

DURHAM • CHAPEL HILL • CARRBORO

**DCHC**

METROPOLITAN PLANNING ORGANIZATION

PLANNING TOMORROW'S TRANSPORTATION

# Transportation Performance Measures

## HIGHWAY SAFETY (PM 1)

David Miller, DCHC MPO

Brian Murphy, NCDOT Traffic Safety Unit

MPO Board

January 28, 2025

# DCHC MPO TPM Adoption Dates

Transportation Performance Measure	Adoption Cycle	Most Recent Adoption	Next Required Adoption
<b>Highway Safety (PM 1)</b>	<b>1 year</b>	<b>January 2024</b>	<b>February 27, 2025*</b>
<b>Bridge and Pavement Condition (PM 2)</b>	4 years	May 2023	June 2027*
<b>System Performance/Reliability (PM 3)</b>	4 years	May 2023	June 2027*

\* MPO adoption is due 180 days after NCDOT adoption

# FHWA Transportation Performance Measures (TPMs)

## PM 1 – Highway Safety

Adopted January 23, 2024

1. Number of fatalities
2. Fatality rate
3. Number of serious injuries
4. Serious injury rate
5. Number of non-motorized fatalities and serious injuries

## PM 2 – Pavement and Bridge Condition

Adopted May 10, 2023

6. Interstate pavement in Good condition
7. Interstate pavement in Poor condition
8. Non-Interstate NHS pavement in Good condition
9. Non-Interstate NHS pavement in Poor condition
10. NHS bridges in Good condition
11. NHS bridges in Poor condition

## PM 3 – System Performance/ Reliability

Adopted May 10, 2023

12. Travel time reliability on the Interstate
13. Travel time reliability on the non-Interstate NHS
14. Truck travel time reliability on the Interstate System

- Safe Streets for All / Vision Zero Safety Action Plan
  - MPO staff currently working with member jurisdictions and consultant team (Toole Design and VHB) on safety action plan.
  - Public engagement events throughout MPO area to receive direct feedback.
  - Participating in and coordinating with other regional safety action planning efforts (Capital Area MPO and Central Pines RPO).
- Wildlife Crossings Plan
  - MPO Board adopted its first Wildlife Crossings Plan in November 2024 that identified projects to improve roadway safety.
- MPO staff participation in UNC's annual Vision Zero Leadership Institute and monthly Vision Zero meetings (facilitated by UNC Injury Prevention Research Center).



**NORTH CAROLINA**  
Department of Transportation

# Traffic Safety Data Trends / Performance Measures

Brian Murphy

Traffic Safety Systems Engineer

January 2025

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

# Presentation Overview

**1**

**Statewide Data Trends**

**2**

**DCHC MPO Data Trends**

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**Safety Performance Measures**

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**Safety Data Resources**

**5**

**Questions / Discussion**

# Statewide Data Trends

- State Population
- Vehicle Miles Travelled
- Fatalities
- Serious Injuries
- Pedestrian Fatal and Serious Injuries
- Bicycle Fatal and Serious Injuries

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**Statewide Data Trends**

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# SHSP Goal

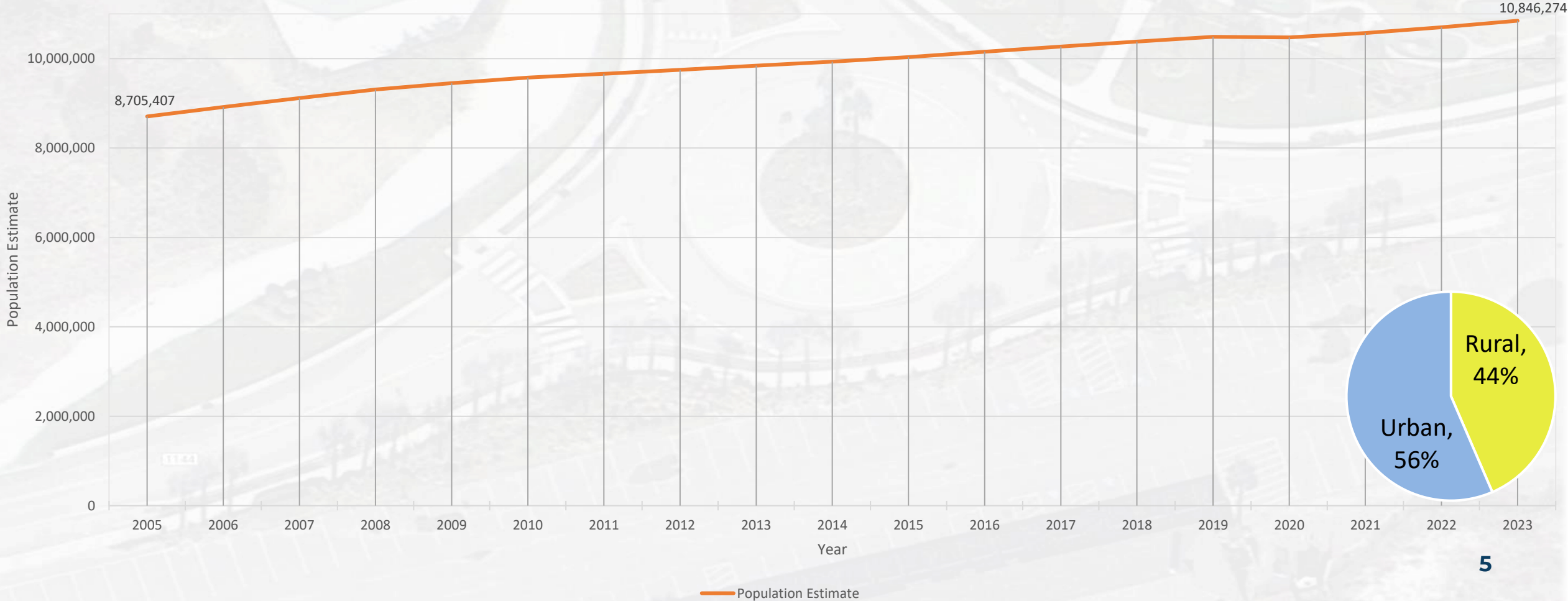
- Reduce all fatalities and serious injuries by half by 2035, moving towards zero by 2050.





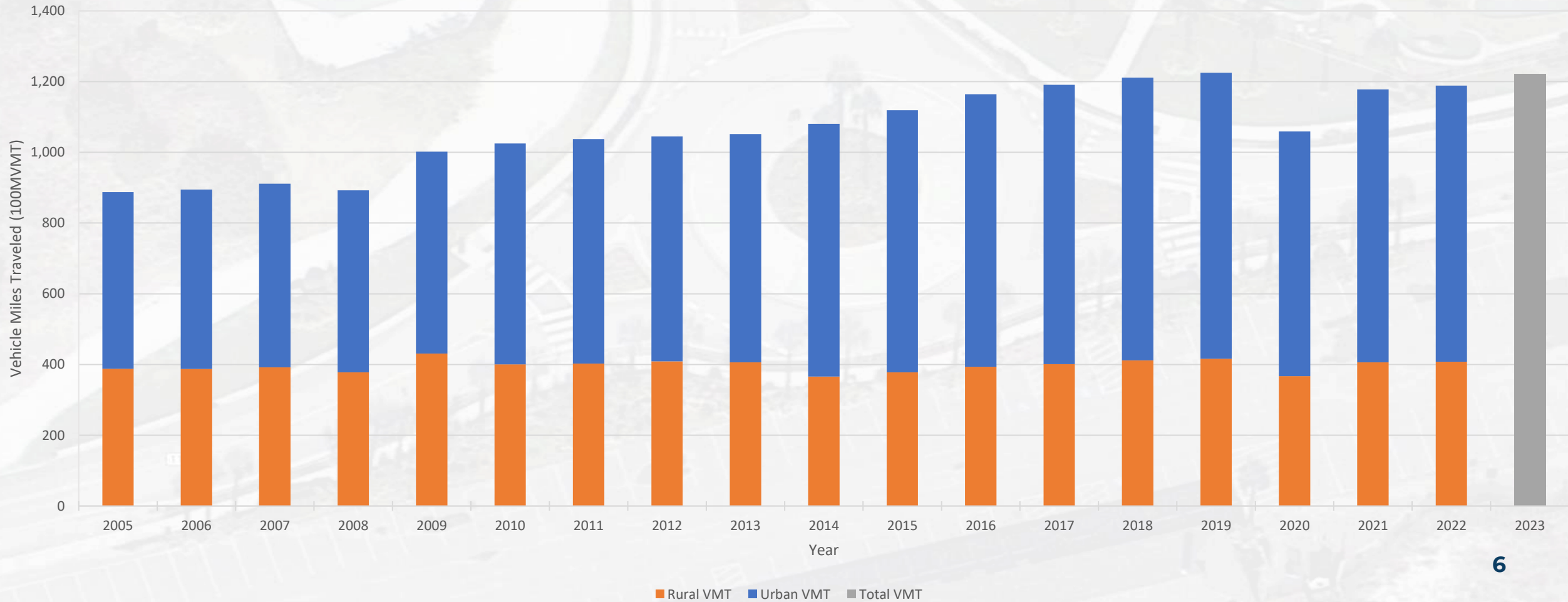
# State Population

State Population Estimates by Year  
(2005 - 2023)



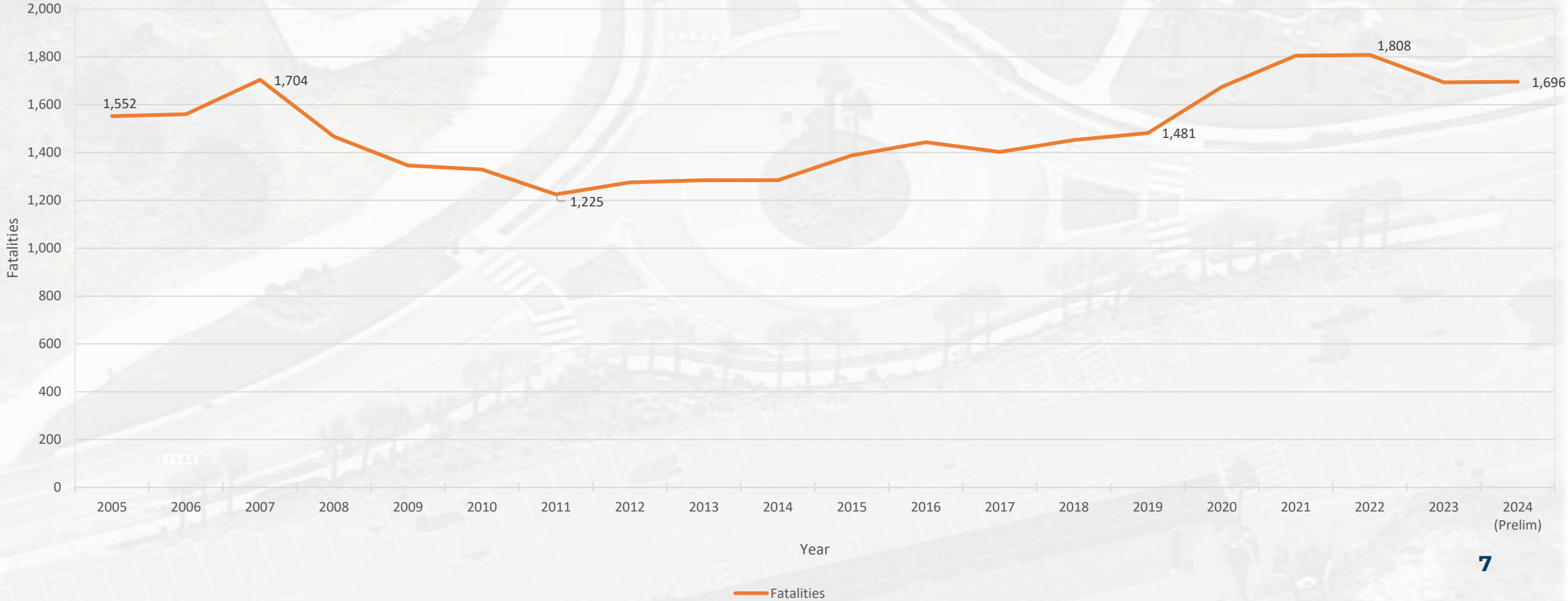
# Vehicle Miles Traveled (VMT)

North Carolina VMT Estimates by Year  
(2005 - 2023)



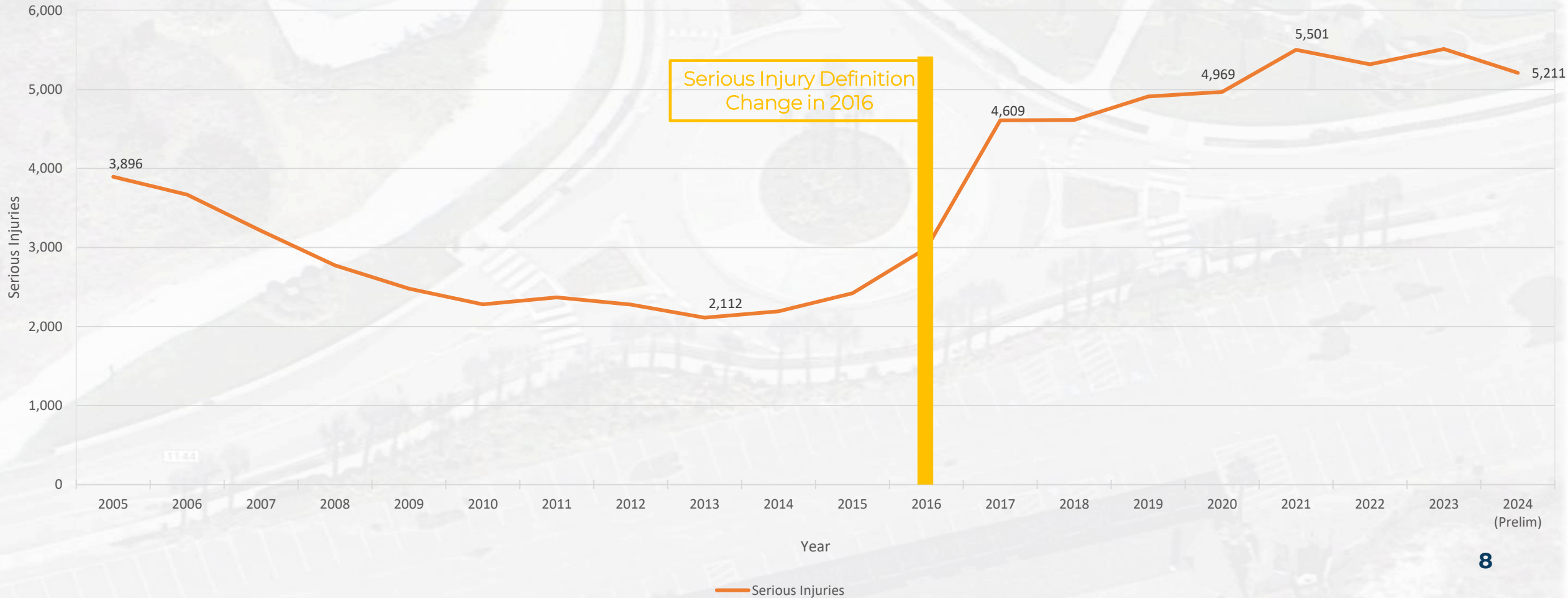
# Fatalities

Fatalities by Year  
(2005 - 2024)



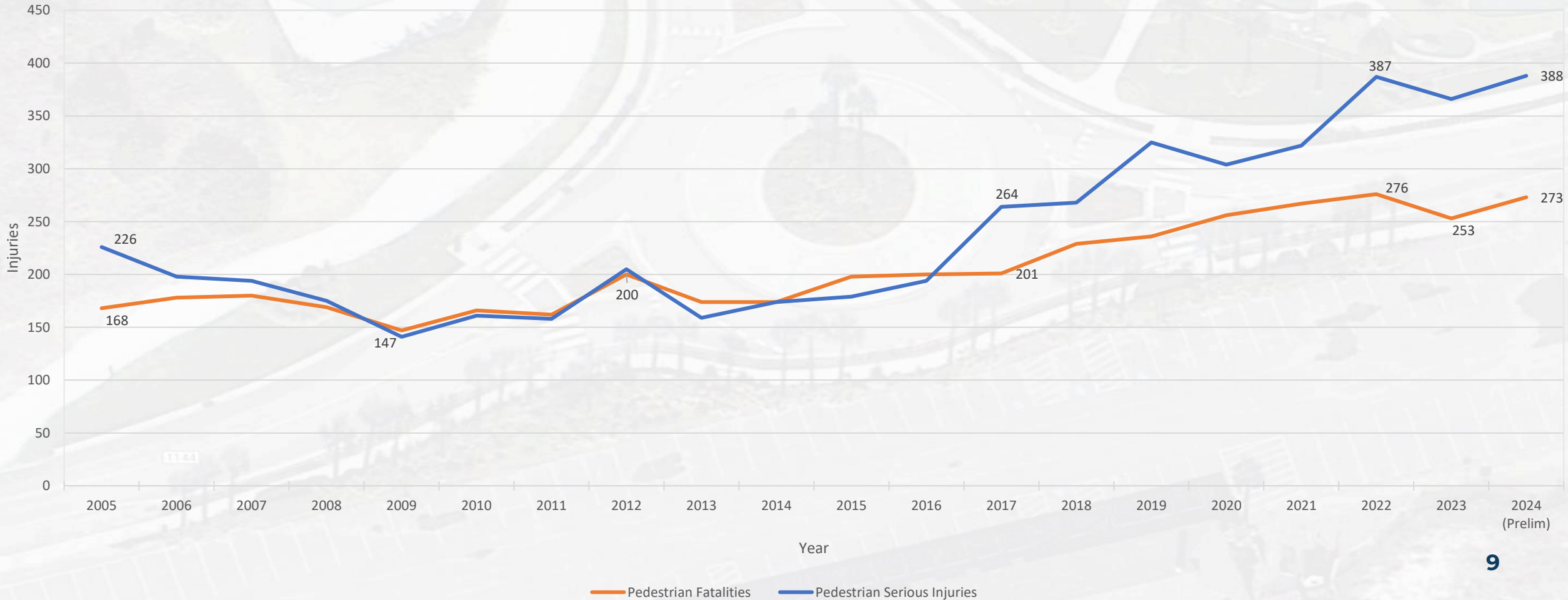
# Serious Injuries (A Type – Disabling)

Serious Injuries (A Type Injuries) by Year  
(2005 - 2024)



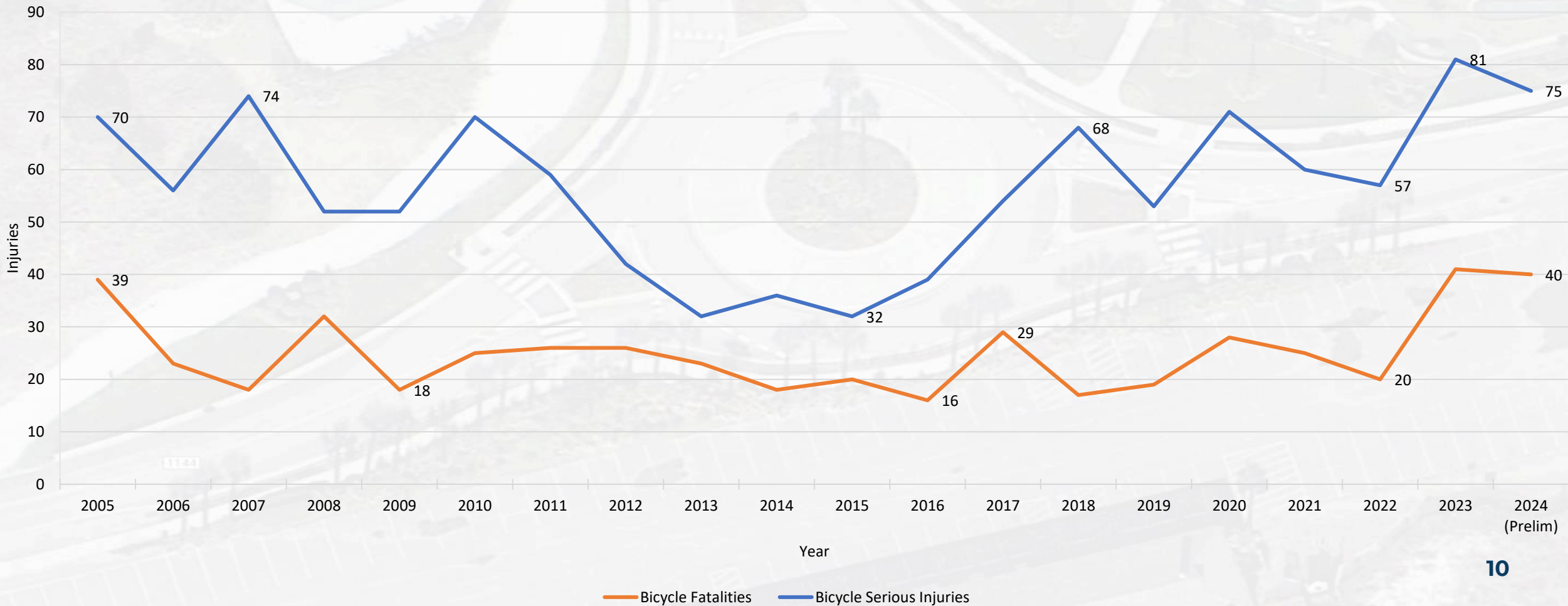
# Pedestrian Fatalities and Serious Injuries

Reported Pedestrian Fatalities and Serious Injuries by Year  
(2005 - 2024)



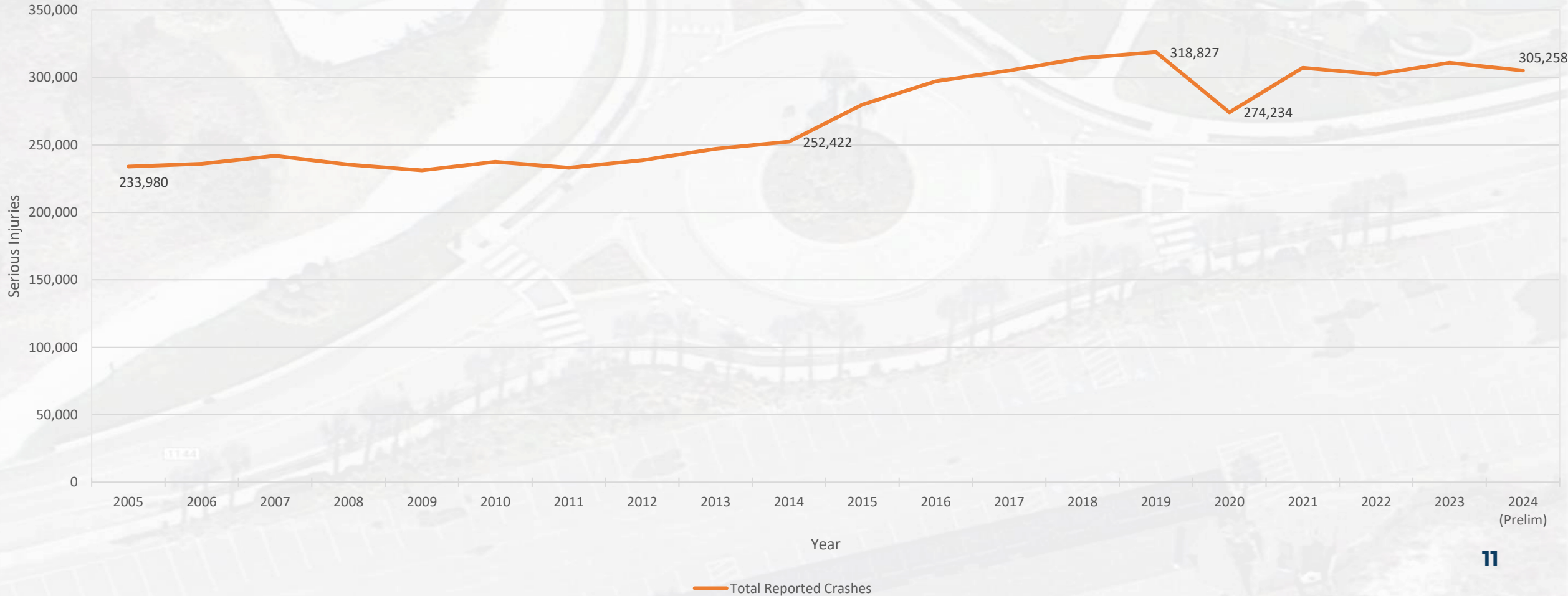
# Bicycle Fatalities and Serious Injuries

Bicycle Fatalities and Serious Injuries by Year  
(2005 - 2024)



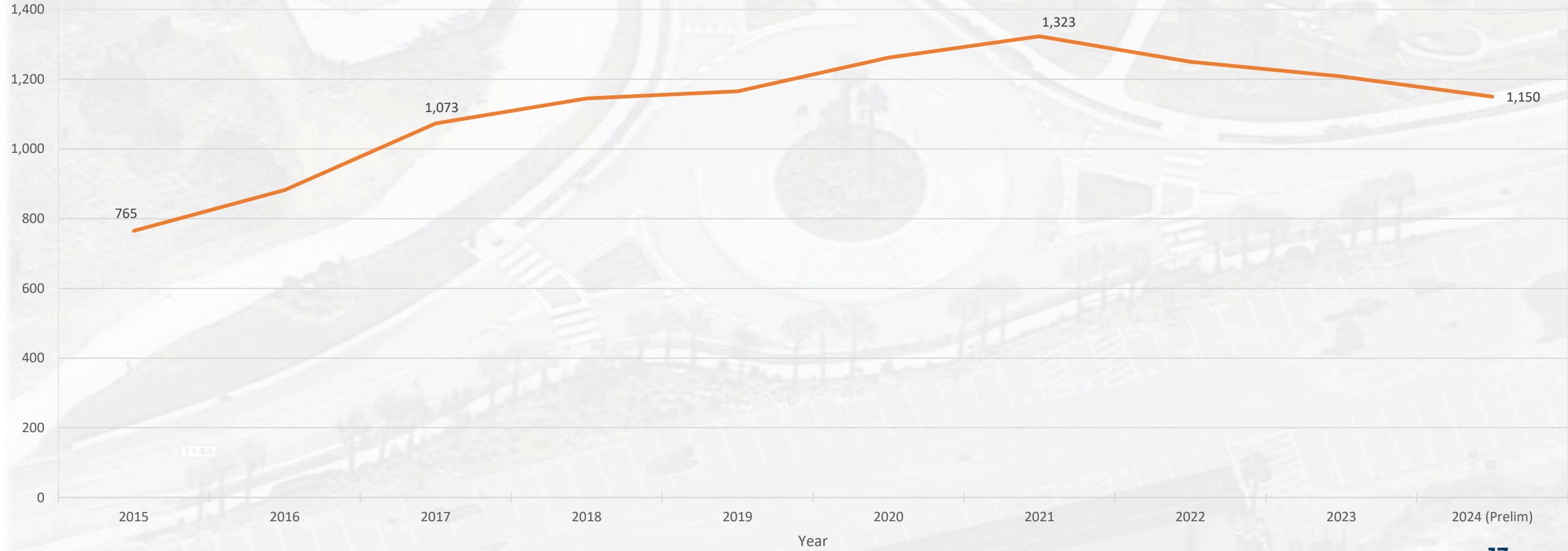
# Reported Crashes

Reported Crashes by Year  
(2005 - 2024)



# Speed Involved Fatalities and Serious Injuries

Speed Involved Fatalities and Serious Injuries by Year  
(2015 - 2024)

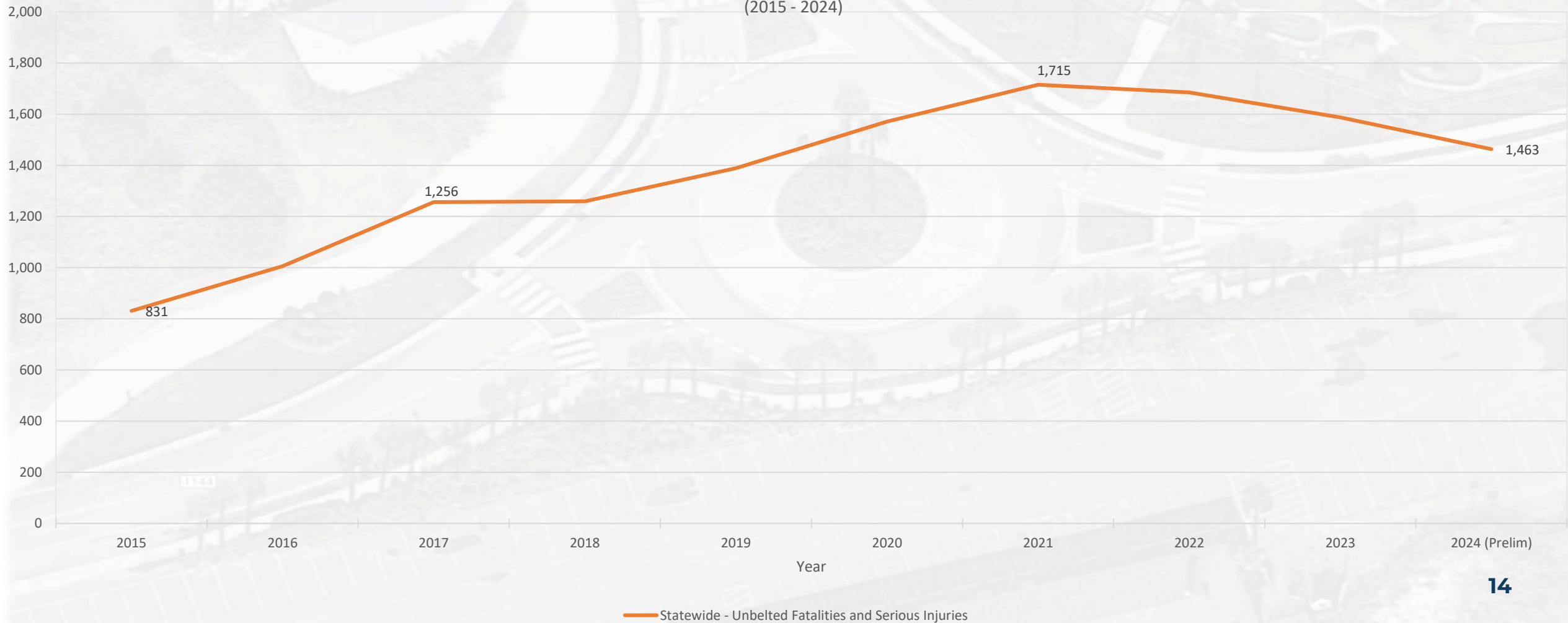


Statewide - Speed Involved Fatalities and Serious Injuries



# Unbelted Fatalities and Serious Injuries

Unbelted Fatalities and Serious Injuries by Year  
(2015 - 2024)



# Durham – Chapel Hill – Carrboro MPO Data Trends

- Vehicle Miles Traveled
- Total Reported Crashes
- Fatalities
- Serious Injuries
- Non-Motorized Fatal and Serious Injuries
- Reported Pedestrian Crashes
- Breakdown by Municipality within the Durham – Chapel Hill – Carrboro MPO

**1**

Statewide Data  
Trends

**2**

DCHC MPO Data  
Trends

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Safety  
Performance  
Measures

**4**

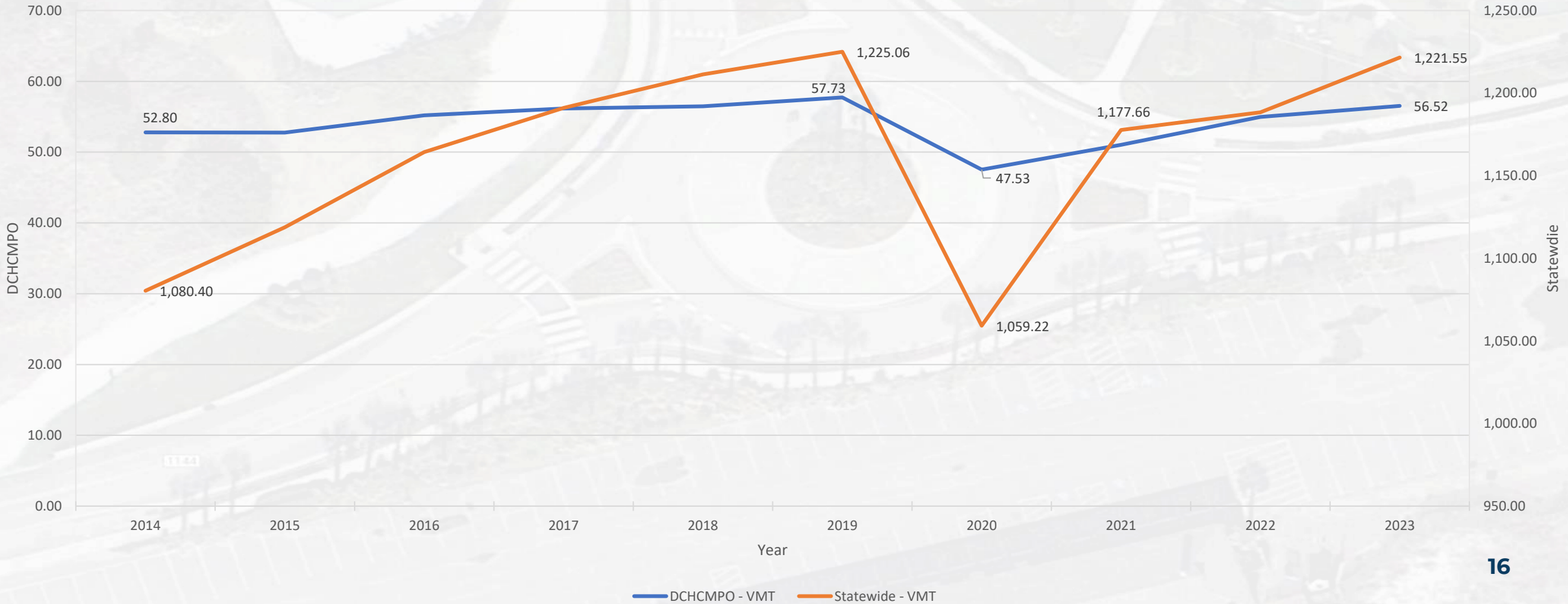
Safety Data  
Resources

**5**

Questions /  
Discussion

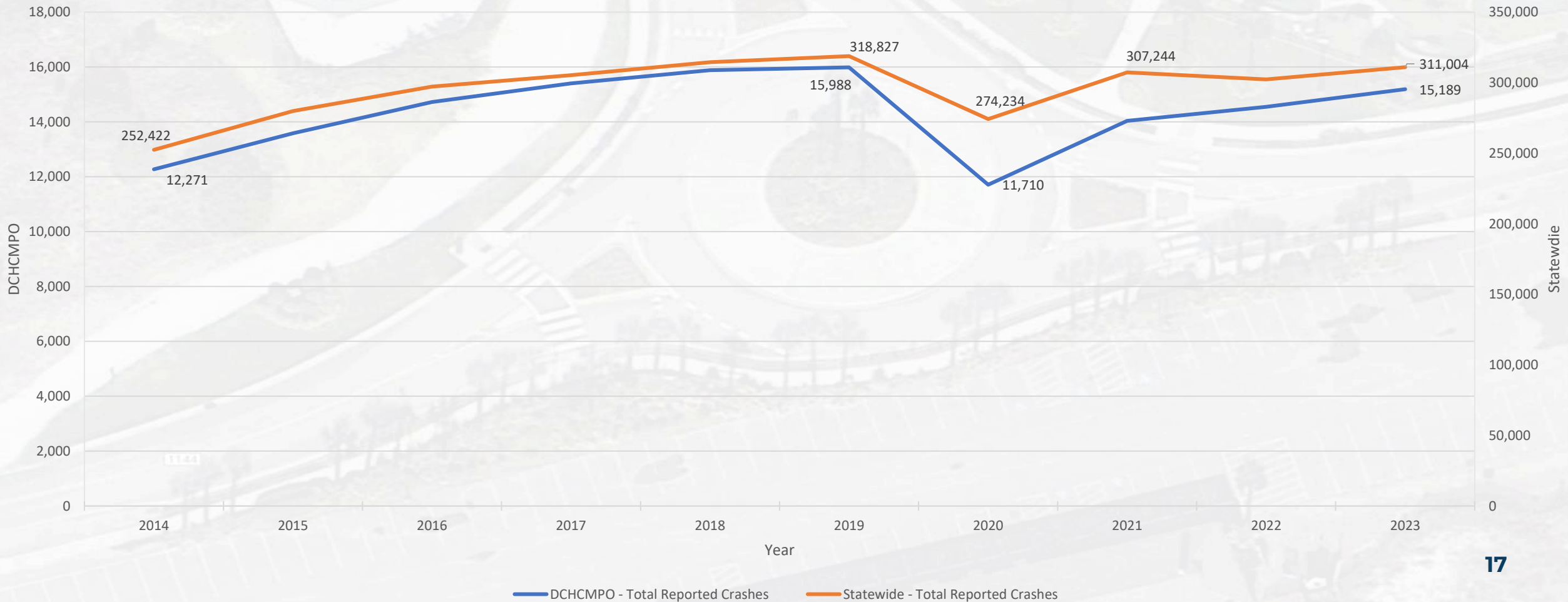
# Vehicle Miles Traveled (VMT)

Vehicle Miles Traveled (100 MVM) by Year  
(2014 - 2023)



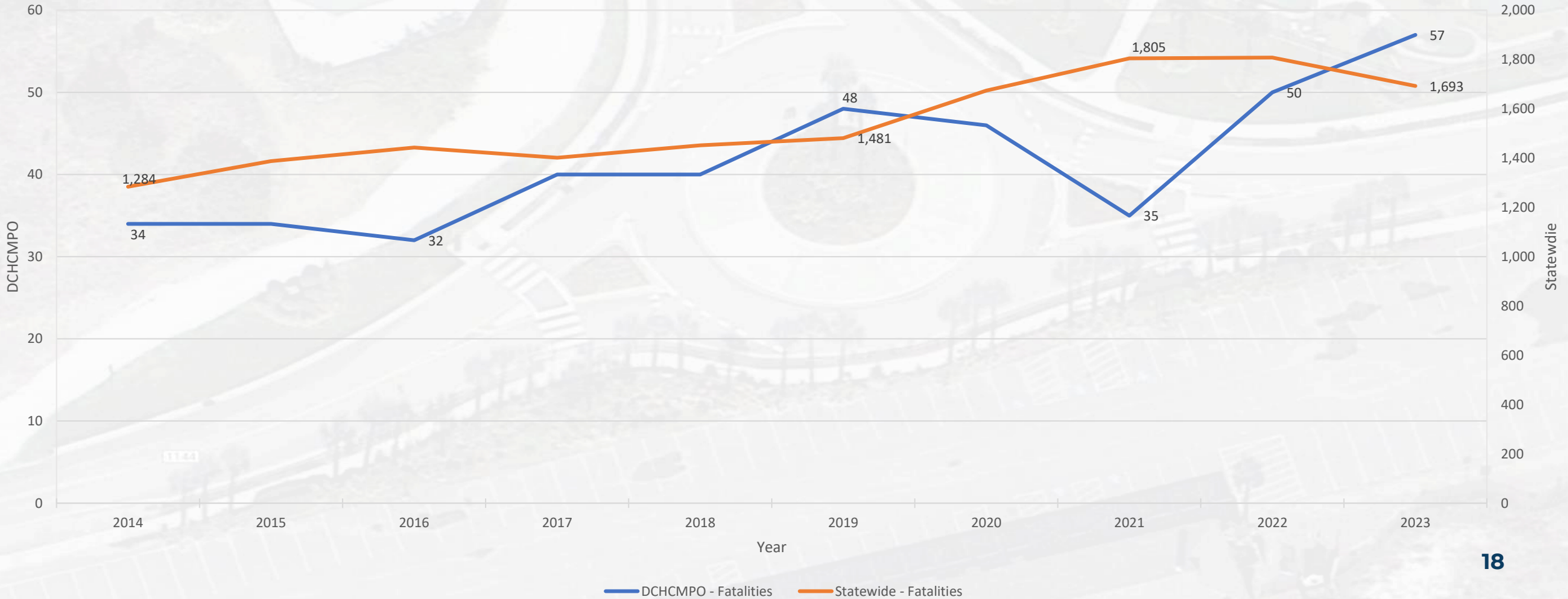
# Reported Crashes

Total Reported Crashes by Year  
(2014 - 2023)



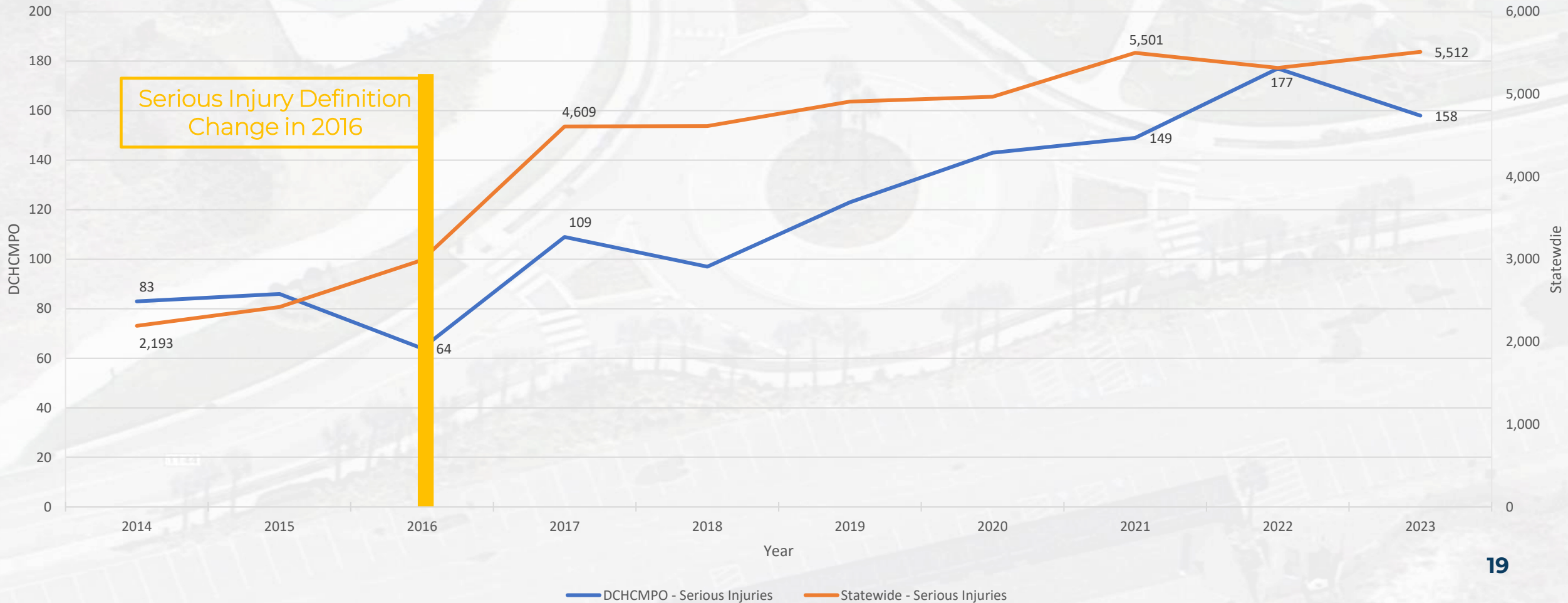
# Fatalities

Fatalities by Year  
(2014 - 2023)



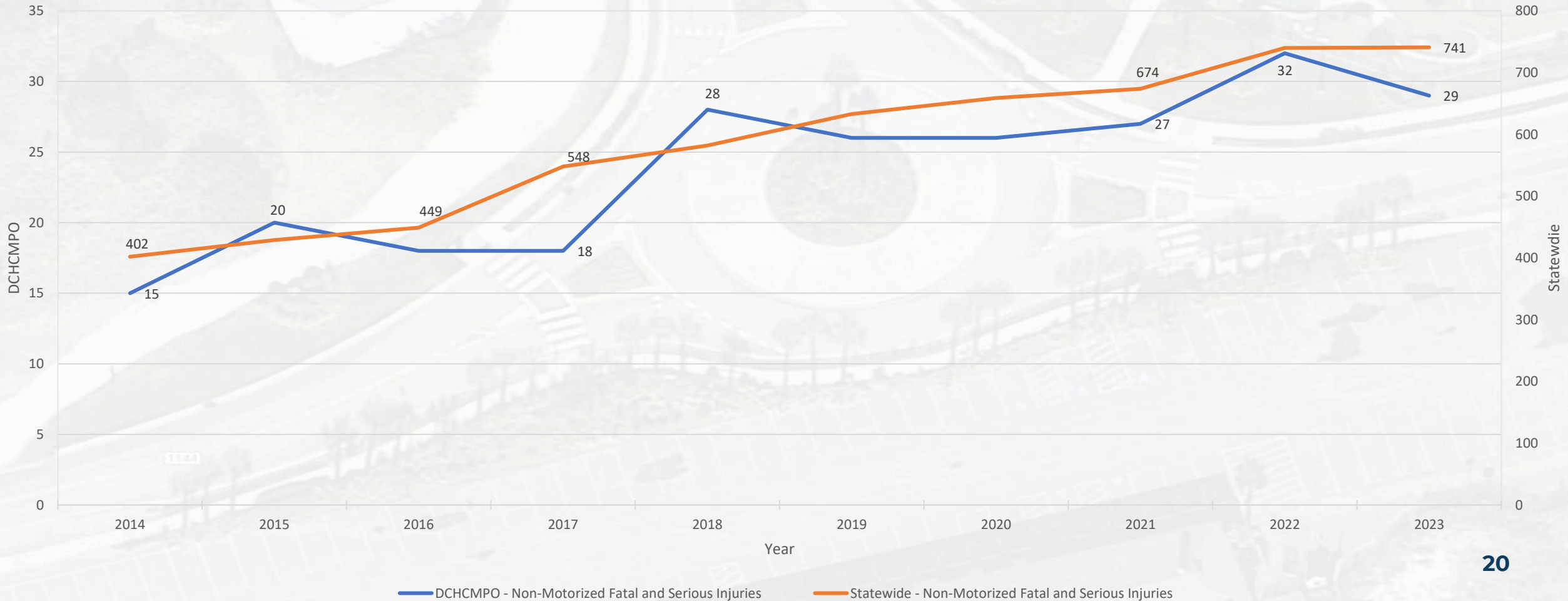
# Serious Injuries (A Type – Disabling)

Serious Injuries by Year  
(2014 - 2023)



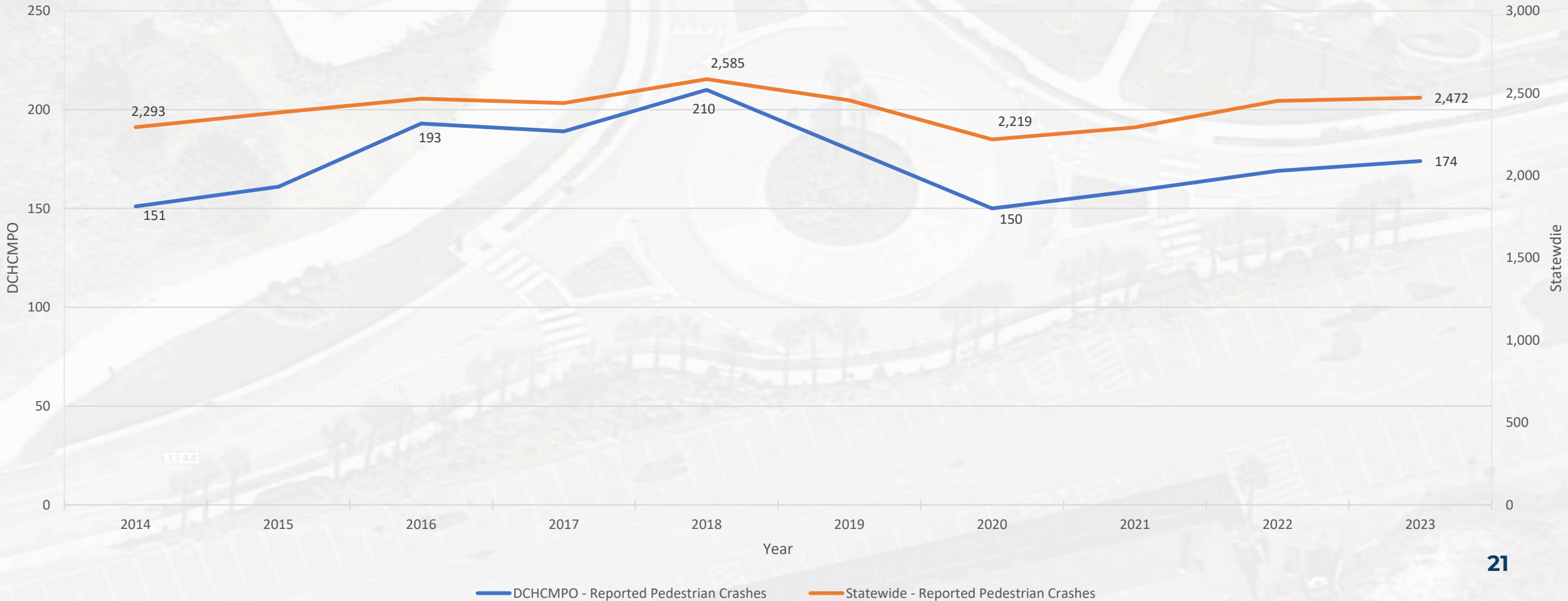
# Non-Motorized Fatalities and Serious Injuries

Non-Motorized Fatal and Serious Injuries by Year  
(2014 - 2023)



# Reported Pedestrian Crashes

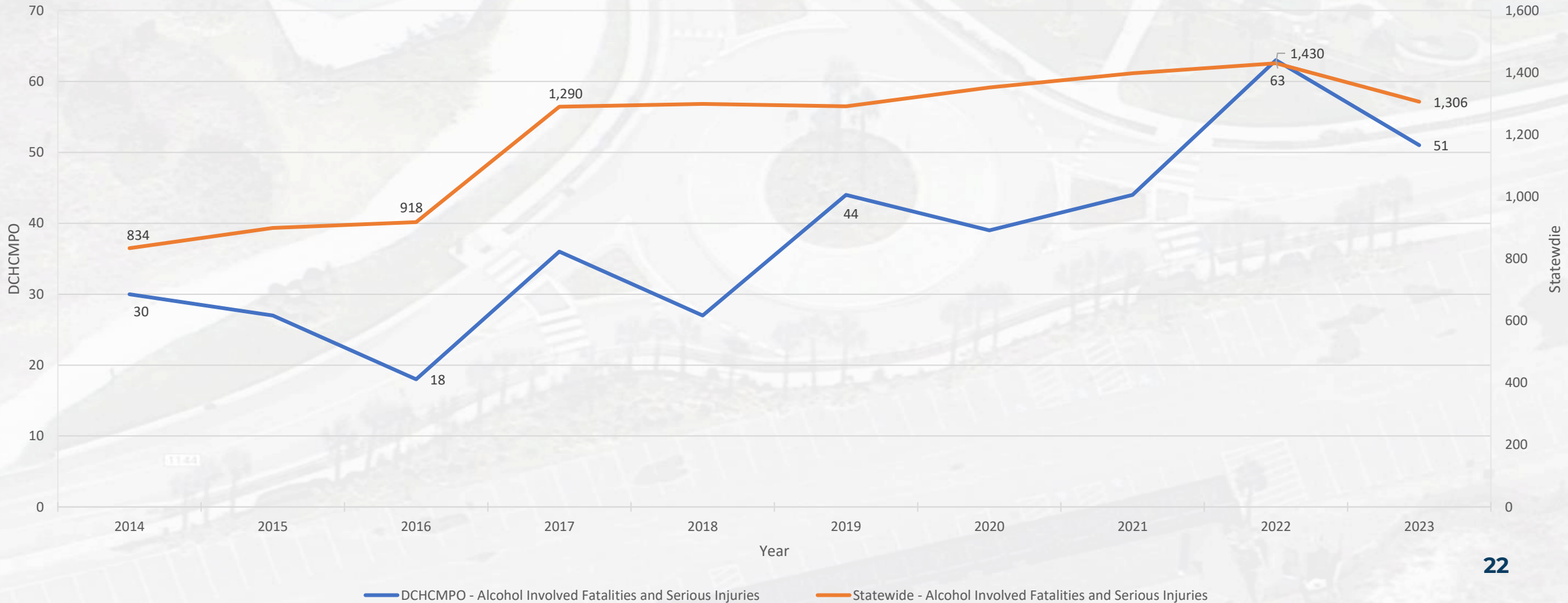
Reported Pedestrian Crashes by Year  
(2014 - 2023)





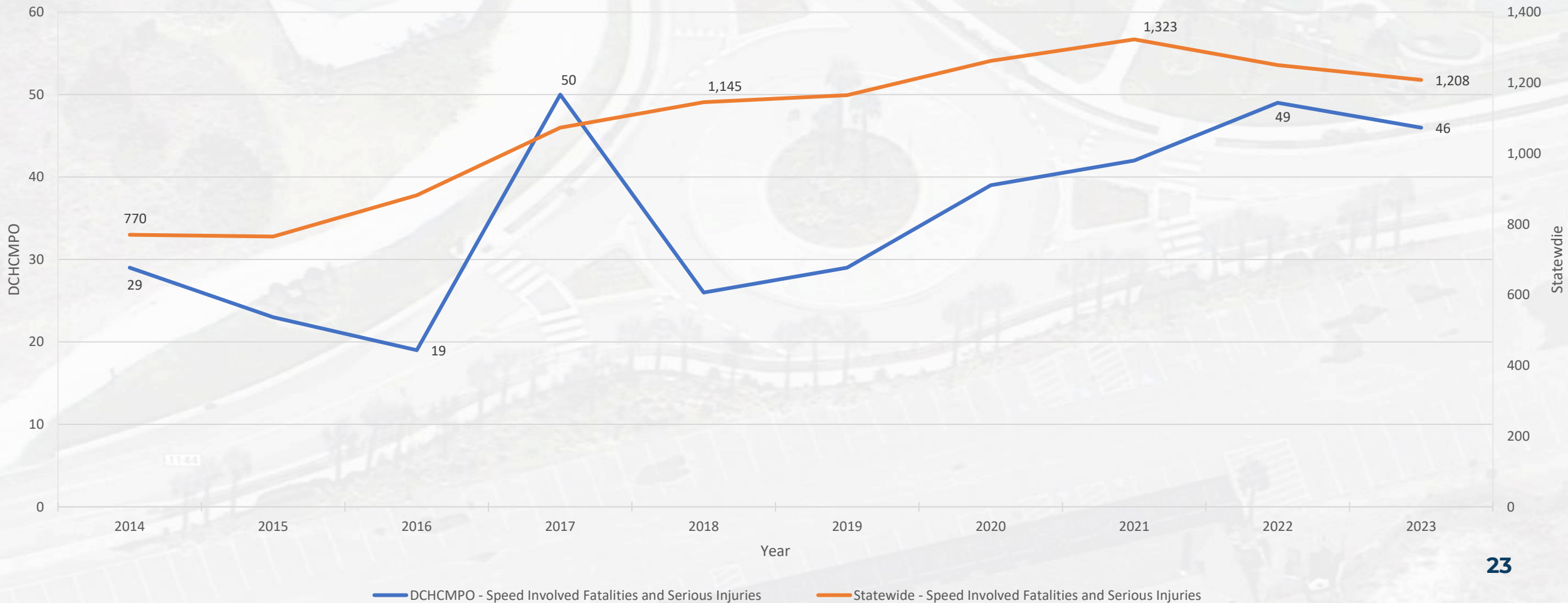
# Alcohol Involved Fatalities and Serious Injuries

Alcohol Involved Fatalities and Serious Injuries by Year  
(2014 - 2023)



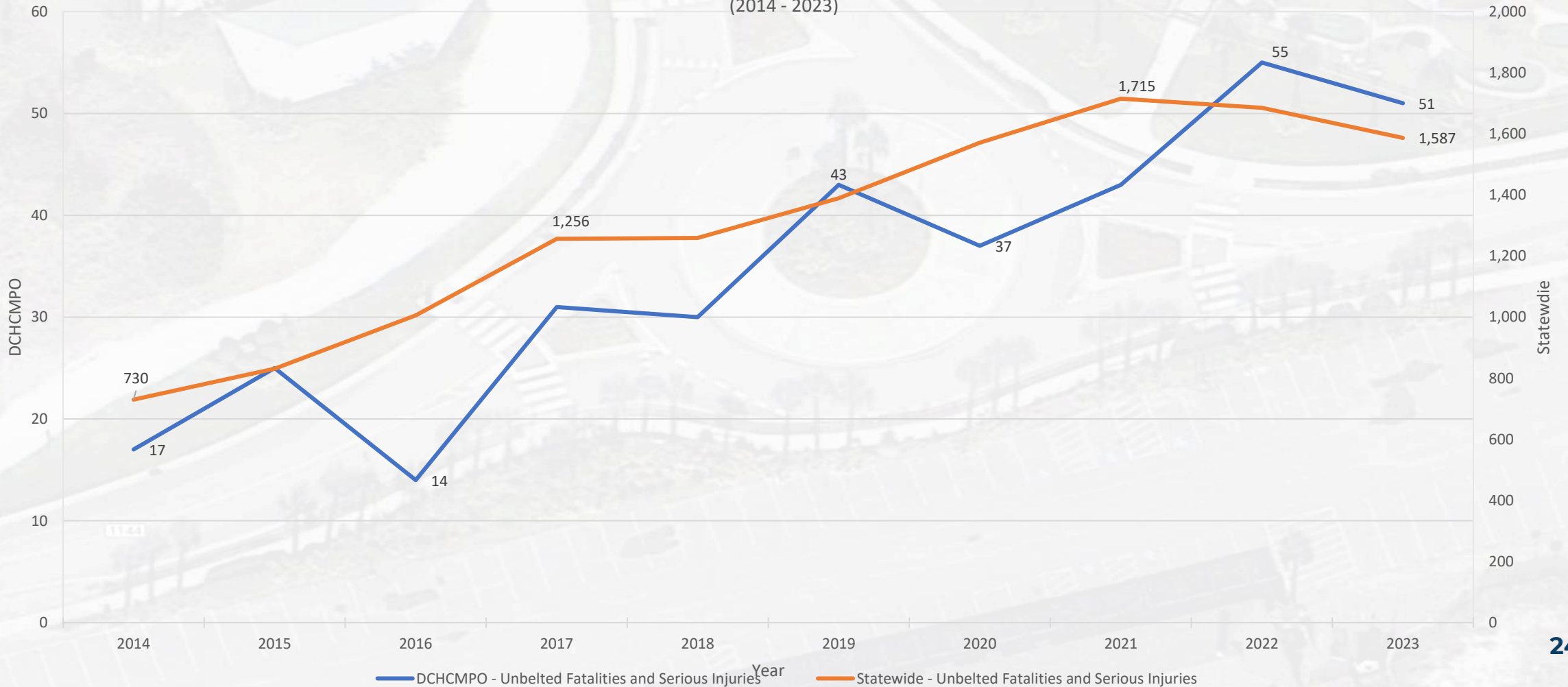
# Speed Involved Fatalities and Serious Injuries

Speed Involved Fatalities and Serious Injuries by Year  
(2014 - 2023)



# Unbelted Fatalities and Serious Injuries

Unbelted Fatalities and Serious Injuries by Year  
(2014 - 2023)



## Breakdown by Municipality within the Durham – Chapel Hill – Carrboro MPO (2014 – 2023)

Municipality	Total Reported Crashes	Fatal Crashes	Serious Injury Crashes
Carrboro	1,614	5	6
Chapel Hill	9,747	21	39
Durham	99,343	209	423
Efland	18	0	0
Hillsborough	2,496	3	15
Rougemont	50	0	0
<i>Rural</i>	<i>30,069</i>	<i>154</i>	<i>505</i>
Total	143,337	392	988

# Safety Performance Measures

- Background
- Assessment
- 2025 Safety Performance Measures

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Statewide Data Trends

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# Safety Performance Measures - Background

## MAP-21 / FAST Act Rulemaking:

- Requires State DOTs and MPOs to set targets for 5 Highway Safety Improvement Program (HSIP) safety performance metrics
- Final Rules published in the Federal Register March 2016; effective April 2016

HSIP Safety Targets	
1	Number of fatalities
2	Rate of fatalities
3	Number of serious injuries
4	Rate of serious injuries
5	Number of non-motorized fatalities and non-motorized serious injuries

## • Targets:

- Are based on 5 year rolling averages
- Are for calendar years
- Are established annually

# Safety Performance Measures - Background

## Target Reporting Dates:

- State: August 31st with annual HSIP report
- MPO: February 27<sup>th</sup>



# Safety Performance Measures - Background

## How are targets set?

- Up to each State and MPO
  - MPO can adopt State methodology, or come up with their own





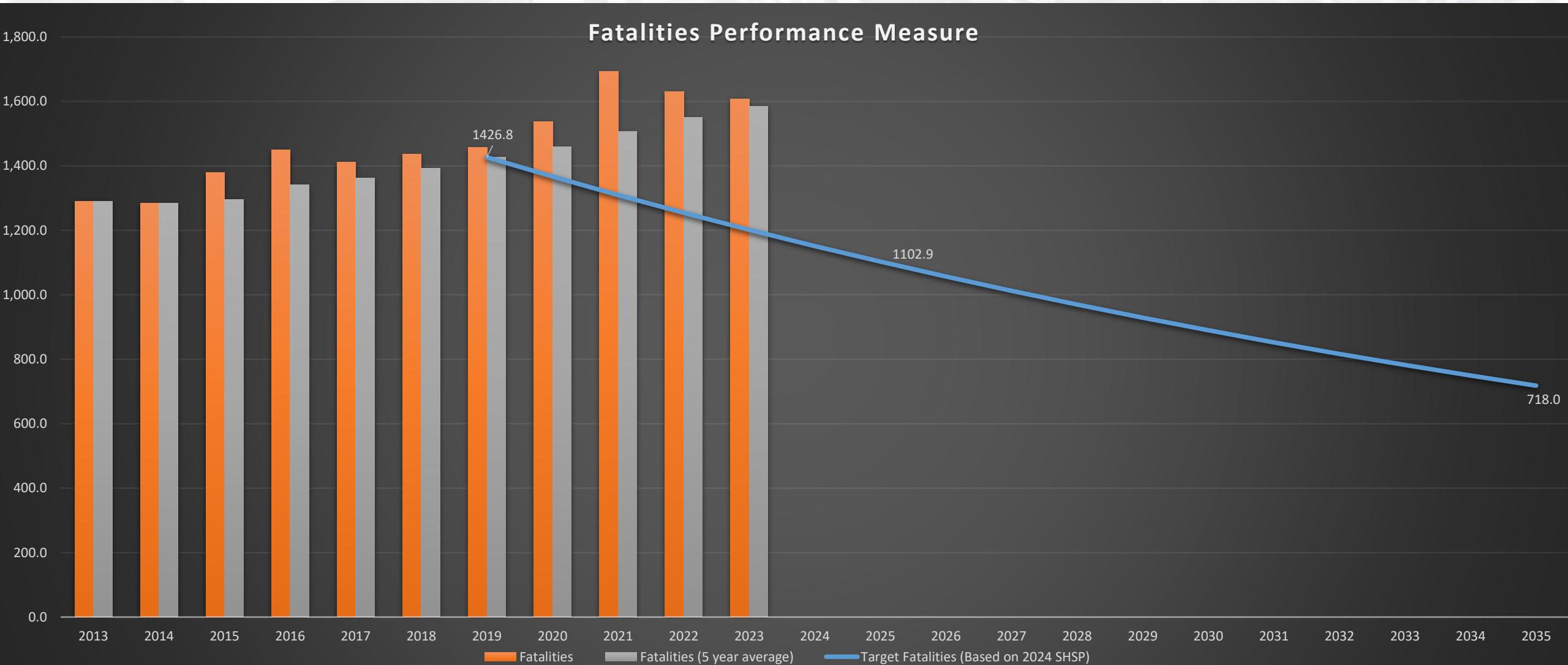


# SHSP Goal

- Reduce all fatalities and serious injuries by half by 2035, moving towards zero by 2050.



# Safety Performance Measures - Background



## Safety Performance Measures - Background

### Assessment of Significant Progress:

- FHWA will determine whether a State DOT has met or made significant progress toward meeting HSIP safety targets
  - CY 2022 targets were assessed in early 2024
- FHWA will not directly assess MPO progress towards meeting HSIP safety targets



# Safety Performance Measures - Background

## Assessment of Significant Progress (cntd):

- FHWA assessed NCDOT's CY 2022 safety targets in early 2024
- **Based on FHWA's review, North Carolina has not met or made significant progress toward achieving its safety performance targets.**

## Assessment of Statewide Targets

Performance Measures	5-year Rolling Averages			Target Achieved?	(Actual) Better than Baseline?	Met or Made Significant Progress?
	Target	Actual	Baseline			
	2018 - 2022	2018 - 2022	2016 - 2020			
<b>Fatalities (5 Year Average)</b>	1,254.9	1,550.8	1,458.6	No	No	No
<b>Fatality Rate (5 Year Average)</b>	1.057	1.328	1.250	No	No	
<b>Serious Injuries (5 Year Average)</b>	3,537.6	5,030.0	4,410.2	No	No	
<b>Serious Injury Rate (5 Year Average)</b>	2.962	4.296	3.776	No	No	
<b>Non-motorized Fatalities and Serious Injuries (5 Year Average)</b>	486.0	661.6	583.4	No	No	

# Safety Performance Measures - Background

## Assessment of Significant Progress (cntd):

- FHWA assessed NCDOT’s CY 2022 safety targets in early 2024
- **Based on FHWA’s review, North Carolina has not met or made significant progress toward achieving its safety performance targets.**

### “Assessment” of Durham – Chapel Hill - Carrboro MPO Targets

Performance Measures	5-year Rolling Averages			Target Achieved?	(Actual) Better than Baseline?	Met or Made Significant Progress?
	Target	Actual	Baseline			
	2018 - 2022	2018 - 2022	2016 - 2020			
Fatalities (5 Year Average)	34.3	43.8	41.2	No	No	No
Fatality Rate (5 Year Average)	0.613	0.821	0.760	No	No	
Serious Injuries (5 Year Average)	84.3	137.8	107.2	No	No	
Serious Injury Rate (5 Year Average)	1.507	2.599	1.991	No	No	
Non-motorized Fatalities and Serious Injuries (5 Year Average)	20.5	28.6	23.8	No	No	

# Durham – Chapel Hill – Carrboro MPO Safety Performance Measures

## Durham – Chapel Hill – Carrboro MPO HSIP Safety Measures

Year	Fatalities	Fatality Rate	Serious Injuries	Serious Injury Rate	Non-motorized Fatalities and Serious Injuries
2008	34	0.746	98	2.150	29
2009	28	0.608	66	1.432	10
2010	30	0.628	57	1.194	13
2011	26	0.542	70	1.459	15
2012	30	0.627	82	1.713	26
2013	40	0.796	80	1.593	24
2014	34	0.644	83	1.572	15
2015	34	0.645	86	1.630	21
2016	32	0.580	64	1.159	18
2017	40	0.712	109	1.941	19
2018	40	0.708	97	1.717	28
2019	48	0.831	123	2.131	26
2020	46	0.968	143	3.008	28
2021	35	0.686	149	2.920	28
2022	50	0.909	177	3.219	33
2023	57	1.009	158	2.796	29

## 2025 Durham – Chapel Hill – Carrboro MPO HSIP Safety Targets

- If adopting the State’s methodology of reducing fatalities and serious injuries by half by the year 2035

Year	Fatalities (5 Year Average)	Fatality Rate (5 Year Average)	Serious Injuries (5 Year Average)	Serious Injury Rate (5 Year Average)	Non-motorized Fatalities and Serious Injuries (5 Year Average)
2008 - 2012	29.6	0.630	74.6	1.590	18.6
2009 - 2013	30.8	0.640	71.0	1.478	17.6
2010 - 2014	32.0	0.647	74.4	1.506	18.6
2011 - 2015	32.8	0.651	80.2	1.593	20.2
2012 - 2016	34.0	0.658	79.0	1.533	20.8
2013 - 2017	36.0	0.675	84.4	1.579	19.4
2014 - 2018	36.0	0.658	87.8	1.604	20.2
2015 - 2019	38.8	0.695	95.8	1.716	22.4
2016 - 2020	41.2	0.760	107.2	1.991	23.8
2017 - 2021	41.8	0.781	124.2	2.343	25.8
2018 - 2022	43.8	0.821	137.8	2.599	28.6
2019 - 2023	47.2	0.881	150.0	2.815	28.8
<b>2025 Target*</b>	<b>30.3</b>	<b>0.540</b>	<b>74.2</b>	<b>1.323</b>	<b>18.8</b>

# Safety Data Resources

- Safety Project Mapping
- Bicycle and Pedestrian Crash Data Dashboard

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# Resources

## **North Carolina Strategic Highway Safety Plan**

- <https://spatial.vhb.com/ncdotshsp/>

## **General Safety Data Mapping Site / Dashboards**

- Link to general safety data mapping site. Includes links to dashboards for total crashes, pedestrian and bicycle crashes, and MPO safety performance measures: <https://www.ncdot.gov/initiatives-policies/safety/traffic-safety/Pages/safety-data-maps.aspx>

## **Highway Safety Improvement Program (HSIP)**

- Our HSIP program is our primary method of identifying locations that are likely to produce a safety project. Locations are flagged if they exceed certain criteria and have patterns that we believe are correctable.
- Link to webpage with description of program and tabular reports: <https://connect.ncdot.gov/resources/safety/pages/nc-highway-safety-program-and-projects.aspx>
- Link to mapped HSIP locations for the last 5 years: <http://ncdot.maps.arcgis.com/home/webmap/viewer.html?webmap=bb6dd277ce6247438fc096200141949a>

## **Total Crash Frequency Grouped By Intersection**

- This product contains planning level crash data grouped by intersection. This data should not be used for detailed design decisions.
  - Special consideration should be given to data at ramps or loop locations.
- Link to ArcGIS Online mapped data: <http://ncdot.maps.arcgis.com/home/webmap/viewer.html?webmap=dc944f1c834f49a18479c17df1f783b9>

## **Planning Level Safety Scoring Data**

- This product contains planning level crash data for each half mile section of roadway. This data should not be used for detailed design decisions. This is the dataset that is used to score projects from a safety perspective as they go through the STI process.
- Link to ArcGIS Online mapped data: <http://ncdot.maps.arcgis.com/home/webmap/viewer.html?webmap=7415a4df4df1468585225bc74a77369b>

## **Fatal and Serious Injury Crashes**

- This product contains fatal and severe injury crashes mapped for the last 10 years.
- Link to ArcGIS Online mapped data: <http://ncdot.maps.arcgis.com/home/webmap/viewer.html?webmap=9a25021dbe91427a92f2eca57bd71ee2>

## **Bicycle and Pedestrian Crash Data**

- This product contains bicycle and pedestrian crashes mapped back to 2007. Link to ArcGIS Online mapped data: <https://ncdot.maps.arcgis.com/home/webmap/viewer.html?webmap=b4fcdc266d054a1ca075b60715f88aef>
- Link to pedestrian and bicycle dashboard information: <https://ncdot.maps.arcgis.com/apps/dashboards/78046d11cabd4658a4d45b88c52ab8af>

## **Safety Project Mapping**

- This product displays completed, funded, and on-hold safety projects since 2019, and is updated quarterly.
- Link to mapped safety project locations: <https://ncdot.maps.arcgis.com/home/webmap/viewer.html?webmap=3f8b32844ad04673b391033a86496852>

## **Spot Mobility Project Mapping**

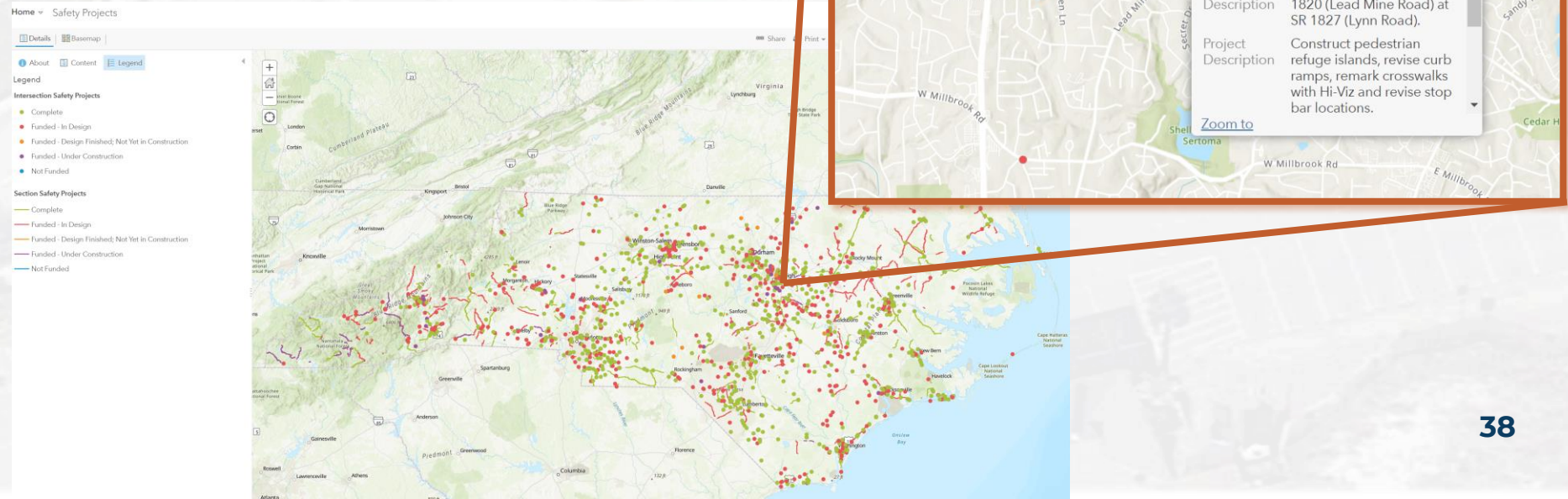
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# Safety Project Mapping

## Safety Project Mapping

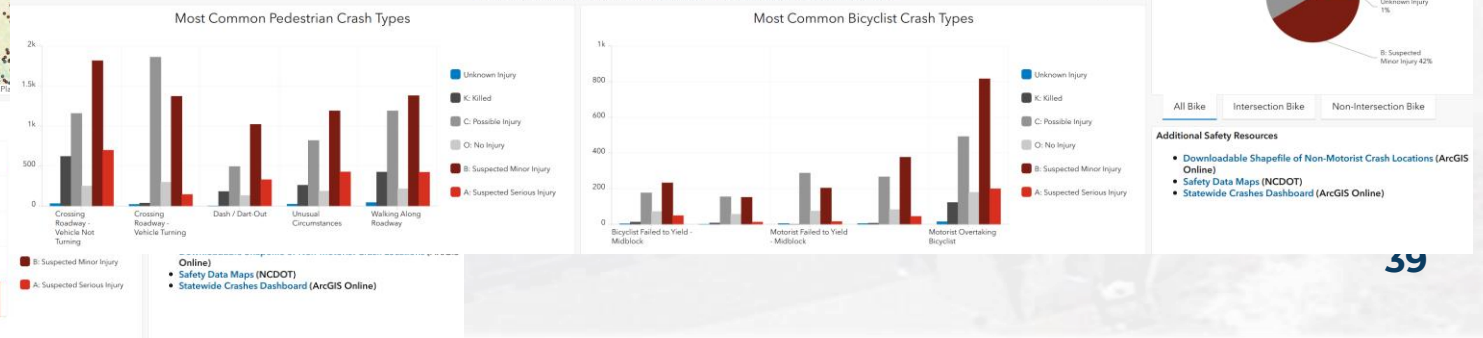
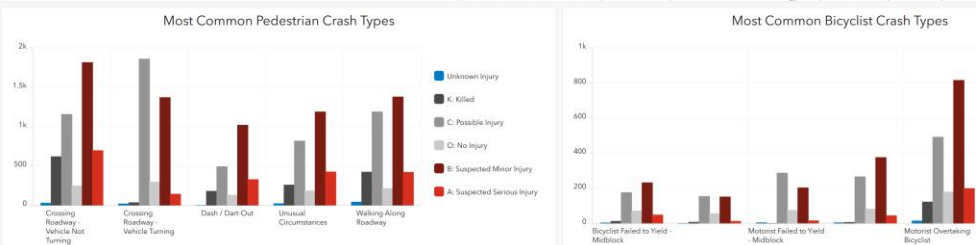
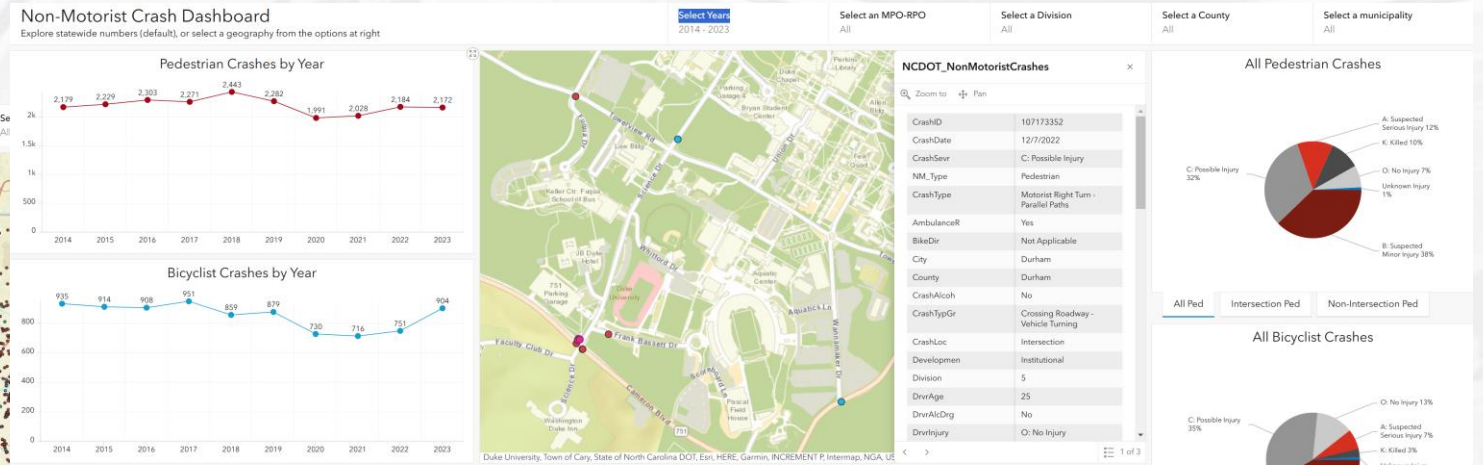
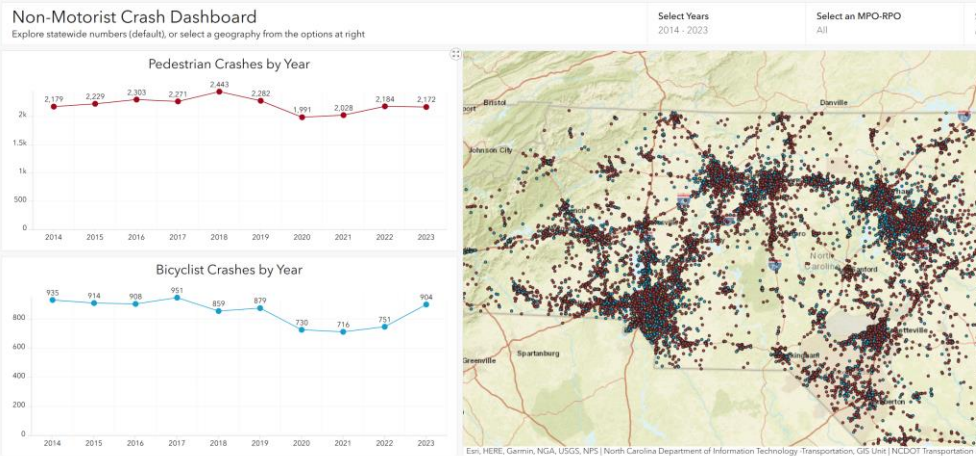
- Projects completed since 2019 are mapped
- All funded, but not completed projects are mapped
- Some systemic or area-wide projects are not mapped
  - e.g. regional guardrail projects, systemic signing projects
- Link: [Safety Project Mapping](#)



# Bicycle and Pedestrian Crash Data Dashboard

## Non-Motorist Crash Data Dashboard

- All non-motorist crashes geolocated and crash typed since 2007
- Query by boundary, get information on individual crashes
- Link: [Non-Motorist Crash Dashboard](#)



# Questions / Discussion

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# Questions / Discussion



# Thank you!

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Brian Murphy, PE

Traffic Safety Systems Engineer

Traffic Safety Unit

North Carolina Department of Transportation

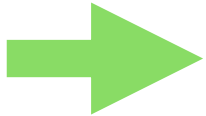
(919) 814-4948

[bgmurphy@ncdot.gov](mailto:bgmurphy@ncdot.gov)

## **TC Recommendation (January 14, 2025):**

- Received the presentation and provided feedback on targets for safety performance measures.

## **Board Recommendation (January 28, 2025):**



- Receive the presentation and provide feedback on targets for safety performance measures.