Charlotte City Council Q&A
October 7, 2024

I-77 North Express Lanes (open to traffic)

What are the key lessons learned from the I-77 North Express Lanes contract?

The I-77 North Express Lanes Project was North Carolina's first express lanes project and P3 project. There are a number of lessons learned that have been identified from the project by NCDOT and local stakeholders. Additionally, NCDOT has tracked feedback over the last year from the Charlotte Regional Transportation Planning Organization (CRTPO) Board. Key lessons learned include:

- Collaborate with local communities early in the process.

  At the time, locals felt they were not informed as much as they should have been and that there was a void in project updates and communications during the contract development process before the Comprehensive Agreement was signed.

  What NCDOT is doing differently:

  As planning organizations know their regions and communities best, NCDOT believes it is essential to have community support for these projects to move forward.

  The Comparative Analysis, that was requested by CRTPO, was conducted to help provide communities with the information needed to make an informed decision for their region. This allows the locals to weigh in on the delivery options.

  For North Carolina, tolls and P3s are tools that can be used to deliver projects more quickly, however NCDOT is aware toll and/or P3 projects may not work in every community. This is why it is important for NCDOT to have open and frequent communication with the local communities to ensure NCDOT can understand and alleviate concerns early on.

- Increase transparency of the business during all phases of the project (contract development, construction, operations).

  Some local communities felt as if they were left in the dark prior to the Comprehensive Agreement being signed for the I-77 North Express Lanes. Additionally, there has been frustration with the amount of information available during the operational period.

  What NCDOT is doing differently:

  Prior to any public advertisement for a Request for Qualifications (RFQ), NCDOT will collaborate with CRTPO to identify the priorities and objectives of the corridor for the region to help inform key contract terms. This collaboration between NCDOT and CRTPO did not take place prior to the execution of the I-77 North Express Lanes Comprehensive Agreement.

  Further, NCDOT has committed to sharing those key contract terms at least 60 days prior to advertising an RFQ and CRTPO can rescind support of moving the project forward prior to

advertisement. NCDOT also commits to providing CRTPO updates throughout the procurement process.

In addition, NCDOT will seek to implement a contract that mandates increased transparency from the developer during the operations phase, particularly concerning the management of information related to the performance of the express lanes.

- Encourage a competitive procurement process to receive multiple fixed-price bids.

  Local stakeholders have expressed interest for NCDOT to encourage more competition for the I-77 South Express Lanes. While four teams were shortlisted for the I-77 North Express Lanes project, ultimately only one bid was received.

  What NCDOT is doing differently:

  If a P3 Toll Delivery were pursued, to foster a competitive environment and maintain high levels of interest from potential developers, NCDOT would engage with the developer market before procurement begins. This includes:

  - Establishing a data room with comprehensive project-related information before procurement, ensuring all potential bidders have equal access to key project details and ample time to refine their views on the Project. Developers have indicated this is key to ensuring a level playing field.
  - Hosting pre-bid conferences and Q&A sessions to clarify project expectations and address potential concerns.
  - Advertising the procurement notice through multiple channels to ensure that all qualified developers are aware of the Project and have sufficient time to respond.
  - These steps would help ensure that all qualified developers are informed and have ample time to prepare competitive bids.
  - NCDOT's commitment to a transparent and fair procurement process for the I-77 South Express Lanes project would also help encourage strong competition among bidders. To this end, NCDOT would implement a consistent evaluation and selection procedure, ensuring all potential bidders have an equal opportunity. An expert evaluation team would assess proposals based on clear criteria, such as technical capability, financial viability, and relevant experience. Each step of the process would be documented and ensuring a level playing field for the selection of the best partner for the Project**.**

  It is also important to acknowledge, the P3 market is different than it was 10 years ago. There are a number of new developers in the market, and many have expressed interest in the I-77 South Express Lanes project. Additionally, in recent years, peer projects across the country with procurements have received multiple competitive bids.

- Optimize the utilization of the Express Lanes and General-Purpose Lanes.

  NCDOT has heard feedback from travelers in the corridor as well as CRTPO board members that toll rates are too high, leading to underutilization of the express lanes.

  What NCDOT is doing differently:

Without compromising the performance of the express lanes, NCDOT will look to moderate toll rates to ensure optimal utilization of the I-77 South Express Lanes.

NCDOT will also continue to identify additional measures to encourage utilization of the I-77 South Express Lanes.

What is the utilization of the Express Lanes?

I-77 Mobility Partners provides a Quarterly Traffic & Revenue Summary on their website. The I-77 North Express Lanes generated 11 million traffic transactions and $27.3 million in toll revenue for Q2 2024.

According to I-77 Mobility Partners, on average, 300,000 distinct drivers use the express lanes each month. The trend has steadily increased, except during the COVID epidemic period. For example, comparing the first half of 2022 and the same period in 2023, the number of transactions increased 22% (16.35 million to 20 million).

Has safety improved on the I-77 North corridor?

NCDOT's Transportation Mobility and Safety team reviewed the crash trends and overall safety performance for the I-77 corridor (I-277 Brookshire to NC 150 Plaza) as a whole. This report is available for review (See "High-level Crash Analysis of I-77 Express Lane Corridor Report"). In general, congestion type crashes such as rear-end, and sideswipe are the dominant crash types along the corridor before and after the express lane project was implemented. While the corridor has experienced an increase in crashes, this increase is similar or slightly less than what Mecklenburg County has experienced. This indicates the corridors' safety performance is in line with what the overall region is experiencing where traffic volumes continue to grow. NCDOT analyzed crash rates, which are crashes per 100 million vehicle miles traveled. The I-77 North corridor crash rate is 219.09. As a comparison, I-77 South is 340.36. Both crash rates are higher than the statewide crash rate for urban interstates, which is 136.70. Reviewing total crashes, NCDOT found that countywide total crashes increased by 18 percent, while the I-77 Express Lanes corridor increased by 8 percent.

Provide a breakdown of the DBE (African American) participation on the I-77 North Express Lanes construction.

The final Disadvantaged Business Enterprises (DBE) payment amount for the Design-Build portion of the I-77 North Express Lanes contract was $100,682,309.89 which exceeded the DBE goal for the Project. The DBE goal for the contract was 12% ($53,302,140) of the original Design-Build portion of the contract ($444,184,500). Specific HUB designation is not something that NCDOT utilizes when setting goals, it is typically used by the Department of Administration and some Municipalities for building construction and maintenance type contracts. NCDOT utilizes the DBE certification when setting goals for highway contracts. The table to the right provides a breakdown of the DBE payments. Please note this summary includes payments listed as non-DBE payments which is why the total differs from the $100.7 million mentioned above.

Row Labels	Sum of Amount
Asian/Pacific American	$ 3,358,754.43
Black American	$ 15,846,829.87
Caucasian American Female	$ 76,327,555.42
Hispanic American	$ 12,612,064.45
Native American	$ 341,754.32
Subcontinent Asian American	$ 7,267,637.84
Grand Total	**$ 115,754,596.33**

I-77 South Express Lanes (under development)

How do traffic volumes on I-77 South compare to I-77 North prior to the construction of the Express Lanes?

Below are the Average Annual Daily Traffic (AADT) counts for the I-77 North corridor in 2015 prior to construction. AADT in the I-77 South corridor is significantly higher than in the I-77 North corridor prior to construction of the express lanes. In 2019, AADT on the I-77 South corridor ranged from 130,000 to 180,000.

I-77 North:

From	To	2015 AADT
Brawley School Road	Williamson Road	70,278
Williamson Road	Langtree Road	82,538
Langtree Road	Griffith Street	88,689
Griffith Street	Catawba Avenue	94,879
Catawba Avenue	Sam Furr Road	85,270
Sam Furr Road	Gilead Road	96,000
Gilead Road	I-485	107,185
I-485	W.T. Harris Boulevard	83,932
W.T. Harris Boulevard	Sunset Road	89,362
Sunset Road	I-85	114,055
I-85	Atando Avenue	172,383
Atando Avenue	Brookshire Freeway	182,387

Provide data from the traffic studies.

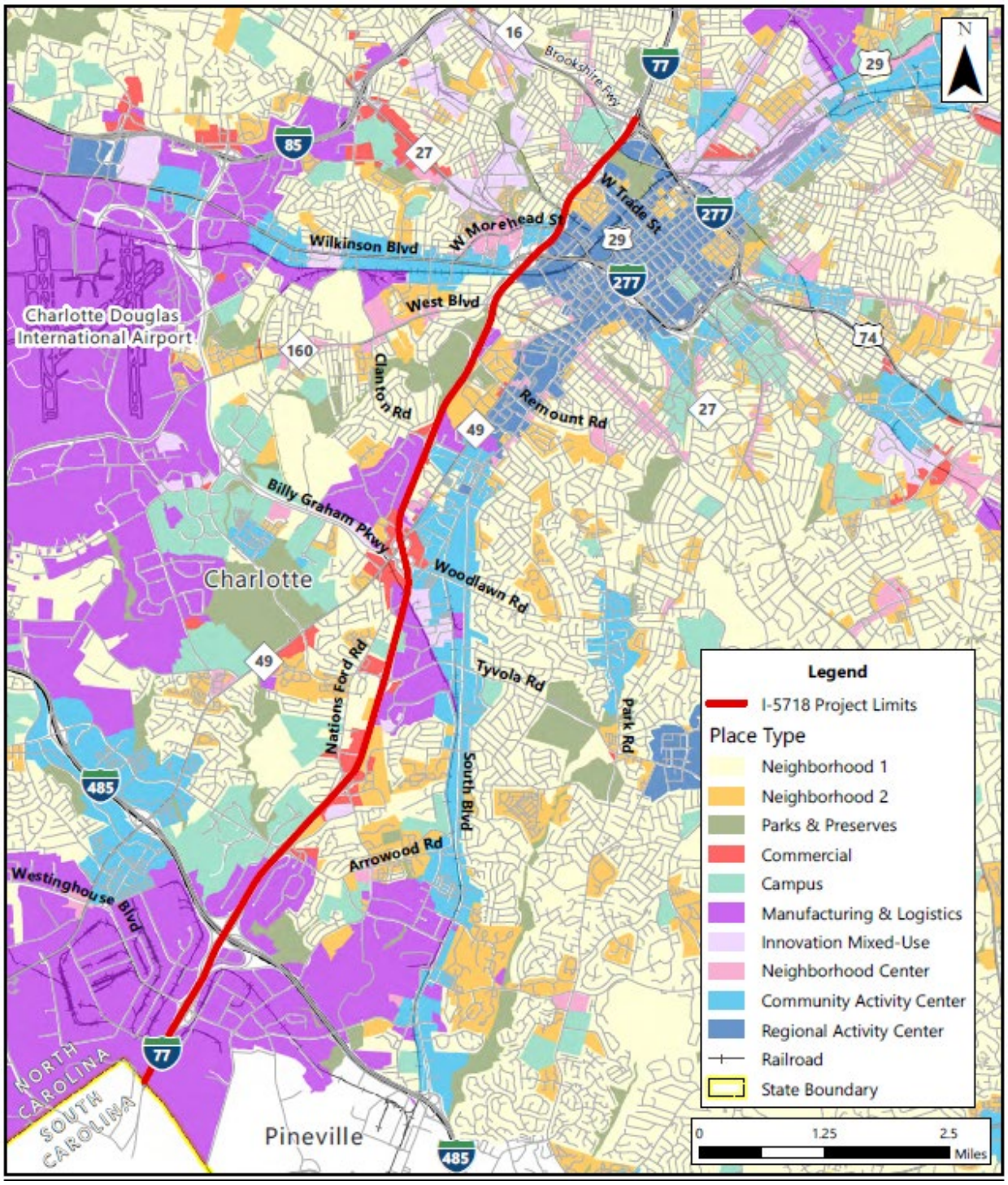
Information on the assumptions and findings from the Traffic and Revenue study can be found in Appendices D and E of the Comparative Analysis Supplemental Report.

What neighborhoods will be affected by the I-77 South Express Lanes construction?

As with any project, NCDOT aims to minimize impacts to the community as much as possible. The I-77 South Express Lanes project is still in the early stages of the environmental and design process which assumes more conservative right-of-way (ROW) acquisition assumptions. As design on the Project progresses, the ROW acquisition needed for the project will be refined and likely reduced. It is currently anticipated that public engagement will resume after a decision is made on the delivery method for the Project.

It is also important to note, that if the Project were to move forward as a P3, developers will likely bid different designs and/or layouts of the Project to optimize access to the facility. These different designs could vary in ROW impacts.

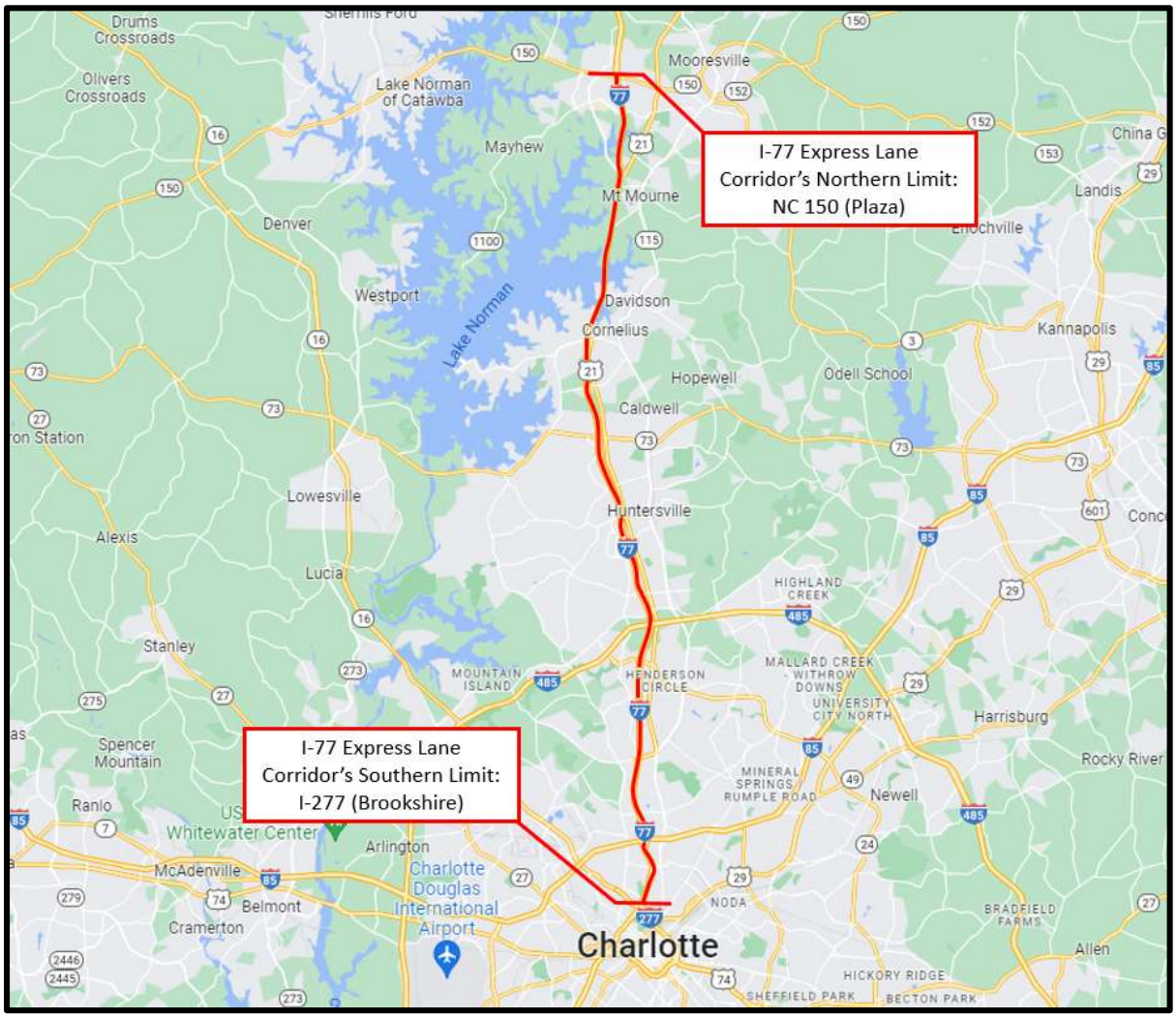
The map on the following page provides an overview of the land use around the I-77 South corridor.


N
Legend
I-5718 Project Limits
Place Type
Neighborhood 1
Neighborhood 2
Parks & Preserves
Commercial
Campus
Manufacturing & Logistics
Innovation Mixed-Use
Neighborhood Center
Community Activity Center
Regional Activity Center
Railroad
State Boundary
0
1.25
2.5
Miles
Charlotte
Pineville
Charlotte Douglas International Airport
Wilkinson Blvd
W Morehead St
W Trade St
West Blvd
Clanton Rd
Remount Rd
Billy Graham Pkwy
Woodlawn Rd
Tyvola Rd
Park Rd
South Blvd
Nations Ford Rd
Arrowood Rd
Westinghouse Blvd
Brookshire Fwy
NORTH CAROLINA
SOUTH CAROLINA

High-Level Crash Analysis of I-77 Express Lane Corridor

Introduction

NCDOT's Traffic Safety Unit was tasked with providing a high-level crash analysis on the I-77 Express Lane Corridor in Mecklenburg and Iredell Counties (TIPs I-5405 and I-4750AA). The express lanes were fully opened in 2019 covering the area from I-277 (Brookshire) in Mecklenburg County to NC 150 (Plaza) in Iredell County. Altogether, this corridor is approximately 25 miles in length and varies from a 6-lane cross section within the southernmost portions (4 general-purpose lanes + 2 express lanes) to a 3-lane cross section within the northernmost portions (2 general-purpose lanes + 1 express lane).



Study Overview

Crash data was queried from the North Carolina Crash Database for the time period of 11/1/2010 to 7/31/2023. All reportable crashes that fell within the below I-77 milepost ranges were pulled from the database. Crashes that were coded to ramps were excluded from the analysis.

- Mecklenburg County: MPs 11.177 – 30.309, I-277 (Brookshire) to Iredell County Line
- Iredell County: MPs 0.000 – 5.733, Mecklenburg County Line to NC 150 (Plaza)

The first traffic shift for the express lanes' construction occurred in November 2015, which will serve as the start of the construction period for this crash analysis. The express lane corridor was fully opened in early November 2019. Combining this information, a 4-year construction period running from 11/1/2015 - 10/31/2019 was used in this analysis. A 5-year before period, running from 11/1/2010 – 10/31/2015 would be used as reference for the crash trends experienced by this corridor during and after construction.

It is worth keeping in mind that due to the long construction duration, a direct comparison between the before period and after period crash figures may be misleading (driver behavior and nearby infrastructure changes over time). As an example, the northern half of the I-485 loop was completed in 2015 and likely changed the typical conditions along portions of I-77 as a result. Crash figures for the construction period were analyzed in addition to that of the before and after periods to help provide context on the year-to-year changes of the subject area.

Crash Analysis Results

Calculation of Weighted Average Daily Traffic

Annual volume data is reported within the corridor for each sub-section between major interchanges. The sub-sections' volumes were weighted together to find an average overall volume along the corridor for each year within the study period of the crash analysis. The below table shows these annual weighted volumes and also provides the maximum and minimum sub-section volumes. The maximum and minimum sub-section volumes were provided for context on the range of traffic demand along the corridor. Please note that 2022 and 2023 volumes were not yet available at the time of writing this report.

I-77 Express Lane Corridor Volume Info *(vehicles/day)*	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020* *(COVID)*	2021
Average Overall Volume	95,000	94,000	99,000	98,000	99,000	99,000	98,000	96,000	92,000	82,000	93,000
Max. Sub-Section Volume	171,000	171,000	179,000	183,000	182,000	181,000	174,000	171,000	158,000	138,000	153,000
Min. Sub-Section Volume	61,000	59,000	69,000	68,000	70,000	71,000	72,000	69,500	70,000	63,500	68,000

The corridor's year-to-year changes in its average overall volume were found to be rather minimal. The maximum volume along this corridor was typically observed at the southernmost point near I-277 (Brookshire) and the minimum volume was typically observed at the northernmost point near NC 150 (Plaza). There were individual sub-sections that did see noticeable increases or decreases in volume during the study time period, but when combined together they tended to cancel one another out from a holistic viewpoint of the corridor. As an example, some of the southernmost portions of this corridor near Charlotte have experienced reductions in volumes since 2011 where, in contrast, some of the northernmost portions of this corridor near Mooresville have experienced increases in volumes since 2011.

It is difficult to put any weight behind the reported volumes for 2020 due to the response to the COVID pandemic. It is unknown at what time within 2020 the reported volume data was collected along the study corridor. Generally speaking, state-wide volumes were observed to significantly drop in the months immediately after the state of emergency declaration in March 2020, with volumes then increasing back to typical levels around the end of the year.

Crash Analysis Results

I-77 Express Lanes Corridor (Brookshire to NC 150)	Before Period	Construction Period	After Period
Date Range	Nov. 2010 - Oct. 2015	Nov. 2015 - Oct. 2019	Nov. 2019 - July. 2023
Months in Date Range	60	48	45
Length (miles)	24.87		
Total Crashes	5,271	8,038	6,936
Total Crashes/month	*87.9*	*167.5*	*154.1*
Fatal and Injury Crashes	1,261	1,656	1,399
Fatal and Injury Crashes/month	*21.0*	*34.5*	*31.1*
Rear End Crashes	3,066	4,325	3,160
Rear End Crashes/month	*51.1*	*90.1*	*70.2*
Sideswipe Crashes	962	2,080	1,873
Sideswipe Crashes /month	*16.0*	*43.3*	*41.6*
Lane Departure Crashes	628	944	1,289
Lane Departure Crashes/Month	*10.5*	*19.7*	*28.6*
Southbound Total Crashes	2,831	4,194	3,479
SB Total Crashes/Month	*47.2*	*87.4*	*77.3*
Northbound Total Crashes	2,440	3,844	3,457
NB Total Crashes/Month	*40.7*	*80.1*	*76.8*
6AM - 10AM Total Crashes	1,406	1,897	1,275
AM Peak Crashes/Month	*23.4*	*39.5*	*28.3*
10AM - 3PM Total Crashes	1,115	2,148	1,836
Mid-Day Crashes/Month	*18.6*	*44.8*	*40.8*
3PM - 7PM Total Crashes	1,860	2,326	2,346
PM Peak Crashes/Month	*31.0*	*48.5*	*52.1*

Generally speaking, the corridor's monthly crash frequencies from the after period were found to be lower than that of the construction period but higher than that of the before period. This includes all of the disaggregated crash groupings presented in the above table except for lane departure crashes and PM peak period crashes, both of which were found to have increased from the construction period to the after period as well.

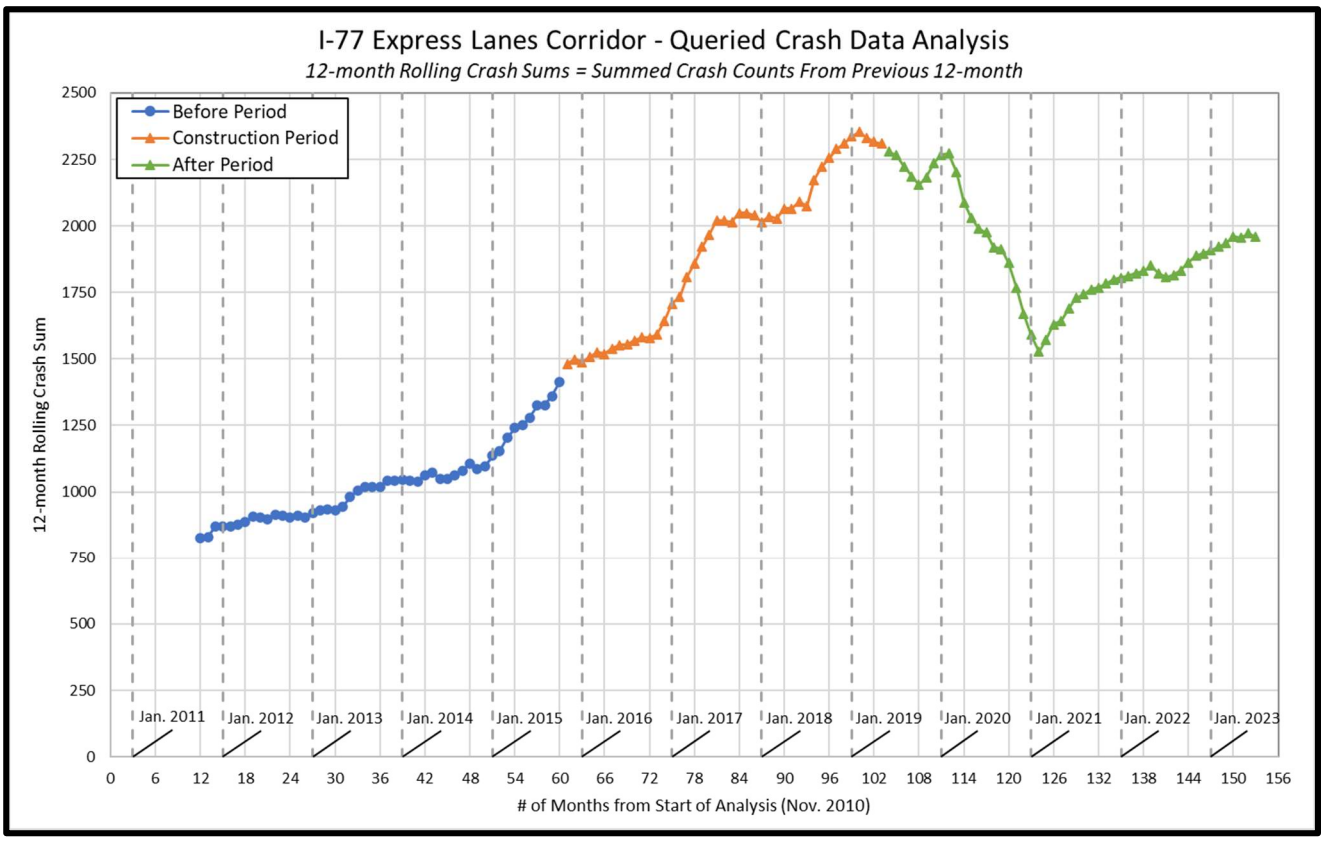
Across all three of the analyzed time periods, around 52% of crashes occurred in the southbound lanes. Additionally, noticeably more crashes took place during the PM peak hours than mid-day or AM peak hours. In the after period, nearly twice the number of crashes took place in the PM peak hours than that of the AM peak hours.

The most predominant crash types in all three time periods were rear ends, sideswipes, and lane departures. These crash types account for around 90% of all crashes in each time period; however, their distribution slightly changes from time period to time period. During the before, construction, and after periods: rear ends

accounted for 58%, 54% and 46% of total crashes, sideswipes accounted for 18%, 26% and 27% of total crashes, and lane departures accounted for 12%, 12%, and 19% of total crashes, respectively.

Calculation of Rolling Crash Counts

12-month rolling crash counts were calculated to help provide context on the changes in crash trends over time. The below graph shows the rolling crash counts for the before, construction and after period. The values in the below graph represent the summed crash totals from the previous 12 months of crash data. Summing the past 12 months of crash data in a rolling crash count helps account for seasonal variability, which can more heavily influence single-month snapshots.



As seen in the above graph, crashes were observed to be generally increasing over time throughout the before period and construction period. The significant dip seen around 2020, within the first year of the express lanes opening, is at least partly due to the effects of the COVID pandemic. Statewide, the frequency of total crashes has been found to have decreased from prior years as a result of the State of Emergency declaration and stay-at-home orders in March 2020. Post-2020, the rolling crash counts have started rebounding and it appears that the crash counts are increasing at a similar rate to that from the before period.

Comparison of I-77 Express Lane Corridor to County-Wide Crash Counts

Yearly crash counts for the I-77 Express Lane Corridor were compared to Mecklenburg's county-wide crash counts to see if the corridor experienced similar year-to-year changes in the years surrounding the express lanes' opening.

Crash Type	I-77 Corridor vs. Meck. Co.	2017 Count	2018 Count	2019 Count	2020 Count	2021 Count	2022 Count	2017->2018, % Change	2018->2019, % Change	2019->2020, % Change	2020->2021, % Change	2021->2022, % Change
Fatal Crashes	Mecklenburg County-wide	104	110	90	121	128	126	6%	-18%	34%	6%	-2%
	I-77 Express Lanes Corridor	3	3	7	6	8	7	0%	133%	-14%	33%	-13%
Non-Fatal Injury Crashes	Mecklenburg County-wide	12,106	12,310	11,999	9,415	10,469	10,429	2%	-3%	-22%	11%	0%
	I-77 Express Lanes Corridor	407	461	496	355	344	351	13%	8%	-28%	-3%	2%
PDO Crashes	Mecklenburg County-wide	26,030	27,392	28,234	21,260	25,844	26,636	5%	3%	-25%	22%	3%
	I-77 Express Lanes Corridor	1,621	1,833	1,720	1,276	1,419	1,523	13%	-6%	-26%	11%	7%
Total Crashes	Mecklenburg County-wide	38,240	39,812	40,323	30,796	36,441	37,191	4%	1%	-24%	18%	2%
	I-77 Express Lanes Corridor	2,040	2,310	2,237	1,669	1,798	1,896	13%	-3%	-25%	8%	5%

The I-77 express lane corridor roughly followed the same year-over-year trends to that of the Mecklenburg County-wide figures. There was a general increase in total crashes from 2017 to 2019, a dip in total crashes during the 2020 COVID pandemic year, and a rebounding increase in crashes during 2021 and 2022. The Express Lane Corridor also experienced a similar increase in fatal crashes throughout the analysis period, although this is difficult to draw any conclusions from due to the small sample size. There were slightly heavier increases in total crashes from 2017 to 2018 along the I-77 Express Lane Corridor than that of the county-wide figures, but this is likely due to an increasingly heavier presence of construction efforts for the express lanes project.

The most notable exception to the similar patterns between the express lanes' corridor and the Mecklenburg county-wide crash trends is seen in the rebounding rate after the COVID-affected 2020. In 2021, the total crash counts for the I-77 express lane corridor did not rebound as significantly compared to that of the county-wide figures. County-wide total crashes increased by 18% from 2020 to 2021 compared to just 8% for the I-77 express lane corridor.