



# DELAWARE

## 2021-2025 Strategic Highway Safety Plan: Towards Zero Deaths



Vulnerable User Fatality & Serious Injury Data Analysis

October 26, 2022



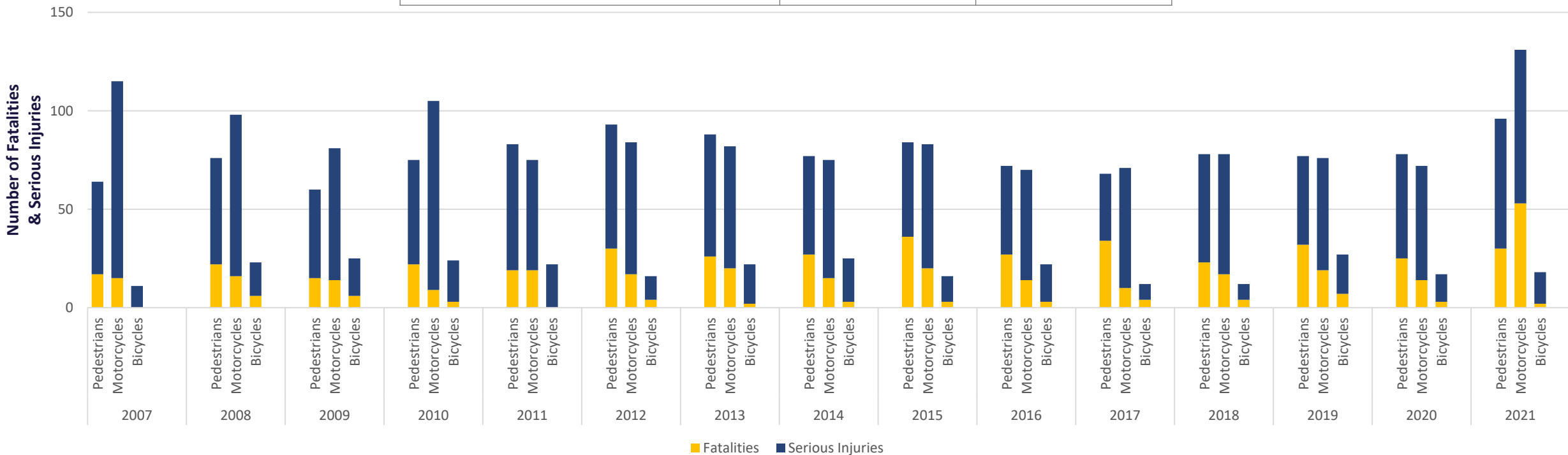
# Vulnerable User Definition

- Definition for purposes of this presentation:
  - Pedestrians
  - Bicyclists
  - Motorcyclists
- Delaware Vulnerable User Law ([Title 21 §4176E](#)):
  - Pedestrian
  - Highway worker
  - Person riding an animal or animal-drawn carriage (includes passengers)
  - Person operating or passenger of a farm tractor, skateboard, roller skates, in-line skates, scooter, moped, bicycle, motorcycle, wheelchair, or electric personal mobility device
- Federal definition (for purposes of Vulnerable Road User Special Rule):
  - A non-motorist with a Fatality Analysis Reporting System (FARS) person attribute code of Pedestrian, Bicyclist, Other Cyclist, and Person on Personal Conveyance”
  - Does not include motorcyclists



# Vulnerable User Fatalities & Serious Injuries

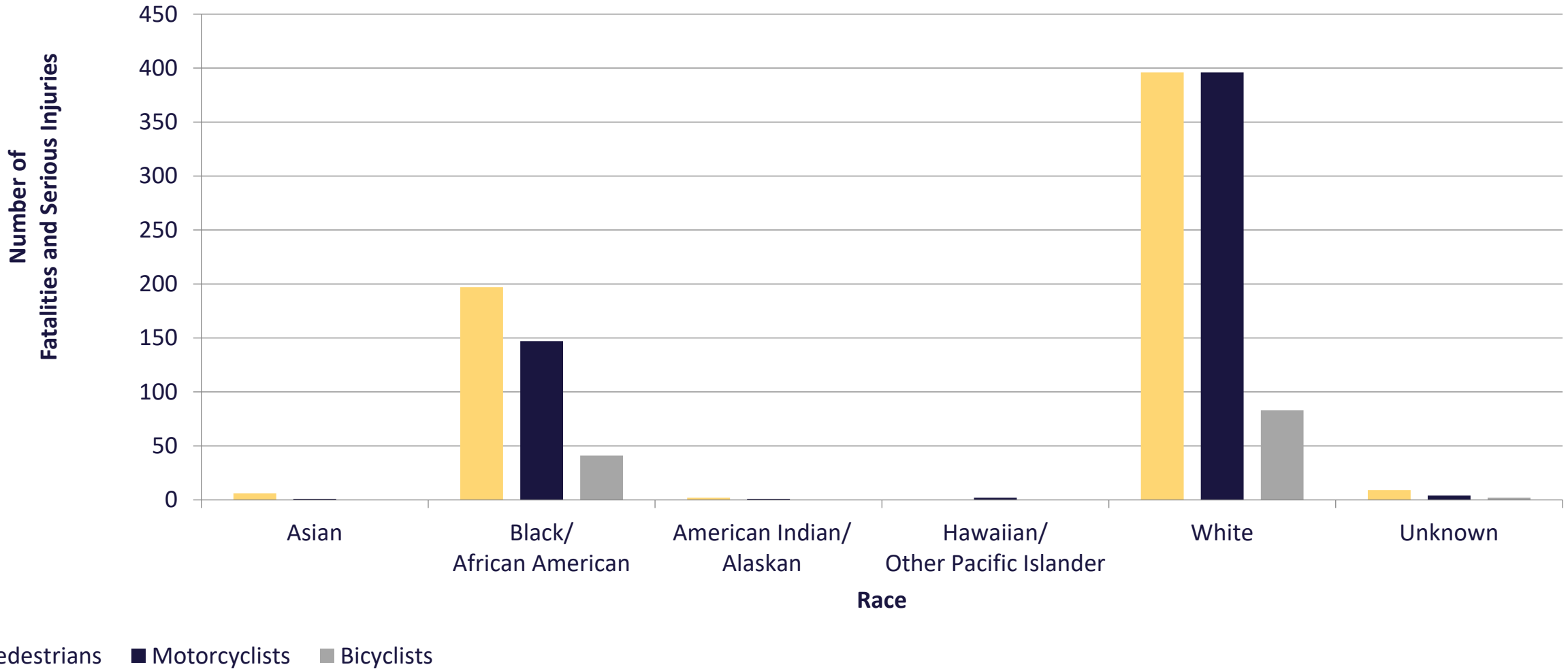
Vulnerable Users	% Total Fatalities (2015-2021)	% Total Serious Injuries (2015-2021)
Pedestrians (Emphasis Area 5)	24%	10%
Motorcyclists (Emphasis Area 6)	13%	13%
Bicyclists (Non-Selected EA)	3%	3%





# Vulnerable User Fatalities & Serious Injuries

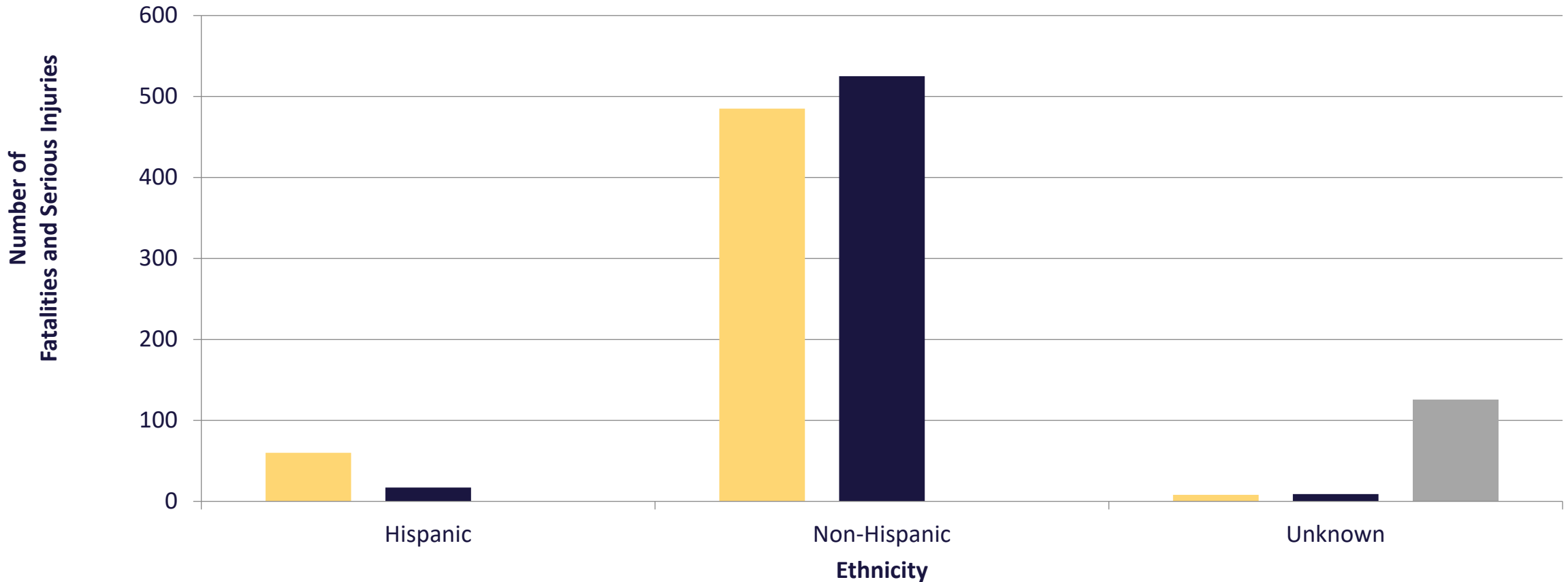
## Race and Ethnicity Demographics





# Vulnerable User Fatalities & Serious Injuries

## Race and Ethnicity Demographics



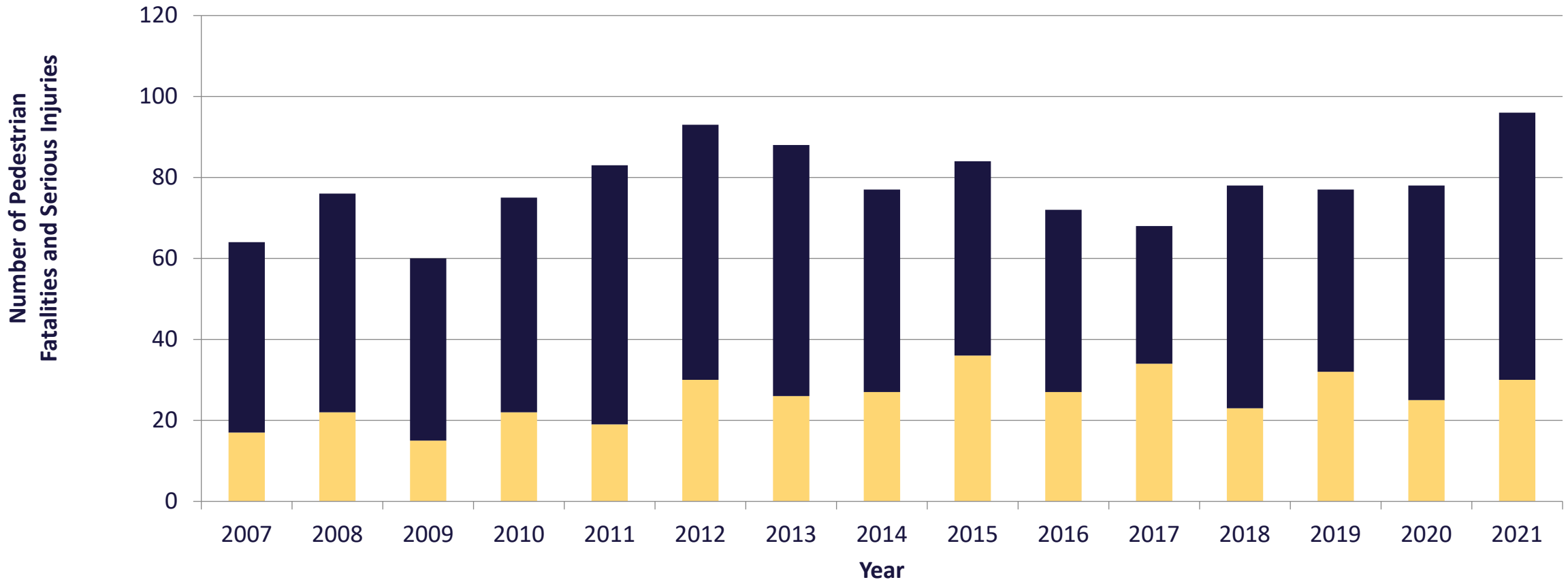
■ Pedestrians ■ Motorcyclists ■ Bicyclists



# Pedestrians



# Pedestrian Fatalities & Serious Injuries

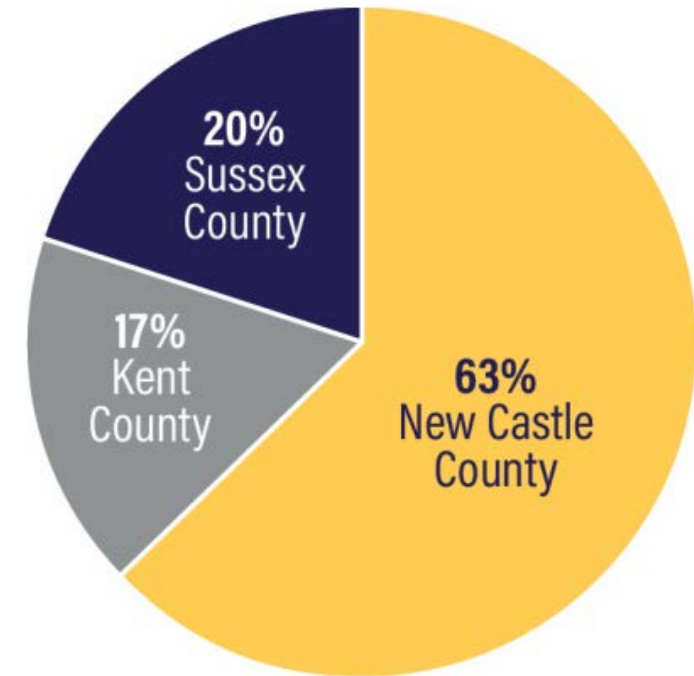


■ Pedestrian Fatalities    ■ Pedestrian Serious Injuries



# Pedestrian Fatalities & Serious Injuries

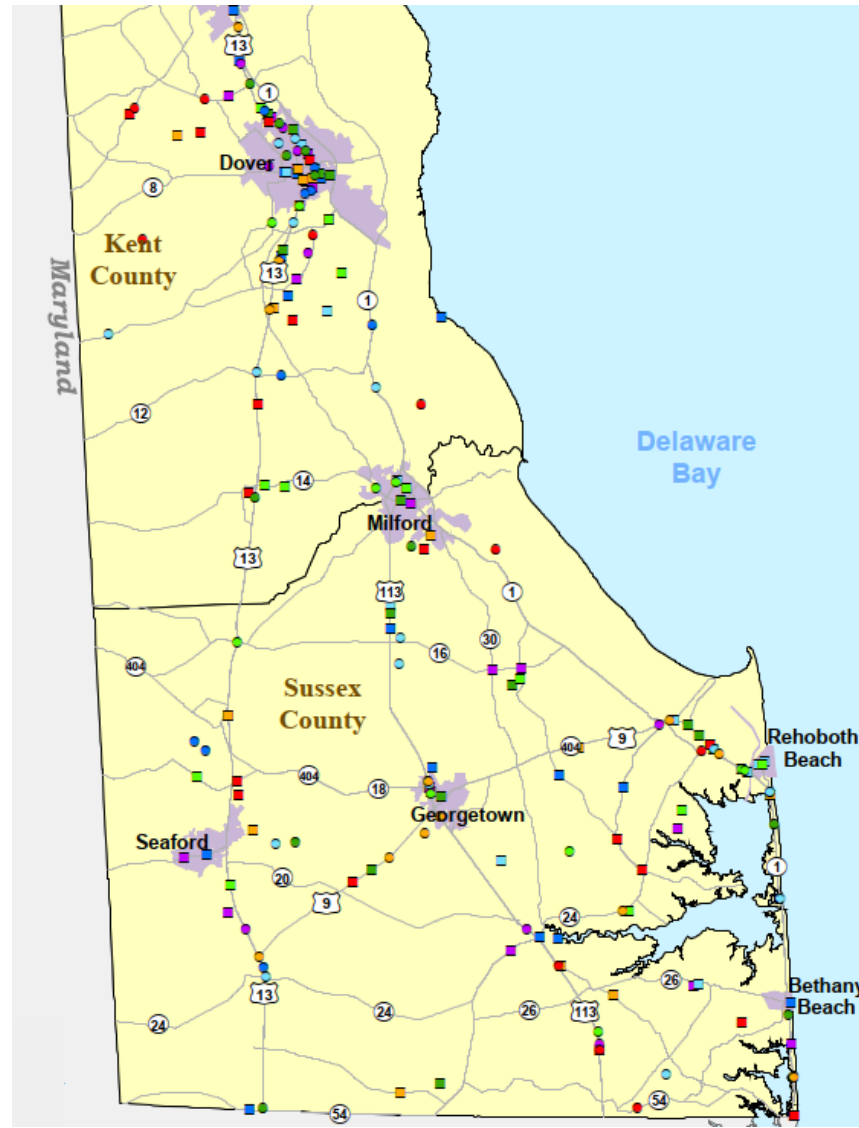
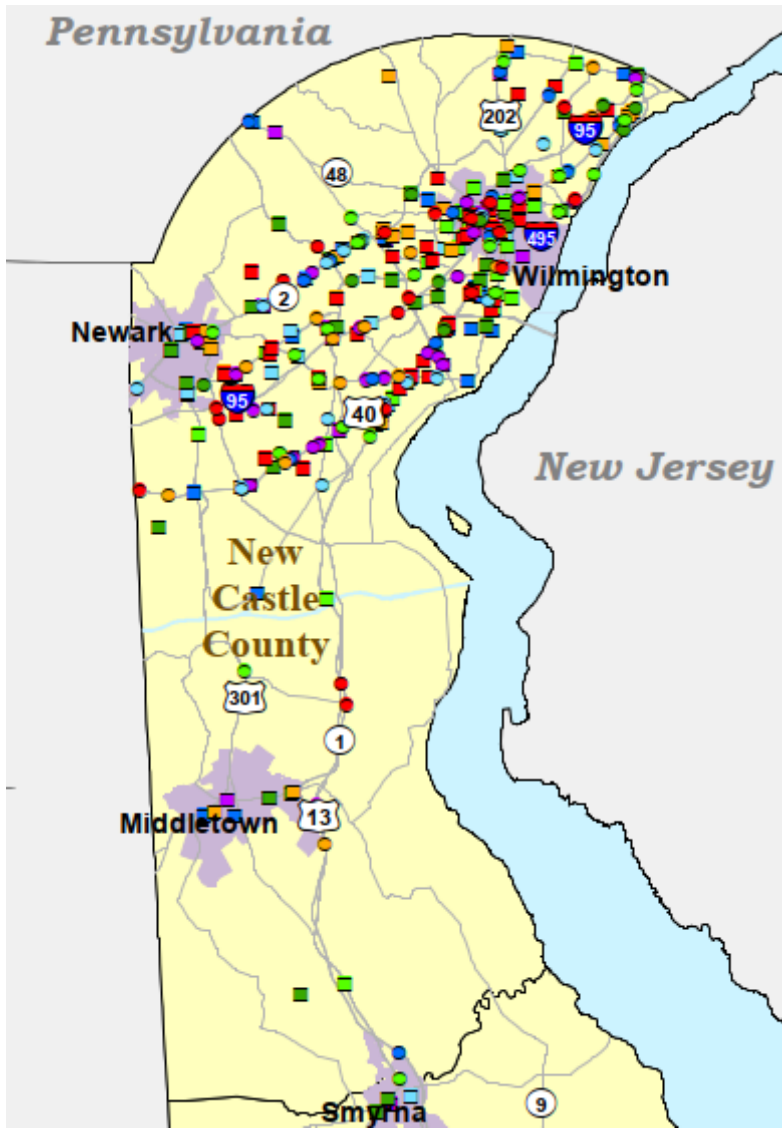
- Pedestrian fatality and serious injury general trends (from 2015-2019 SHSP)
  - 89% occurred in urban areas
  - 73% occurred between 4PM and 2AM
  - 71% were male
  - 69% involved no contributing factor on the part of the vehicle driver
  - 56% occurred along divided roadways
  - 41% occurred on principal arterials
  - 36% occurred during dark (unlit) conditions
- Additional Data Analysis
  - Further evaluation of September – January pedestrian fatalities & serious injuries
  - Further evaluation of lighting conditions
  - Further evaluation of pedestrian locations/actions







# Pedestrian Fatalities & Serious Injuries



**Pedestrians**

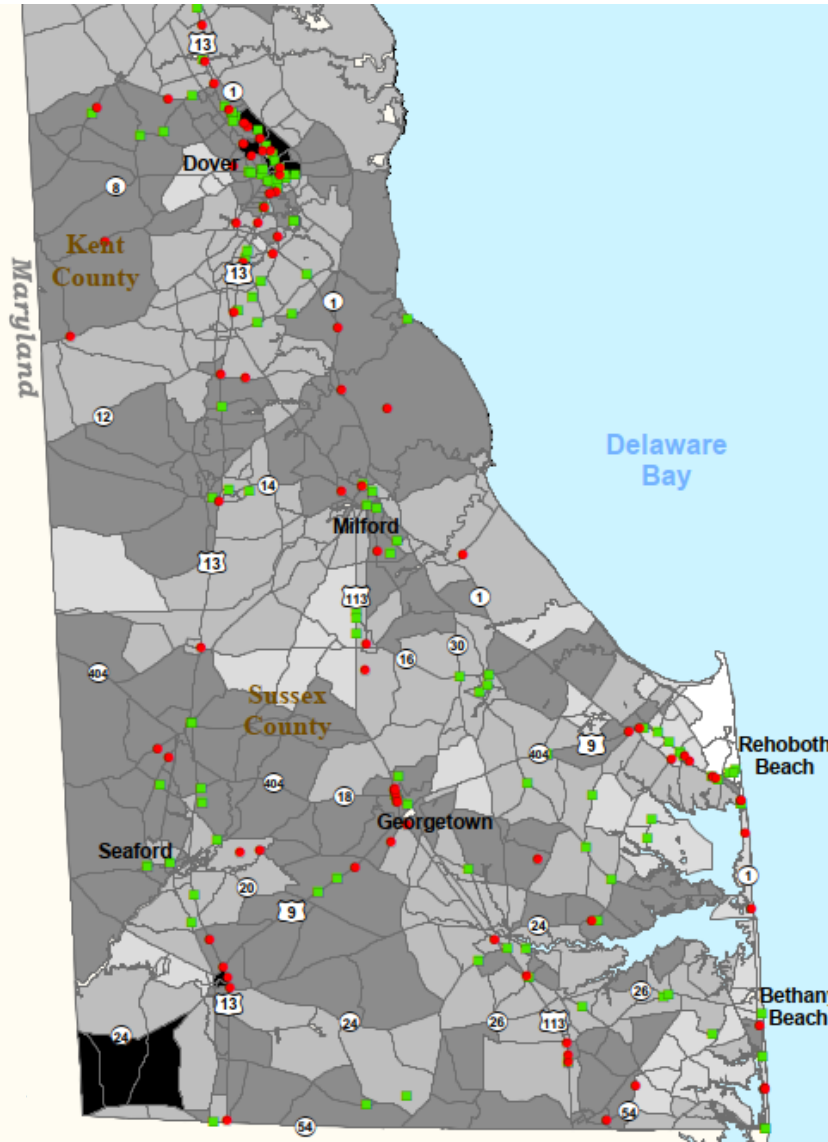
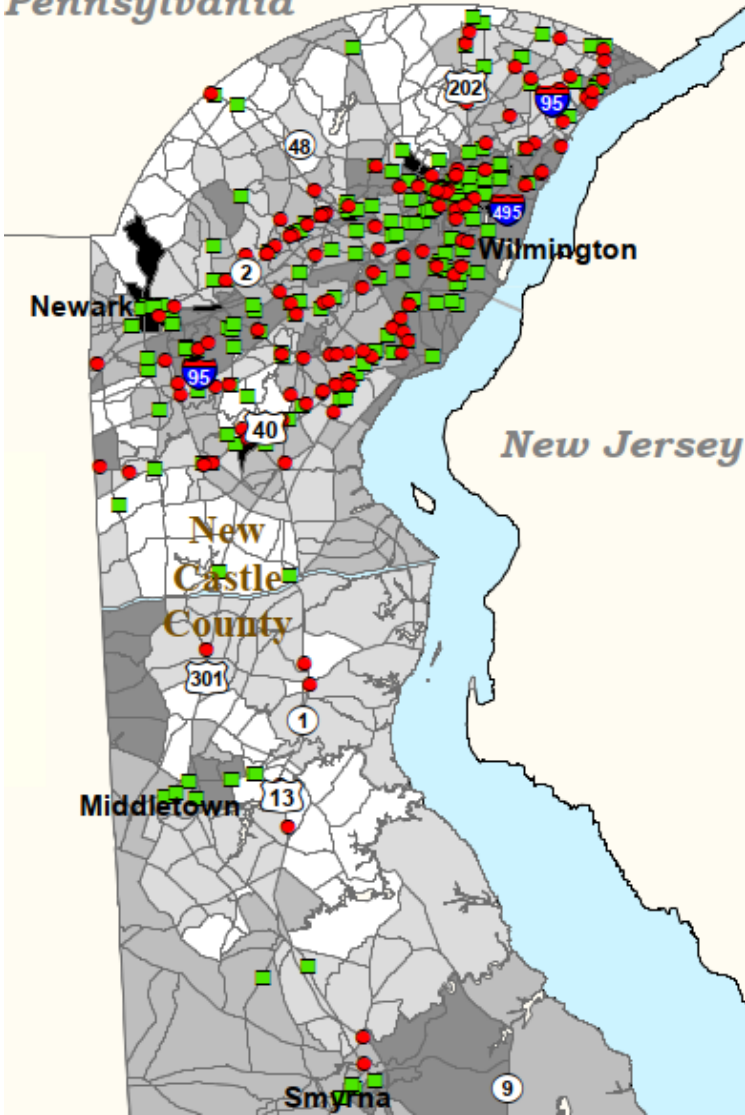
Year	New Castle County		Kent County		Sussex County	
	Fatalities	Serious Injuries	Fatalities	Serious Injuries	Fatalities	Serious Injuries
2015	26	28	5	10	5	10
2016	18	28	6	8	3	9
2017	17	19	6	6	12	9
2018	12	38	6	8	5	9
2019	21	31	5	6	6	8
2020	13	35	3	6	9	12
2021	20	48	5	7	5	11
<b>Total</b>	<b>127</b>	<b>227</b>	<b>36</b>	<b>51</b>	<b>45</b>	<b>68</b>
%	64%		15%		21%	

\* Each symbol represents a crash location. Multiple crashes may have occurred at or near the same location, therefore, symbols may overlap. Additionally, multiple fatalities and/or serious injuries may have resulted from a single crash.  
Analysis years 2015 - 2021



# Pedestrian Fatalities & Serious Injuries

## Pennsylvania



### Pedestrian Crashes

AVERAGE INCOME (2020)

<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: black; margin-right: 5px;"></span> &lt; \$30,000</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #444; margin-right: 5px;"></span> \$30,000 - \$60,000</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #888; margin-right: 5px;"></span> \$60,000 - \$90,000</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #ccc; margin-right: 5px;"></span> \$90,000 - \$120,000</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #fff; border: 1px solid #ccc; margin-right: 5px;"></span> &gt; \$120,000</li> </ul>	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: red; border-radius: 50%; margin-right: 5px;"></span> Fatality*</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; border: 1px solid green; margin-right: 5px;"></span> Serious Injury*</li> </ul>
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Source: WILMAPCO

\* Each symbol represents a crash location. Multiple crashes may have occurred at or near the same location, therefore, symbols may overlap. Additionally, multiple fatalities and/or serious injuries may have resulted from a single crash.  
Analysis years 2015 - 2021

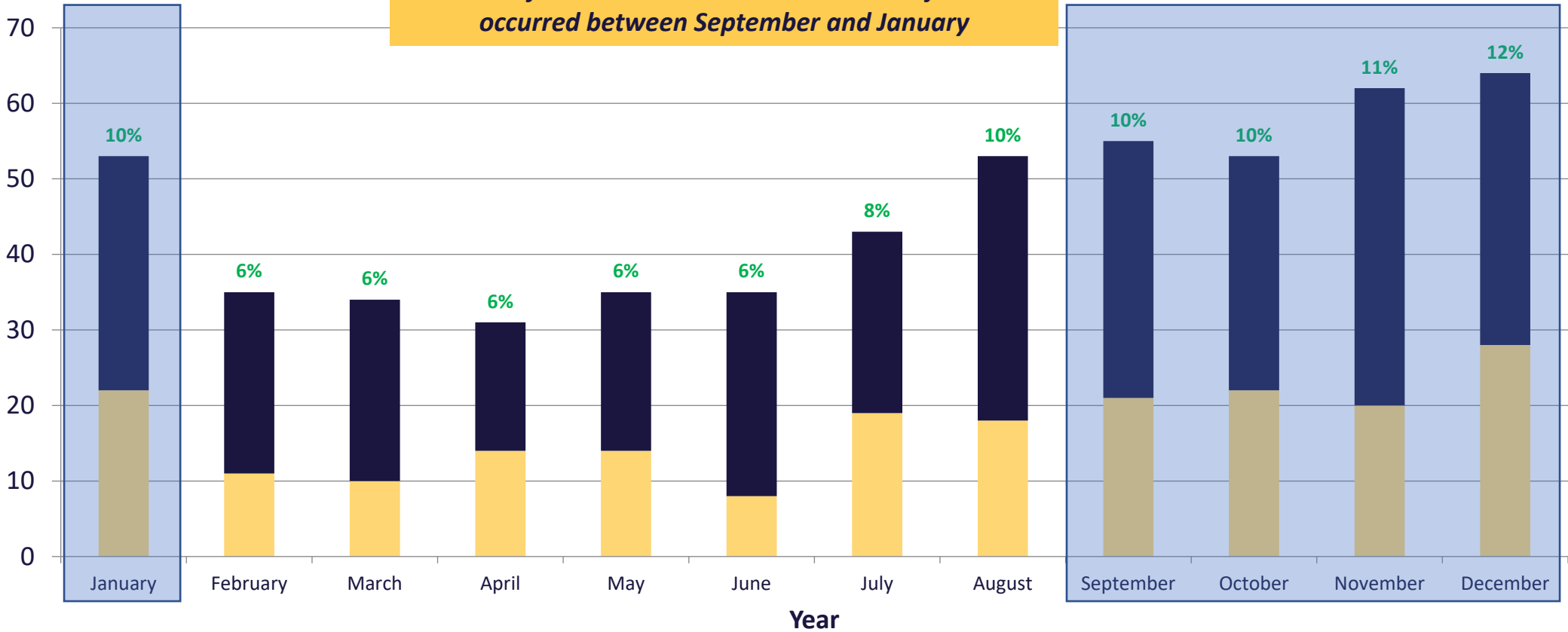


# Pedestrian Fatalities & Serious Injuries

## September - January

*53% of Pedestrian Fatalities & Serious Injuries occurred between September and January*

Number of Pedestrians  
Fatalities and Serious Injuries



■ Fatalities ■ Serious Injuries Percentage

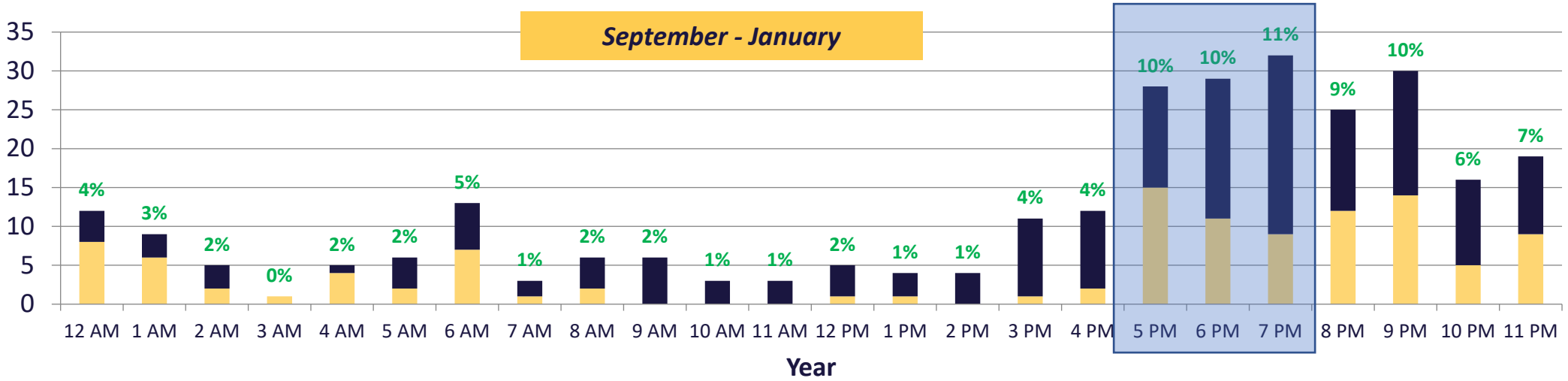
% Pedestrian fatalities and serious injuries



# Pedestrian Fatalities & Serious Injuries

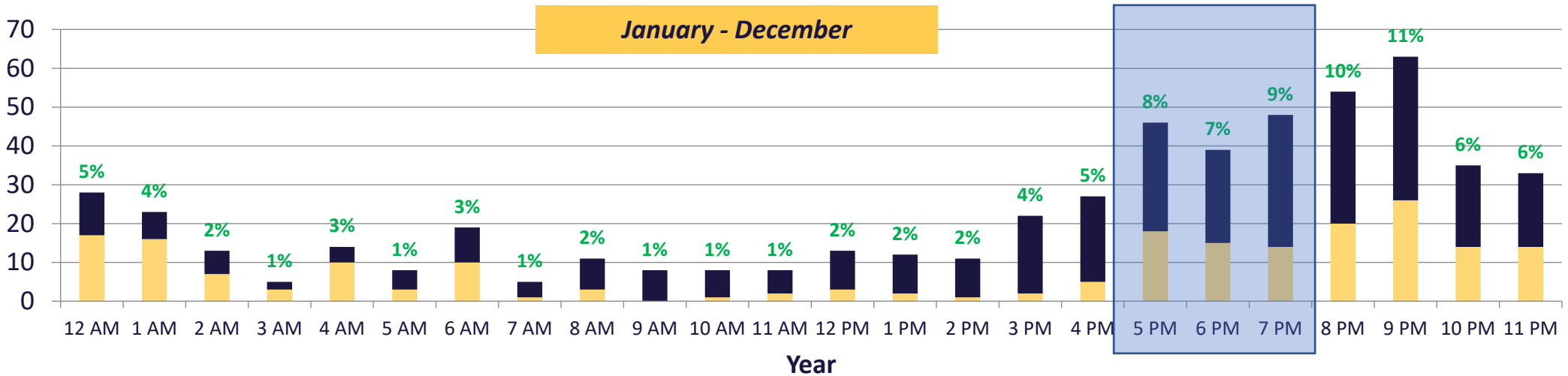
## September - January

Number of Pedestrians  
Fatalities and Serious  
Injuries



■ Fatalities ■ Serious Injuries % Pedestrian fatalities and serious injuries (September – January)

Number of Pedestrians  
Fatalities and Serious  
Injuries



■ Fatalities ■ Serious Injuries % Pedestrian fatalities and serious injuries (January – December)



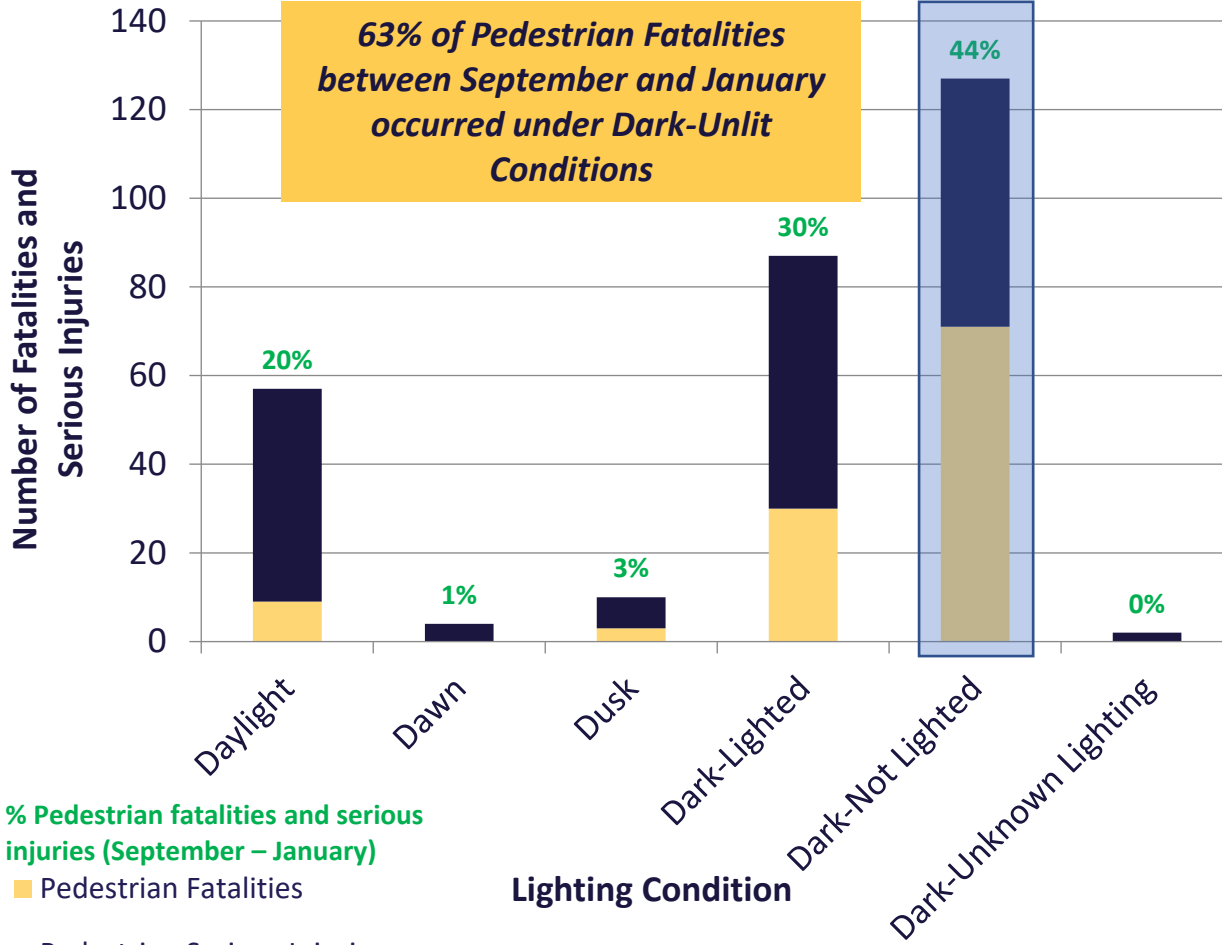
# Pedestrian Fatalities & Serious Injuries

## September - January

### Lighting Conditions

#### September - January

*63% of Pedestrian Fatalities between September and January occurred under Dark-Unlit Conditions*



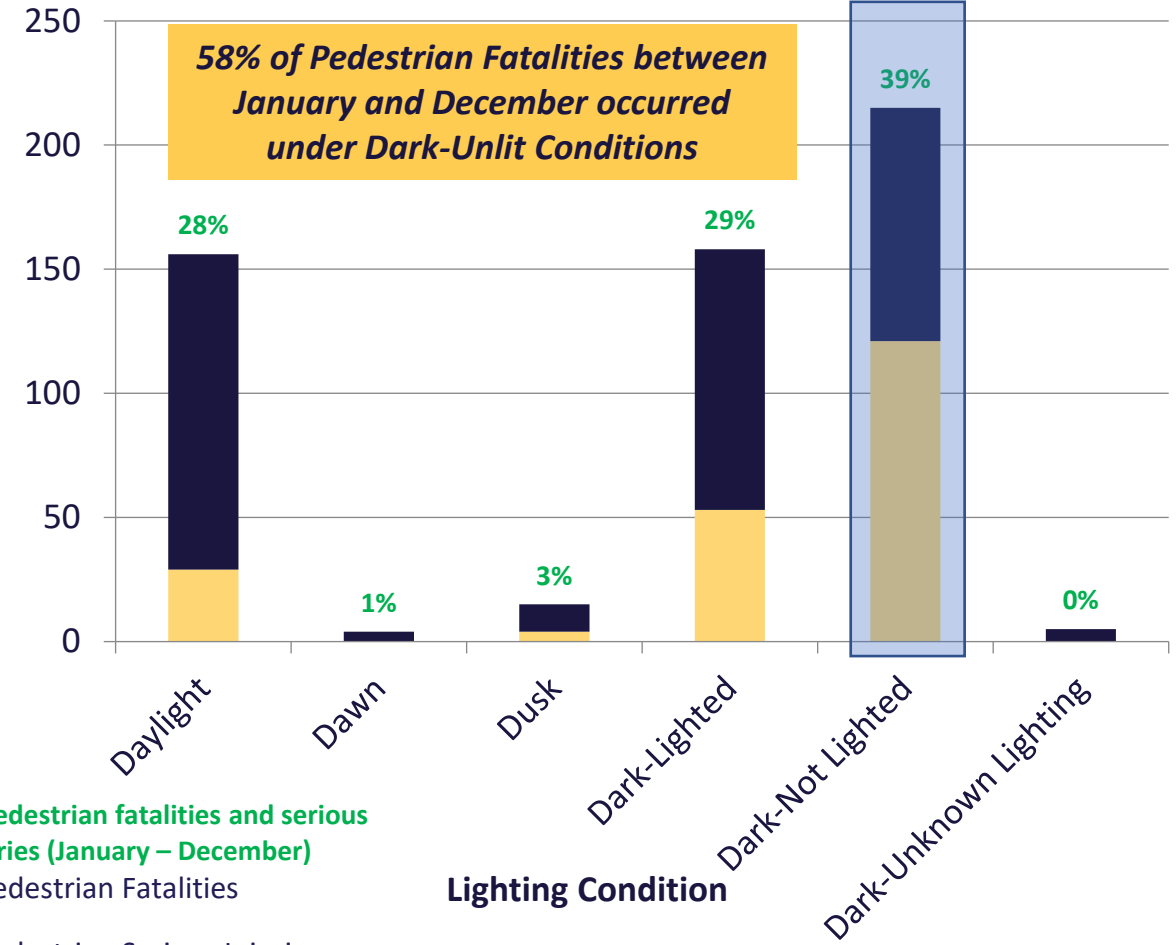
% Pedestrian fatalities and serious injuries (September – January)

■ Pedestrian Fatalities

■ Pedestrian Serious Injuries

#### January - December

*58% of Pedestrian Fatalities between January and December occurred under Dark-Unlit Conditions*



% Pedestrian fatalities and serious injuries (January – December)

■ Pedestrian Fatalities

■ Pedestrian Serious Injuries

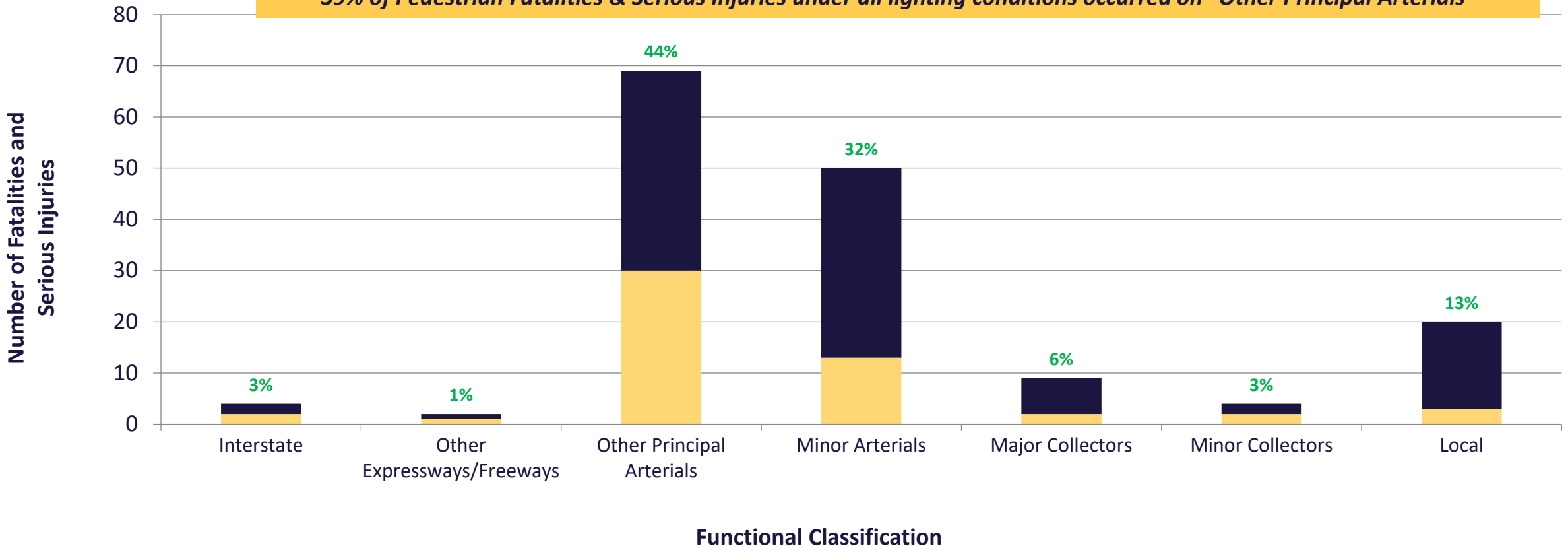


# Pedestrian Fatalities & Serious Injuries

## Lighting Condition = Dark-Unlit

### Dark-Unlit Pedestrian Fatalities & Serious Injuries by Road Type

**39% of Pedestrian Fatalities & Serious Injuries under all lighting conditions occurred on "Other Principal Arterials"**



■ Pedestrian Fatalities ■ Pedestrian Serious Injuries  
% Pedestrian fatalities and serious injuries under dark-unlit conditions

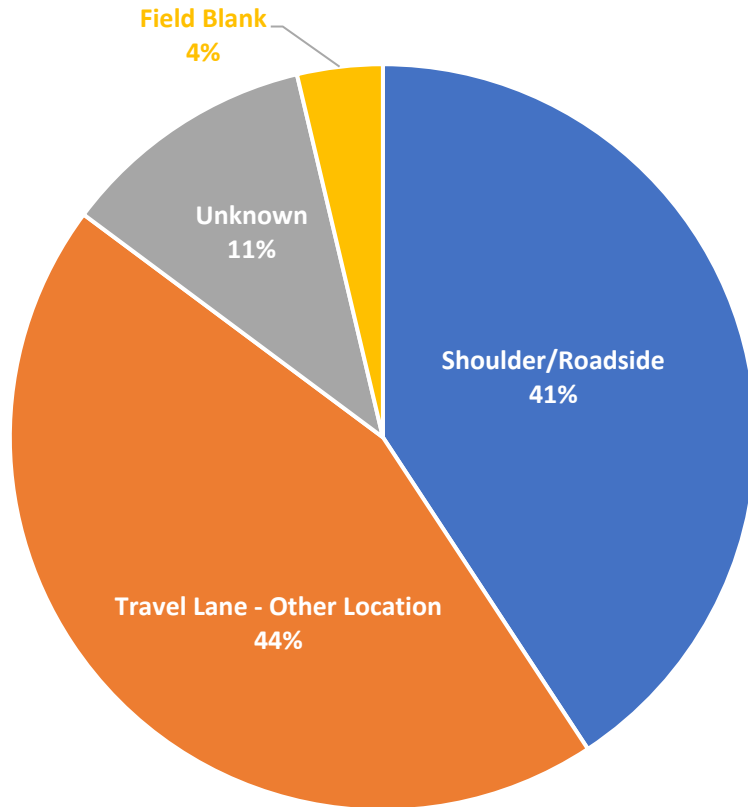


# Pedestrian Fatalities & Serious Injuries

## Pedestrian Location Prior to Crash by Road Type

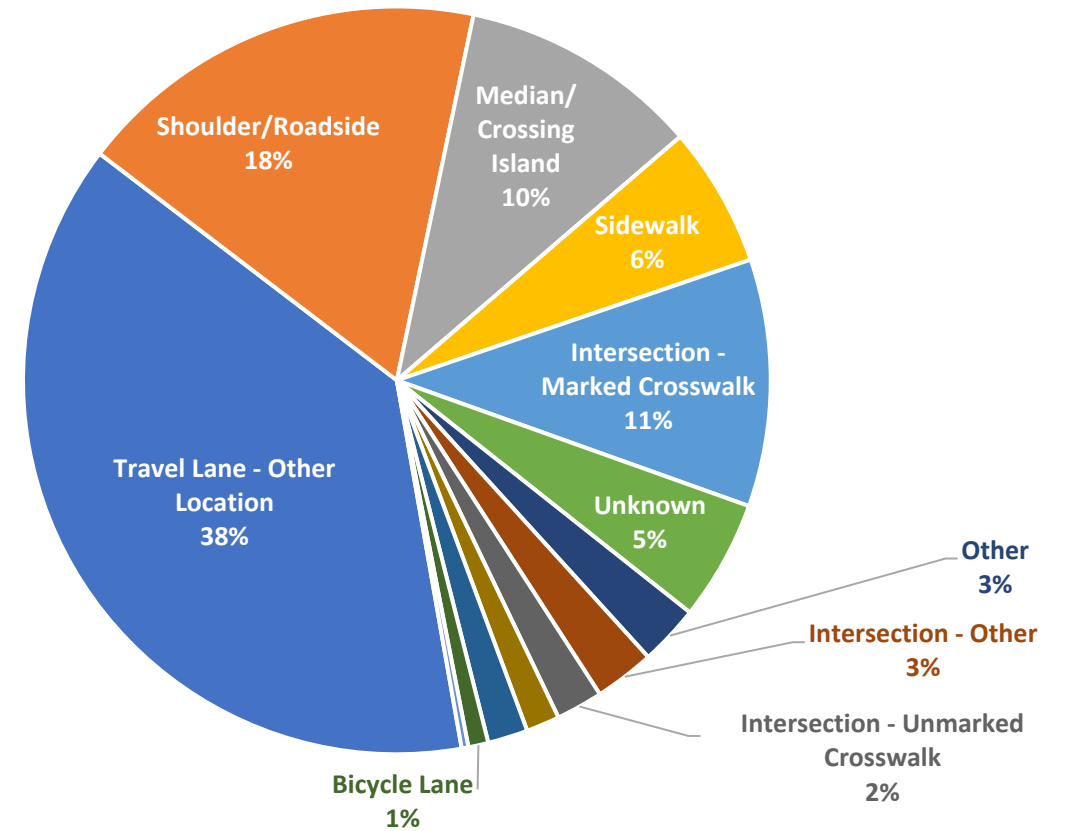
### Interstate/Freeway/Expressway

(7% of all pedestrian fatalities & serious injuries)



### Arterials (Principal and Minor)

(62% of all pedestrian fatalities & serious injuries)



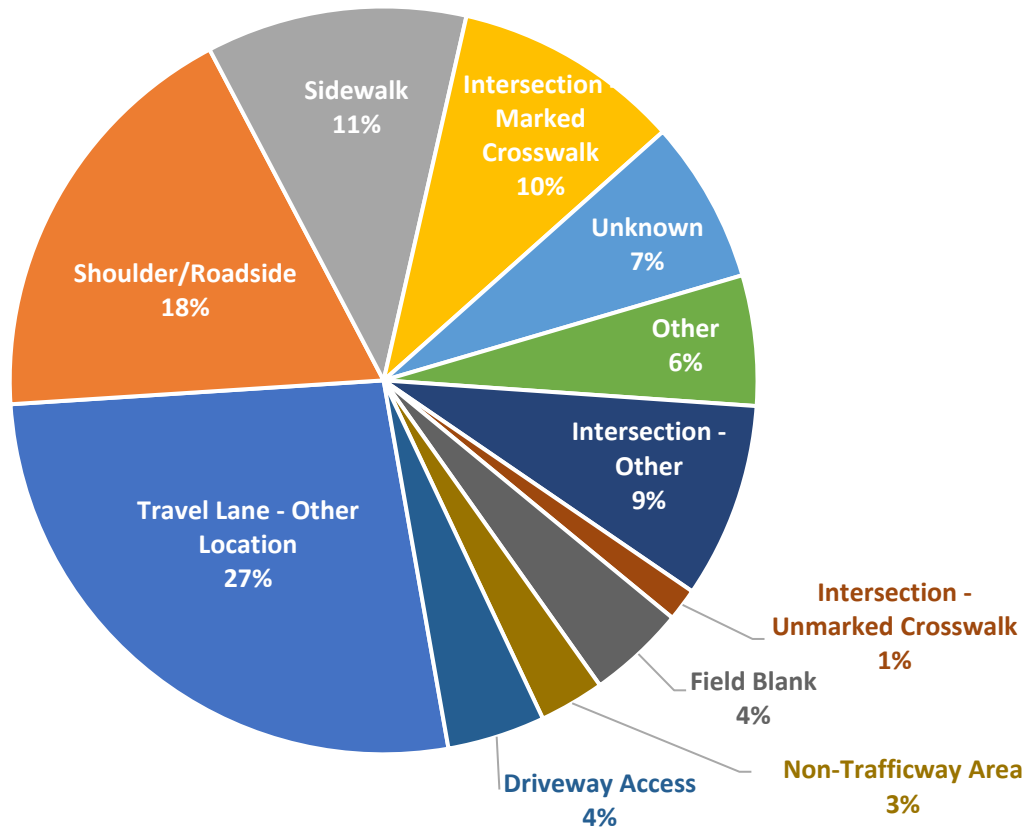


# Pedestrian Fatalities & Serious Injuries

## Pedestrian Location Prior to Crash by Road Type

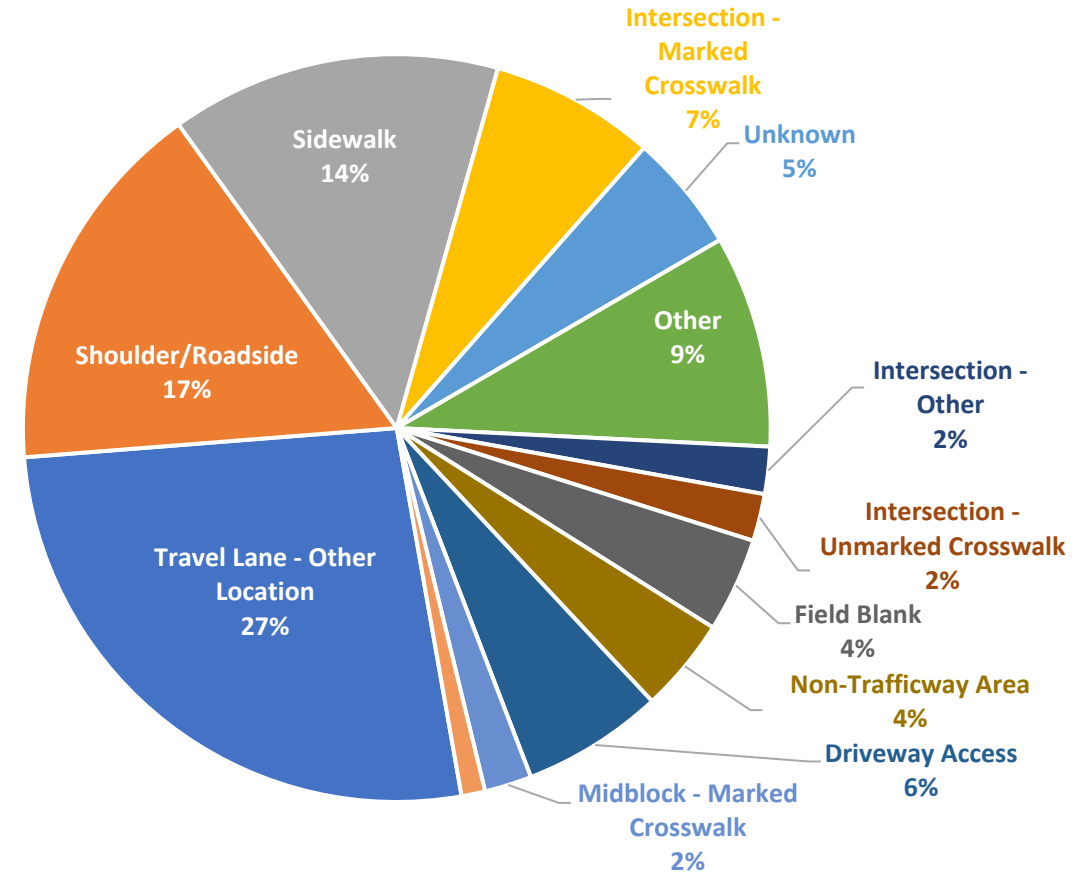
### Collectors (Major and Minor)

(13% of all pedestrian fatalities & serious injuries)



### Locals

(18% of all pedestrian fatalities & serious injuries)





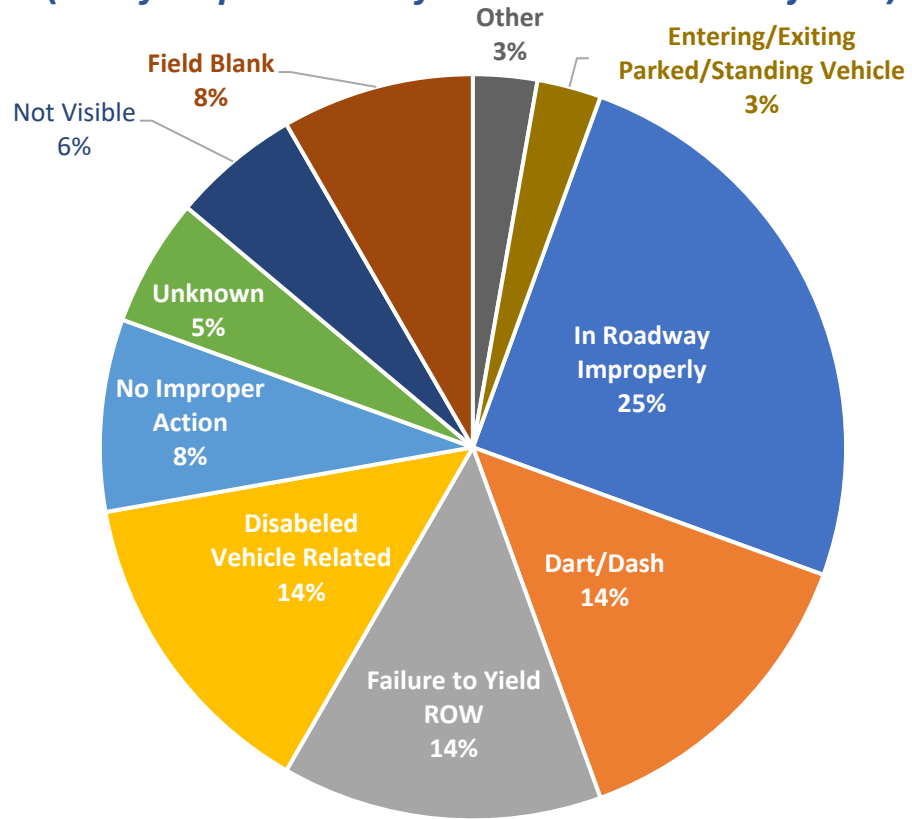


# Pedestrian Fatalities & Serious Injuries

## Pedestrian Action at Time of Crash by Road Type

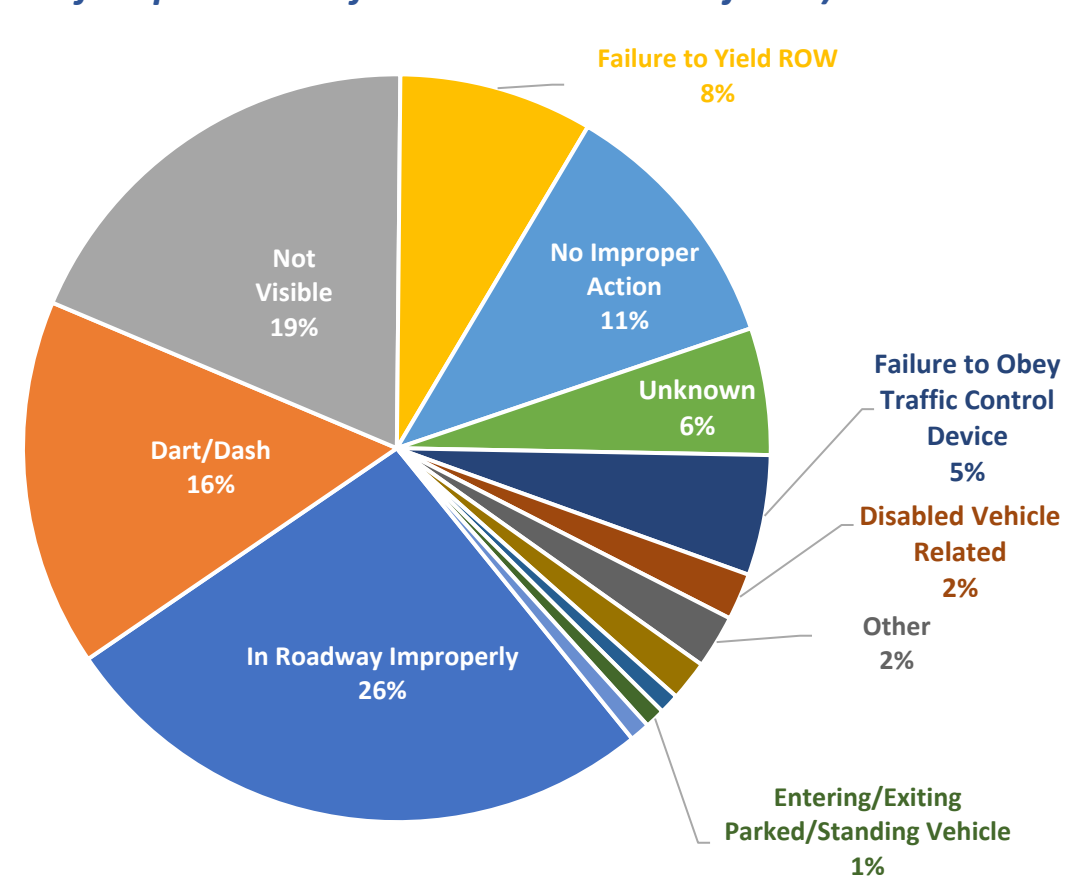
### Interstate/Freeway/Expressway

(7% of all pedestrian fatalities & serious injuries)



### Arterials (Principal and Minor)

(62% of all pedestrian fatalities & serious injuries)



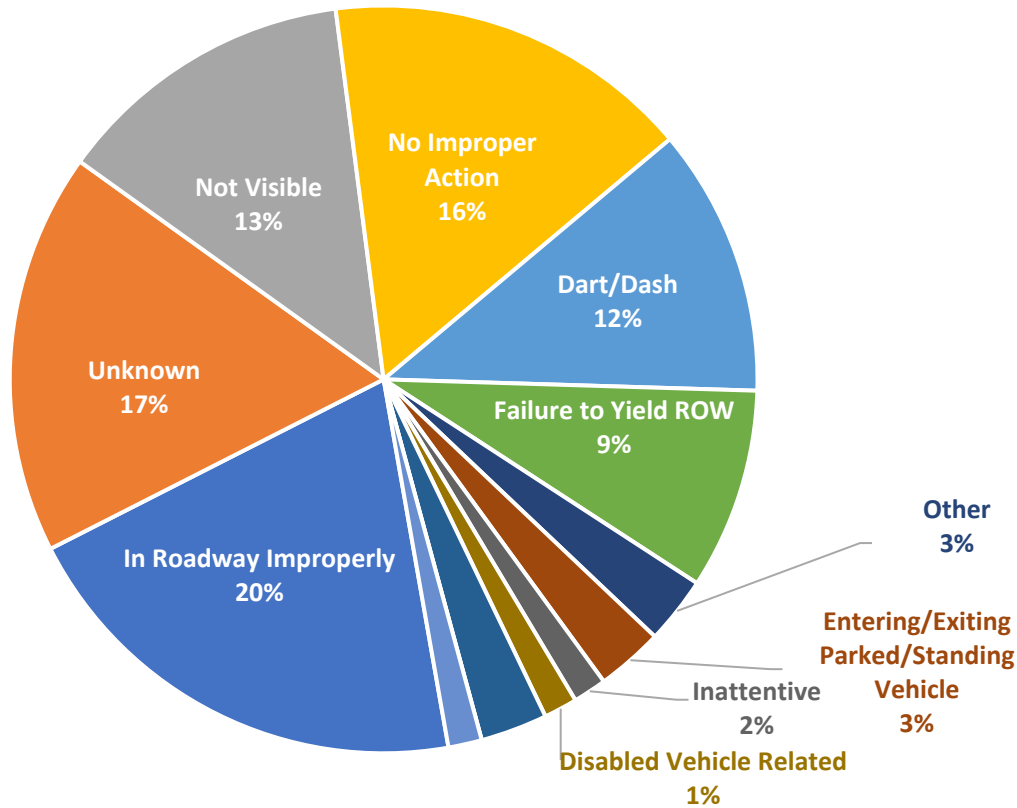


# Pedestrian Fatalities & Serious Injuries

## Pedestrian Action at Time of Crash by Road Type

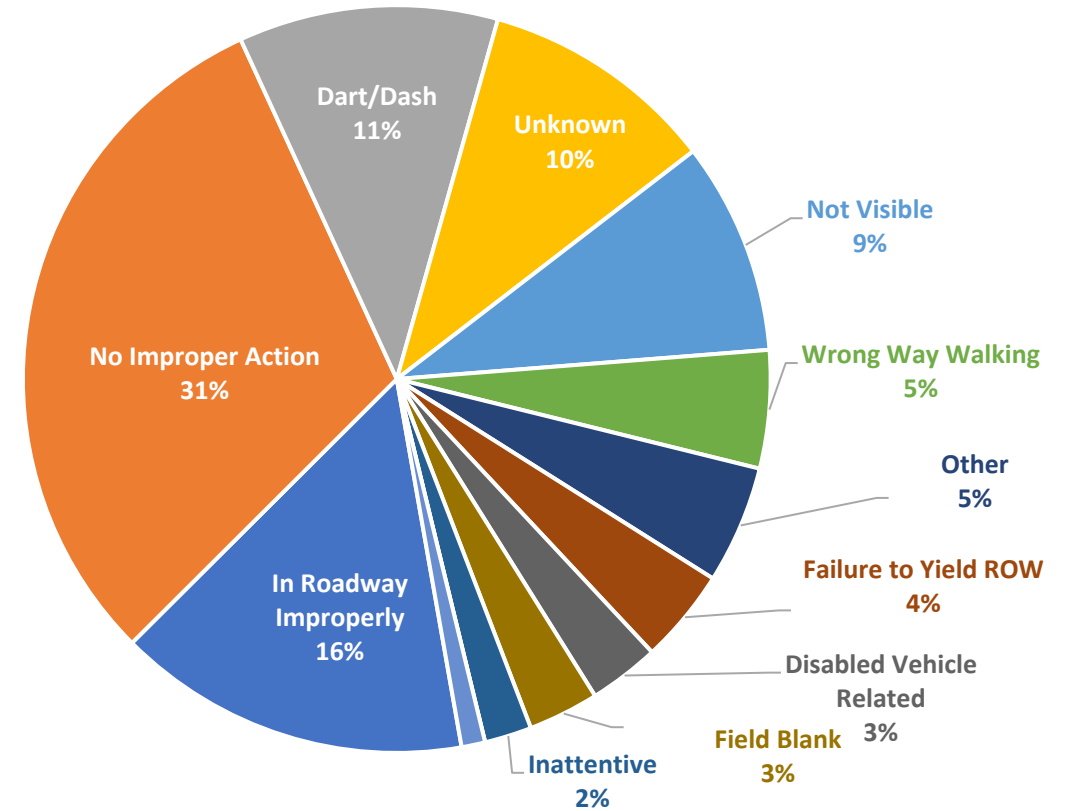
### Collectors (Major and Minor)

(13% of all pedestrian fatalities & serious injuries)



### Locals

(18% of all pedestrian fatalities & serious injuries)

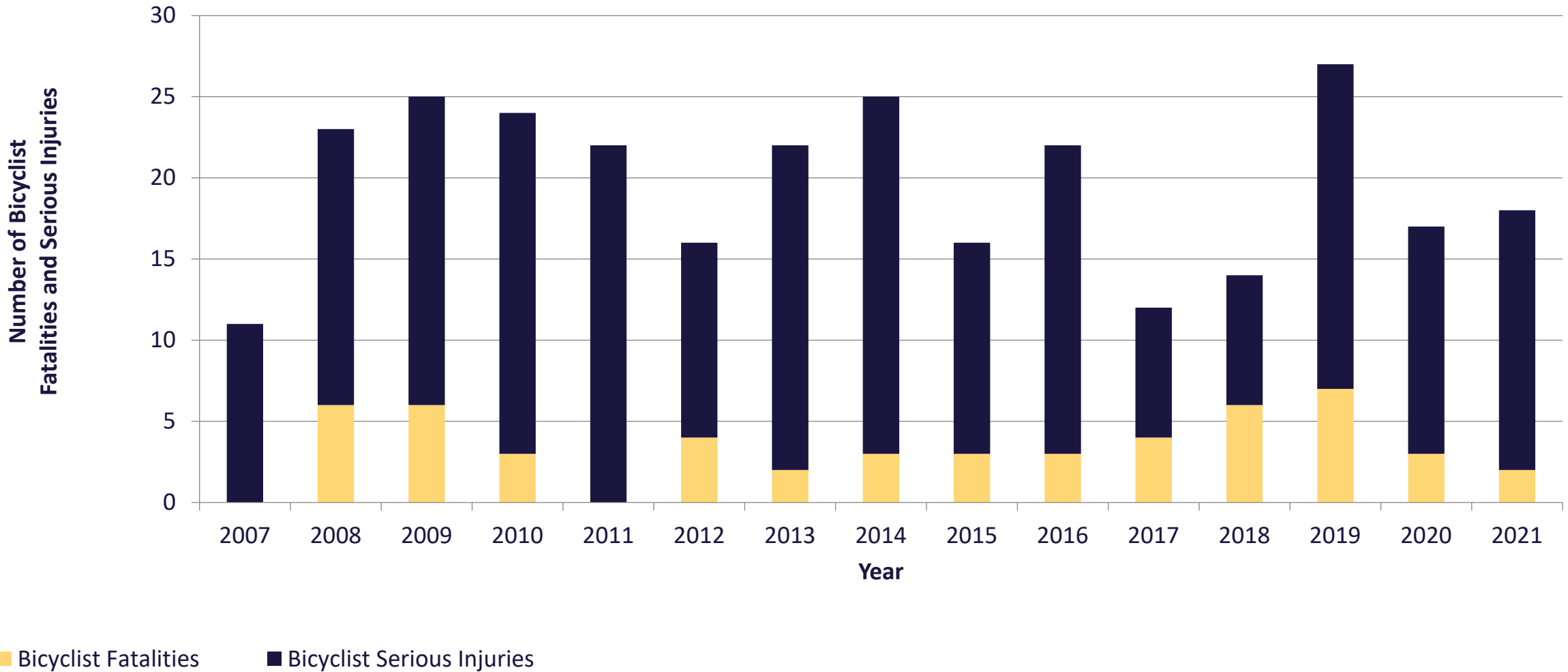




# Bicyclists



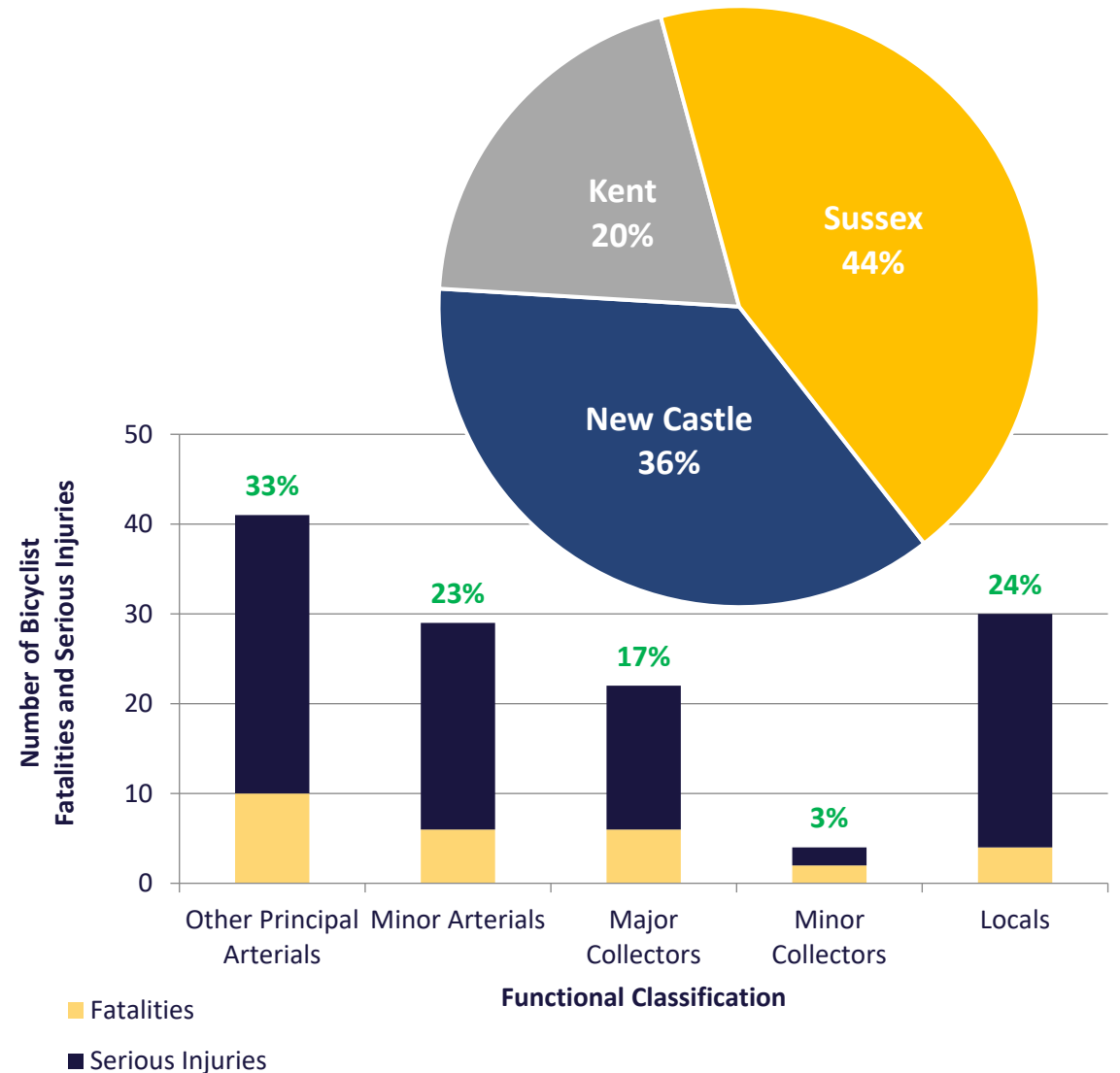
# Bicyclist Fatalities & Serious Injuries





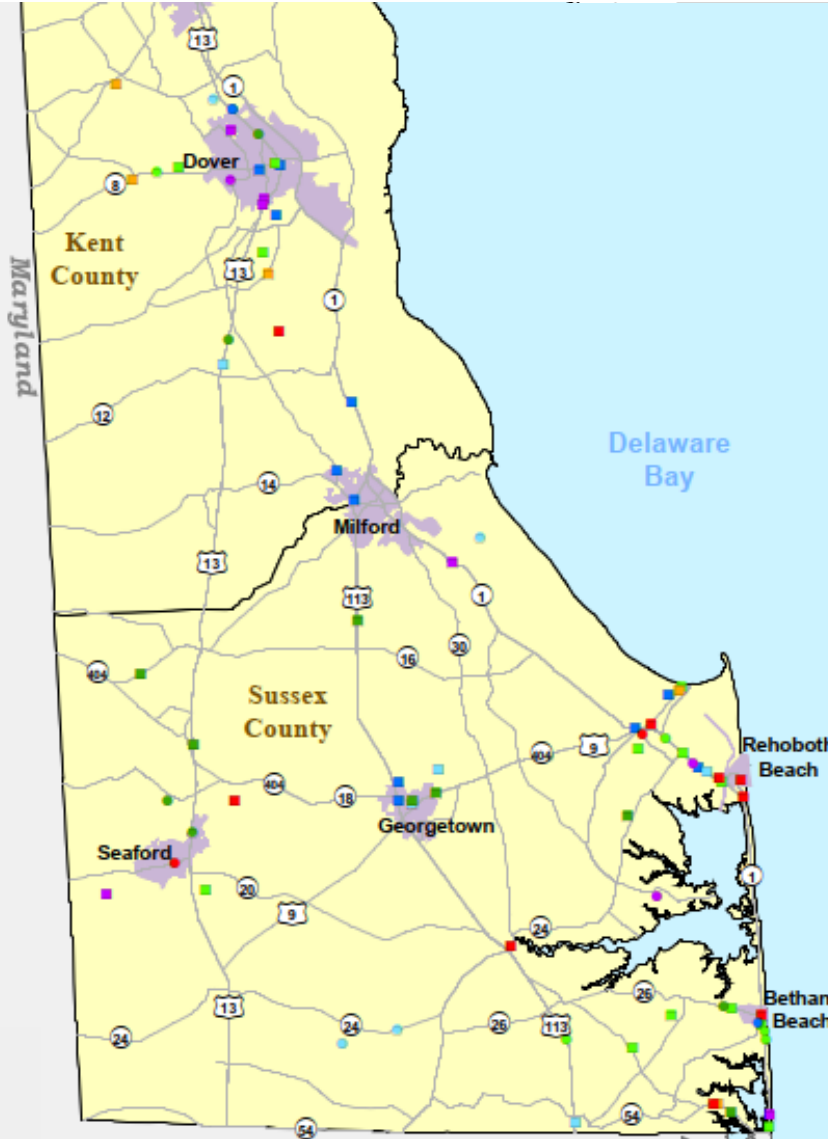
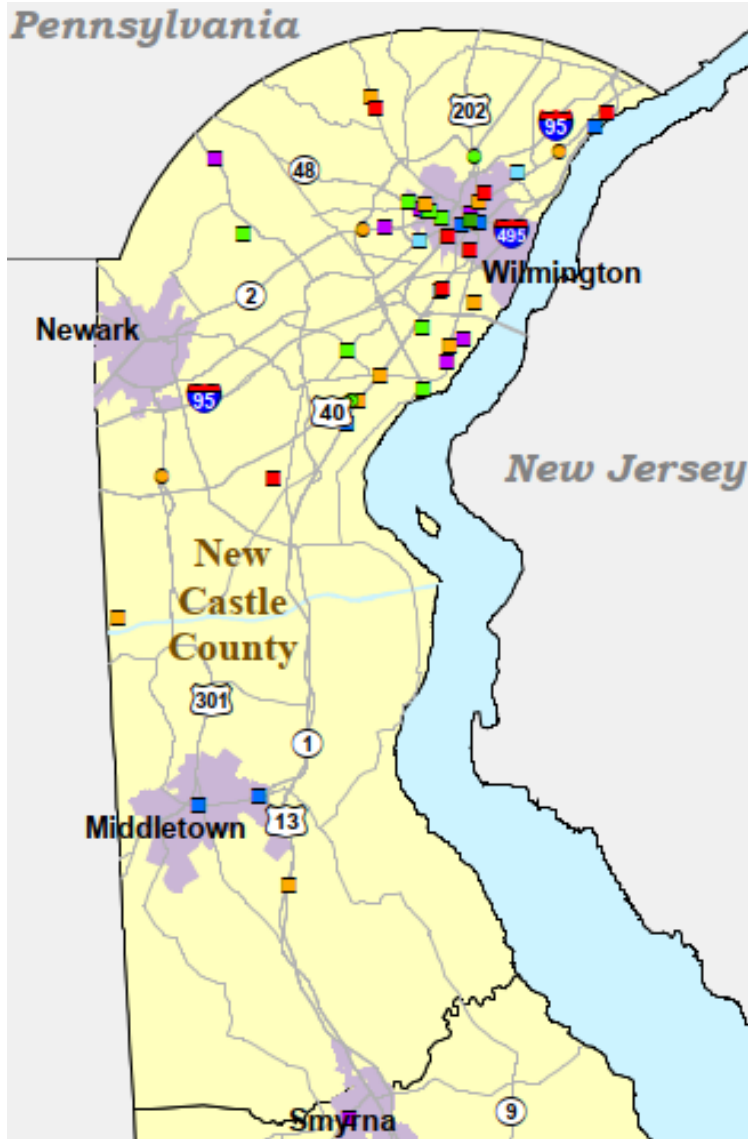
# Bicyclist Fatalities & Serious Injuries

- Bicyclist fatality and serious injury general trends (2015 – 2021)
  - Highest number of fatalities (7) occurred in 2019
  - 83% involved males
  - 79% occurred between May and October
  - 82% occurred in urban areas
  - 52% occurred on a Friday, Saturday, or Sunday
  - 43% occurred at an intersection
  - 42% involved persons aged 40 – 69
  - 20% involved persons aged 10 – 19
  - 43% occurred between 1PM and 7PM
  - 37% were not wearing a helmet
  - 13% of bicyclists were impaired
  - 12% occurred as an angle crash
  - Crash data does not indicate helmet use by victims





# Bicyclist Fatalities & Serious Injuries



Bicycles						
Year	New Castle County		Kent County		Sussex County	
	Fatalities	Serious Injuries	Fatalities	Serious Injuries	Fatalities	Serious Injuries
2015	0	6	1	4	2	3
2016	0	8	2	6	1	5
2017	0	3	1	1	3	4
2018	0	1	2	0	4	7
2019	2	7	1	3	4	10
2020	3	9	0	3	0	2
2021	0	7	0	1	2	8
Total	5	41	7	18	16	39
%	64%		15%		21%	

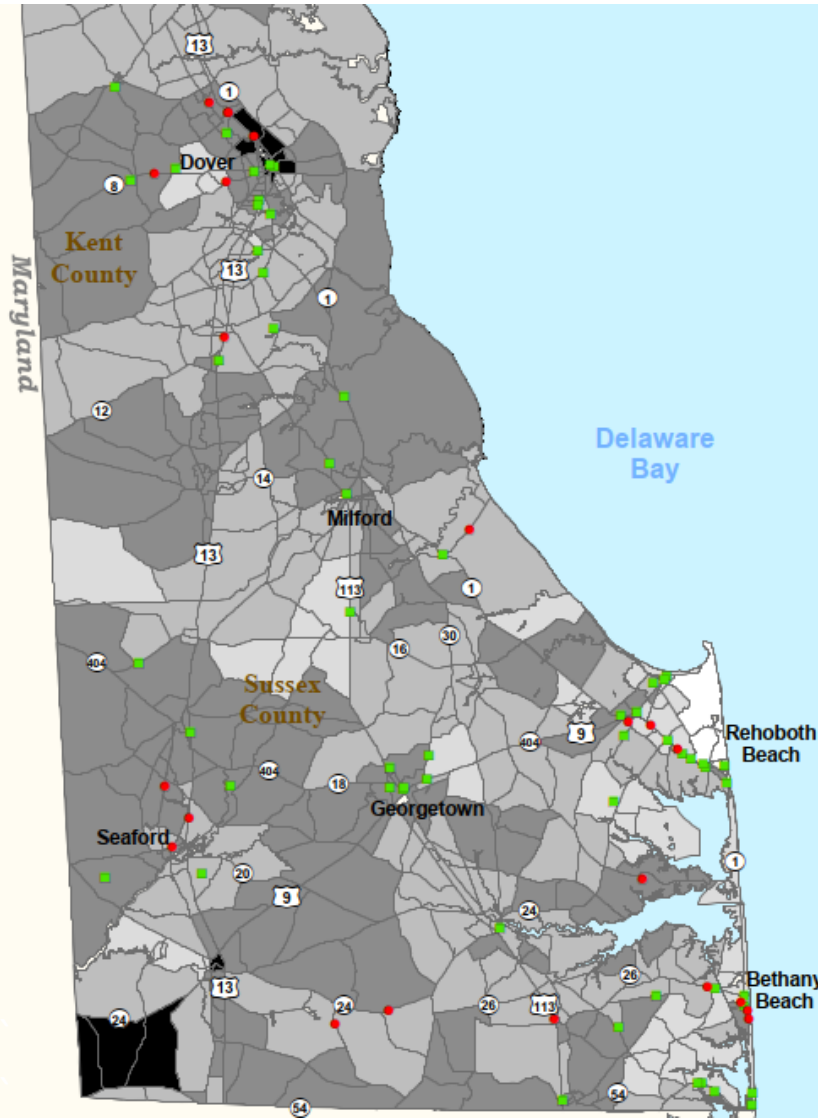
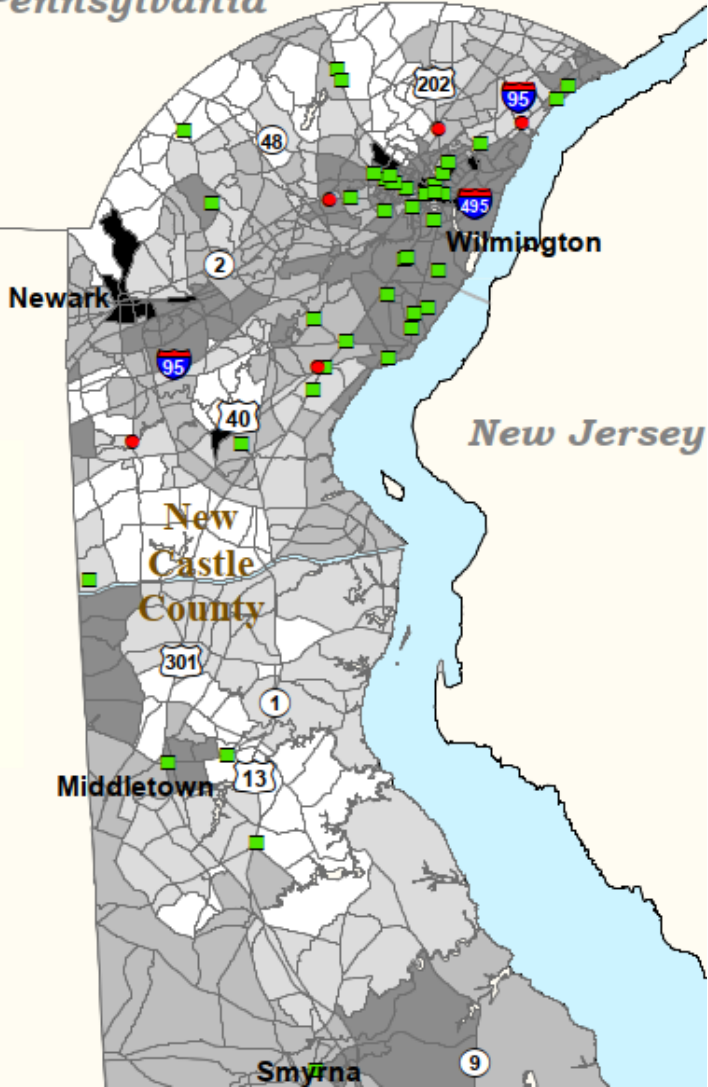
● Fatality\*  
 ■ Serious Injury\*  
 ■ Municipality

\* Each symbol represents a crash location. Multiple crashes may have occurred at or near the same location, therefore, symbols may overlap. Additionally, multiple fatalities and/or serious injuries may have resulted from a single crash.  
 Analysis years 2015 - 2021










# Bicycle Fatalities & Serious Injuries

## Pennsylvania



**Bicycle Crashes**

AVERAGE INCOME (2020)

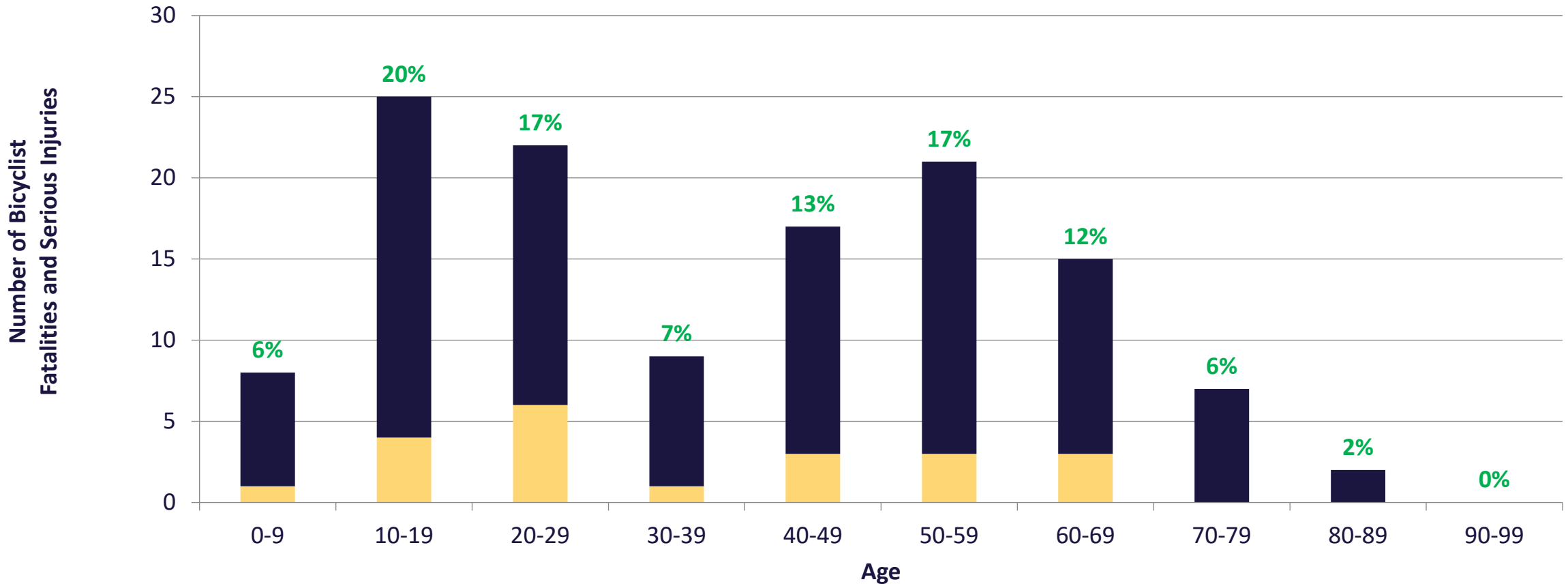
	< \$30,000		Fatality*
	\$30,000 - \$60,000		Serious Injury*
	\$60,000 - \$90,000		
	\$90,000 - \$120,000		
	> \$120,000		

Source: WILMAPCO

*\* Each symbol represents a crash location. Multiple crashes may have occurred at or near the same location, therefore, symbols may overlap. Additionally, multiple fatalities and/or serious injuries may have resulted from a single crash.  
Analysis years 2015 - 2021*



# Bicyclist Fatalities & Serious Injuries



Female Male

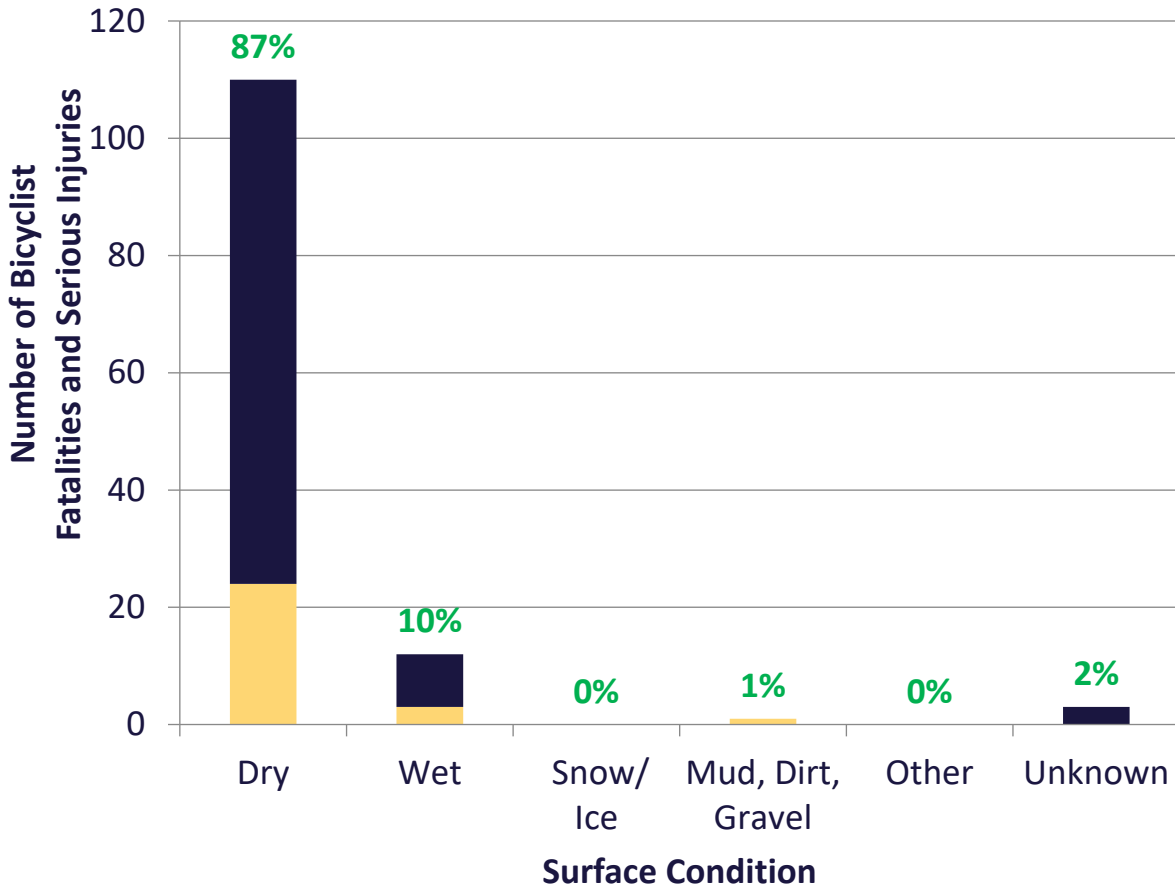
% Bicyclist fatalities & serious injuries





# Bicyclist Fatalities & Serious Injuries

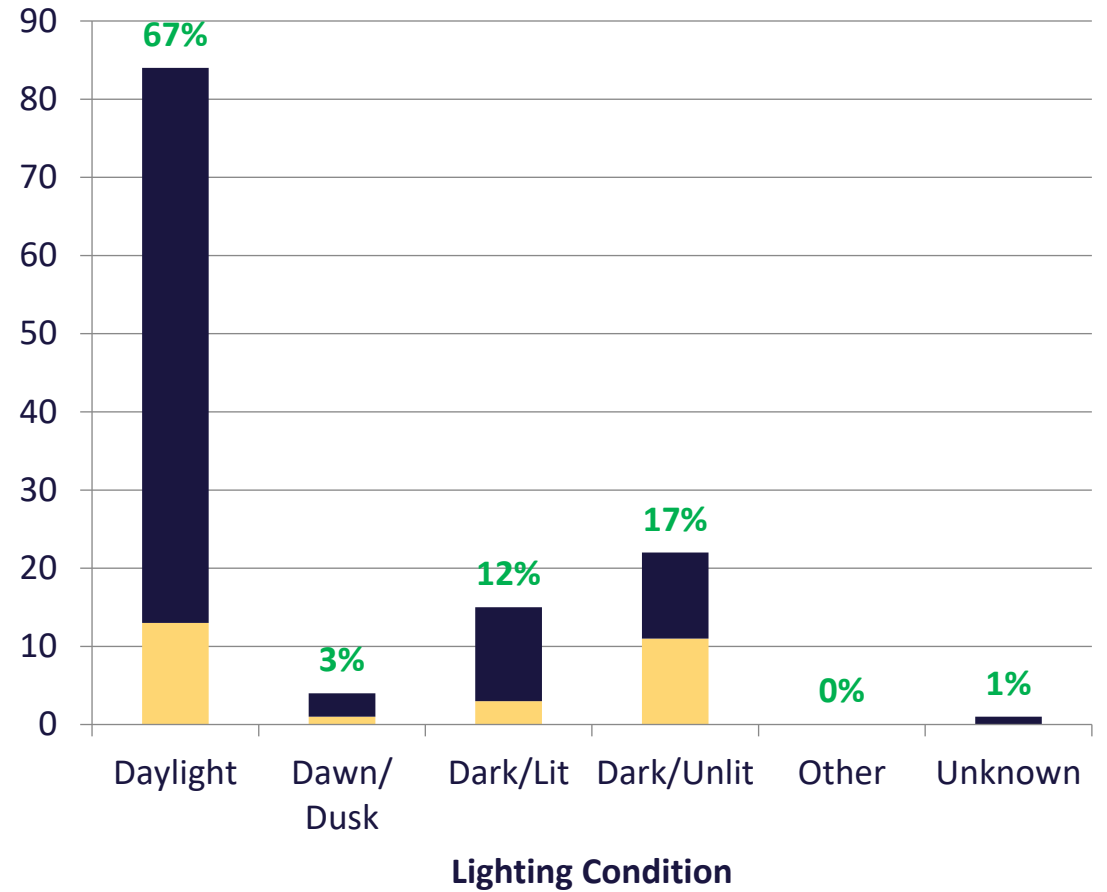
## Surface Conditions



■ Fatalities ■ Serious Injuries

% Bicyclist fatalities & serious injuries

## Lighting Conditions



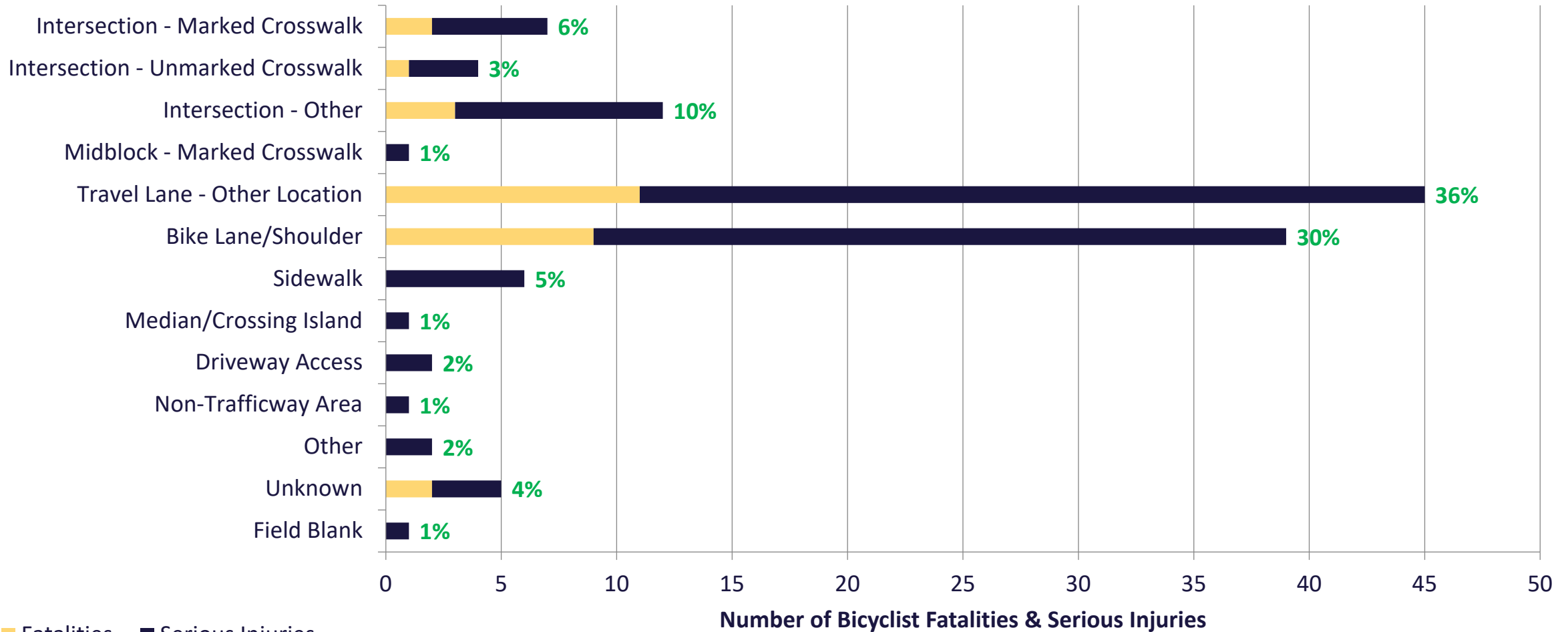
■ Fatalities ■ Serious Injuries

% Bicyclist fatalities & serious injuries



# Bicyclist Fatalities & Serious Injuries

## Bicyclist Location Prior to Crash



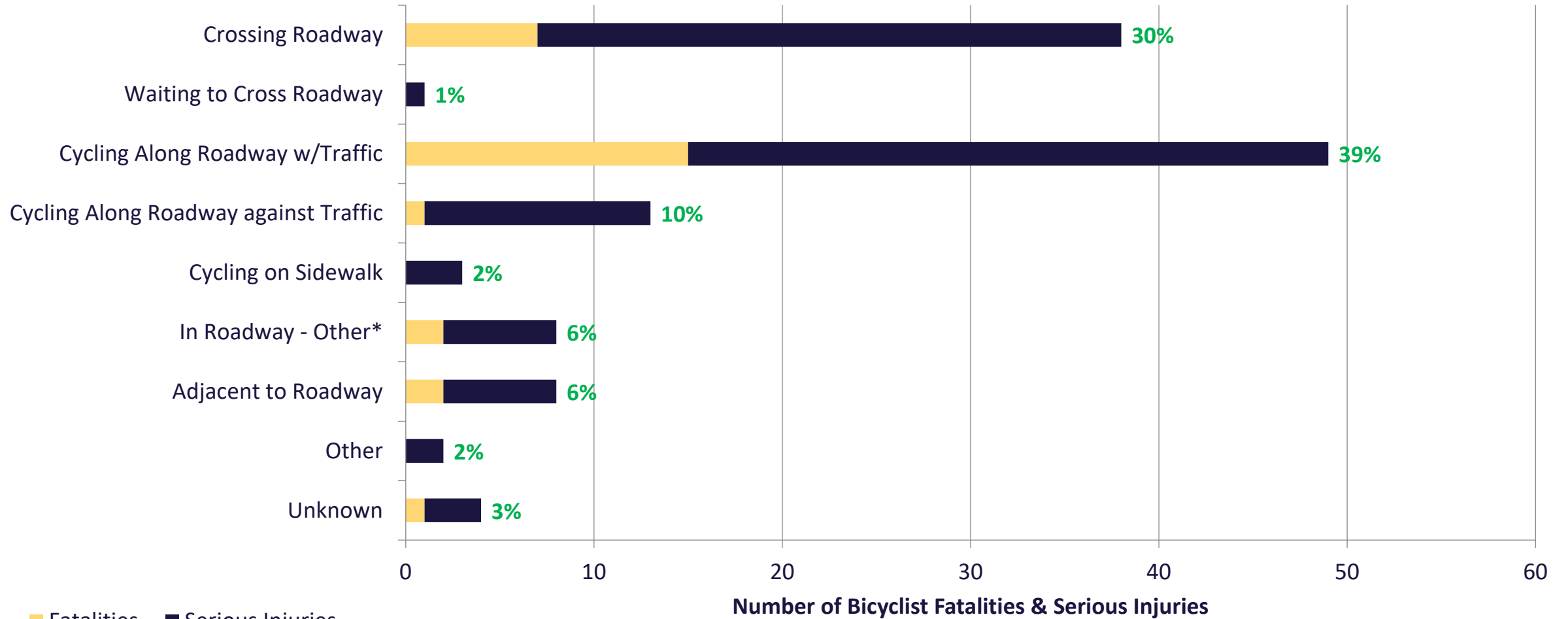
■ Fatalities ■ Serious Injuries

% Bicyclist fatalities & serious injuries



# Bicyclist Fatalities & Serious Injuries

## Bicyclist Action Prior to Crash



■ Fatalities ■ Serious Injuries

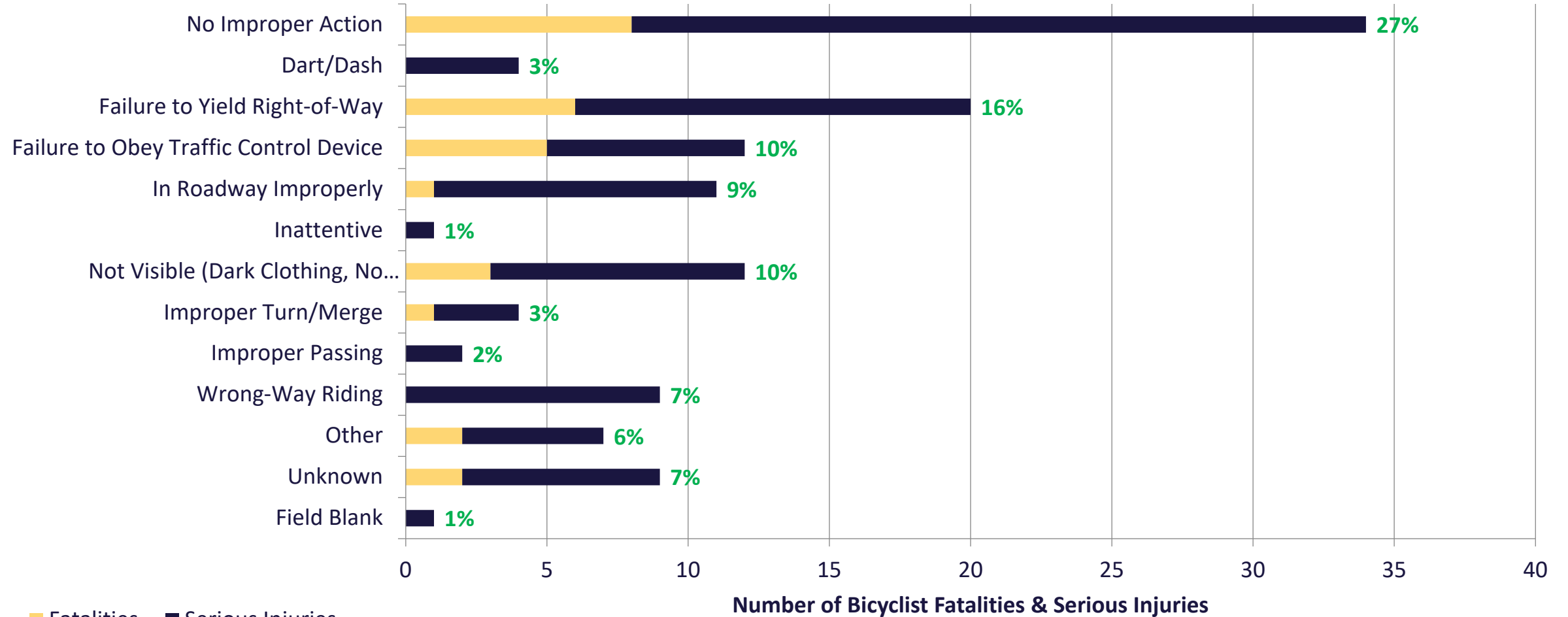
% Bicyclist fatalities & serious injuries

\*Working, Playing, etc.



# Bicyclist Fatalities & Serious Injuries

## Bicyclist Action at Time of Crash



■ Fatalities ■ Serious Injuries

% Bicyclist fatalities & serious injuries