



Data-Driven Motorcycle Safety

Recent Trends in Central Ohio

SMSA Summit | *Friday, September 15th, 2023*



MID-OHIO REGIONAL
MORPC
PLANNING COMMISSION

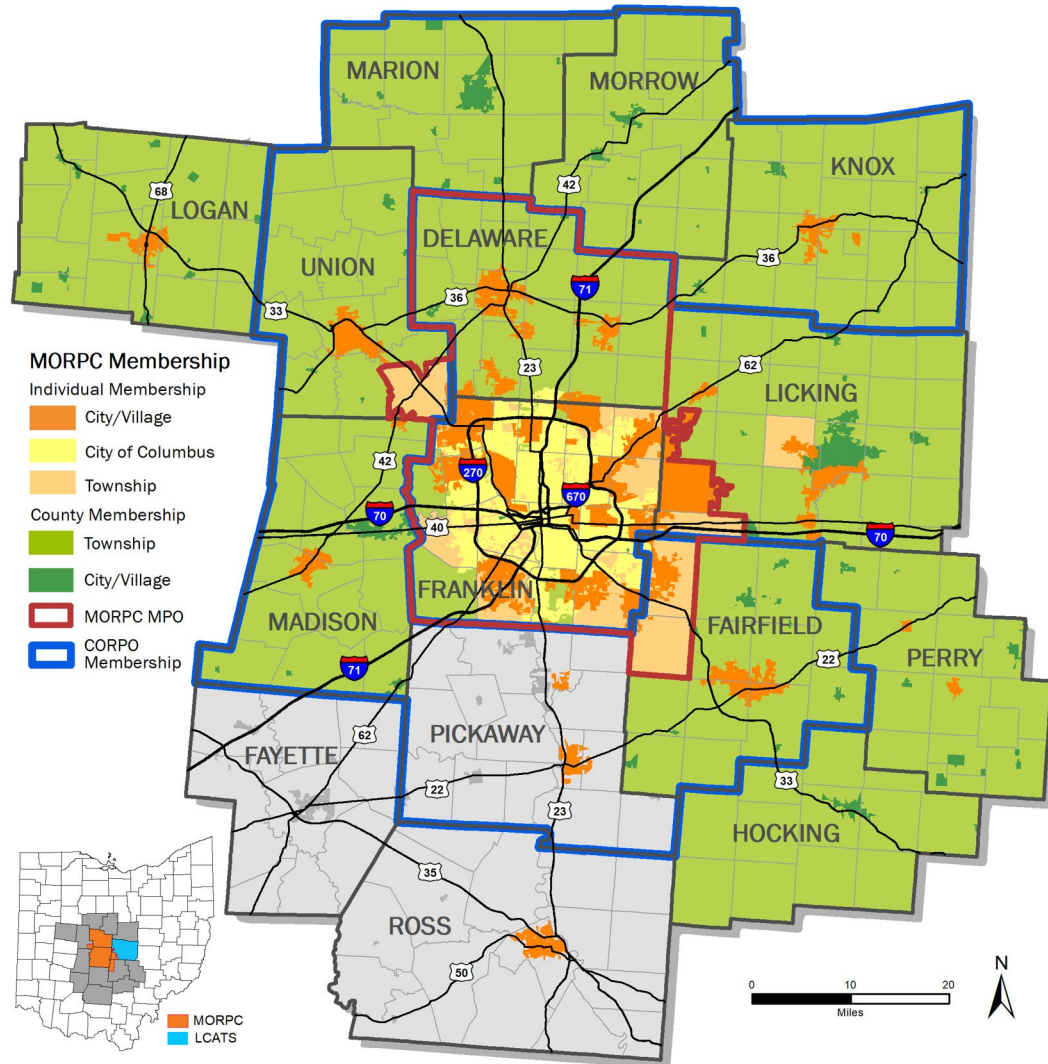
Agenda

- About MORPC
 - 10-County Central Ohio Region
 - Regional Priorities
 - Safe System Approach
- Central Ohio Crash Trends (2018-2022)
 - Vulnerable Road Users
 - Severe Crash Types
- Motorcycle Crash Trends
 - Overview
 - Environmental Factors
 - Behavioral Factors
- Overarching Takeaways



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About MORPC



Transportation & Mobility



Direct Service Programs



Community & Economic Development



Planning & Sustainability



Data & Mapping



Engagement



Public Policy



Metropolitan Transportation Plan (MTP)

What is the MTP?

- Long-range transportation plan for Central Ohio (MPO Planning Area)
- Identifies regional transportation strategies and projects
- Formal document submitted to ODOT and USDOT every 4 years
- Transportation projects must be on MTP to be eligible for federal funding
- Guides the work of MORPC and partners

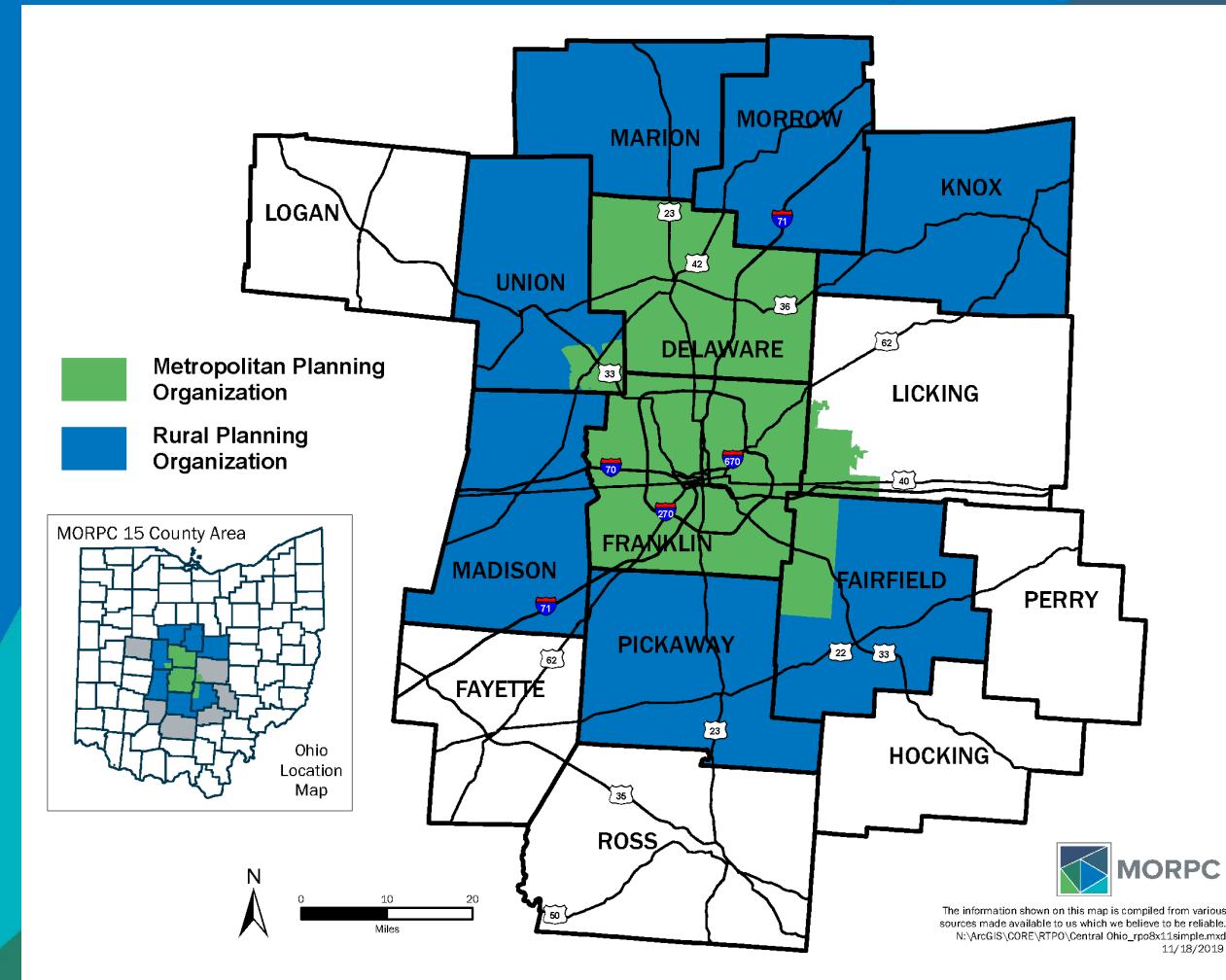
Key Safety Strategies

- Collect, develop, maintain, and analyze crash data and identify regional safety emphasis areas and priority safety locations
- Implement countermeasures that address priority safety locations
- Advance educational initiatives that address regional safety emphasis areas
- Advance legislative initiatives that address regional safety emphasis areas

Transportation Safety

MORPC Safety Program

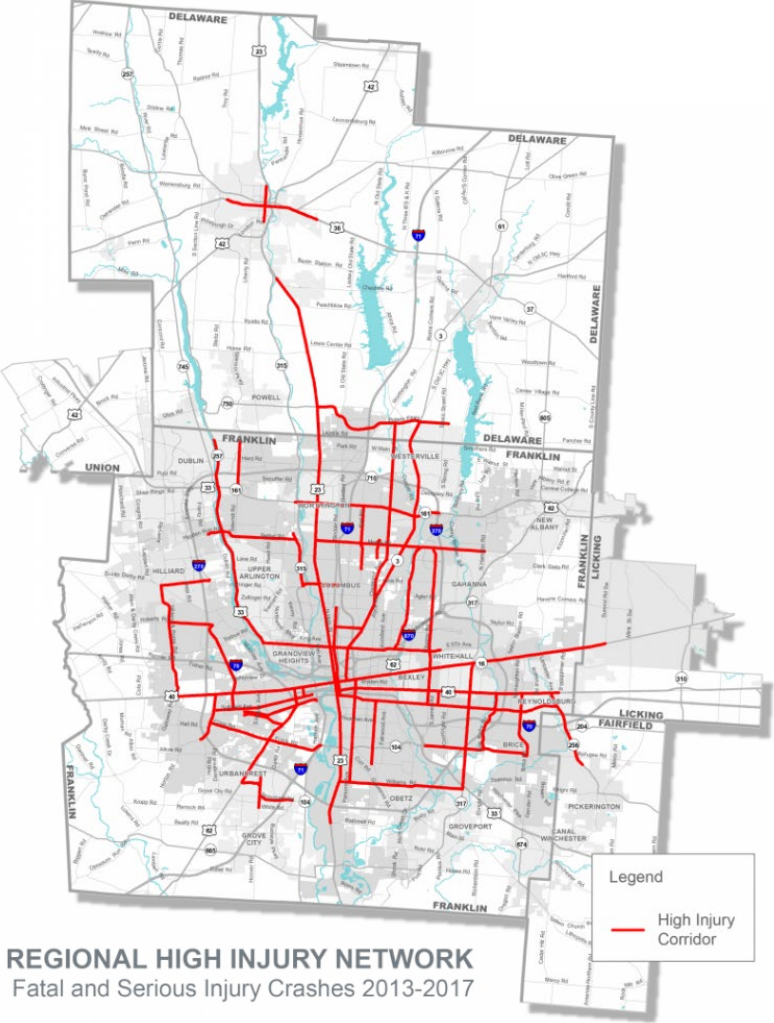
- Regional Crash Data Analysis
- Technical Assistance
- Project Evaluation
- Special Projects and Studies
- Participation in Safety Committees
- Regional Safety Education



Transportation Safety at MORPC



MORPC

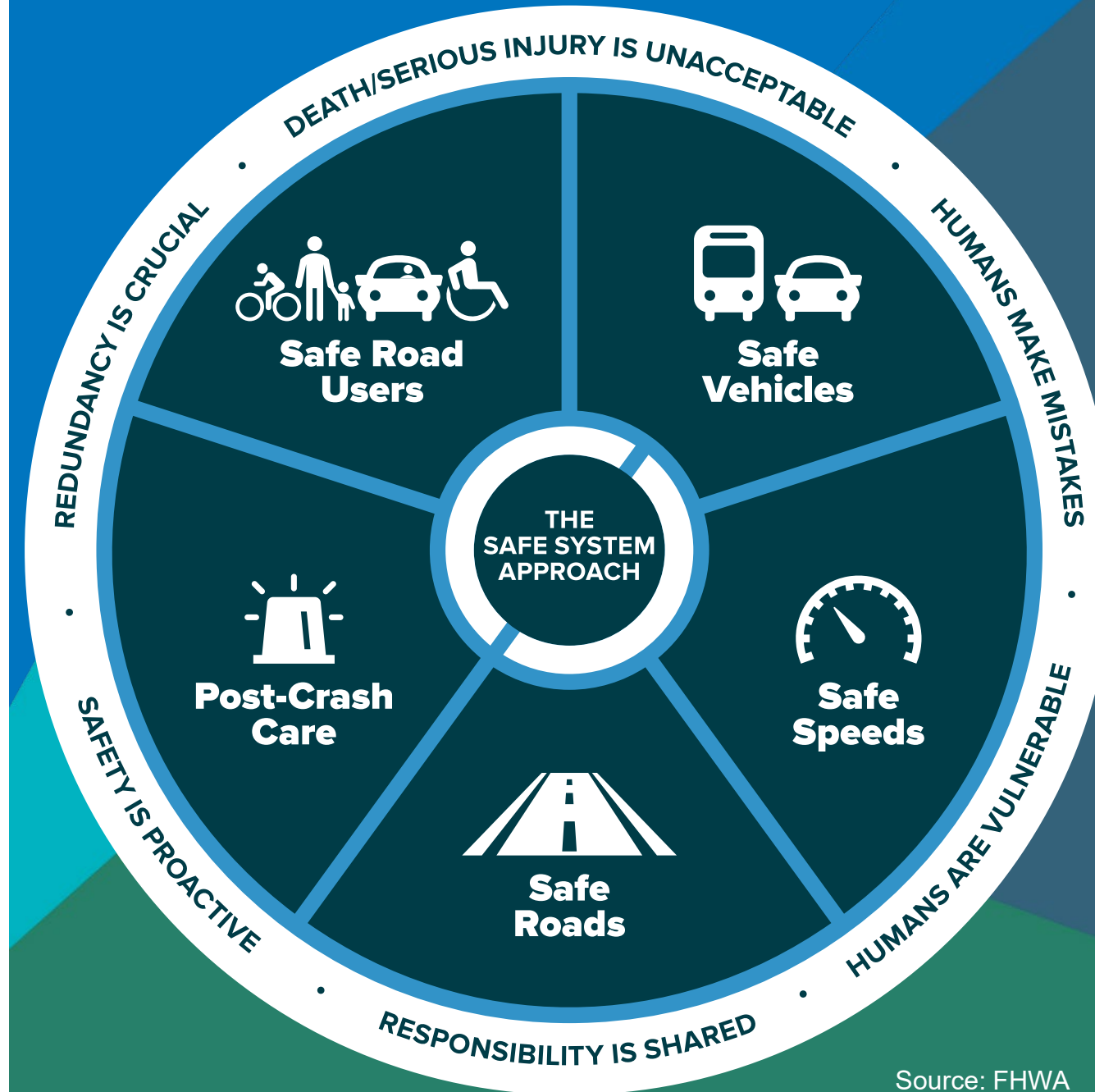


REGIONAL HIGH INJURY NETWORK
Fatal and Serious Injury Crashes 2013-2017

Safe System Approach

SAFE SYSTEM PRINCIPLES

1. Death and Serious Injury is Unacceptable
2. Humans Make Mistakes
3. Humans are Vulnerable
4. Responsibility is Shared
5. Safety is Proactive
6. Redundancy is Crucial



Central Ohio Crash Trends

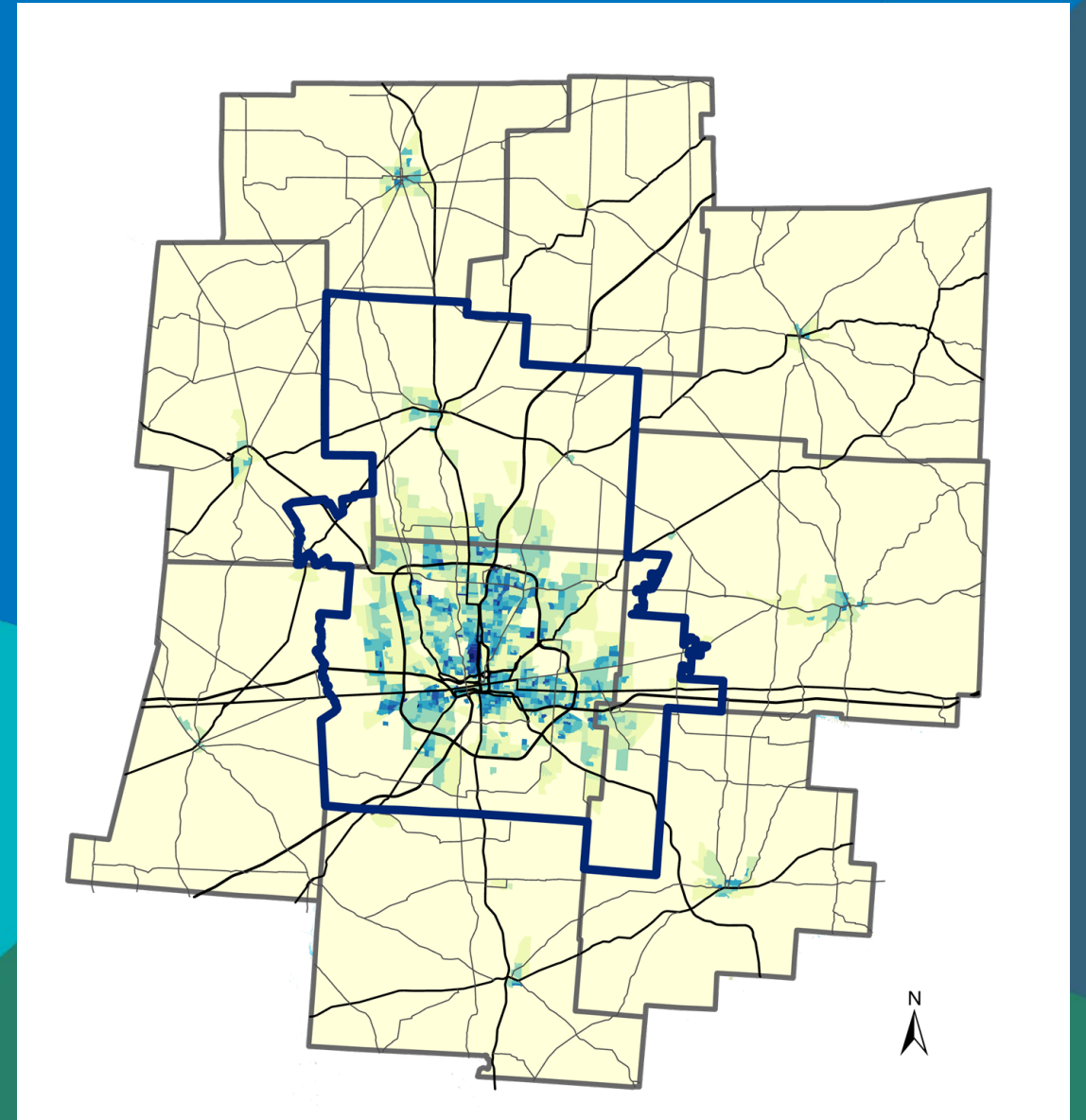
2018 - 2022



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10-County Region

- Metropolitan Planning Organization (MPO) and Central Ohio Rural Planning Organization (CORPO) areas
- Central Ohio Context
 - Urban, Suburban, and Rural
- Demographic Context (2021)
 - **Population:** 2,400,500
 - **Households:** 230,000
- Population Distribution
 - Downtown core
 - County seats



About the Data

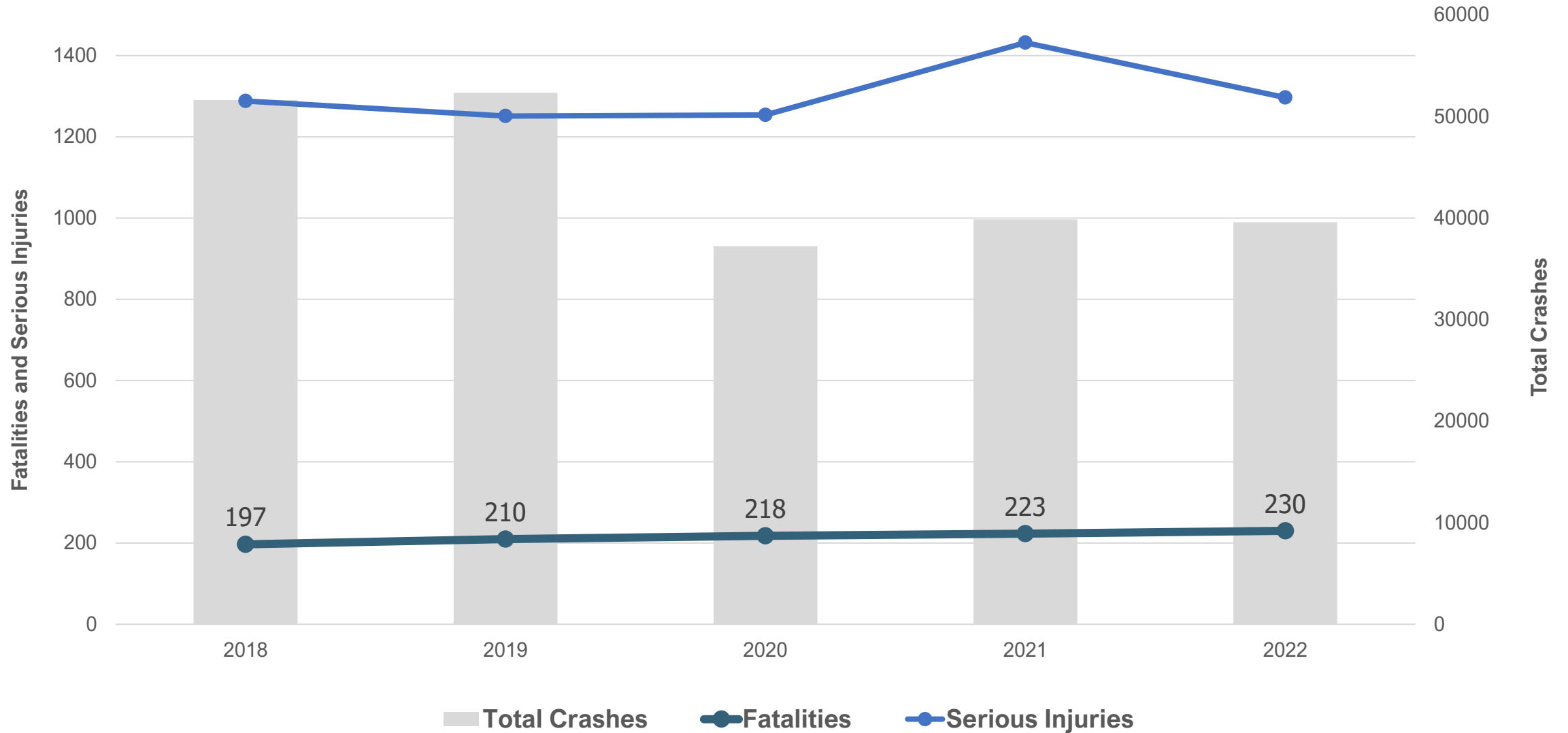
- Most recent complete 5-year period
 - 2018-2022
- 10-County *Reported* Crashes
 - Ohio Department of Public Safety
 - Ohio Department of Transportation
- Unit data from *reported* crashes
 - Unit or vehicle involved in crash
 - Includes occupants
- FSI = Fatal or Serious Injury
 - Also known as KA in “KABCO” rating system

Ohio Department of Public Safety **TRAFFIC CRASH REPORT** *DCRITES MANDATORY FIELD FOR SUPPLEMENT REPORT

PHOTOS TAKEN <input type="checkbox"/> OH-2 <input type="checkbox"/> OH-3		LOCAL INFORMATION* 2	LOCAL REPORT NUMBER* 4	
SECONDARY CRASH <input type="checkbox"/> OH-3P <input type="checkbox"/> OTHER		REPORTING AGENCY NAME* 3	NCIC* 5	HIT&RUN NUMBER OF UNITS 6
PRIVATE PROPERTY <input type="checkbox"/>				UNIT IN ERROR 7
COUNTY* 8	LOCALITY* 9	LOCATION: CITY, VILLAGE, TOWNSHIP* 10	CRASH DATE / TIME* 11	CRASH SEVERITY 12
ROUTE TYPE 12	ROUTE NUMBER 13	PREFIX 14	LOCATION ROAD NAME 15	ROAD TYPE 16
ROUTE TYPE 17	ROUTE NUMBER 18	PREFIX 19	REFERENCE ROAD NAME (ROAD, MILEPOST, HOUSE #) 20	ROAD TYPE 21
REFERENCE POINT 24	DIRECTION FROM REFERENCE 25	ROUTE TYPE 26	ROAD TYPE 27	INTERSECTION RELATED 28
MILE POST 24	NORTH 25	US - FEDERAL US ROUTE 26	AL - ALLEY 27	WITHIN INTERSECTION OR ON APPROACH 28
HOUSE # 24	SOUTH 25	SR - STATE ROUTE 26	AV - AVENUE 27	WITHIN INTERCH 28
	EAST 25	CR - NUMBERED COUNTY ROUTE 26	BL - BOULEVARD 27	ROADWAY 29
	WEST 25	TR - NUMBERED TOWNSHIP ROUTE 26	CR - CIRCLE 27	ROADWAY DIVIDE 29
DISTANCE FROM REFERENCE 26	DISTANCE UNIT OF MEASURE 27		DR - DRIVE 27	
MILES 26	FEET 27		HE - HEIGHTS 27	
	ROADS 27		PL - PLACE 27	
LOCATION OF FIRST HARMFUL EVENT 30		MANNER OF CRASH COLLISION / IMPACT 31		DIRECTION OF TRAVEL 32
1 - ON ROADWAY 30	9 - CROSSOVER 30	1 - NOT COLLISION 31	4 - REAR-TO-REAR 31	1 - NORTH 32
2 - ON SHOULDER 30	10 - DRIVEWAY/ALLEY ACCESS 30	2 - BETWEEN MOTOR VEHICLES IN TRANSPORT 31	5 - BACKING 31	2 - SOUTH 32
3 - IN MEDIAN 30	11 - RAILWAY GRADE CROSSING 30	3 - REAR-END 31	6 - ANGLE 31	3 - EAST 32
4 - ON ROADSIDE 30	12 - SHARED USE PATHS OR TRAILS 30	4 - HEAD-ON 31	7 - SIDESWIPE, SAME DIRECTION 31	4 - WEST 32
5 - ON GORE 30	13 - BIKE LANE 30		8 - SIDESWIPE, OPPOSITE DIRECTION 31	
6 - OUTSIDE TRAFFIC WAY 30	14 - TOLL BOOTH 30		9 - OTHER / UNKNOWN 31	
7 - ON RAMP 30	99 - OTHER / UNKNOWN 30			
8 - OFF RAMP 30				
<input type="checkbox"/> WORK ZONE RELATED 34	WORK ZONE TYPE 35	LOCATION OF CRASH IN WORK ZONE 36		CONTOUR 40
1 - WORKERS PRESENT 34	1 - LANE CLOSURE 35	1 - BEFORE 36	1 - STRAIGHT LEVEL 40	CONDITIONS 41
<input type="checkbox"/> LAW ENFORCEMENT PRESENT 37	2 - LANE SHIFT/CROSSOVER 35	2 - ADVANCE WARNING AREA 36	2 - STRAIGHT GRADE 40	1 - DRY 41
<input type="checkbox"/> SCHOOL ZONE 37	3 - WORK ON SHOULDER OR MEDIAN 35	3 - TRANSITION AREA 36	3 - CURVE LEVEL 40	2 - WET 41
	4 - INTERMITTENT OR MOVING WORK 35	4 - ACTIVITY AREA 36	4 - CURVE GRADE 40	3 - SNOW 41
	5 - OTHER 35	5 - TERMINATION AREA 36	9 - OTHER/UNKNOWN 40	4 - ICE 41
LIGHT CONDITION 38	WEATHER 39			5 - SAND, MUD, DIRT, OIL, GRAVEL 41
1 - DAYLIGHT 38	1 - CLEAR 39			6 - WATER (STANDING, MOVING) 41
2 - DAWN / DUSK 38	2 - CLOUDY 39			7 - SLUSH 41
3 - DARK - LIGHTED ROADWAY 38	3 - FOG 39			9 - OTHER / UNKNOWN 41
4 - DARK - ROADWAY NOT LIGHTED 38	4 - RAIN 39			
5 - DARK - UNKNOWN ROADWAY LIGHTING 38	5 - SLEET, HAIL 39			
9 - OTHER / UNKNOWN 38	99 - OTHER / UNKNOWN 39			
NARRATIVE 43		SURFACE 42		
		1 - CONCRETE 42		
		2 - BLACKTOP, BITUMINOUS, ASPHALT 42		
		3 - BRICK / BLOCK 42		
		4 - SLAG, GRAVEL, STONE 42		
		5 - DIRT 42		
		9 - OTHER/UNKNOWN 42		
CRASH REPORTED DATE / TIME 45		DISPATCH DATE / TIME 46	ARRIVAL DATE / TIME 47	SCENE CLEARED DATE / TIME 48
TOTAL TIME ROADWAY CLOSED 49		OTHER INVESTIGATION TIME 50	TOTAL MINUTES 51	OFFICER'S NAME* 52
				OFFICER'S BADGE NUMBER* 53
				Checked by OFFICER'S NAME* 54
				Checked by OFFICER'S BADGE NUMBER* 55
				REPORT TAKEN BY 56
				<input type="checkbox"/> POLICE 56
				<input type="checkbox"/> MOTORIST 56
				SUPPLEMENTARY COMMENTS (FOR USE BY OHIO DEPARTMENT OF PUBLIC SAFETY) 57

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Central Ohio Crash Trends – 2018-2022



Vulnerable Road Users

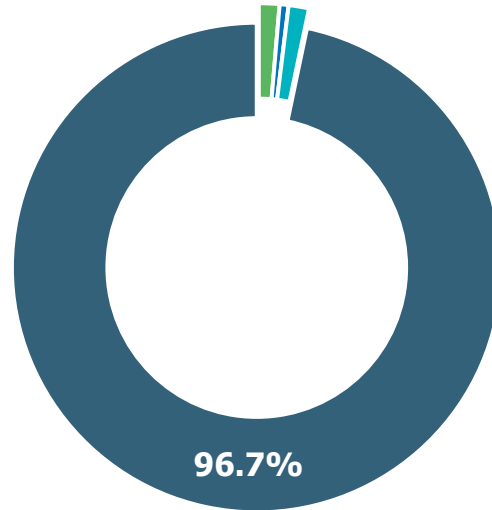
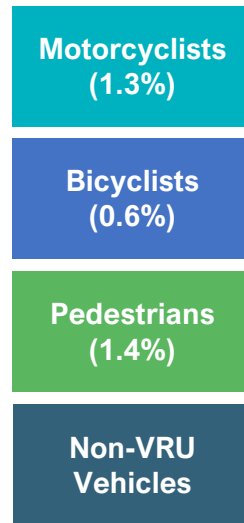


Pedestrians

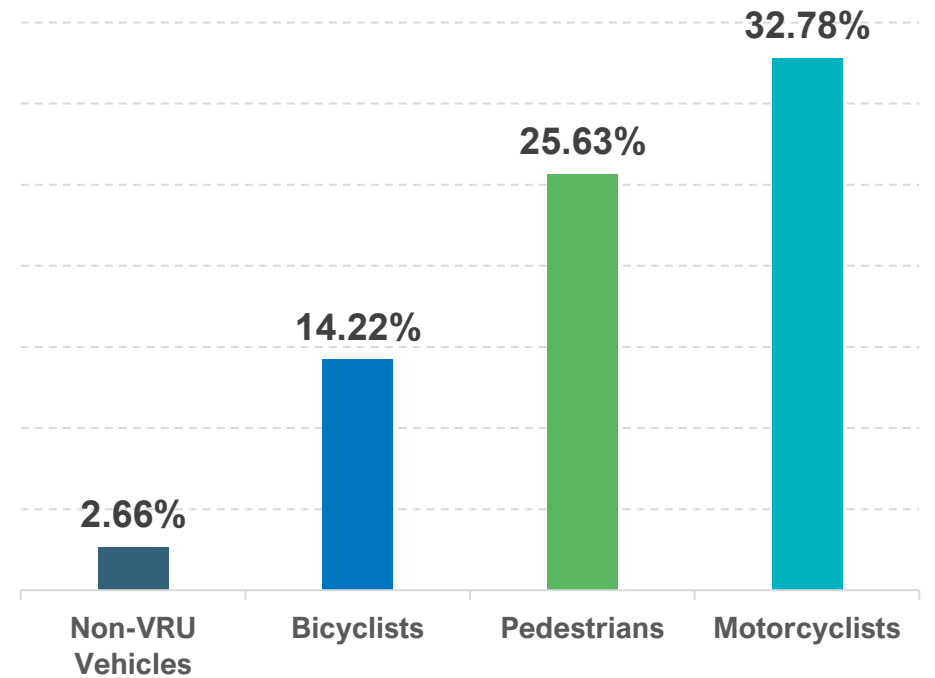
Bicyclists

Motorcyclists

Percentage of Units Involved in Crashes by Unit Type



Fatal & Serious Injury Rate by Unit Type



Vulnerable Road Users

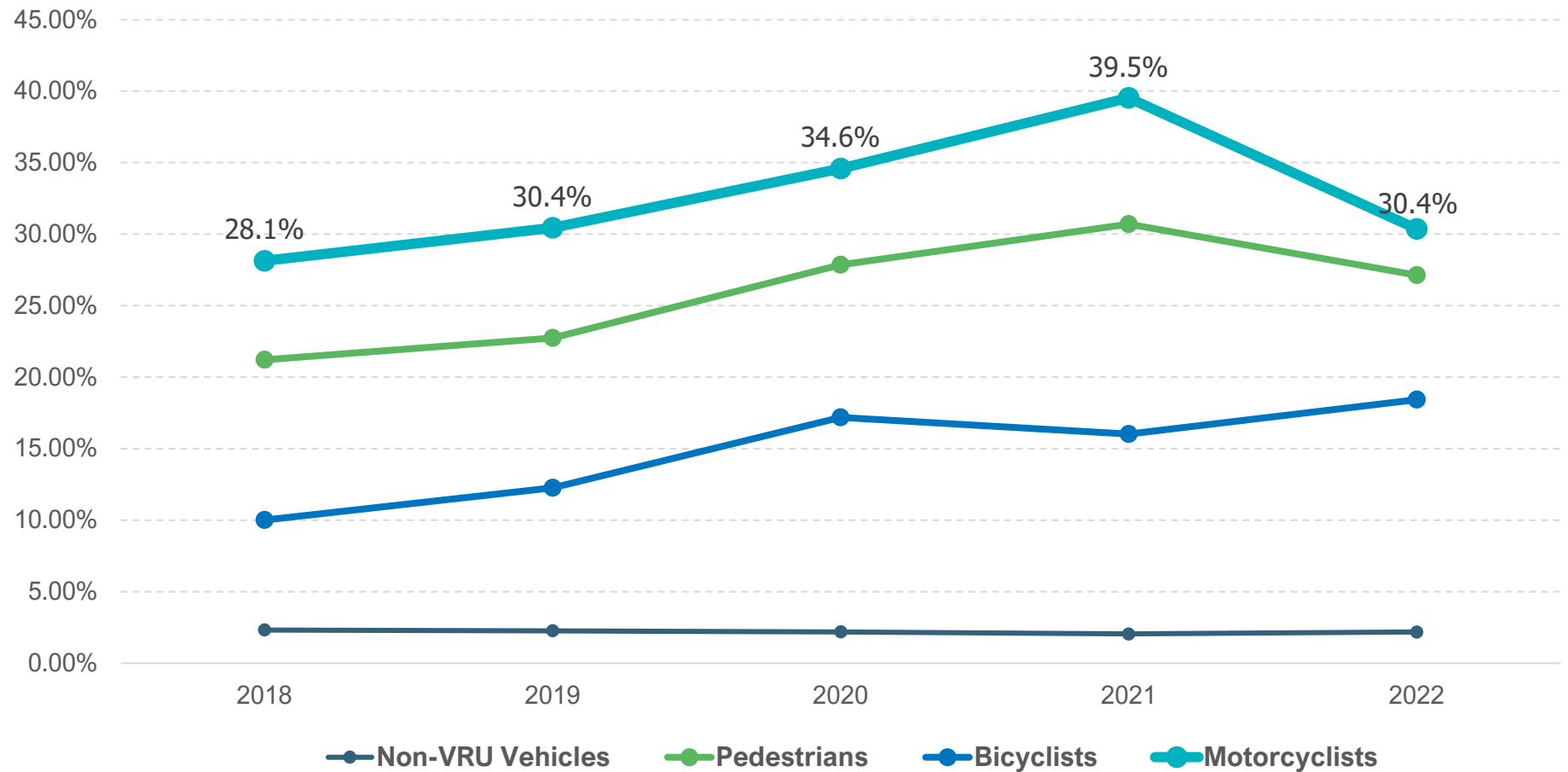


Pedestrians

Bicyclists

Motorcyclists

Fatal & Serious Injury Rates by User Type (2018-2022)

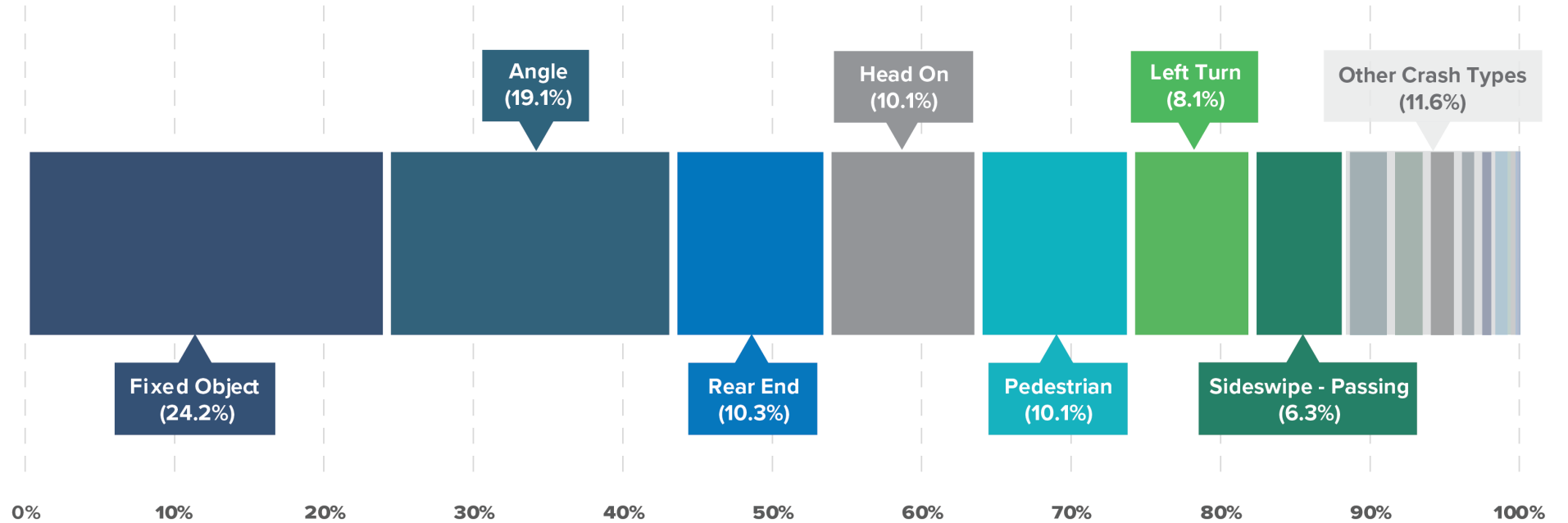


Serious Crash Types



- Fixed Object
- Angle
- Rear End
- Head On
- Pedestrian

Crash Types by Proportions of Total Fatal & Serious Injuries



Key Takeaways

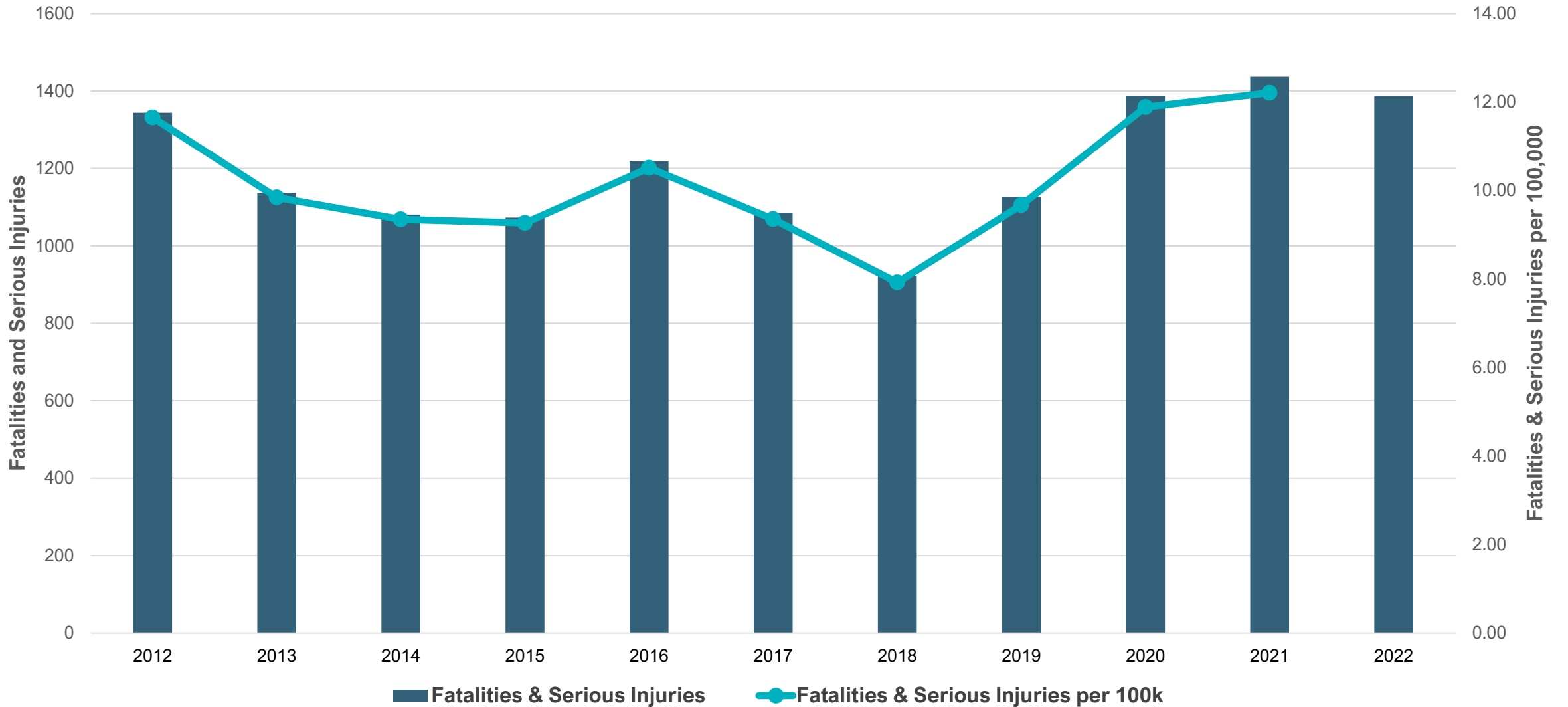
- Vulnerable Road Users (VRUs) at greater risk of severe crash outcomes
 - Lack protection of steel frame
- VRU FSI rates increased during pandemic
 - More speeding behaviors
 - Vehicle sizes continue to increase
- Motorcyclists particularly at risk
 - Combination of vulnerability and speed

Recent Motorcycle Crash Trends

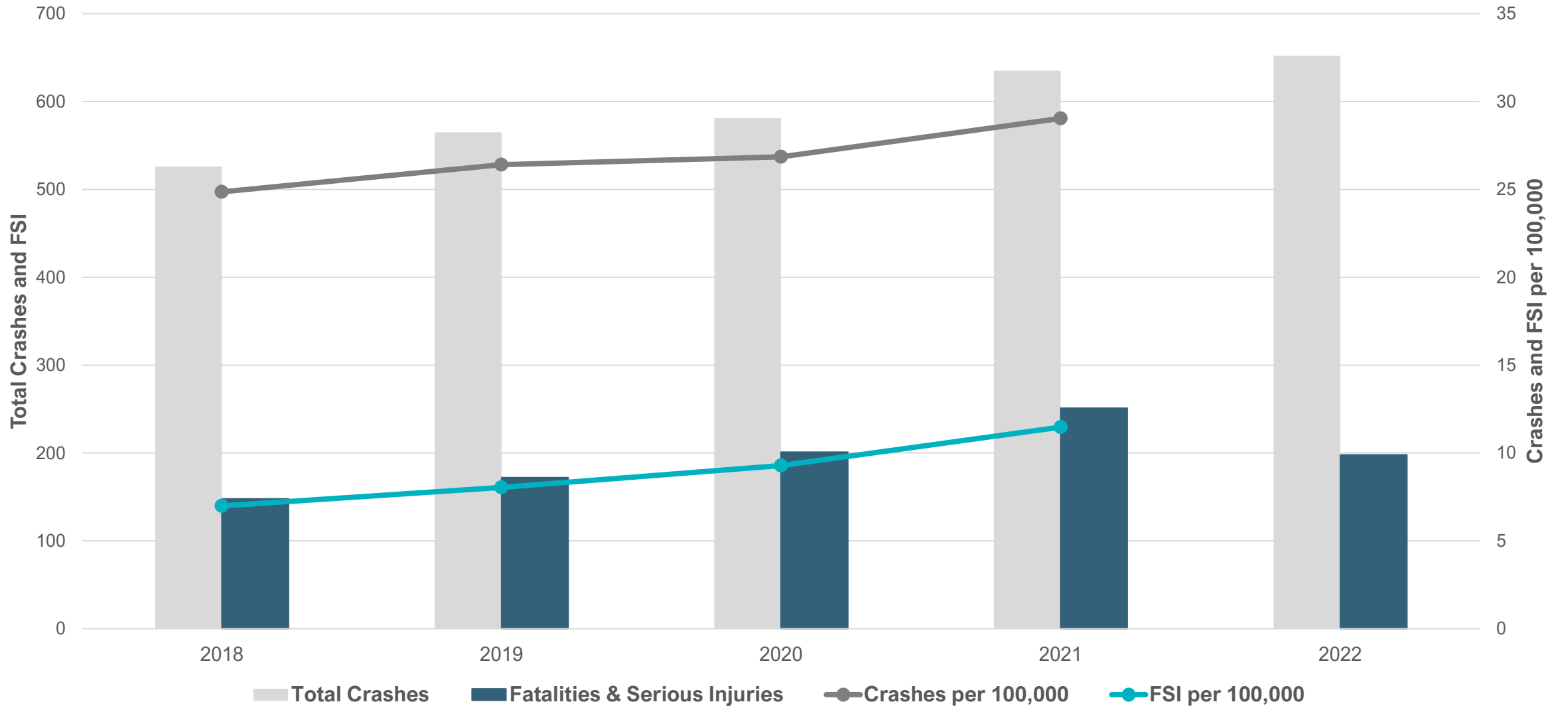


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Ohio Statewide Trends in Motorcycle Crashes

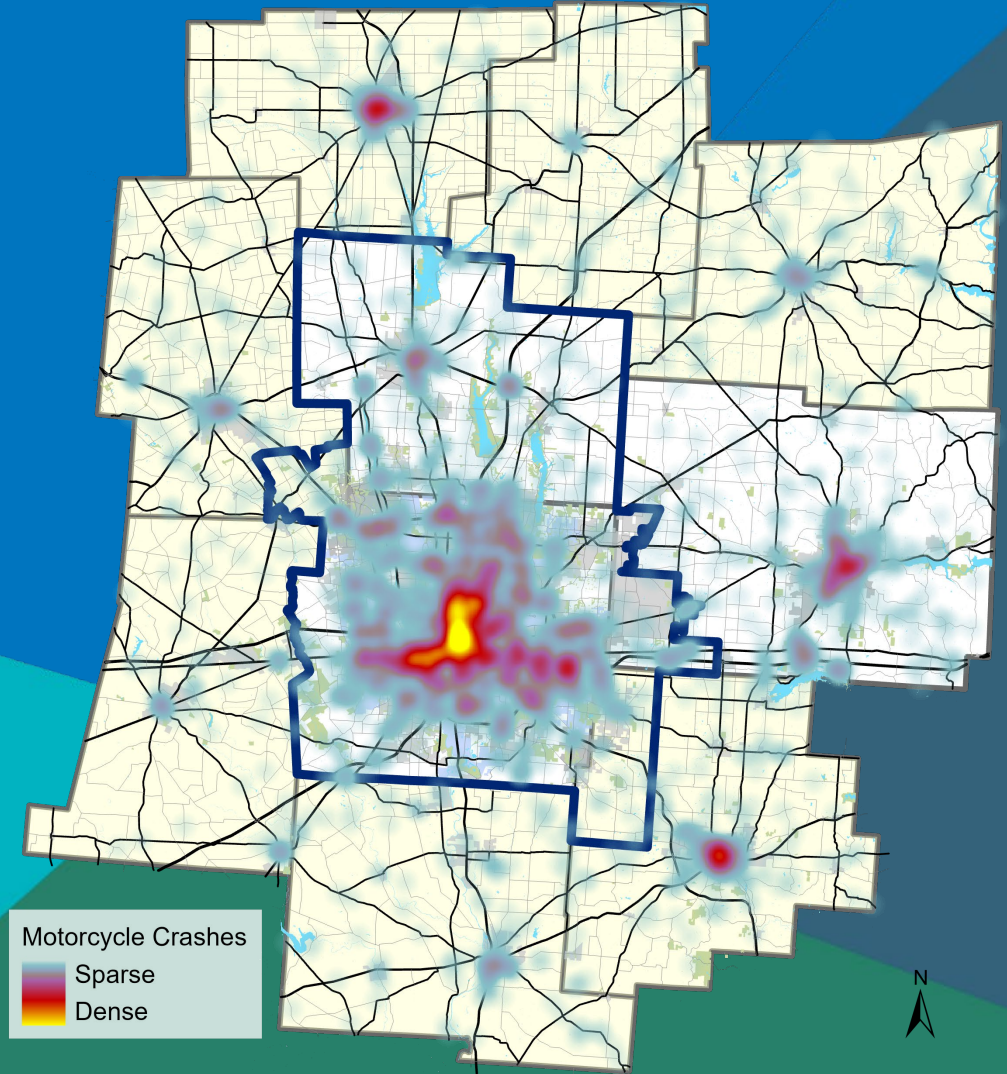


Central Ohio: Motorcycle Crashes and Fatalities & Serious Injuries (2018-2022)



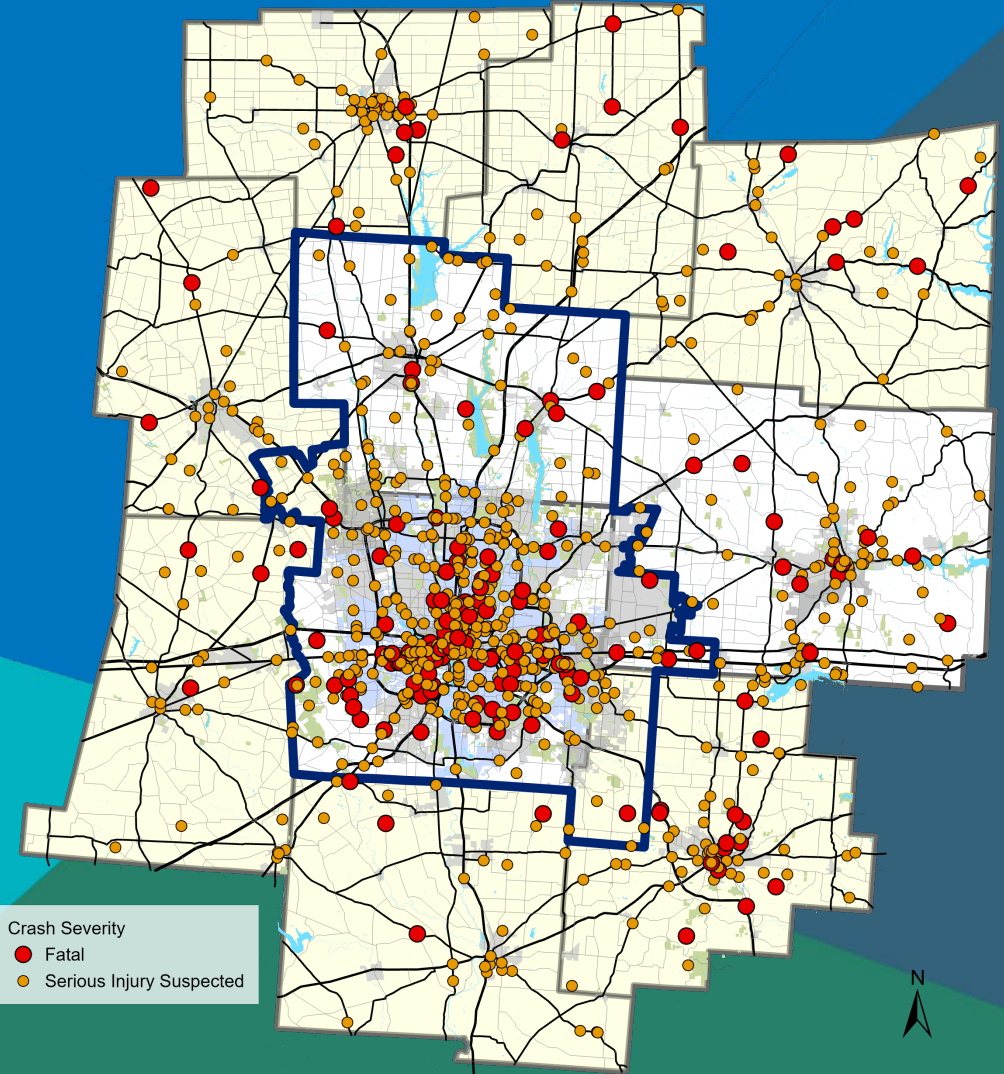
Crash Locations

- Regional distribution of motorcycle crashes
 - Largely follows population density
- Downtown Columbus – epicenter
- County seats – hotspots
- Key corridors
- Major intersections



FSI Crash Locations

- Regional distribution of fatal & serious injury motorcycle crashes
 - Largely follows population density
- Downtown Columbus – epicenter
- County seats – hotspots
- Urban vs Rural
 - Motorcyclist FSI per capita
 - Higher in rural counties



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Motorcycle Crashes & Outcomes

Environmental Factors

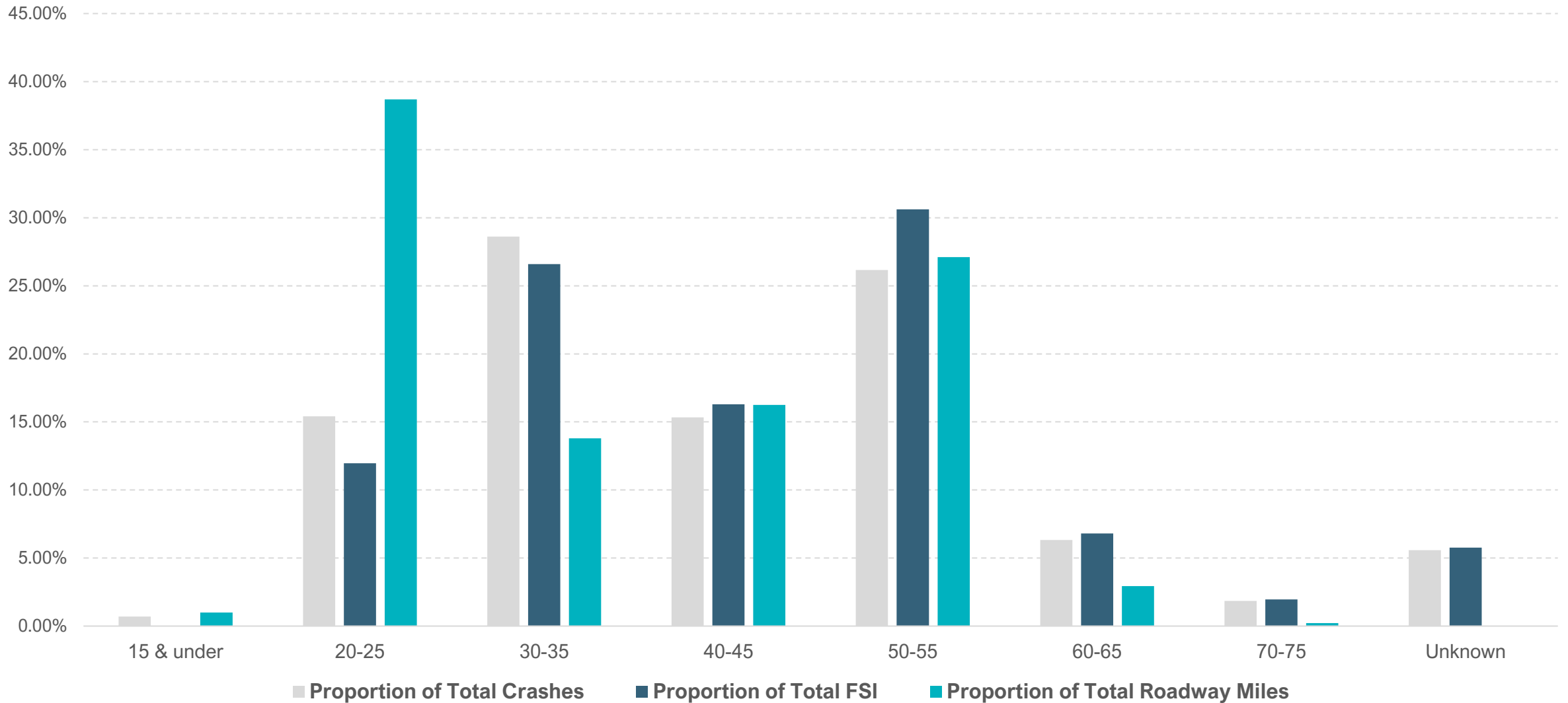


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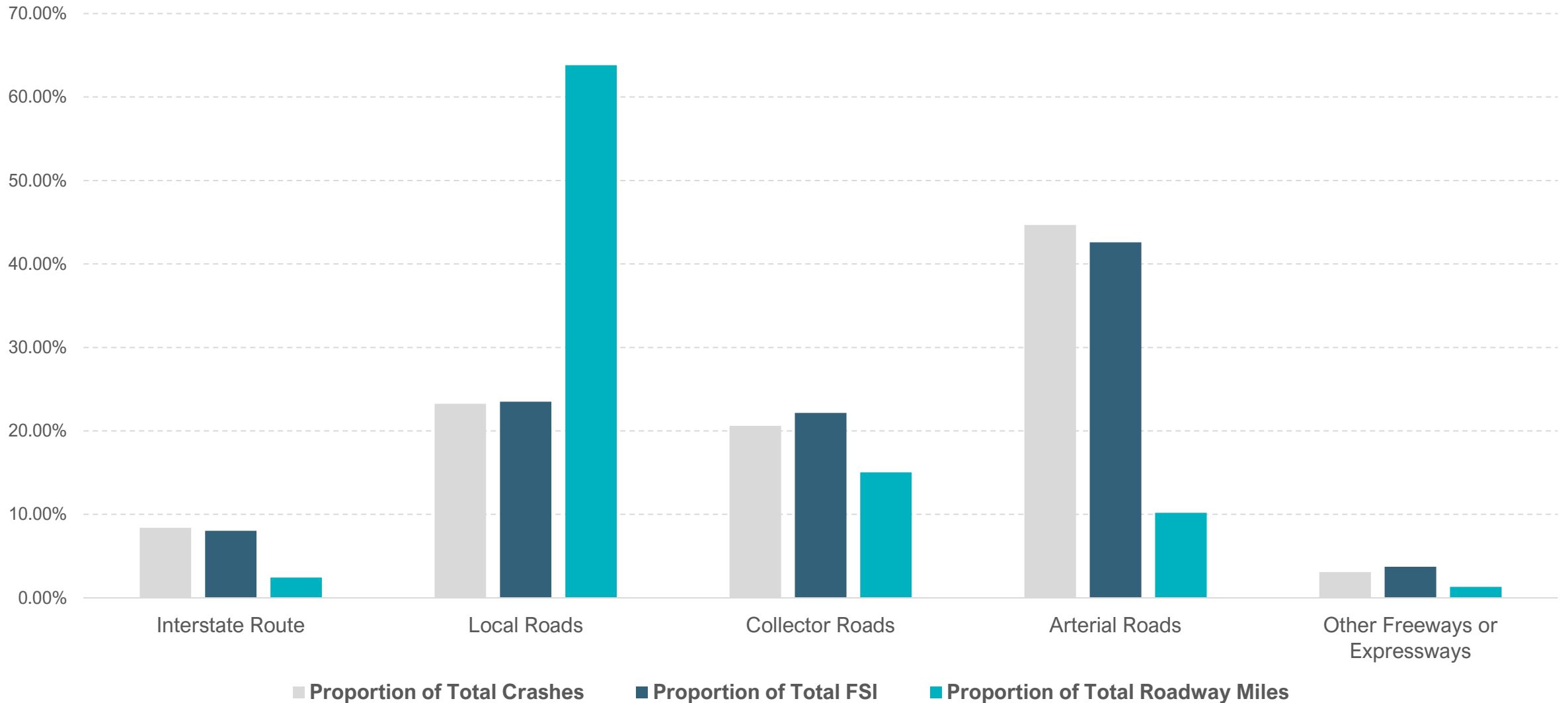
Section Agenda

- Roadway Characteristics
 - Speed Limits
 - Function
 - Combination
- Severe Crash Types
- Pandemic-related changes

Proportions of Crashes and FSI by Speed Limit



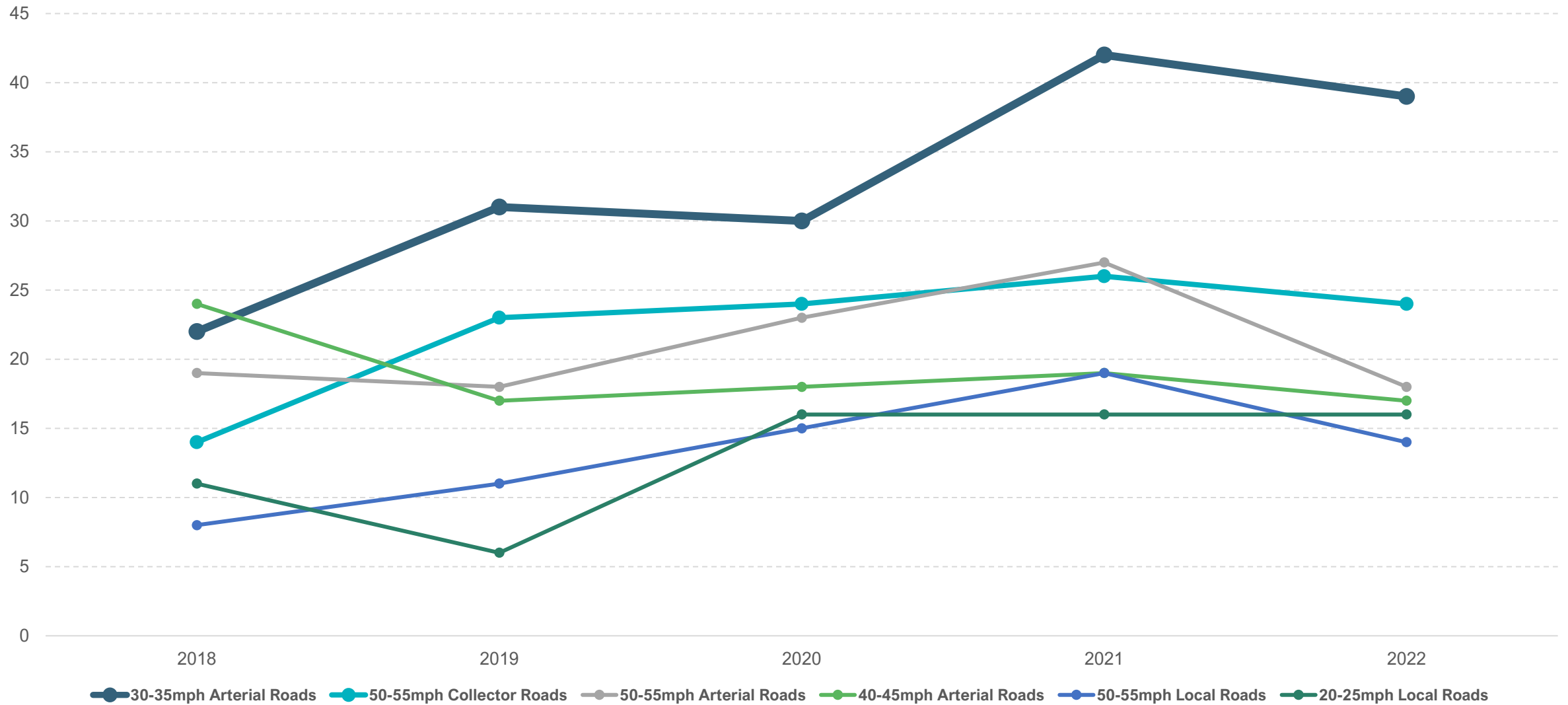
Proportions of Crashes and FSI by Functional Classification



Speed Limit X Functional Classification



Speed Limit X Functional Classification



Severe Crash Types Involving Motorcyclists



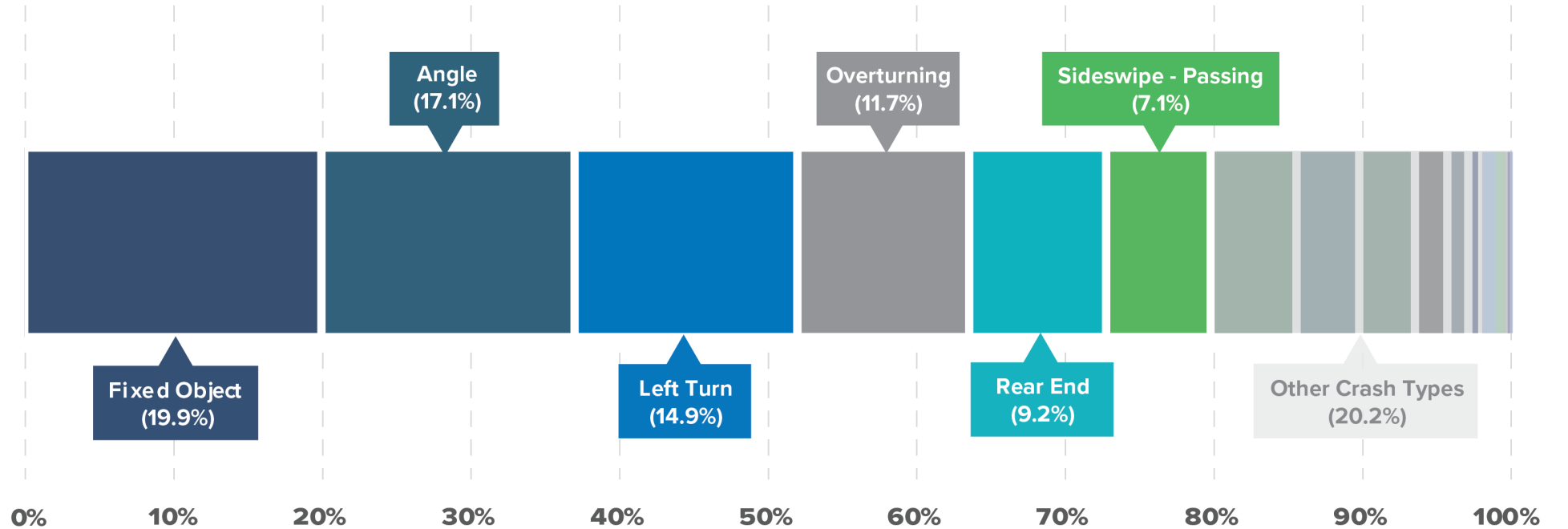
Fixed Object

Angle

Left Turn

Overturning

Rear End



Severe Crash Types Involving Motorcyclists



- Fixed Object
- Angle
- Left Turn
- Overturning
- Rear End

Motorcyclist Fatal & Serious Injury Rates by Crash Type

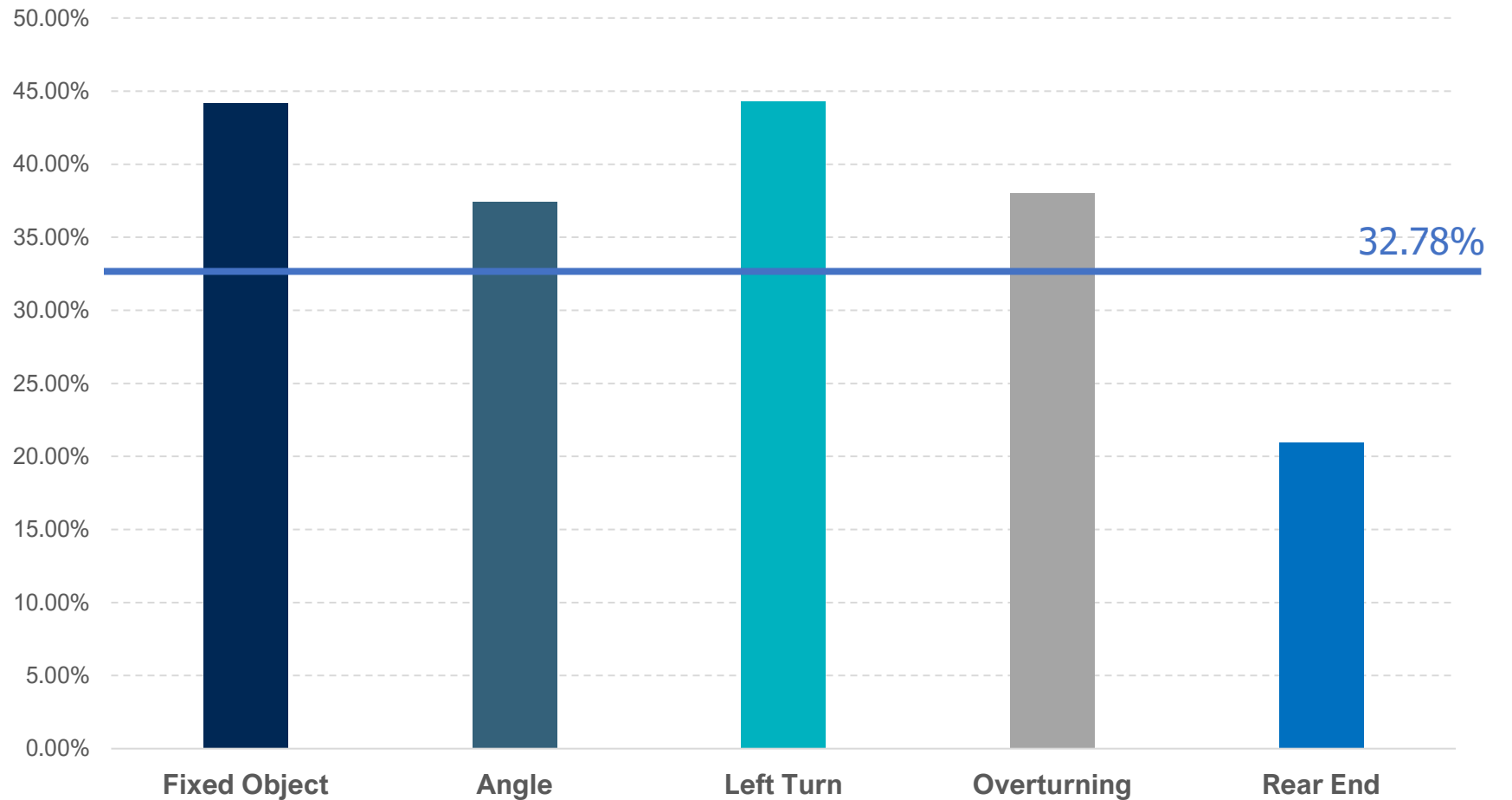


Table 3. Ratios of Adjusted Proportions of Drivers Who Reported Engaging in Various Driving Behaviors within the Past 30 Days Among Drivers Who Increased or Reduced Their Driving Due to the COVID-19 Pandemic Relative to Drivers Who Did Not Change How Much They Drove, Sample of 2,888 Licensed Active Drivers Aged 16 Years and Older, United States, October–November 2020.

	Reduced Driving vs. No Change		Increased Driving vs. No Change	
	Prevalence Ratio (95% Confidence Interval)			
Talking on cellphone	0.96	(0.84–1.09)	1.00	(0.75–1.33)
Reading text messages	1.07	(0.94–1.23)	1.27	(1.01–1.60)
Typing text messages	1.02	(0.84–1.23)	1.38	(1.01–1.88)
Speeding on freeways	1.13	(1.00–1.26)	1.40	(1.16–1.69)
Speeding on residential streets	1.14	(0.99–1.31)	1.40	(1.08–1.80)
Running red lights	1.08	(0.90–1.30)	1.67	(1.25–2.23)
Changing lanes aggressively	1.10	(0.90–1.33)	1.86	(1.37–2.52)
Drowsy driving	1.03	(0.82–1.29)	1.01	(0.61–1.69)
Alcohol-impaired driving	0.99	(0.68–1.46)	2.09	(1.11–3.92)
Driving after using marijuana	1.13	(0.70–1.83)	2.90	(1.34–6.30)
Driving without wearing seatbelt	0.67	(0.52–0.87)	1.31	(0.80–2.14)

Source: AAA Foundation for Traffic Safety

Section Takeaways

- Vehicle Speeds
 - Increasingly a transportation safety concern
- Arterial “Str-oads”
 - Excess roadway space
 - Inter-user conflicts
- Severe crash types
 - Fixed object and angle, increasingly so
 - Left turn and overturning, particularly so
- Roadway user behavior
 - Riskier driving behaviors during pandemic
 - 2021 indicates continuation
- How about in motorcyclists?



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Motorcycle Crashes & Outcomes

Behavioral Factors

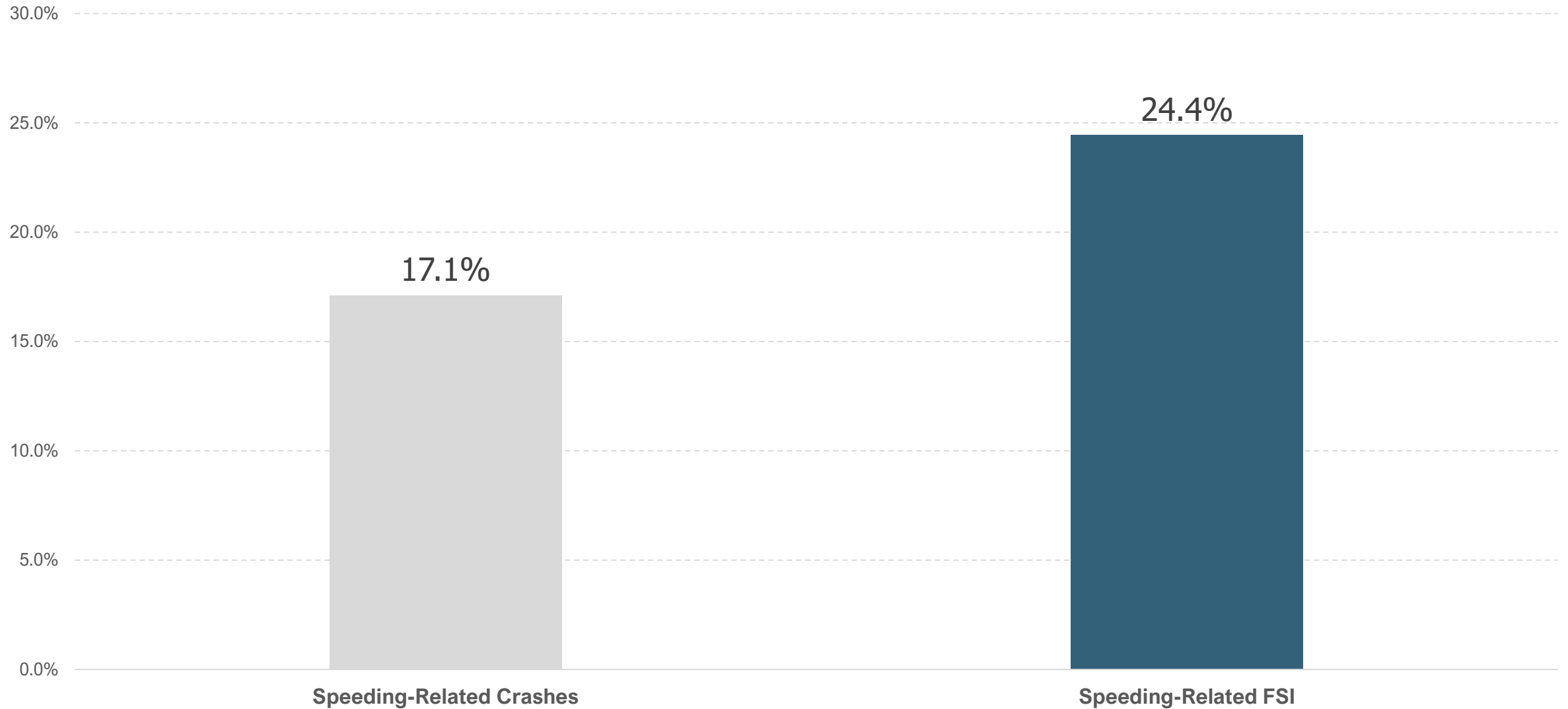


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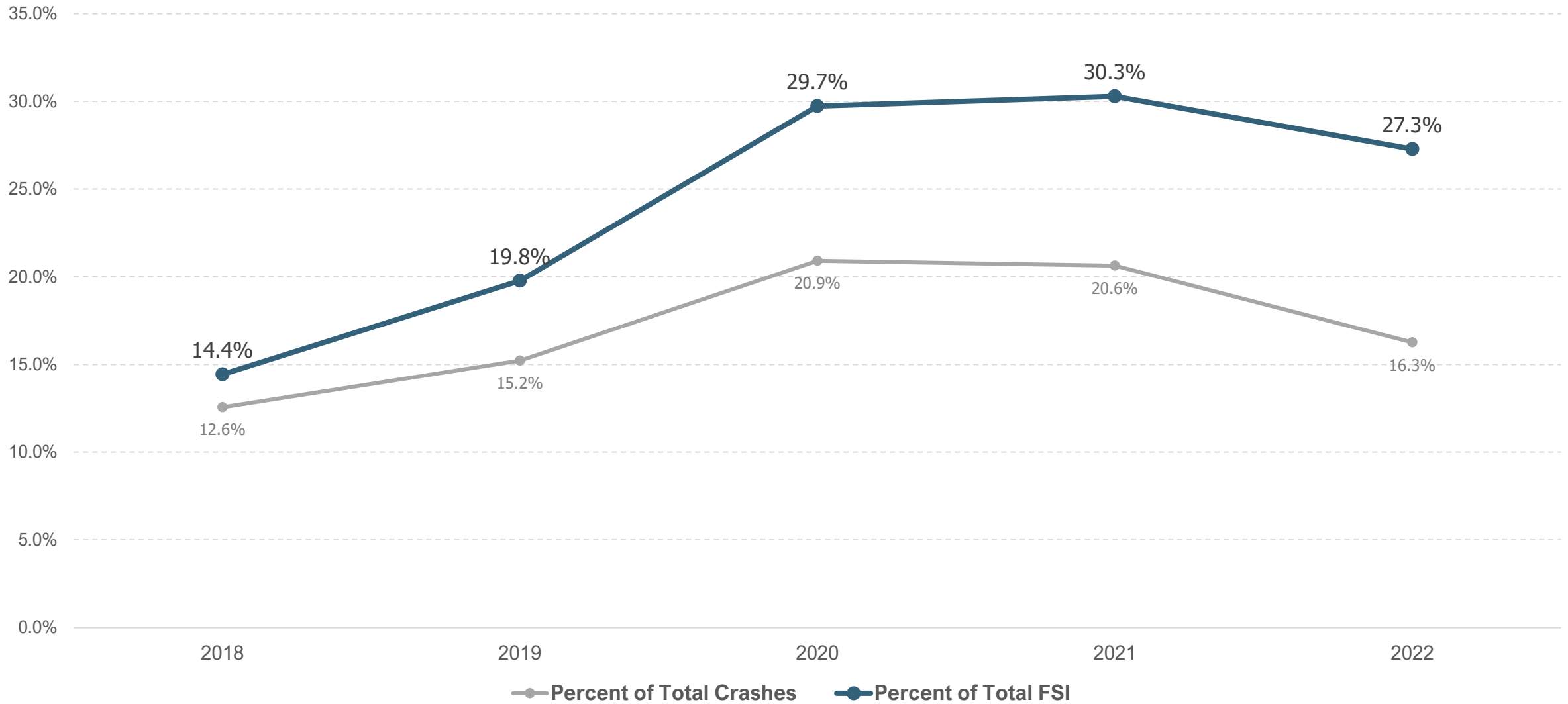
Section Agenda

- Speeding among motorcyclists
- Helmet-Use
- At-fault rates
- Motorcyclist age
- Motorcycle endorsement

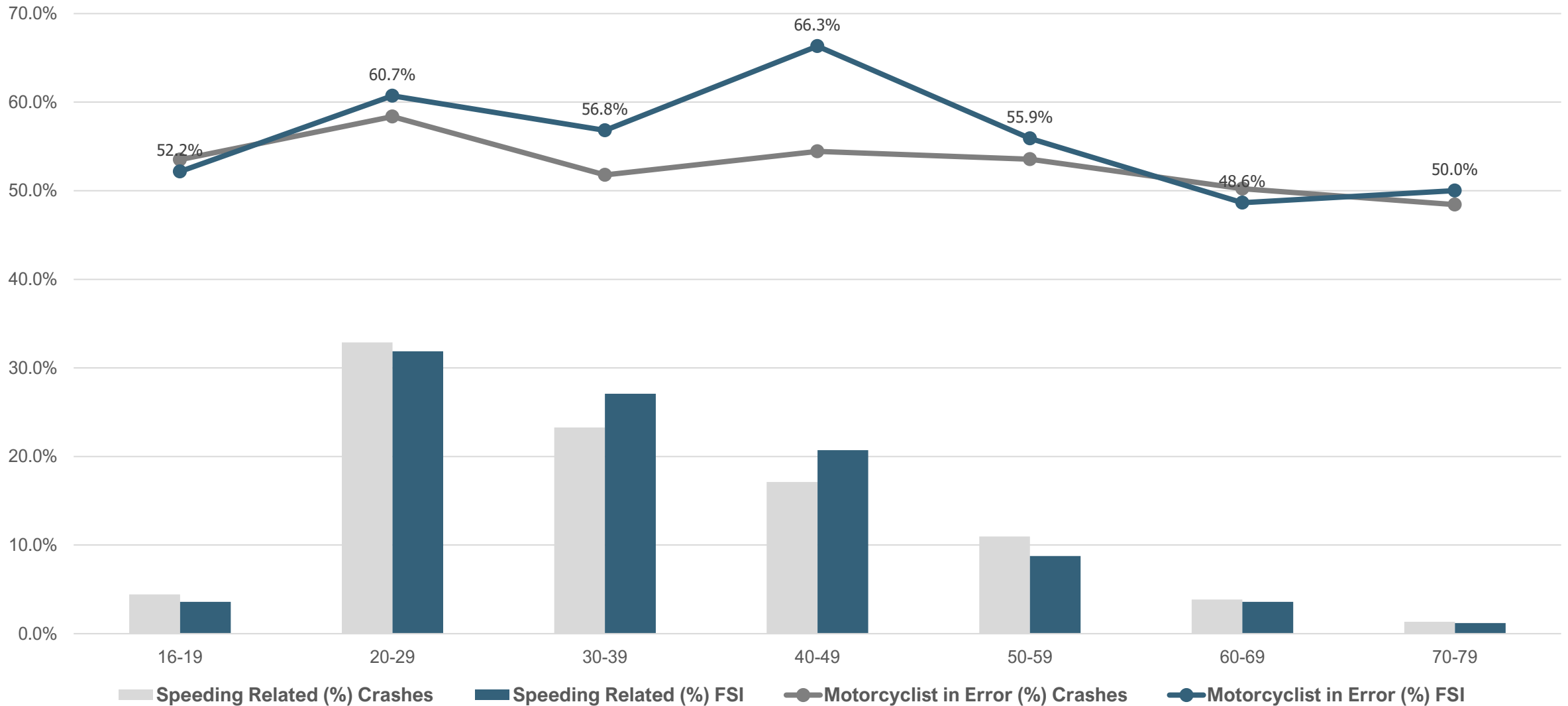
Proportion of Speeding-Induced** Motorcyclist Crashes & FSI



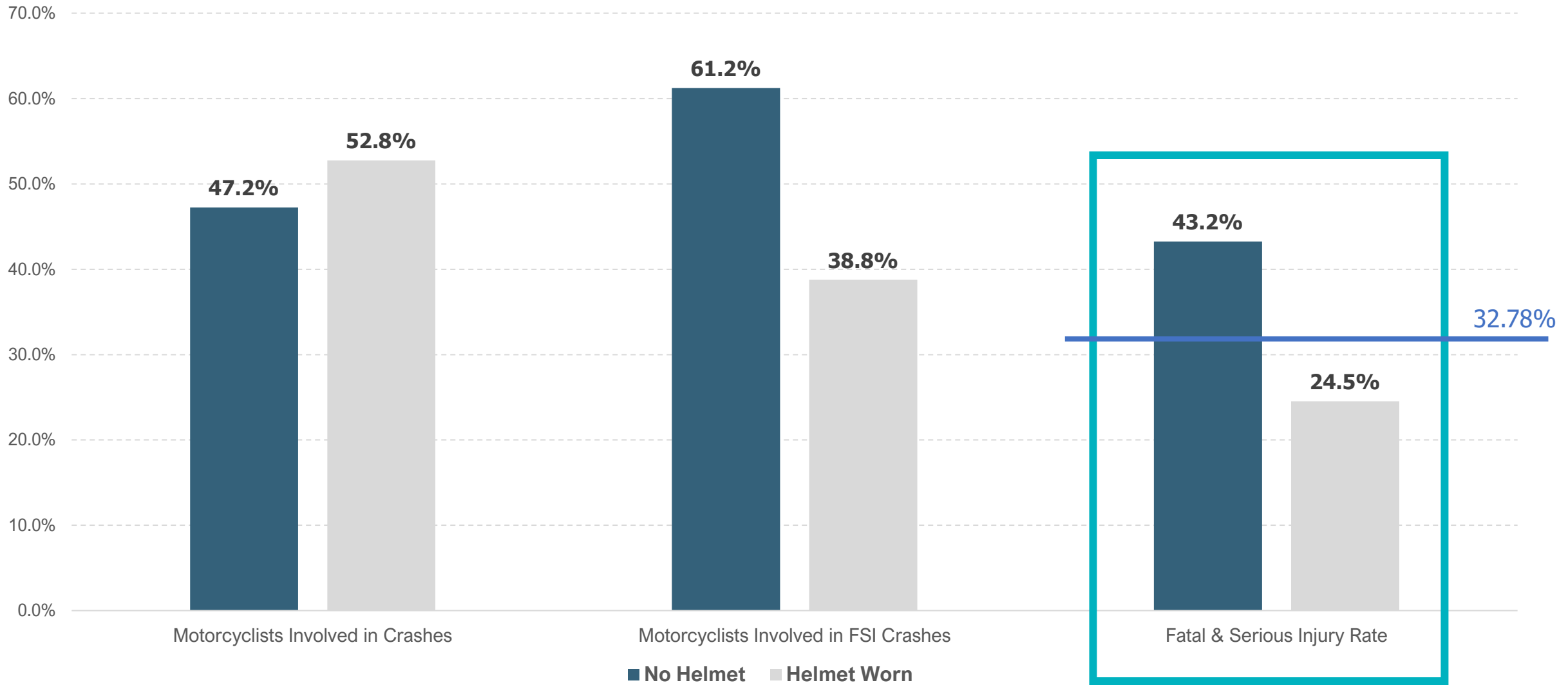
Proportion of Speeding-Induced** Motorcyclist Crashes & FSI



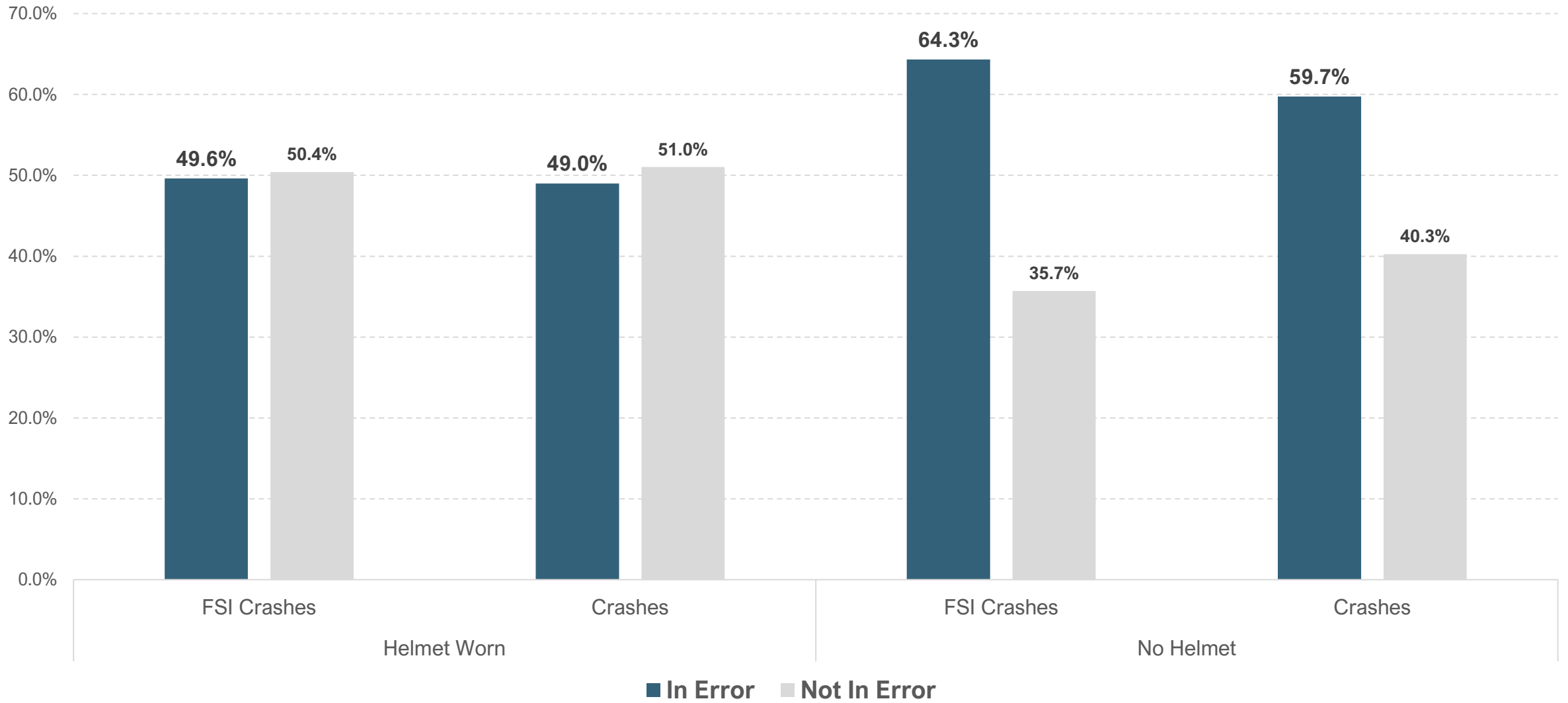
Motorcyclist Age and Speeding-Related & At-Fault Rates



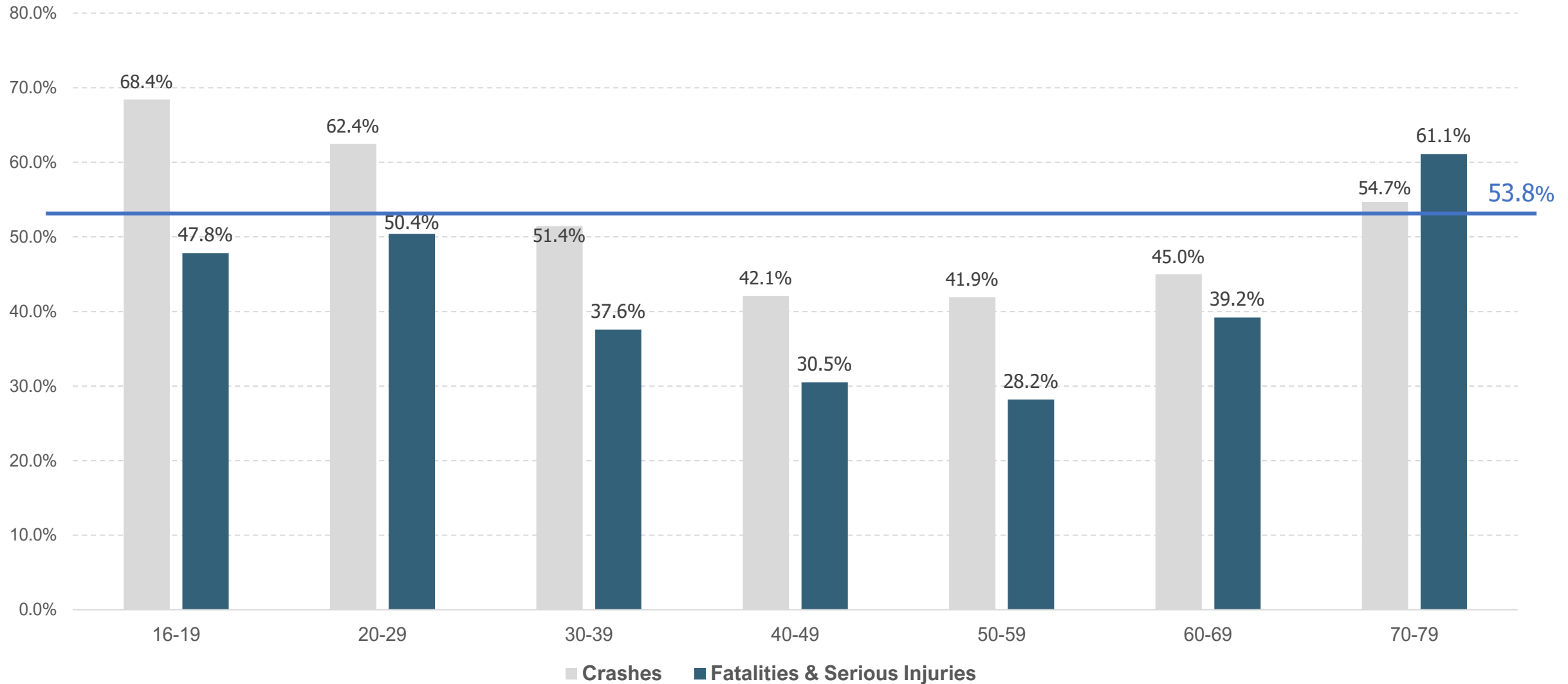
Motorcyclist Helmet-Use & Crash Outcomes



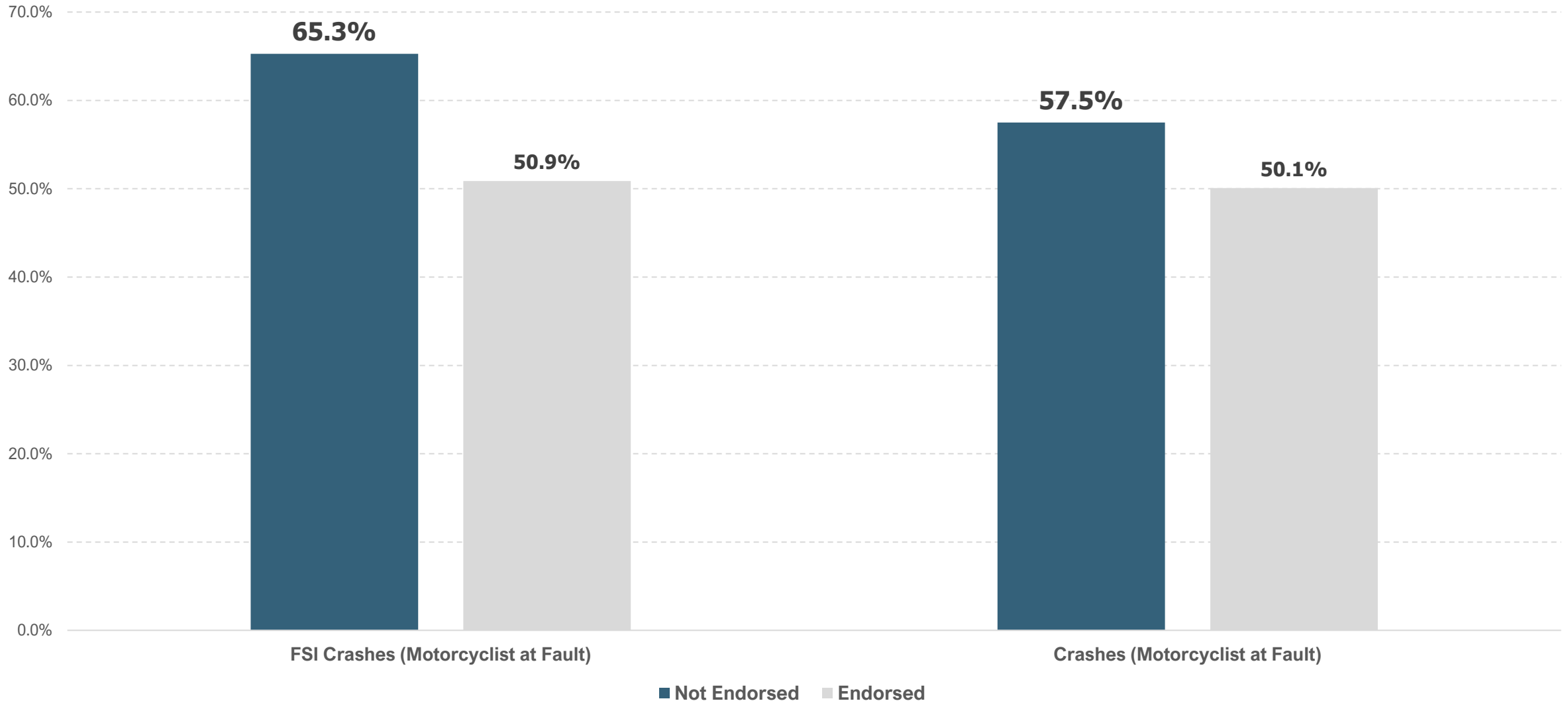
Motorcyclist Helmet-Usage & At-Fault Rates



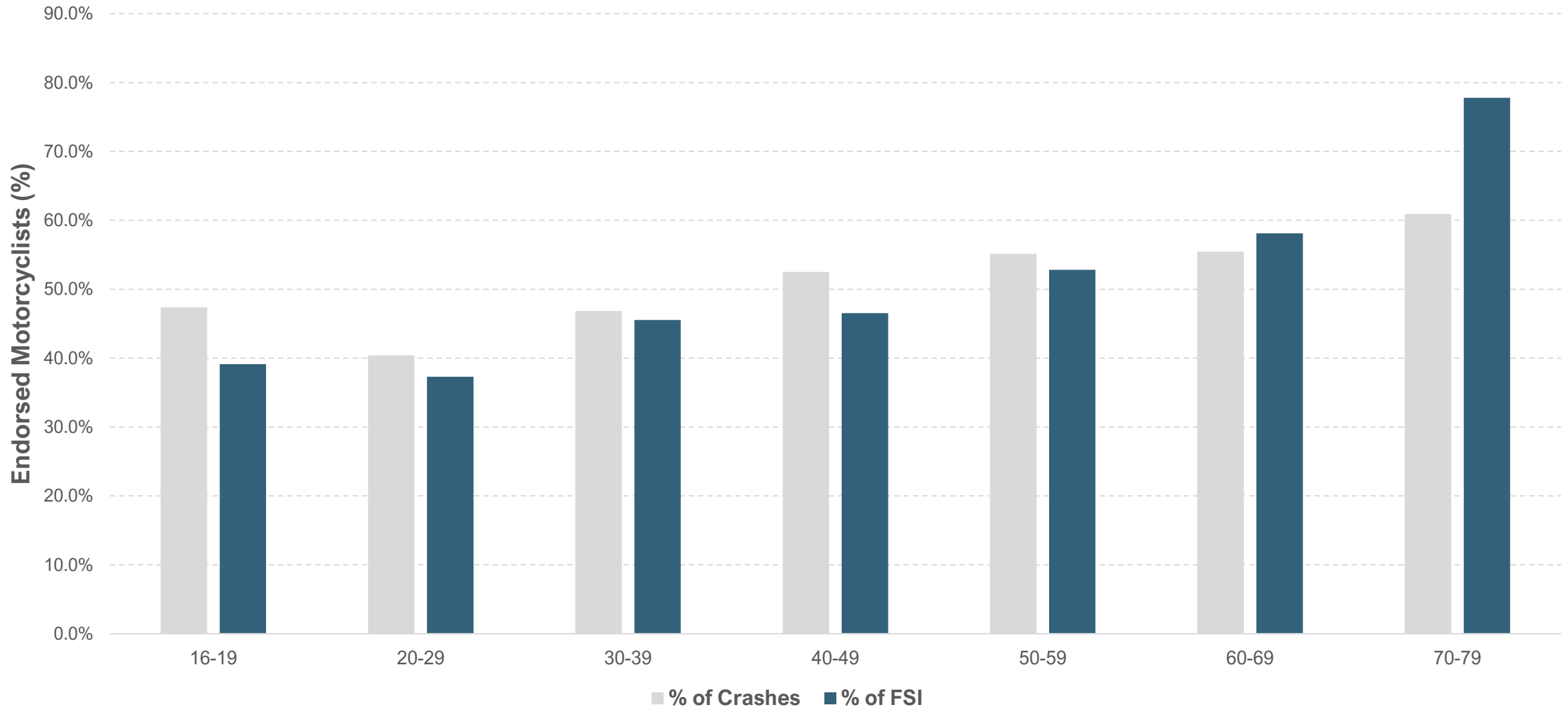
Percentage Helmeted X Motorcycle Age



Motorcycle Endorsement & At-Fault Rates



Motorcycle Endorsement and Motorcyclist Age

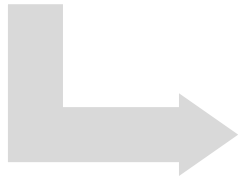


Section Takeaways

- Speeding → More severe crash outcomes
 - Increasingly so
 - Younger riders
- Wearing a helmet confers significant safety benefits to motorcyclists
 - Helmeted FSI Rate: 25%
 - Un-Helmeted FSI Rate: **43%**
 - Higher rates of use among younger riders
- Motorcycle endorsements
 - Correlated with in-error rates
 - Lower rates among younger riders

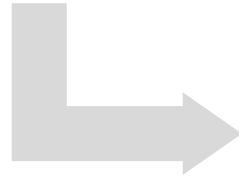
Vulnerable Road Users

- ❑ Severe crashes rising
- ❑ Motorcyclists most at risk



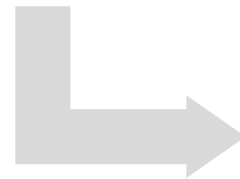
Environmental Factors

- ❑ "Stro-ads"
- ❑ Key crash types



Behavioral Factors

- ❑ Speeding
- ❑ Helmet-Use
- ❑ Endorsements



Transportation Safety is Motorcycle Safety



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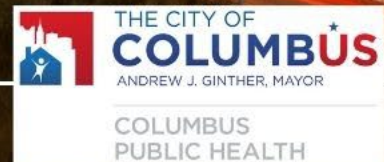


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The Public Health Approach to Motorcycle Safety

Anna Piper, CHES, CPST
Franklin County Safe Communities





How Can a Public Health Agency Improve Motorcycle Safety?

1. Fatal Crash Data Reviews
2. Programming and Messaging
3. Research



Fatal Crash Data Reviews

- Review all fatal crashes on Franklin County Roadways
- Develop action items for improving infrastructure, enforcement, and education to prevent future crashes



Fatal Crash Data Reviews

The Traffic Fatality Review Board is an interdisciplinary team made up of industry professionals that specialize in road safety and injury prevention

Photos

Photos from the scene of each case are displayed during the meeting to better understand the crash as a whole.

Law Enforcement

The investigating agency for each crash presents vital case information including conditions, pre-crash actions, sequence of events, and more.

Engineers

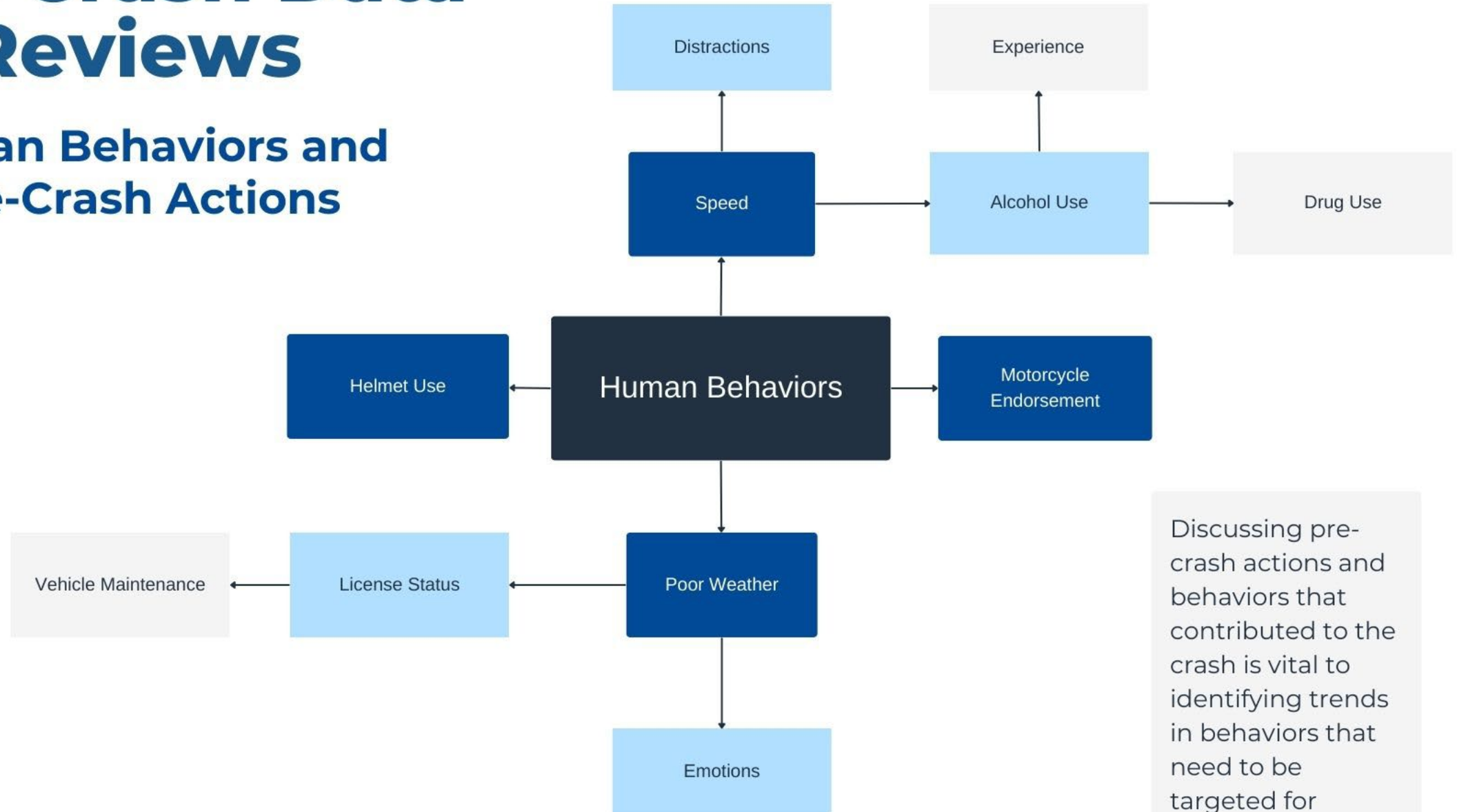
Traffic engineers present information related to the crash in question as well as history of crashes in the area, missing infrastructure and upcoming improvement projects.

Coroner

The County Coroner will present ruling and cause of death, significant injuries and/ or illness, and toxicology findings

Fatal Crash Data Reviews

Human Behaviors and Pre-Crash Actions



Discussing pre-crash actions and behaviors that contributed to the crash is vital to identifying trends in behaviors that need to be targeted for education.



Fatal Crash Data Reviews

After learning the facts of each crash review board members make recommendations for targeted education or prevention efforts, improvements to infrastructure, and ways law enforcement can improve enforcement strategies

After the completion of the Fatal Crash Data Review Meeting Franklin County Safe Communities staff create and send detailed case summaries and collect crash related data.

PROGRAMMING AND MESSAGING

Trends in fatal and serious injury crashes steer efforts in messaging and programming. Audiences are selected by targeted behaviors and geographic locations of concern. Messaging is developed to educate on prevalent factors that contributed to the outcome of crashes.



Research

Franklin County Road Use Behaviors, Knowledge, and Attitudes Survey

- Partnership with Franklin County Safe Communities and Ohio State University
- Will be used to better identify gaps in knowledge or understanding in targeted populations

ROAD USE SURVEY

FRANKLIN COUNTY ROAD USERS NEEDED!

Learn more and participate:

Franklin County Safe Communities has partnered with researchers at Ohio State University and Ohio Department of Transportation to learn more about Franklin County drivers and are asking for your help!

1 in 10 participants will receive \$10-50 Amazon gift cards

The survey will take 15-20 minutes



Email the lead researcher

with questions

Research

This study will be asking questions for all road user types and questions will differ based on the modes of transportation participants personally use.

General Questions

Do you lease or own, are you insured, have you been in a crash, have you been pulled over, do you have an endorsement, etc.

Road Sharing

When drivers share the road with a motorcyclist what behaviors do they have?

Rider Behaviors

How often if ever do you do the following when riding: riding high, riding buzzed, wear protective gear, speed, wore a helmet, etc.



THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR

COLUMBUS
PUBLIC HEALTH



Anna Piper, CHES, CPST

Program Manager: Franklin Co. Safe Communities



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Columbus Public Health



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