



Central Ohio Transportation Safety Planning

Pedestrian Safety Peer Exchange 2019



MID-OHIO REGIONAL
MORPC
PLANNING COMMISSION

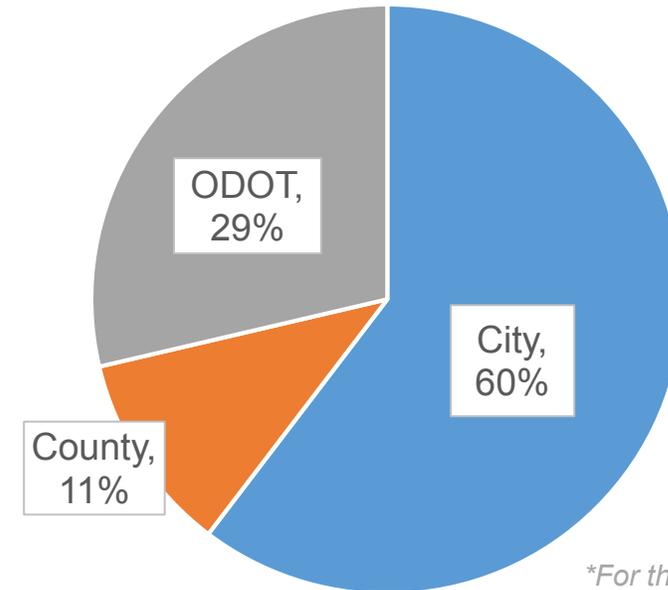
REGIONAL SAFETY PLAN

Plan Purpose and Scope



- Comprehensive Safety Plan for Central Ohio with a focus on fatal and serious injury crashes
- Provides a framework for identifying, analyzing, and prioritizing safety improvements on local roads
- Inspired by the Strategic Highway Safety Plan, but drills down to locally maintained roadways
- Funded by ODOT to develop Safety Plan and create a template for other regions around the state
- Expands upon existing MORPC Safety programs

Fatal and Serious Crashes by Maintenance Authority* (2013-2017)



Planning Process



1. Engage & Establish Leadership
 - Regional safety stakeholders
2. Data Compilation and Analysis
 - Analyze crash data & determine emphasis areas
3. Priority Safety Location Identification
 - Identify emphasis *locations*
4. Regional Safety Action Plan and Safety Strategy Development
 - Identify and prioritize strategies
5. Implementation and Evaluation
 - Implementation Committee



FHWA, Local Road Safety Plans

Trends in Regional Safety

BETWEEN 2013 – 2017 IN CENTRAL OHIO:

- 196,792 crashes were reported  **an overall increase of 21.2%**
- 498,131 people were involved  **an overall increase of 19.9%**
- 528 people were killed  **an overall increase of 27.8%**
- 4,323 people were seriously injured  **an overall decrease of 4.2%**



Regional Safety Priorities / Emphasis Areas



Serious Crash Types

- Fixed Object
- Rear End
- Angle
- Left Turn
- Head On



Driving Safety Concerns

- Impaired Driving (Alcohol/Drug)
- Restraint/Seat Belt
- Speed
- Age
- Distracted Driving



Vulnerable Roadway Users

- Pedestrians
- Bicyclists
- Motorcyclists



Emerging Technologies

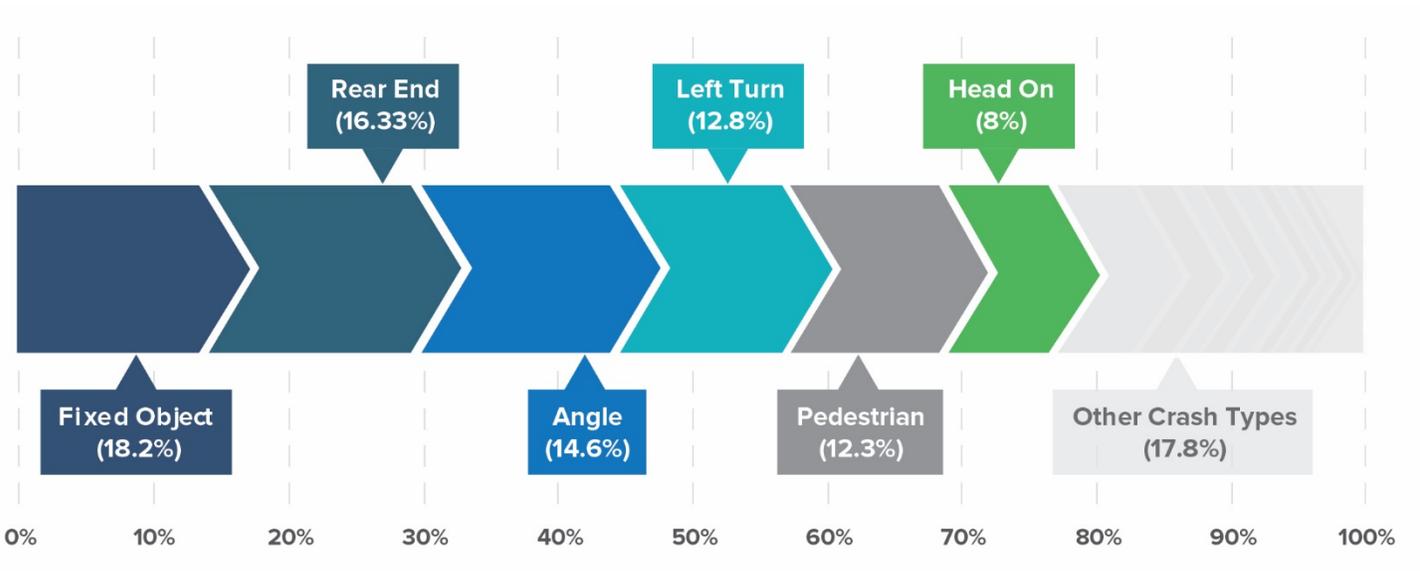
- Autonomous/Connected Vehicle
- Electric Vehicles
- Electric Scooters

Serious Crash Types



- Fixed Object
- Rear End
- Angle
- Left Turn
- Head On

Total Fatalities and Serious Injuries by Crash Type (2013-2017)



Vulnerable Roadway Users

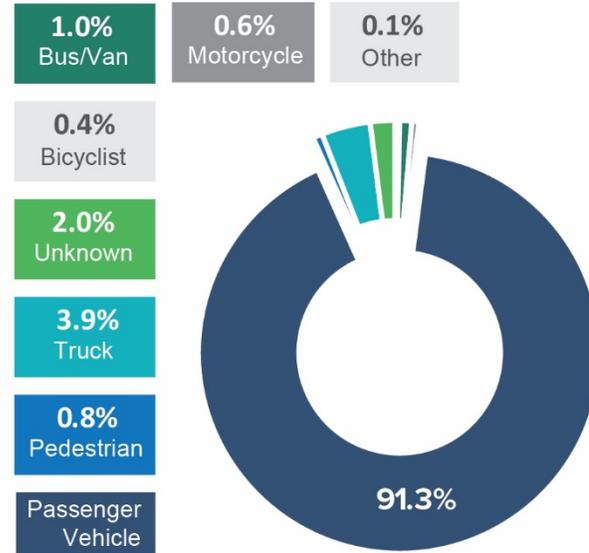


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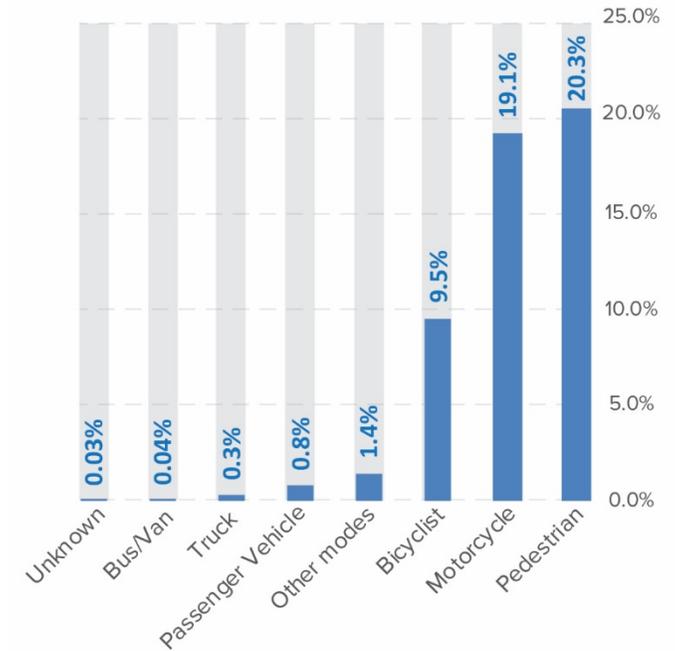


Pedestrians
Bicyclists
Motorcyclists

Percentage of Units Involved in Crashes by Unit Type



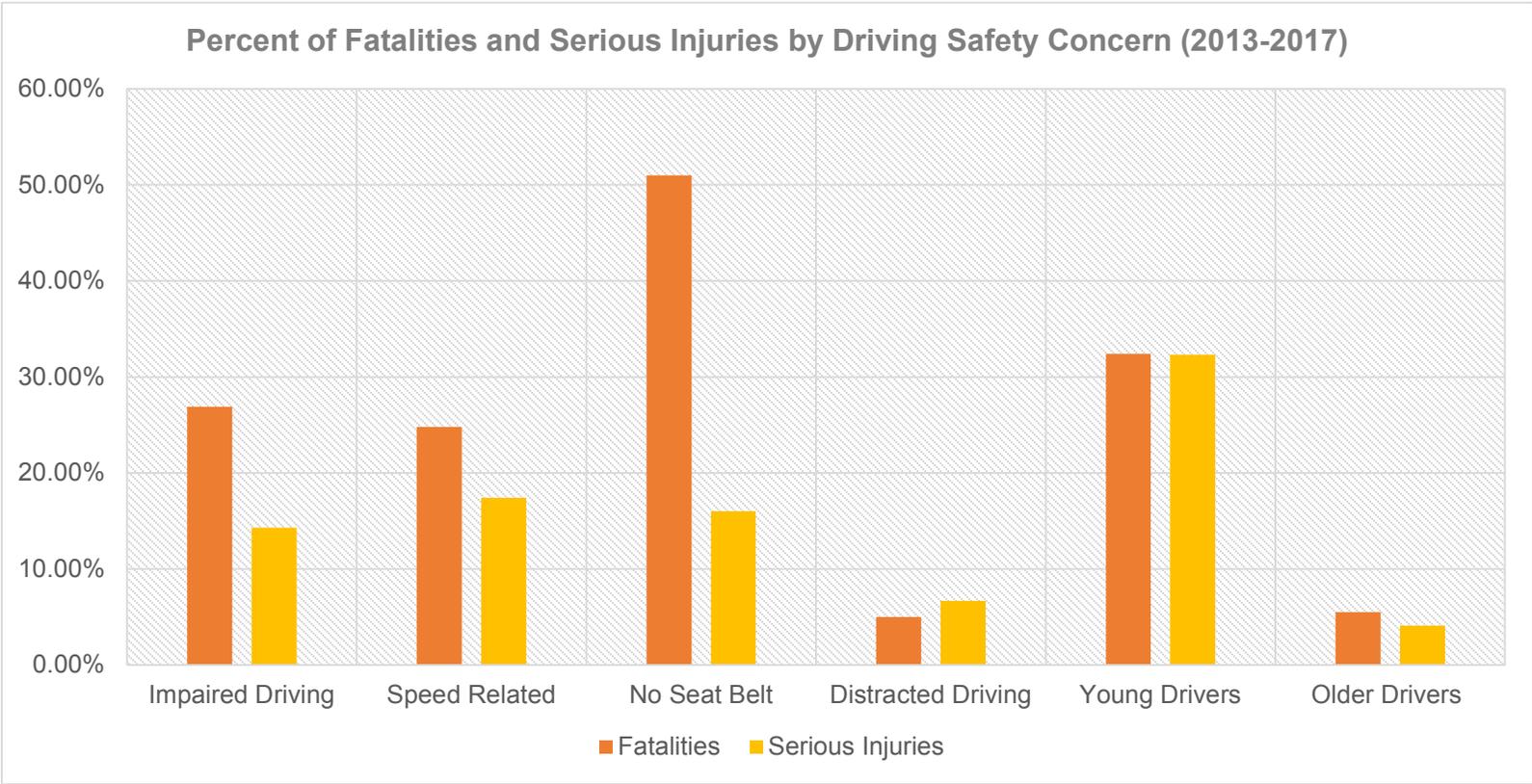
Fatal & Serious Injury Rate by Unit Type



Driving Safety Concerns



- Impaired Driving (Alcohol/Drug)
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Emerging Technologies



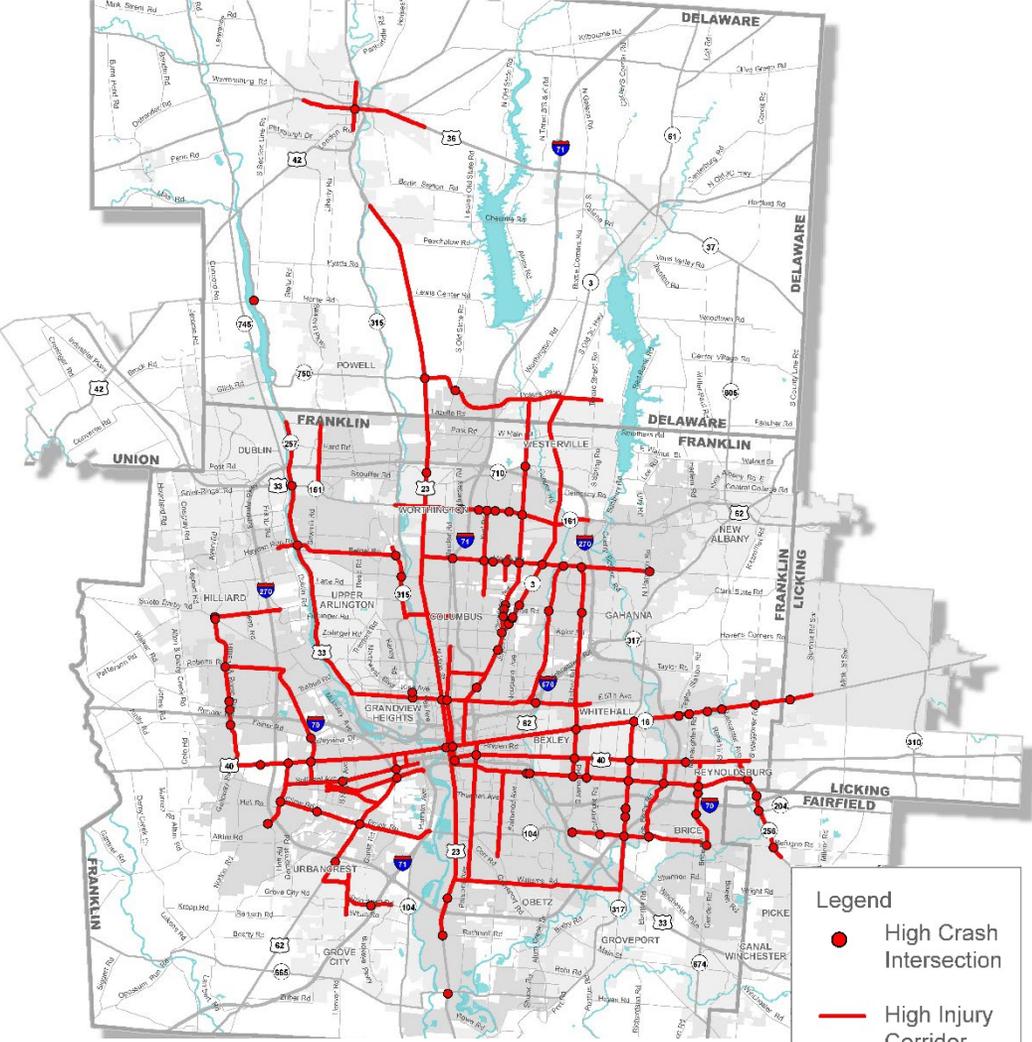
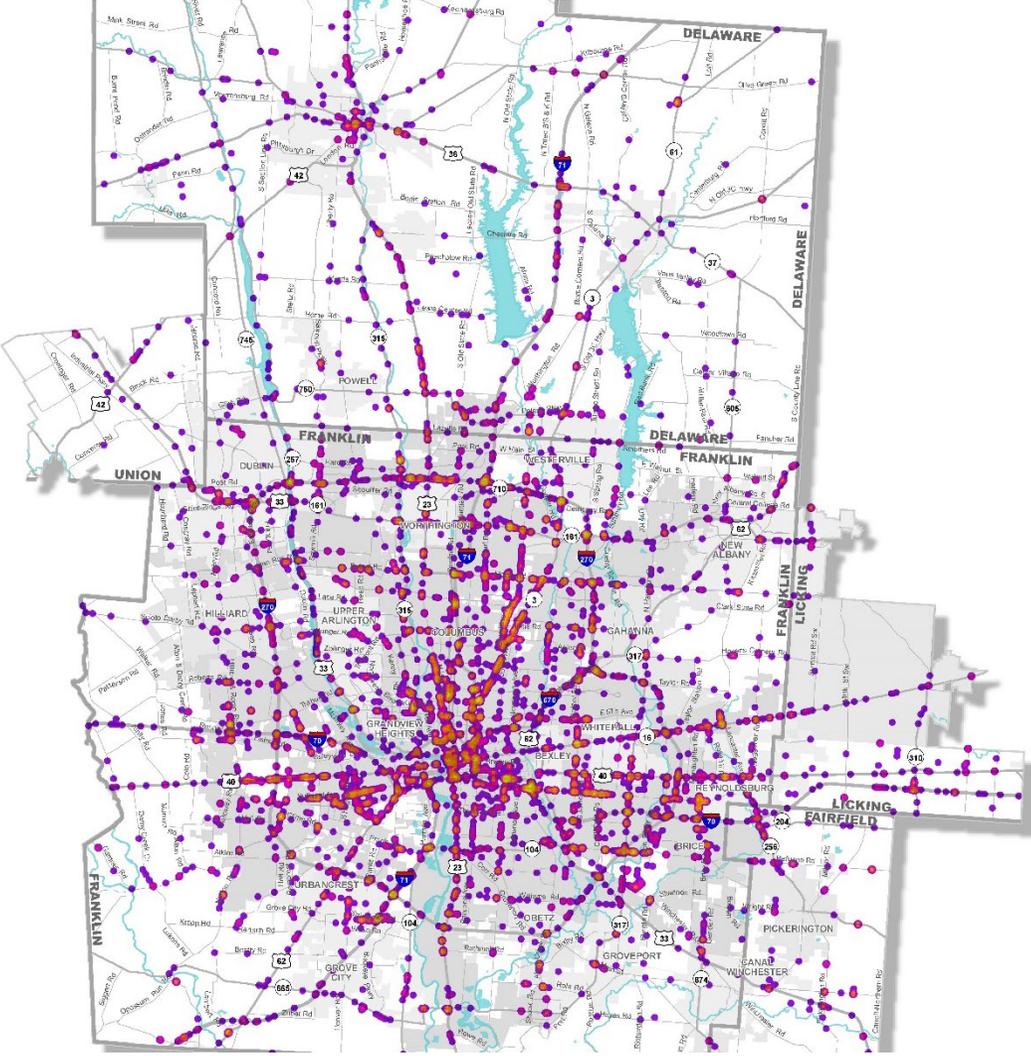
Autonomous
/Connected Vehicles
Electric Vehicles
Electric Scooters



Priority Safety Locations



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Legend

- High Crash Intersection
- High Injury Corridor

Implementation & Evaluation



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- Action Plan
- Annual Reporting
- Technical Assistance



Strategy 1: Work with government partners to increase awareness of safety issues and available resources.

| # | Action Lead | Description | Output Measure | Timeline |
|-----|-----------------------|---|---|----------|
| 1.1 | MORPC ODOT | Identify and track crashes & projects occurring at priority safety locations and report findings. | # Priority Safety Locations list | Ongoing |
| 1.2 | LPAs MORPC ODOT | Routinely conduct Road Safety Audits (RSAs) and Safety Studies at priority safety locations to identify best engineering solutions at each site. | # RSAs # Safety Studies conducted annually | Ongoing |
| 1.3 | LPAs MORPC ODOT | Routinely conduct Systemic Safety Improvements (SSIs) at warranted locations. | # SSIs conducted annually | Ongoing |
| 1.4 | LPAs MORPC | Demonstrate proposed/recommended infrastructure improvements through temporary demonstration pop-ups with educational materials to local communities. | # of completed demonstrations | Short |
| 1.5 | LPAs MORPC | Increase awareness of regional safety issues and appropriate countermeasures to address them. | | |

Strategy 5: Conduct high visibility enforcement to address driving safety concerns in locations with frequent fatal/serious injury crashes.

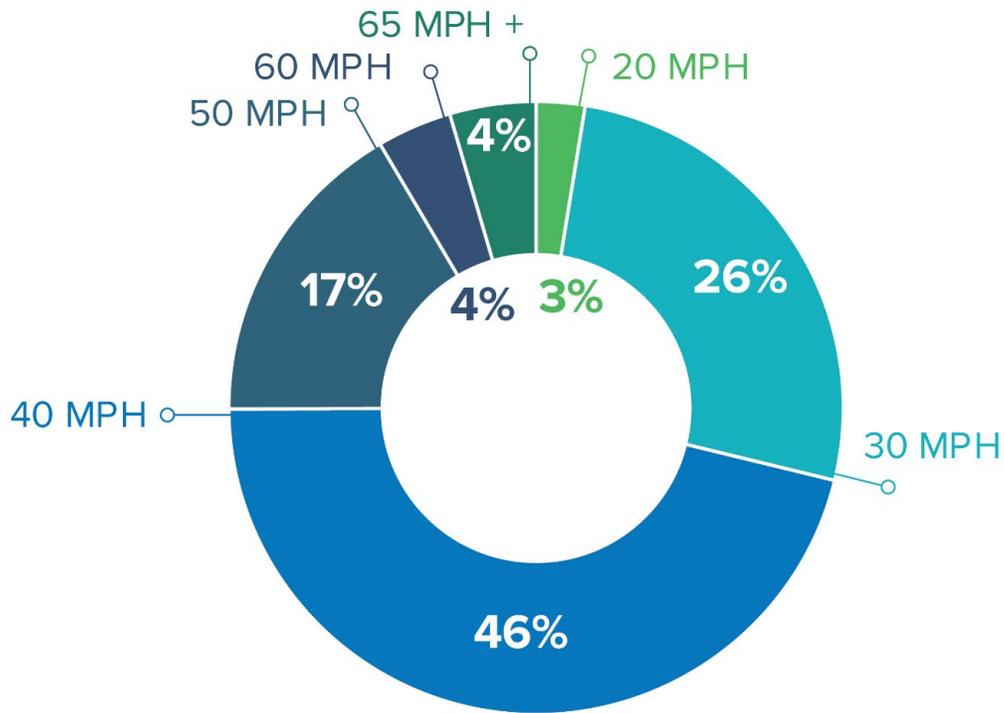
| # | Action Lead | Description | Output Measure | Timeline |
|-----|---------------|---|--------------------------------------|----------|
| 5.1 | MORPC OTSO | Promote grants awarded to law enforcement agencies to conduct highly visible enforcement activities related to aggressive and speeding drivers. | Amount of funding awarded regionally | Short |
| 5.2 | MORPC OTSO | Promote grants awarded to law enforcement agencies to conduct highly visible enforcement activities related to impaired and distracted drivers. | Amount of funding awarded regionally | Short |
| 5.3 | MORPC OTSO | Promote grants awarded to law enforcement agencies to conduct highly visible enforcement activities related to seatbelt usage. | Amount of funding awarded regionally | Short |
| 5.4 | LPAs MORPC | Assist grantees to complete reports to funders on relevant information. | Completion of grant reporting | Short |

PEDESTRIAN SAFETY

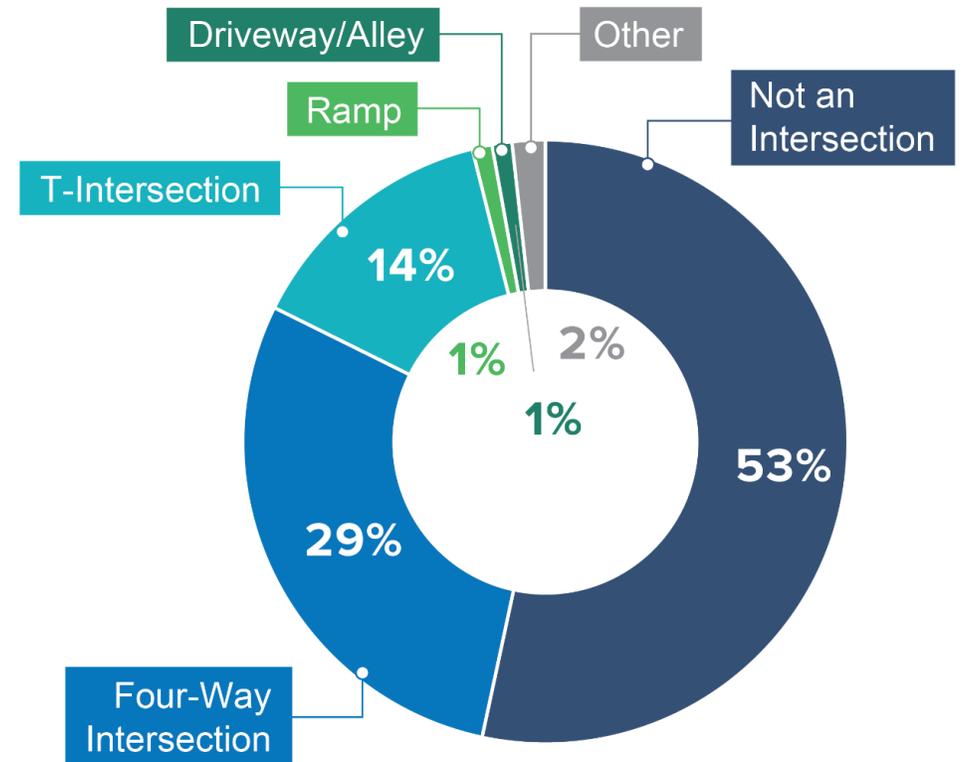
Pedestrian-Involved Crashes



Fatal and Serious Pedestrian-Involved Crashes by Posted Speed Limit



Fatal and Serious Pedestrian-Involved Crashes by Location Type

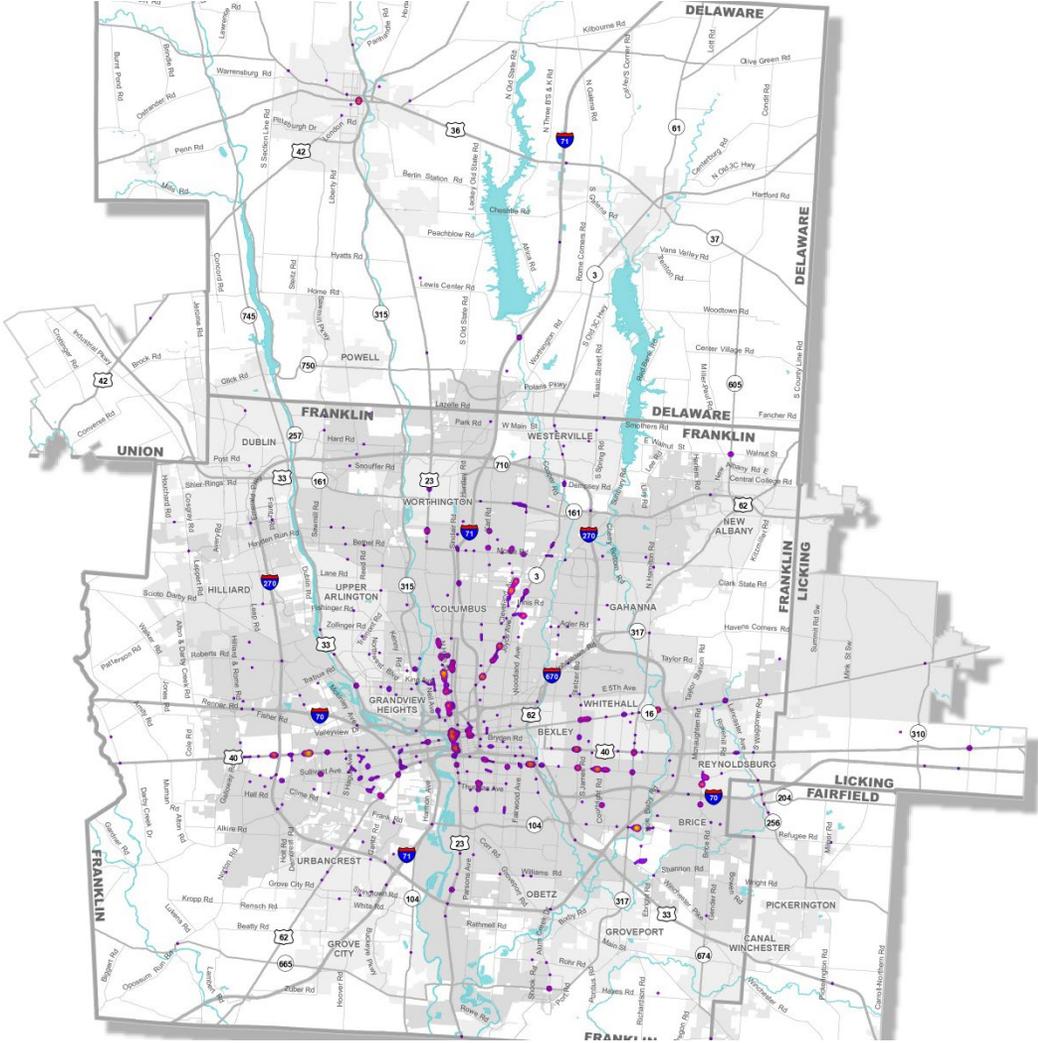
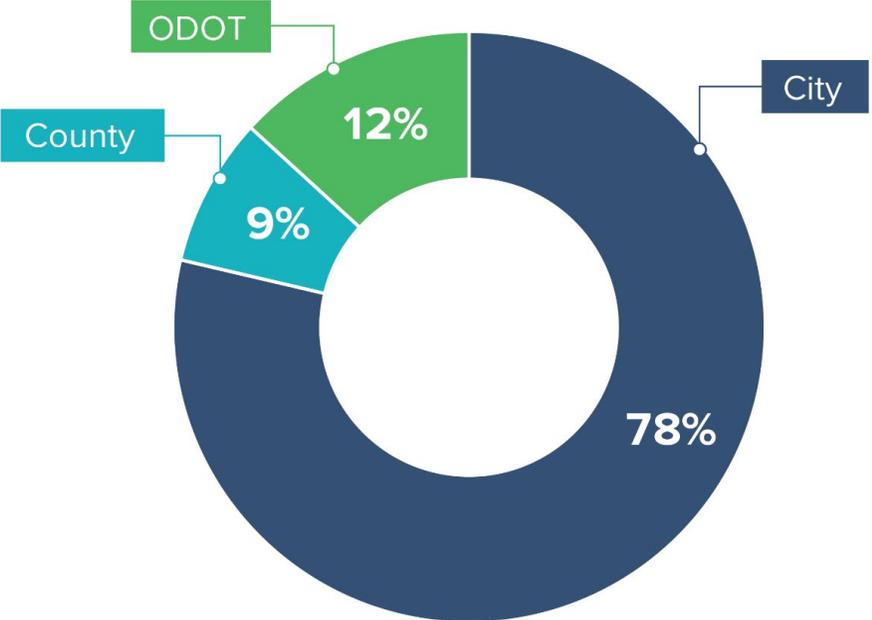


Prioritizing Pedestrian Safety



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Fatal and Serious Pedestrian-Involved Crashes by Maintenance Authority



Systemic Safety Improvements



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- System-wide implementation of safety improvements based on high-risk roadway features
 - Solves an unmet need in transportation safety
 - Uses a risk-based approach to prevent crashes
 - Results in a comprehensive road safety program
 - Advances a cost-effective means to address safety concerns

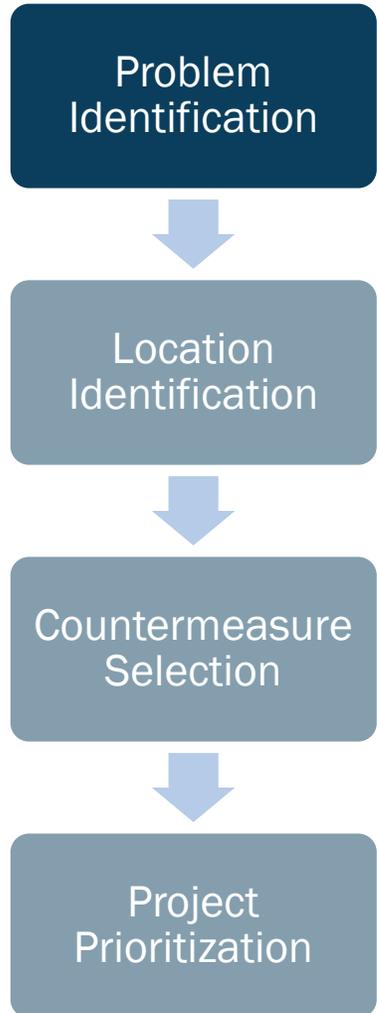


FHWA, *A Systemic Approach to Safety*

Regional SSI Pilot Project



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- Identify priority crash types and related risk factors

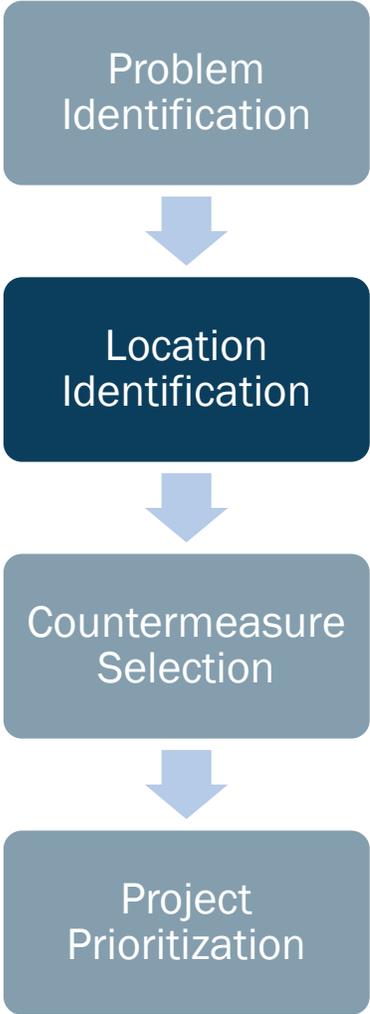
CRASH TYPE BY FREQUENCY AND SEVERITY

| CRASH TYPE | TOTAL CRASHES | CRASH SEVERITY | | | | FSI RATE |
|---------------------|---------------|----------------|----------------|--------------|-----------|--------------|
| | | Fatal | Serious Injury | Minor Injury | No Injury | |
| Rear End | 59,015 | 30 | 586 | 15,208 | 43,191 | 1.0% |
| Angle | 28,603 | 53 | 645 | 8,137 | 19,768 | 2.4% |
| Sideswipe - Passing | 22,275 | 12 | 255 | 3,245 | 18,763 | 1.2% |
| Fixed Object | 21,560 | 130 | 821 | 5,339 | 15,270 | 4.4% |
| Parked Vehicle | 15,627 | 14 | 114 | 1,191 | 14,308 | 0.8% |
| Left Turn | 9,462 | 24 | 326 | 3,291 | 5,821 | 3.7% |
| Backing | 5,885 | 2 | 14 | 233 | 5,636 | 0.3% |
| Animal | 4,767 | 1 | 23 | 271 | 4,472 | 0.5% |
| Sideswipe - Meeting | 3,544 | 35 | 136 | 974 | 2,399 | 4.8% |
| Pedestrian | 2,519 | 86 | 382 | 1,738 | 313 | 18.6% |
| Other Non-Collision | 2,492 | 5 | 61 | 459 | 1,967 | 2.6% |
| Pedalcycles | 1,373 | 11 | 133 | 966 | 263 | 10.5% |
| Head On | 1,303 | 28 | 128 | 537 | 610 | 12.0% |
| Other Object | 1,150 | 2 | 15 | 108 | 1,025 | 1.5% |
| Overtuning | 882 | 14 | 100 | 453 | 315 | 12.9% |
| Unknown | 354 | 8 | 17 | 83 | 246 | 7.1% |
| Train | 18 | - | 1 | 6 | 11 | 5.6% |
| Other Non-Vehicle | 5 | - | - | 2 | 3 | 0.0% |

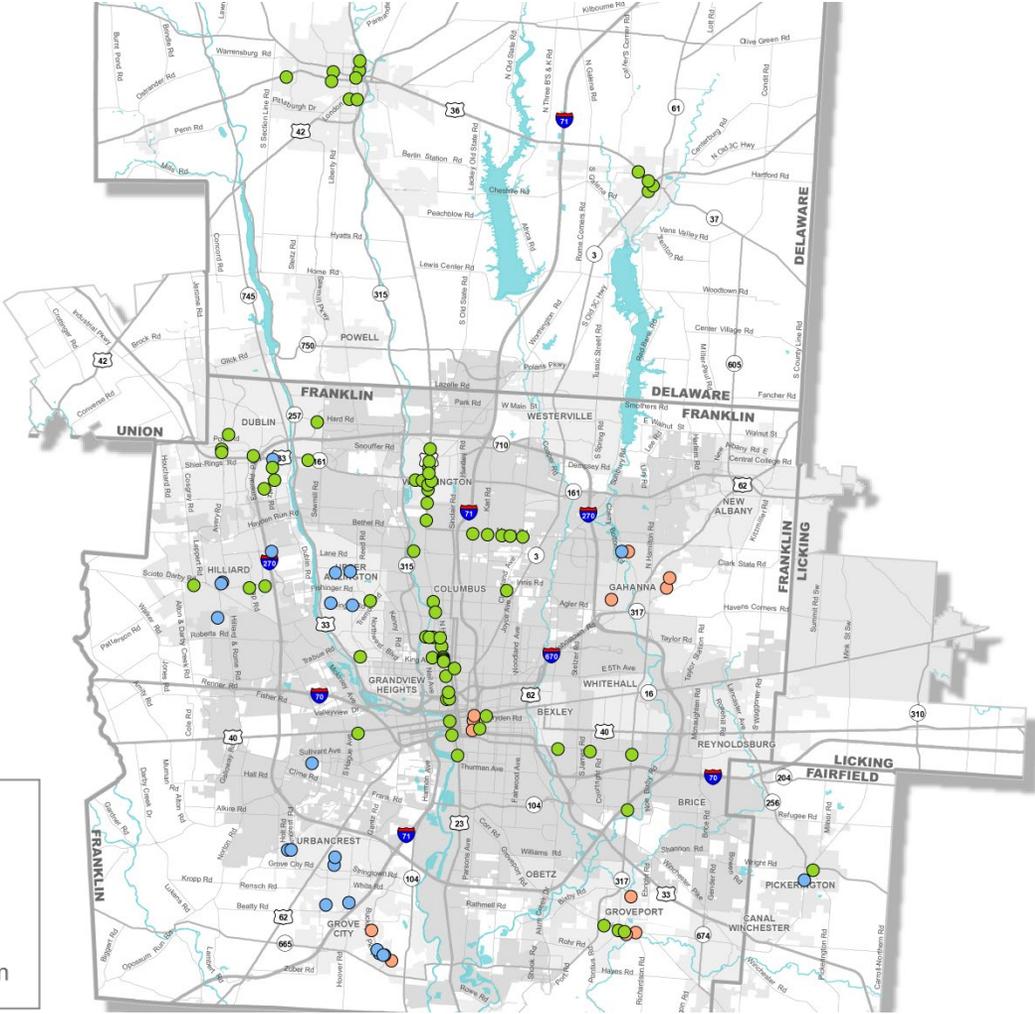
Regional SSI Pilot Project



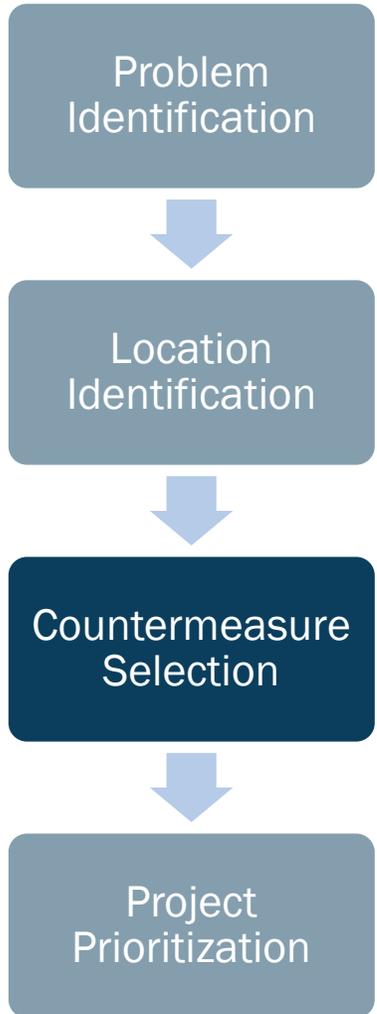
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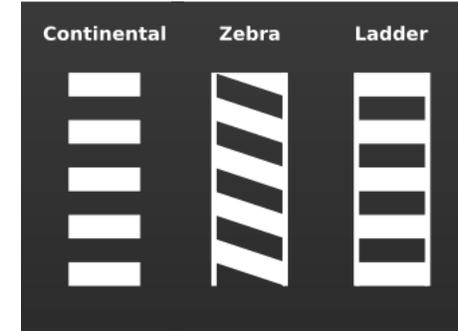
- Crash analysis and network screening
- Coordination with local jurisdictions



Regional SSI Pilot Project



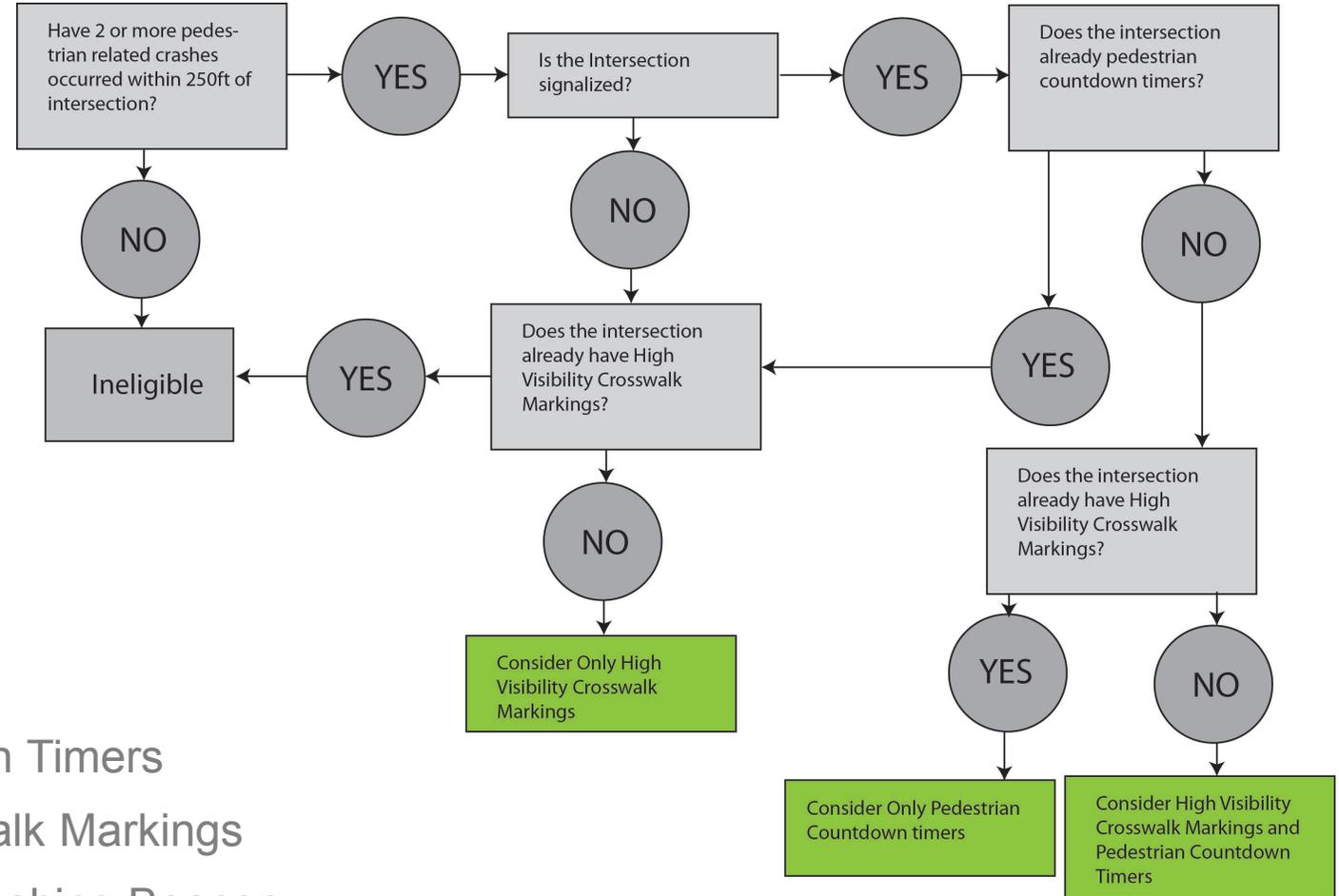
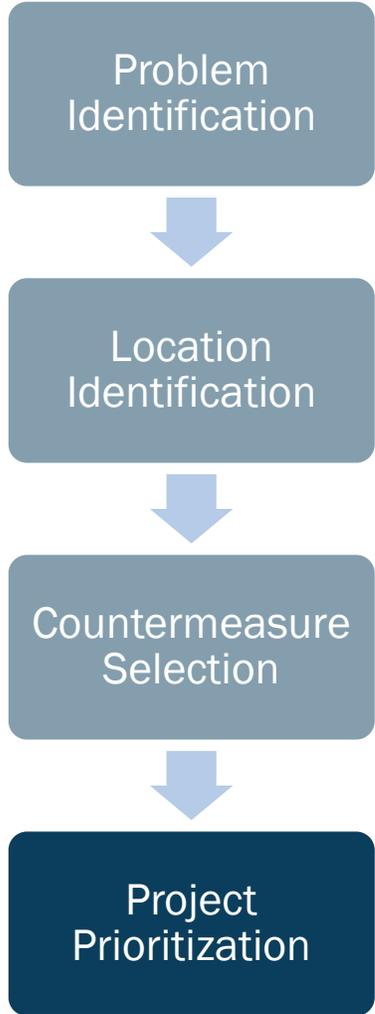
- Pedestrian Countdown Timers
- High Visibility Crosswalk Markings
- Rectangular Rapid Flashing Beacon



Regional SSI Pilot Project



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- Pedestrian Countdown Timers
- High Visibility Crosswalk Markings
- Rectangular Rapid Flashing Beacon

Regional Pilot Project (2012-2015)



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Funding, Implementation, and Evaluation

Funding Allocation

- **Total Phase Allocation:** \$900,000 (10% Contingency)
- **Jurisdiction Phase Allocation:**
Floor Allocation + Need Allocation
- **Floor Allocation:** Minimum amount individual jurisdiction received for participating
- **Need Allocation:** Allocation based on proportion of target crashes occurring within jurisdiction out of the region's

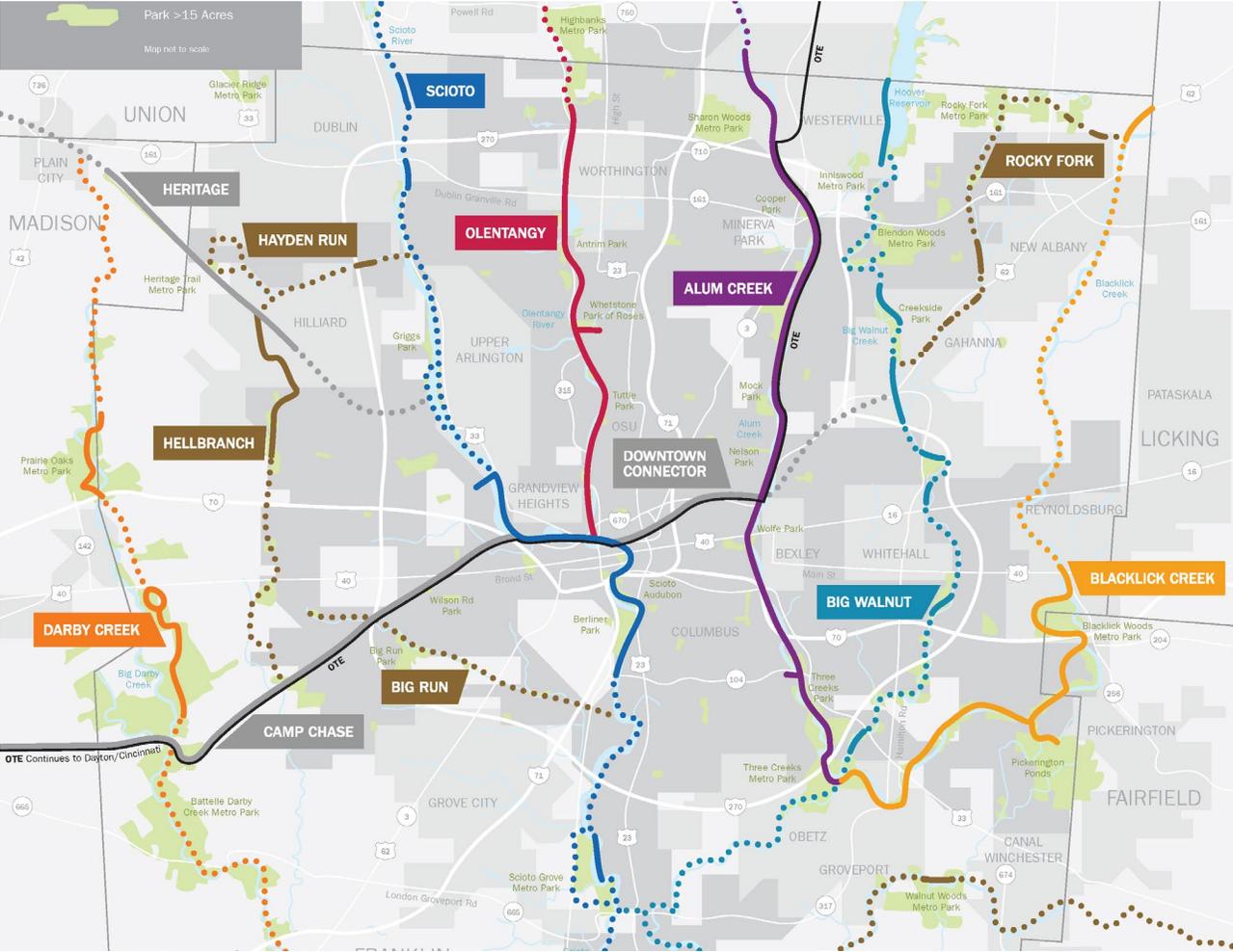
EXAMPLE:

- Assume 10 participating jurisdictions
- Floor allocation: \$50,000
- Need Allocation: \$400,000* .10
(Jurisdiction X's proportion)
- Total Allocation: \$90,000

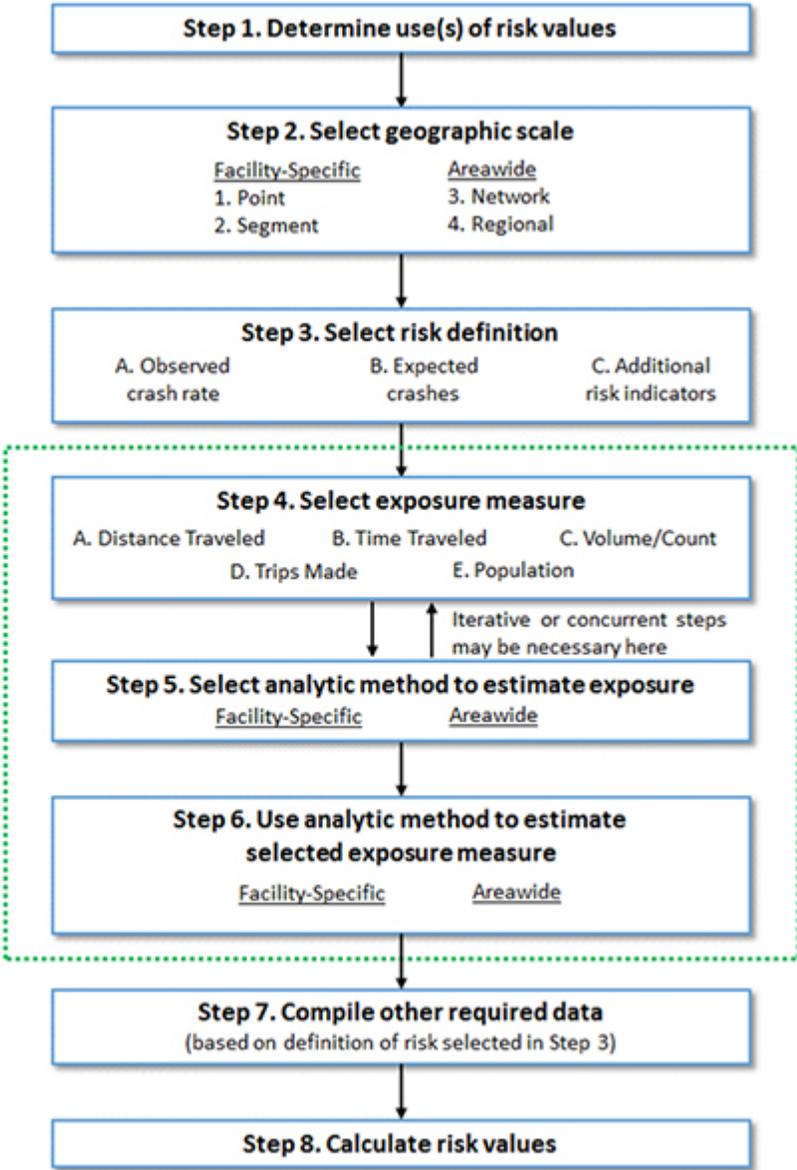
Pre-Implementation Crash Trends

| ANALYSIS LOCATION | CRASH TYPE | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | TOTAL 2006-2016 | ANNUAL AVERAGE CRASH FREQ. | PERCENT CHANGE |
|-------------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|----------------------------|----------------|
| Phase 2 Locations | Pedestrian | 28 | 31 | 27 | 39 | 38 | 36 | 50 | 36 | 23 | 37 | 30 | 375 | 34.1 | 7.1% |
| | All | 992 | 1,043 | 955 | 964 | 859 | 880 | 958 | 837 | 853 | 1,022 | 895 | 10,258 | 932.5 | -9.8% |
| MORPC MPO Area | Pedestrian | 532 | 439 | 500 | 469 | 535 | 461 | 475 | 473 | 565 | 575 | 513 | 5,537 | 503.4 | -3.6% |
| | All | 38,153 | 38,628 | 35,979 | 34,499 | 36,629 | 35,913 | 34,263 | 33,787 | 37,687 | 41,160 | 38,993 | 405,691 | 36,881.0 | 2.2% |

Regional Trail Access Safety Project



Exposure Estimation Steps (inside dashed box)



Regional Trail Access Safety Project



| | Indicator | Description | Weight |
|----------------------------|--|---|--------|
| Exposure | Product of Non-Motorized and Vehicular Volumes | Higher product = higher level of exposure | 5 |
| | Non-Motorized Demand Index | Higher value = higher level of exposure | 1 |
| Additional Risk Indicators | Intersection Signalization | Signalization = decreased risk | 2 |
| | Crosswalk Type | Greater visibility by crosswalk type = decreased risk | 1.5 |
| | Crossing Length | Higher length = higher risk | 1 |
| | Presence of Pedestrian Signal | Pedestrian signal = decreased risk | 1 |
| | Warning Signage | Greater intensity of warning signage = decreased risk | 1.5 |
| | Presence of Refuge Island | Refuge island = decreased risk | 2 |
| | Number of Lanes Crossed | Greater number of lanes = increased risk | 1 |
| | Posted Speed | Higher speed = higher risk | 2 |
| | Presence of Bike Lane | Bike lane = decreased risk | 1 |
| | Presence of Street Parking | Street parking = increased risk | 1 |
| | Presence of Sidewalk | Sidewalk = decreased risk | 1 |
| | Presence of Transit Route | Transit route = increased risk | 1 |
| Observed Crashes | Crash Severity (EPDO) | Higher crash severity = higher risk | 1 |



THANK YOU!

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