Device: 2010-2014**



**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 12 shows, 54 (50.0%) of the 108 intersection crashes in Brown County between 2010 and 2014 happened at signalized intersections when the signals were fully operational. Although there were no fatalities related to these crashes, these crashes did result in 5 serious pedestrian injuries, 24 minor pedestrian injuries, and 25 “possible” pedestrian injuries. There were also 26 pedestrian crashes at intersections controlled by stop signs, and there was 1 pedestrian crash at a roundabout.

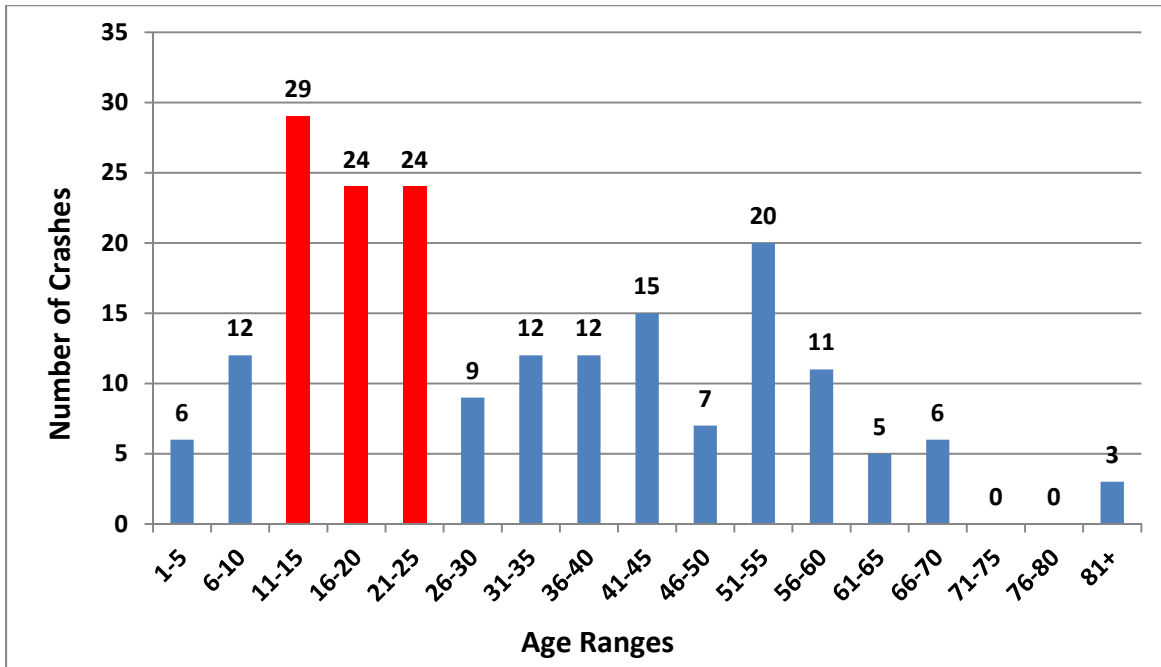
### Pedestrian Crash Citations

According to the TOPS Laboratory Crash Records Database, 151 (77.4%) of the 195 drivers involved in intersection and non-intersection pedestrian crashes between 2010 and 2014 were cited by the responding law enforcement officers. The crash records database also indicates that 59 (30.3%) of the 195 pedestrians were cited following the crashes. The total citation percentage exceeds 100.0% because drivers and pedestrians were cited following 15 of the 195 crashes.

### Pedestrian Crashes by Age

The number of pedestrian crashes in Brown County between 2010 and 2014 for each five-year age range is shown in the following figure.

**Figure 13: Pedestrian Crashes in Brown County by Five-Year Age Ranges: 2010-2014**



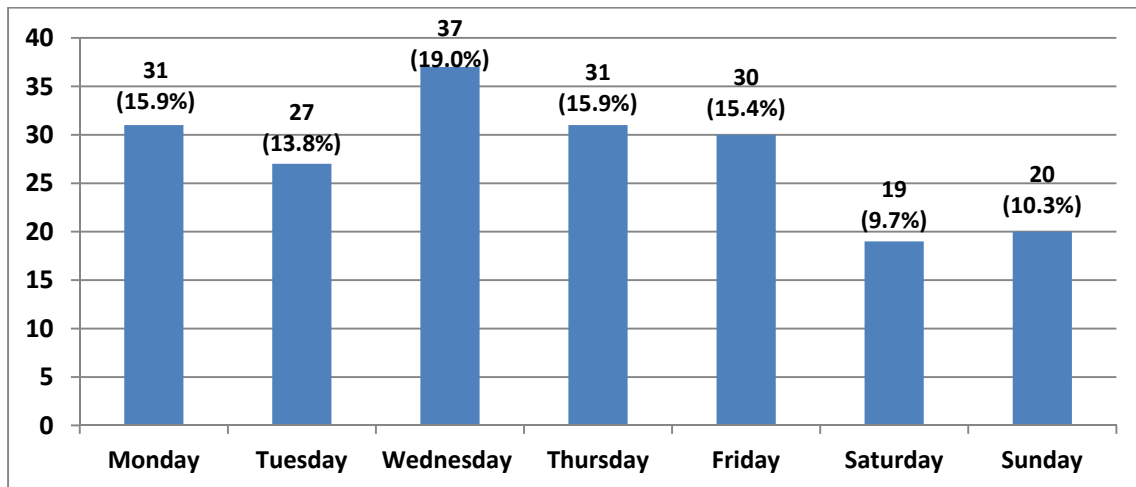
**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 13 shows, 77 (39.5%) of the 195 pedestrian crashes in Brown County during the five-year study period involved pedestrians who were between the ages of 11 and 25. The crash data also indicate that 27 (35.1%) of these 77 pedestrians between the ages of 11 and 25 were cited by the responding law enforcement officers.

### Pedestrian Crashes by Day of Week

Between 2010 and 2014, 156 (80.0%) of the 195 pedestrian crashes in Brown County happened on weekdays. The number of pedestrian crashes by day of the week is summarized in Figure 14 on the following page.

**Figure 14: Pedestrian Crashes in Brown County by Day of Week: 2010-2014**



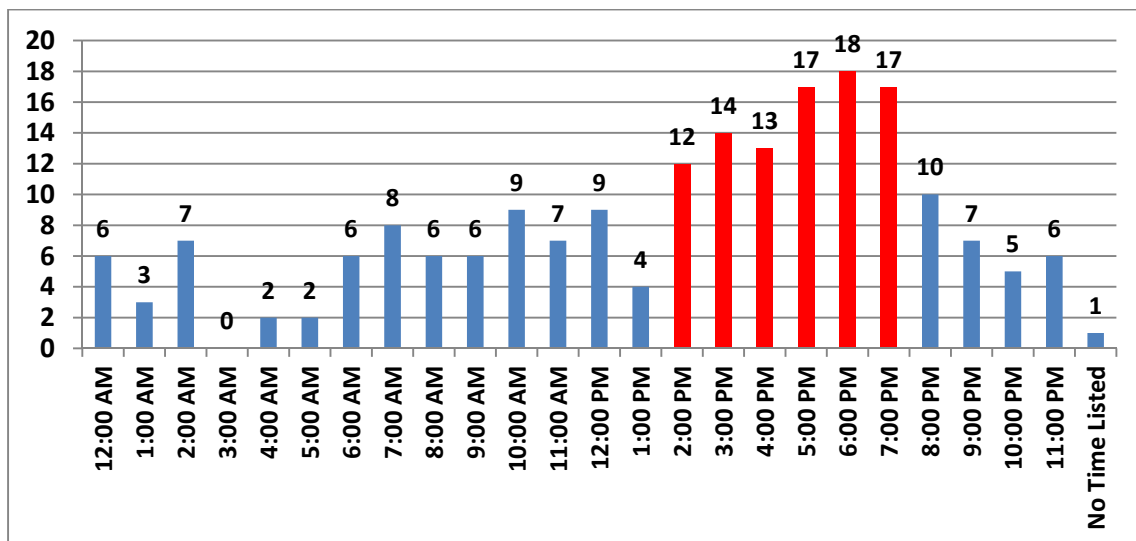
**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

According to the crash data, 69.9% of weekday pedestrian crashes in Brown County between 2010 and 2014 happened in the City of Green Bay, which is consistent with the city's percentage of total pedestrian crashes during this five-year period.

Pedestrian Crashes by Time of Day

The number of reported pedestrian crashes by time of day is summarized in the following figure.

**Figure 15: Pedestrian Crashes in Brown County by Crash Notification Hour: 2010-2014**

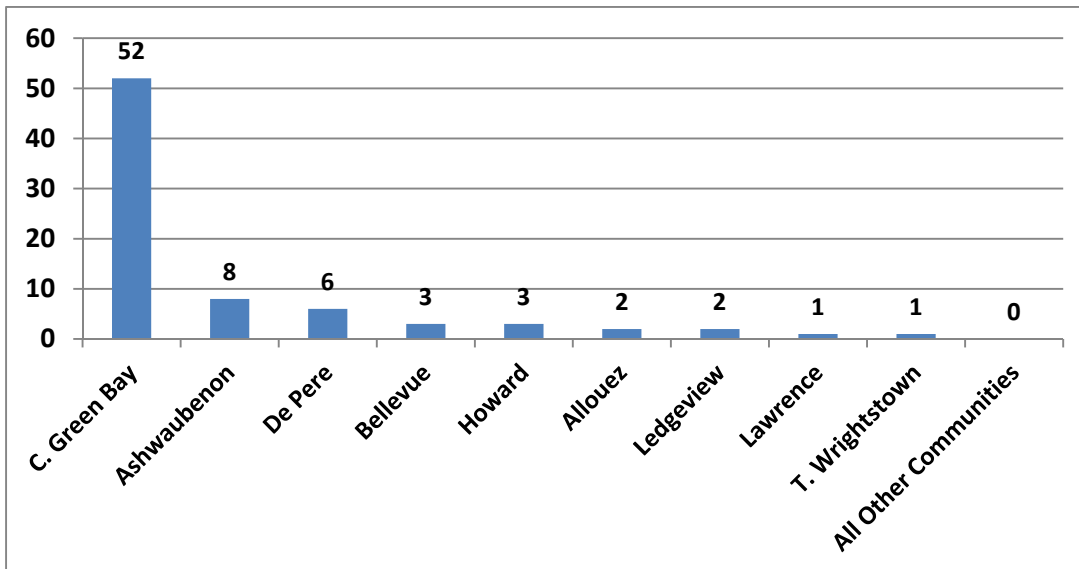


**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 15 shows, 91 (46.7%) of the 195 pedestrian crashes in Brown County during the five-year study period happened between 2:00 p.m. and 7:00 p.m. The crash data also indicate that 78 (85.7%) of the 91 pedestrian crashes that happened between 2:00 p.m. and 7:00 p.m. occurred on weekdays, and the majority of these weekday afternoon/evening crashes happened in the City of Green Bay. The number of pedestrian crashes that happened between 2:00 p.m.

and 7:00 p.m. on weekdays in each Brown County community is summarized in the following figure.

**Figure 16: Pedestrian Crashes between 2:00 p.m. and 7:00 p.m. on Weekdays: 2010-2014**



**Source:** Wisconsin Traffic Operations and Safety (TOPS) Laboratory Crash Records Database.

As Figure 16 shows, 52 (66.7%) of the 78 pedestrian crashes that happened between 2:00 p.m. and 7:00 p.m. on weekdays in Brown County happened in the City of Green Bay, which is consistent with the city's proportion of total pedestrian crashes during this five-year period.



## **Pedestrian Crash Analysis Summary**

- There were 195 reported pedestrian crashes in Brown County between 2010 and 2014.
- 138 (70.8%) of the county's 195 reported pedestrian crashes happened in the City of Green Bay.
- There were 8 pedestrian fatalities in Brown County between 2010 and 2014. According to the crash data:
  - 7 of the 8 fatalities occurred at non-intersection locations.
  - 6 of the 8 fatalities occurred on multi-lane highways or streets, and 1 of the 8 fatalities occurred on a high-speed two-lane highway.
  - 6 of the 8 fatalities occurred when it was dark.
  - 6 of the 8 drivers involved in the fatal pedestrian crashes were found to have alcohol or another inebriant in their systems at the time of the crashes.
- 4 (50.0%) of the county's 8 pedestrian fatalities happened in the City of Green Bay.
- There were 32 serious pedestrian injuries, 86 minor pedestrian injuries, and 68 "possible" pedestrian injuries in Brown County between 2010 and 2014.
- 23 (71.9%) of the county's 32 serious pedestrian injuries and 60 (69.8%) of the county's 86 minor pedestrian injuries happened in the City of Green Bay.
- 108 (55.4%) of the county's 195 reported pedestrian crashes happened at intersections.
- 81 (75.0%) of the county's 108 intersection crashes happened where traffic signals or stop signs were present. There was 1 pedestrian crash at Brown County's roundabouts during the five-year study period.
- 151 (77.4%) of the 195 drivers and 59 (30.3%) of the pedestrians involved in intersection and non-intersection crashes between 2010 and 2014 were cited following the crashes.
- 77 (39.5%) of the 195 pedestrian crashes in Brown County during the five-year study period involved pedestrians who were between the ages of 11 and 25.
- 156 (80.0%) of the 195 pedestrian crashes in Brown County during the five-year study period happened on weekdays, and 109 (69.9%) of these 156 weekday pedestrian crashes happened in the City of Green Bay.
- 91 (46.7%) of the 195 pedestrian crashes in Brown County during the five-year study period happened between 2:00 p.m. and 7:00 p.m.,
- 78 (85.7%) of the 91 pedestrian crashes that happened between 2:00 p.m. and 7:00 p.m. occurred on weekdays.
- 66.7% of the pedestrian crashes that happened between 2:00 p.m. and 7:00 p.m. on weekdays in Brown County happened in the City of Green Bay.



## Pedestrian Crash Analysis Conclusions

The pedestrian crash statistics for Brown County between 2010 and 2014 were similar to the bicycle crash statistics for this period in many ways. For example:

- The City of Green Bay experienced a relatively high number of pedestrian and bicycle crashes, serious injuries, and minor injuries during the five-year study period.
- Many of the county's pedestrian and bicycle crashes involved children and young adults.
- The peak period for pedestrian and bicycle crashes in the county was weekday afternoons.
- The total number of pedestrian and bicycle crashes at intersections controlled by traffic signals and stop signs was much higher than the total number of pedestrian and bicycle crashes at roundabouts.

But despite these similarities, there were also some differences. For example:

- The proportion of non-intersection crashes was higher for pedestrians than for bicyclists.
- The proportion of pedestrians cited for violations was lower than for bicyclists.
- Injury severity at non-intersection locations was greater for pedestrians than for bicyclists, and it appears that the most severe pedestrian crashes happened at non-intersection locations where vehicles were traveling at high speeds and pedestrians were unexpectedly present.

Based on the results of the pedestrian crash analysis, it appears that many of the same crash reduction efforts that are recommended in the bicycle crash analysis section could be used to reduce pedestrian crashes. These efforts include education programs in gym classes, driver education courses, PSAs, and targeted enforcement programs. The Green Bay Area Public School District's Safe Routes to School planning efforts will also be an opportunity to develop and implement effective pedestrian safety education programs in the district's schools.

**In addition, drivers need to be frequently reminded that they need to be alert because children and young adults are still developing their perceptual, attention, and decision-making abilities and may not be able to anticipate dangerous situations in order to avoid crashes.**

The Brown County Bicycle and Pedestrian Plan, MPO Long-Range Transportation Plan, and many community plans also include education, engineering, and enforcement recommendations that address the factors that resulted in crashes between 2010 and 2014.



## **Next Steps**

Now that the bicycle and pedestrian crash analysis is finished, BCPC/MPO staff intends to:

- Incorporate the analysis into the 2016 Brown County Bicycle and Pedestrian Plan Update.
- Provide the analysis to school districts and communities in Brown County to use when developing Safe Routes to School plans, bicycle and pedestrian plans, and other plans or programs that address bicycle and pedestrian safety.
- Identify high-priority locations that should be studied in greater detail using the forms that were completed by the law enforcement officers who responded to the bicycle and pedestrian crashes.
- Develop detailed analyses of the high-priority locations and work with stakeholders to develop effective methods of improving bicycle and pedestrian safety at these locations.