Trend Study: Understanding the Impacts of I-75 Express Lanes on Southeast Metro Atlanta Communities

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PREPARED FOR

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Independent Study

In Collaboration with

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Table of Contents

Figures

Tables

Executive Summary

In support of the I-75 South Metro Express Lanes implementation, researchers at Georgia State University (GSU) with support from the Georgia Department of Transportation (GDOT) conducted annual surveys over a four-year period (2017-2020), to obtain information on mode of travel, frequency of use, reasons for use, travel-time savings, and trip-time reliability of users of both the express lanes and general purpose lanes within the corridor. This trend study aims to determine if there is an unequal distribution of burdens or benefits for environmental justice (EJ) populations that live near and use the I-75 corridor. Additionally, the study aims to determine if the express lanes improved commuting for all South Metro Atlanta commuters. This study was conducted by GSU researchers in partnership with Noble Insight, LLC, and HNTB with support from GDOT.

Opened to traffic in January 2018, the I-75 South Metro Express Lanes were Georgia's first reversible toll lanes, extending 12 miles from SR 138/Stockbridge Highway in Clayton County to SR 155/McDonough Road in Henry County. The reversible lanes are open to northbound traffic in the mornings and southbound traffic in the afternoons during peak-travel hours. To access the I-75 South Express Lanes, commuters are required to pay a toll (fee) using a Peach Pass transponder. The toll is determined through congestion pricing with the cost rising as demand increases and falling as demand decreases.

For the purpose of this study, EJ group status was defined in two ways: that of low-income, or poverty-only and that of poverty and racial minority status. That is, researchers examined responses of multiple groups: non-EJ, or those living in census block groups that do not exceed regional poverty or racial minority thresholds; EJ poverty, or those living in census block groups where the percentage of those who are low-income exceeds the regional average; and EJ poverty and race, or those who reside in census block groups where both the poverty levels and percent of racial minority exceed regional averages.

This is a trend study, which means a new sample was collected for each of the four years the research team went into the field to collect data. Disproportionate stratified sampling was used to ensure equal numbers of EJ and non-EJ respondents were collected. Weights were used with all analyses to bring the sample back into proportion with the area population. Each year, approximately 20 weeks were spent in data collection. Face-to-face interviews were the primary mode of administration prior to 2020 and COVID-19, because self-administered survey response rates are currently below 10%.[1] A convenience sample was also collected (grid sample) to replace targeted sample members who refused or were ineligible to participate in the study.

Based on statistical regressions presented in this trend study, EJ group members had a statistically shorter commute time both before and after the opening of the I-75 South Metro Express Lanes compared to non-EJ group members. Difference in commute times between EJ groups did not vary over time. In other words, the opening of the express lanes did not disadvantage EJ group members with regard to commute times. This finding holds regardless of EJ definition used. Commute times did shorten significantly after the express lanes opened. For the commute to work, commute times were close to pre-opening levels by the third-year post-opening of the express lanes, although this lower reduction in travel time compared to pre-opening travel is not statistically significant. On the other hand, commute times from work remained lower compared to pre-opening travel times, although they were slightly higher than Year 1 after opening. The third post-opening wave of data collection is completely confounded with the COVID-19 pandemic; therefore, any changes in commute times cannot be attributed to the new I-75 South Express Lanes. A significant proportion of residents use the express lanes daily, the majority use it occasionally, and less than 20% never use it.

[1] Dillman, D., J. Smyth, and L. Christian (2014). "Response rate and measurement differences in mixed-mode surveys using mail, telephone, interactive voice response (IVR) and the Internet." *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method.* Hoboken, NJ: Wiley.

Perceptions of inequities can be almost as important as actual inequities. We found no attitudes or perceptions of the new I-75 South Metro Express Lanes that demonstrated a potential source of inequity for EJ groups.

1 Introduction

In 2018, GDOT opened the I-75 South Metro Express Lanes.

The I-75 South Metro Express Lanes were Georgia's first reversible toll lanes, extending 12 miles from SR 138/Stockbridge Highway in Clayton County to SR 155/McDonough Road in Henry County (See Figure 1). The reversible lanes are open to northbound traffic in the mornings and southbound traffic in the afternoons during peak-travel hours.

To access the I-75 South Metro Express Lanes, commuters are required to pay a toll (fee) using a Peach Pass transponder. The toll is determined through congestion pricing with the cost rising as demand increases and falling as demand decreases.

Researchers at GSU with support from GDOT conducted annual surveys over a four-year period (2017-2020), to determine if there is an unequal distribution of burdens or benefits for EJ groups by the creation of the I-75 South Metro Express Lanes, and if the express lanes improved commuting for all South Metro Atlanta commuters. To answer these questions, researchers designed a four-year trend survey study of the residents most likely to use the new express lanes heading to and from work. The first survey was implemented one year prior to the opening of the I-75 South Metro Express Lanes (2017), and the next three were implemented one, two, and three years after the opening.

This report uses all four years of data from the trend study to answer the question of potential EJ impacts from the I-75 South Metro Express Lanes. The researchers examine travel pattern differences that may exist between EJ groups and non- non-EJ groups and whether there are differences in the attitudes towards express lanes. The next section will define EJ groups, and list how they have been defined in other studies. The subsequent section presents the data and methods of analysis followed by a section of results, discussion, and conclusions.

1.1 Environmental Justice Groups

According to the Federal Highway Administration (FHWA) Environmental Justice Reference Guide, addressing EJ means "identifying and addressing disproportionately high and adverse effects of the agency's programs, policies, and activities on minority populations and low-income populations to achieve an equitable distribution of benefits and burdens."[2] EJ populations, then, include both minority populations and low-income populations.

Minority populations. The definition of a minority from the FHWA Order 6640.23A includes a person who is:

1. Black: a person having origins in any of the black racial groups of Africa;
2. Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
3. Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent;
4. American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition; or

[2] *FHWA Environmental Justice Reference Guide, 2015.*

5. Native Hawaiian or Other Pacific Islander: a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Low-income populations. The FHWA defines a "low-income" individual as a person "whose median household income is at or below the Department of Health and Human Services poverty guidelines."[3] These guidelines are established for federal aid programs and differ slightly from the U.S. Census Bureau's definition of poverty thresholds, which are a statistical measure of poverty developed from household income and family size, adjusted yearly for inflation. Given the data available for analysis, researchers used the Census Bureau's poverty threshold measures to define low-income populations.

In most situations, following the FHWA definition of EJ groups that includes minority and low-income, is appropriate. Litman and Brenman (2012)[4] found that distinguishing between demographic versus functional status is more appropriate for a study evaluating the implementation of toll lanes. Litman and Brenman suggest that demographic categories, such as race and age, are less meaningful for socially equitable transportation planning than are functional statuses, such as poverty and physical disability.

As an FHWA case study, the city of Dallas, Texas, recently evaluated the EJ impact of their new toll lanes and defined EJ solely as based on economic status.[5] Therefore, it is reasonable to define the EJ population in this study as low-income groups and leave racial minority status out of the EJ identification process, while still examining differences in express-lane usage among various minority and non-minority groups.

Within the study area (five-mile radius around the Express Lane, see below for more information), 39% of the population is African American according to the 2019 American Community Survey's five-year average. While racial minority status is certainly very important and its impact is assessed in this study, it is not evident that minority status, particularly in a city like Atlanta, which has a large middle-class and affluent African American population, in and of itself creates barriers to using tolled facilities. Therefore, it is reasonable to define the EJ population in this study as low-income groups and leave racial minority status out of the EJ-identification process—while still examining differences in toll lane usage among various minority and non-minority groups.

2 Data and Methods

The first step in the study was to define the appropriate population. A population was selected from a 5-mile buffer area, surrounding the corridor (see Figure 1). The buffer was selected around the three southernmost access points of the I-75 South Metro Express Lanes, as there would not likely be users of the express lanes northwest of this location. The buffer was then divided into a set of 33 census block groups that included areas where residents were most likely to use the I-75 South Metro Express Lanes traveling into Atlanta for work.

In order to ensure representation from non-EJ and EJ groups, researchers developed the samples using an area-based EJ definition, as is common practice in transportation planning. That is, EJ and non-EJ populations at the block group level were defined based on geographic-area income and racial minority characteristics following the Atlanta Regional Commission's (ARC) definition of EJ areas rather than the individual characteristics of the households (as these would be impossible to identify prior to sampling). ARC defines low-income EJ populations as those households whose incomes that fall below the median poverty rate for the 10-county metropolitan Atlanta area. Likewise, ARC defines an area with racial minority populations that exceeds the median for the metropolitan Atlanta region as an EJ minority area.

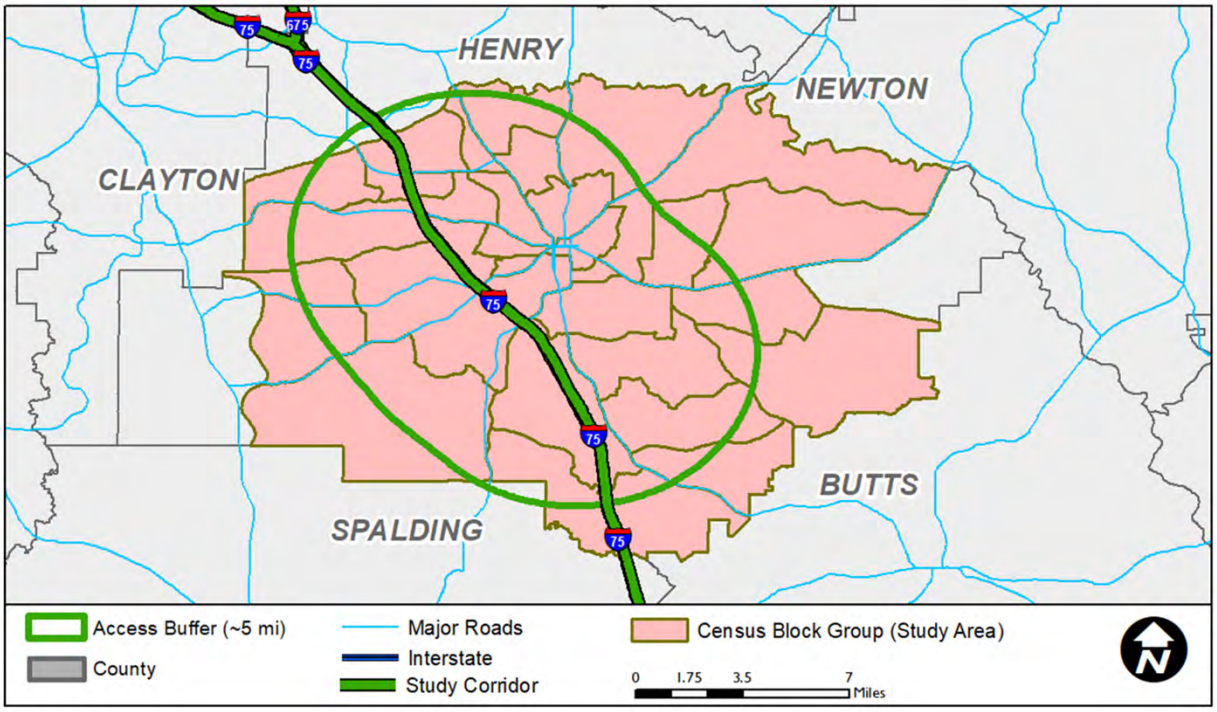
[3] *FHWA Environmental Justice Reference Guide 2015, p. 10.*

[4] *Litman, T. and M. Brenman. 2012. "A New Social Equity Agenda for Sustainable Transportation," Presented at 2012 Transportation Research Board Annual Meeting, paper 12-3916, http://www.vtpi.org/equityagenda.pdf.*

[5] *Wesch, Sandy and Brandy T. Huston, 2012. Regional Tolling Analysis Informs NEPA Assessment of Cumulative Impacts on Low-Income Populations. Texas Department of Transportation.*

The 10-county metropolitan Atlanta area includes Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry, and Rockdale counties, as well as the city of Atlanta.

Figure 1. The Geographic Area that Includes the I-75 South Metro Area Population



The American Community Survey (ACS), the most robust demographic tool available to calculate the EJ thresholds as specified by ARC, was used to create geographically-defined EJ groups. For each year of data collection, new thresholds were calculated based on the most recent ACS five-year averaged dataset available. Researchers assigned each census block group to an EJ-related status. For the pre-opening year of data collection, the 2011 five-year averaged ACS data were used. The final year of data collection, three years after the express lanes opened, the 2017 ACS five-year data were used. Census block groups are not stagnant. Therefore, census block groups that met the EJ definition for one year of data collection may not meet the definition in another year of data collection. In fact, 45% of census block groups shifted between EJ group statuses over the period of the study. Based on analyses from previous years, this shift does not affect the study findings.

All occupied residential addresses within the 33 census block groups were retrieved from Dunhill, a company licensed to manage and sell U.S. post office addresses. The GSU research team did not include group quarter defined addresses (e.g. nursing home), business addresses, or P.O. Boxes. For each of the four years of data collection, the research team selected a distinct sample in order to conduct the trend study to assess behavior change within residents of the 33 census block groups over time.

Researchers used a disproportionate stratified probability sampling method. All census block groups were first stratified by the aforementioned racial minority and poverty thresholds into four groupings:

1. Greater than threshold poverty and racial minority composition levels;
2. Greater than poverty threshold composition level;
3. Greater than threshold racial minority composition level; and
4. Less than threshold poverty and racial minority composition levels.

This sampling allowed the researchers to achieve a balanced design as well as providing the greatest flexibility in defining EJ status. Weights were calculated and used in all analyses to make the sample proportionate to the original population, and thus, representative.

2.1 Sampling

Participant eligibility was further defined as those residents of the area who commute on I-75 towards Atlanta for work. Researchers cannot know whether potential participants are eligible prior to implementing the survey. This meant the researchers surveyed the households in the sample to determine eligibility by asking participants whether they used I-75 to commute towards Atlanta for work. If a participant answered that they did not use I-75 to commute towards Atlanta for work, they were considered 'ineligible' to participate in the study. If the participant answered the eligibility question and was found to be ineligible, the researchers identified the participant as ineligible and the survey complete. If the participant was found to use I-75 to commute towards Atlanta for work, they were considered eligible, and the remainder of the survey was conducted.

At baseline, prior to the express lanes opening, the researchers selected a sample size of 3,468. The research team engaged in several contact methods:

- mailing a postcard with online link
- emailing respondents for whom the researchers had an email address
- mailing surveys for self-administration and return mail
- phoning those for whom the researchers had a phone number
- face-to-face survey interviewing (when other methods did not work).

The research team received a final response rate of 10.3% or 359 respondents. Of these only 41% or 148 met the eligibility requirement (see Table 1).

For data collection efforts in years one, two, and three, post-opening of the express lanes, the researchers made several adjustments. First, the research team discontinued using mail, email, and phone calling and focused immediately on face-to-face interviewing. Secondly, researchers added a grid sample technique. An alternate grid sample was introduced when a targeted respondent refused to participate, was ineligible, the address was bad, or the participant never responded. Researchers located an eligible neighbor, defined as living on the same block as the target, to participate in the study. Analyses show that grid sample participants did not introduce bias into the earlier bivariate analyses. However, researchers created an indicator variable for the grid sample and included it in all regression analyses to remove any potential bias it might have in the multivariable analyses. In collecting the grid sample, the team averaged visiting two homes per block to complete one survey. This increased both the completed survey totals, and it increased the denominator used to calculate the response rates.

Due to these changes, the response rates improved dramatically. The research team had 42% response rates for both post-opening years one and two. The third-year, post-opening survey effort was halted one month into data collection by the COVID-19 pandemic. During data collection in 2020, the citizens of the state of Georgia were placed under the state of emergency mandated restrictions which disrupted traditional travel patterns. Consequently, the Georgia State University Institutional Review Board (IRB), modified all research to ensure the health and safety of all researchers and research participants. By March 20, 2020, the project team researchers were reauthorized to resume data collection, but only to collect data by nonintrusive measures. Researchers mailed postcards with online links and surveys with

self-addressed, stamped envelopes. Post-COVID-19, the research team gathered very few additional respondents (n=27) despite increased time and additional mailings. This low response rate, which follows national trends, is due mainly to the fact that fewer participants are willing to participate in self-administered surveys. Nationally, the response rates for self-administered surveys are now below 10%.

In addition to lower-than-expected response rates, COVID-19 also has the potential to bias, or shape, the findings of this study, because the closures from the pandemic directly affected travel behavior. In the year-three report, this was found to be the case. Minorities, living in block groups where the percentage of the population below the poverty level is lower than the Atlanta metropolitan area average, were most likely to participate in the study post-COVID-19 and still be eligible compared to other racial and economic groups. Thus, a COVID-19 indicator variable was created and used in all multivariable analyses to control for the statistical bias this introduced.

Table 1. Sample Sizes Across Years of Data Collections

	Baseline	Year 1+	Year 2+	Year 3+	Total
Sample Size	3,468	1,390	1,332	1,445	7,635
Completed Surveys	359	558	532	120	1,569
Response rate target only	10%	40%	40%	8%	21%
Eligible Target	148	144	101	32	425
Ineligible Target	211	414	431	88	1,144
Eligible Grid	0	199	188	13	400
Total Eligible	148	343	289	45	825
Response Rate*	10%	42%	42%	9%	23%

**Response rate calculated as (completed +grid)/(sample size + (grid *2))*
+Adjusted data collection methods due to COVID restrictions

2.2 Survey Instrument

The survey is divided into three main sections with a total of 50 questions. The first section addresses travel behaviors and experiences, along with travel knowledge of the Atlanta metropolitan area. The second section focuses on attitudes, preferences, and perceptions of travel in Atlanta. The last section focuses on respondent demographics (refer to Appendix A for a copy of the survey).

3 Findings

In what follows, trends in commute behaviors and patterns for EJ group differences are presented. The section thereafter examines EJ group differences in attitudes, preferences, and perceptions of travel and congestion in Atlanta. All analysis variables are introduced within each section.

3.1 Commuting Behavior Trends

Table 2 presents measures of central tendency for the variables used in this section (means and percentages) by year of data collection. Distance in miles from home to work is fairly consistent across each year of data collection, ranging from 31.9 in Year 2 to 37.4 at pre-opening.

At pre-opening, very few participants had a Peach Pass transponder. By Year 2, over half the sample had one. Table 3 shows Peach Pass ownership by EJ group definition; also illustrated in Figures 2 and 3. The differences in trends over time are partly due to the small Year 3 sample size. There is no statistically significant difference in Peach Pass ownership between EJ and non-EJ groups.

Atlanta's South Metro area depends heavily on cars to commute to work with over 90% driving alone, as shown in Table 2. Commute times to work ranged from 46 minutes to 55 minutes, on average across all time points. Over the course of the study, use of the express lanes increased. Again, Year 3 is anomalous due to COVID-19. A fairly consistent 70% of respondents commute to work during the morning rush hours.

The outcomes of interest for this section are commuting times to and from work. They are measured in minutes. Commute times are generally longer on the commute home from work averaging between 54 and 67 minutes. Respondents used the express lanes more frequently on their return home commute compared to their morning commute. The return home commute was more variable in terms of time. Between 55% and 68% of respondents were commuting during the evening rush hours. In the three years post-opening of the express lanes, respondents were asked if they thought their commute had gotten better, stayed the same, or gotten worse. With three time points of data, a trend analysis can be conducted. It appears as if the majority think commute times have improved at all three time points. However, the third response is somewhat unreliable, because of COVID-19 restrictions on data collection. Therefore, the analyses on this variable should be interpreted with caution.

Table 2. Descriptions of Commute Variables (Means or Percent)

	Pre-opening	Year 1	Year 2	Year 3
Distance to Work	37.35	34.68	31.88	36.66
Commute Mode:				
Drive alone	90%	91%	91%	94%
Have Peach Pass	1.0%	41.5%	58%	48%
Commute Time				
To Work	50.08	45.72	47.06	54.55
From Work	67.04	54.39	54.78	63.54
Use Express Lanes on Morning Commute				
Daily	0%	24%	29%	11%
A Few Times/Week	0%	18%	19%	16%
1-2 Times/Week	0%	18%	17%	8%
A Few Times/Month	0%	12%	14%	24%
Once/Month	0%	9%	5%	0%
Never	100%	19%	16%	41%
Commute During Morning Rush	70%	74 %	74 %	77%
Use Express Lanes on Evening Commute				
Daily	0%	30%	42%	21%
A Few Times/Week	0%	28%	19%	15%
1-2 Times/Week	0%	14%	12%	15%
A Few Times/Month	0%	10%	9%	18%
Once/Month	0%	4%	5%	0%
Never	100%	14%	13%	31%
Commute During Evening Rush	58%	64%	55%	64%
N (sample size)	150	337	279	40

Table 3. Peach Pass Ownership Percent over Time by EJ Group Definitions (Poverty Only and Race and Poverty)

	Poverty -Only		Race and Poverty	
	EJ	**Non-EJ**	**EJ**	**Non-EJ**
Baseline	2.0%	0.6%	2.5%	0.0%
Year 1	41.4%	41.7%	39.2%	45.2%
Year 2	62.2%	51.0%	40.0%	53.4%
Year 3	70.9%	35.7%	69.5%	31.6%

Figure 2. Peach Pass Ownership Percent over Time for Poverty-only EJ Status

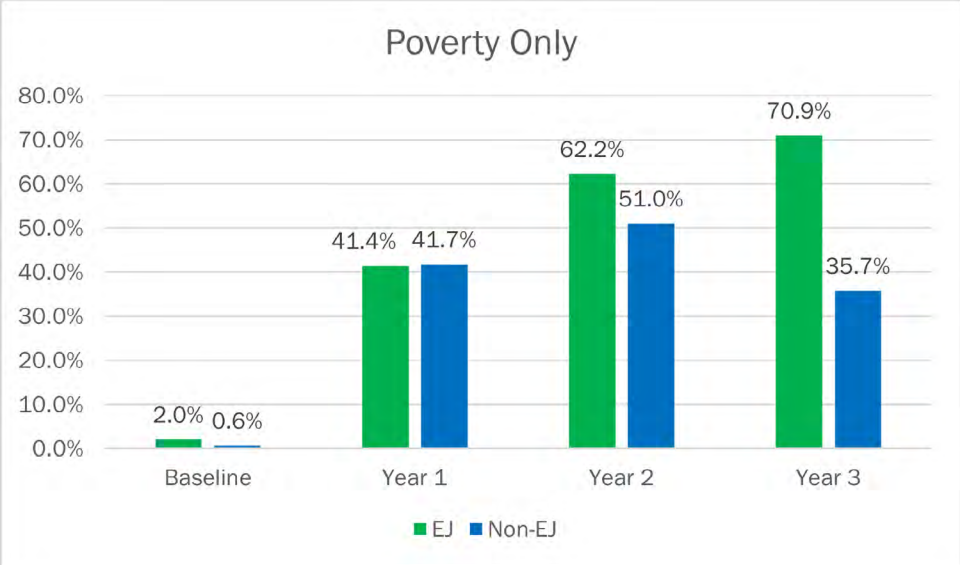
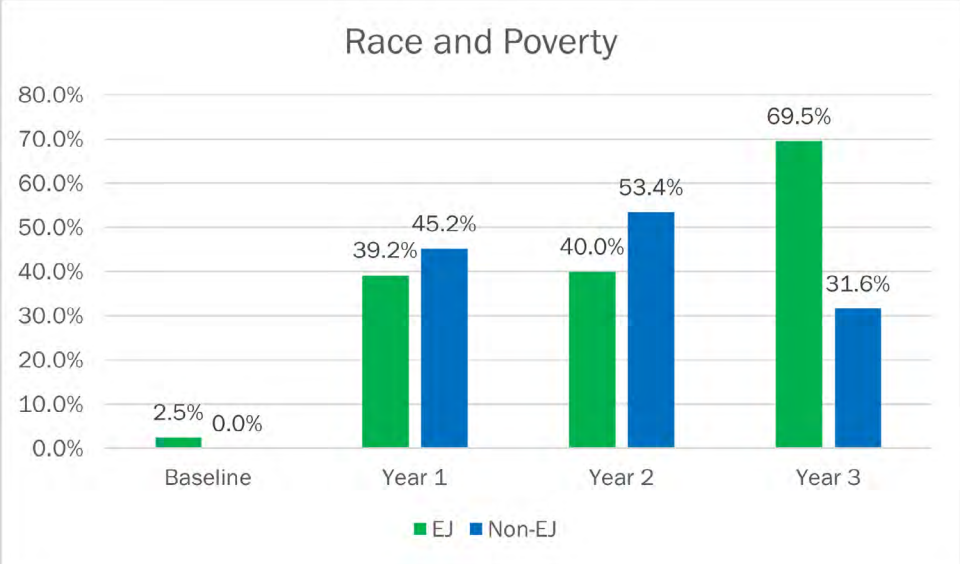


Figure 3. Peach Pass Ownership Percent over Time for Race and Poverty EJ Status



In the regressions that follow, using the express lanes is treated as a series of indicator variables. A variable for 'daily use' was created, a variable for 'never use' was created, and a variable for 'occasional use' was created. The 'occasional use' of express lanes variable will be treated as the reference category (comparison group).

Table 4 presents the first sets of linear regressions predicting commute time (in minutes) to work for EJ and non-EJ group members based on the poverty-only EJ definition. Model 1 examines the differences in commute time between EJ groups not controlling for any other potential explanations of commute time. This model provides the largest EJ group difference; a starting point. The next two models will attempt to eliminate any EJ group differences. On average, EJ group members spend four minutes less

on their commute compared to non-EJ group members, a statistically significant difference. The trend in commute times over the four years of data collection are not linear; therefore, Model 1 includes a dummy variable to distinguish each post-opening year of the express lanes from the baseline or prior to opening of the express lanes. Year 1 post-opening of the express lanes shows a statistically significant decline in commute times by an average of 4.25 minutes.

Model 2 adds the commute distance to regressions and finds that controlling for commute time, the EJ group difference is attenuated from 4.35 minutes to an average of 3 minutes. Distance traveled is positively associated with increased commute times as would be expected. The introduction of "distance traveled" results in a significant increase in the R-square for Model 2 compared to Model 1.

Model 3 adjusts for whether commuters use the express lanes daily or never (versus using it occasionally) and if the commute takes place during the morning rush. Essentially the EJ group difference changes very little. Furthermore, the change in the R-squared for Model 3 compared to Model 2 is minimal after the introduction of express lanes usage and peak period commuting. There is a three-minute average commute benefit for EJ groups compared to non-EJ groups. Commuting during the morning rush hours adds more than three minutes to the commute time regardless of EJ group status.

Table 4. Regressing Commute Time (in minutes) Heading to Work by EJ Status (poverty-only)

N=813	Model 1	Model 2	Model 3
Intercept	51.24 (1.97)*	48.37 (1.63)*	50.41 (3.09)*
EJ Group	-4.35 (1.67)*	-2.98 (1.37)*	-3.12 (1.37)*
1 Year Post-Opening (2018)	-6.99 (2.26)*	-4.25 (1.87)*	-8.57 (2.9)*
2 Years Post-Opening (2019)	-4.25 (2.32)	0.17 (1.93)	-3.98 (2.92)
3 Years Post-Opening (2020)	0.87 (4.81)	3.12 (3.96)	-1.09 (4.57)
Distance Traveled (miles)		0.77 (.04)*	0.76 (.04)*
Use Express Lanes Daily			-0.33 (2.16)
Never Use Express Lanes			-4.60 (2.5)
Commute During Evening Rush			3.80 (1.43)*
R-Square	.014	.34	.35

Notes: Controlling for grid sample, COVID-19 restrictions. Reference category: Non-EJ, baseline, use express lanes occasionally. Standard errors in parentheses.

** indicates statistical significance at the .05 level (p<.05)*

Figure 4 models the average commute times from Table 4, Model 3 for EJ and non-EJ groups. The graphic shows the 'reference' category (i.e., the intercept) that represents the non-EJ group in the Baseline year. Changes in commute times for the years post-opening are calculated by adding the regression variables for post-opening. The commute times for the EJ group are represented by adjusting the non-EJ commute times by the variable representing the EJ group. The researchers find a significant decline in commute times initially, but by the third-year post-opening of the express lanes, commute times are back to pre-opening levels.

Figure 4. Estimated Travel Times (in minutes) Heading to Work by Poverty-Only EJ Status (Model 3)

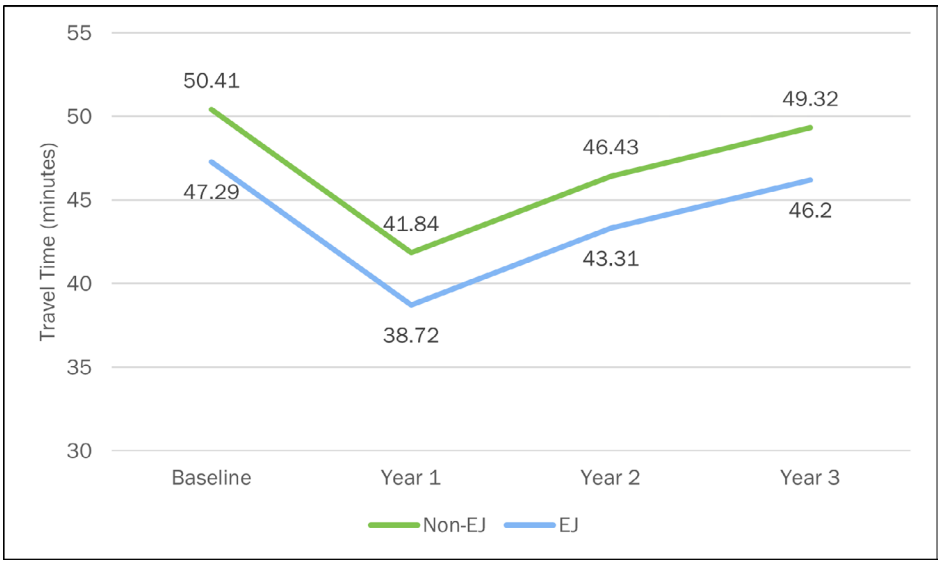


Table 5 replicates Table 4 except that the research team is now examining EJ differences in commute times by the race and poverty EJ definition. Residents of census block groups that exceed the thresholds for racial minority composition, but do not exceed the poverty threshold, are now treated as EJ group members. Model 1 examines the differences in commute time between EJ groups not controlling for any other potential explanations of commute time. This provides the largest EJ group difference; a starting point. The next two models will attempt to eliminate any EJ group differences. Under this EJ definition, EJ group members spend 5.6 fewer minutes on their commute compared to non-EJ group members, a statistically significant average difference. The Year 1 post-opening survey of the express lanes shows a statistically significant decline in commute times by an average of 5.46 minutes.

Model 2 adjusts for distance in miles traveled during the commute. This model did attenuate EJ group differences to three minutes, on average. Distance traveled is positively associated with increased commute times as would be expected. Model 3 adjusts for use of express lanes and commuting during the morning rush. The EJ pattern as well as the reduction in commute times over time remains fairly stable. Again, commuting during the morning rush hours adds over three minutes to the commute time regardless of EJ group status. The introduction of distance traveled to Model 2 results in the largest change in R-square.

Table 5. Regressing Commute Time (in minutes) Heading to Work by EJ Status (race & poverty)

N=813	Model 1	Model 2	Model 3
Intercept	52.04 (1.97)*	48.54 (1.64)*	50.68 (3.10)*
EJ Group	-5.60 (1.57)*	-3.05 (1.31)*	-3.23 (1.31)*
1 Year Post-Opening (2018)	-5.46 (2.22)*	-3.28 (1.84)	-7.63 (2.92)*
2 Years Post-Opening (2019)	-3.84 (2.32)	0.29 (1.93)	-3.89 (2.92)
3 Years Post-Opening (2020)	0.39 (4.80)	3.04 (3.96)	-1.26 (4.57)
Distance Traveled (miles)		0.76 (.04)*	0.76 (.04)*
Use Express Lanes Daily			-0.68 (2.16)
Never Use Express Lanes			-4.70 (2.5)
Commute During Morning Rush			3.83 (1.43)*
R-square	.03	.34	.35

Notes: Controlling for grid sample. Reference category: Non-EJ, baseline, use express lanes occasionally. Standard errors in parentheses.

** indicates statistical significance at the .05 level (p<.05)*

Figure 5 models the average commute times from Table 5, Model 3 for EJ and non-EJ groups. A significant decline in commute times is found initially, but by the third-year post-opening of the express lanes, commute times are back to pre-opening levels. When higher income, racial minority neighborhoods are treated as EJ, the gap between the EJ groups increases compared to the poverty-only EJ group differences.

Figure 5. Estimated Travel Times (in minutes) Heading to Work by Race & Poverty EJ Status (Model 3)

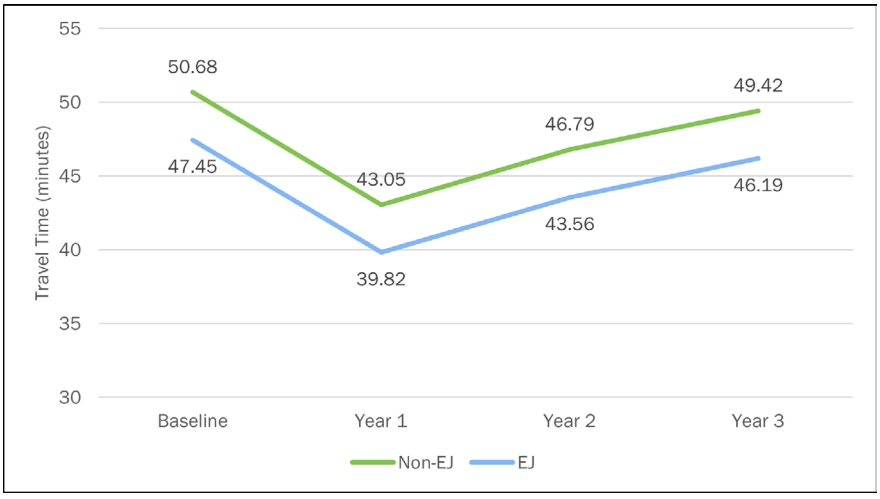


Table 6 presents the first sets of linear regressions predicting commute home from work in minutes for EJ and non-EJ group members based on the poverty-only EJ definition. Again, Model 1 examines the differences in commute time between EJ groups not controlling for any other potential explanations of commute time. On the commute home from work, there are no statistically significant EJ group differences. However, on the commute home, the commute time has improved significantly for Years 1 and 2 post-opening. Year 3 is an anomaly given the COVID-19 state-mandated restrictions affected

commute times and survey study participation In March 2020, the Governor declared a Public Health State of Emergency (Executive Order 6.29.2002) requiring the general population to shelter-in-place and nonessential businesses to implement teleworking policies. Similarly, the Georgia State University Institutional Review Board (IRB), modified all research to nonintrusive measures to ensure the health and safety of all researchers and research participants.

Model 2 adjusts for distance in miles traveled during the commute. This did attenuate EJ group differences to three minutes, on average. Distance traveled is positively associated with increased commute times as would be expected. By adjusting the regression for distance traveled, the R-square for Model 2 increases significantly compared to Model 1. Model 3 adjusts for use of express lanes and commuting during the evening rush. The EJ pattern as well as the reduction in commute times over time remains fairly stable. Commuting during the evening rush hours adds more than 13 minutes to the average commute times regardless of EJ group status. The observed change in R-square by adding usage of the express lanes and commuting in the evening rush is relatively small in comparison to the changes observed after introducing distance traveled.

Table 6. Regressing Commute Time (in minutes) Heading Home from Work by EJ Status (poverty-only)

N=813	Model 1	Model 2	Model 3
Intercept	68.51 (2.73)*	69.95 (2.36)*	65.92 (4.55)*
EJ Group	-3.88 (2.31)	-2.18 (1.99)	-3.36 (1.94)
1 Year Post-Opening (2019)	-14.20 (3.13)*	-10.80 (2.71)*	-19.39 (4.46)*
2 Years Post-Opening (2020)	-12.46 (3.22)*	-6.98 (2.79)*	-13.34 (4.45)*
3 Years Post-Opening (2022)	-9.95 (6.67)	-7.16 (5.75)	-12.95 (6.49)*
Distance Traveled (miles)		0.95 (.06)*	0.91 (.06)*
Use Express Lanes Daily			-4.31 (2.69)
Never Use Express Lanes			-8.23 (3.83)*
Commute During Morning Rush			13.73 (1.83)*
R-square	.03	.28	.33

Notes: Controlling for grid sample. Reference category: Non-EJ, baseline, use express lanes occasionally. Standard errors in parentheses.

** indicates statistical significance at the .05 level (p<.05)*

Figure 6 models the average commute times from Table 6, Model 3 for EJ and non-EJ groups. A significant decline in commute times is found initially, and they remain lower than pre-opening through Years 2 and 3. Differences between EJ groups are not statistically significant.

Figure 6. Estimated Travel Times (in minutes) Heading Home from Work by Poverty-only EJ Status (Model 3)

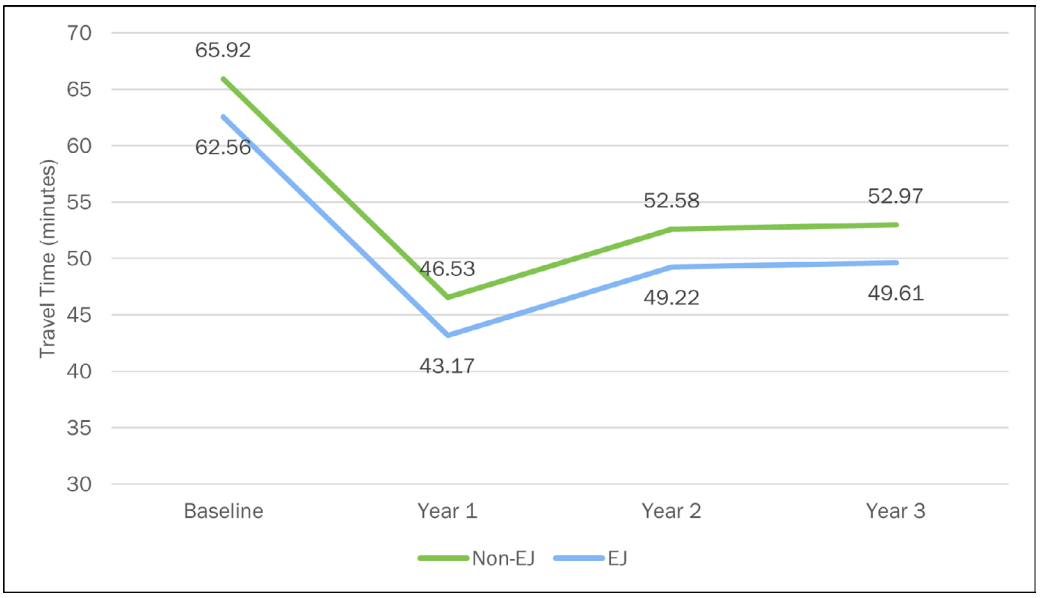


Table 7 presents the same sets of linear regressions predicting commute home from work in minutes for EJ and non-EJ group members based on the race and poverty EJ definition. Again, Model 1 examines the differences in commute time between EJ groups not controlling for any other potential explanations of commute time. On the commute home from work, a statistically significant EJ group difference is found. EJ group members now include residents of upper income, racial minority census block groups. With this change, EJ group members, on average, have a 4.98-minute faster commute compared to non-EJ group members on the commute home. The commute time has improved significantly at Years 1 and 2 post-opening.

Model 2 adjusts for distance in miles traveled during the commute. This reduced the EJ group differences to be non-statistically significant. Distance traveled is positively associated with increased commute times as would be expected. Model 3 adjusts for use of express lanes and commuting during the evening rush. The EJ pattern as well as the reduction on commute times over time remains fairly stable. Commuting during the evening rush hours adds more than 13 minutes to the commute time regardless of EJ group status. As observed before, the introduction of traveled distance results in the largest change in R-square when comparing the three regression models.

Table 7. Regressing Commute Time (in minutes) Heading Home from Work by EJ Status (race & poverty)

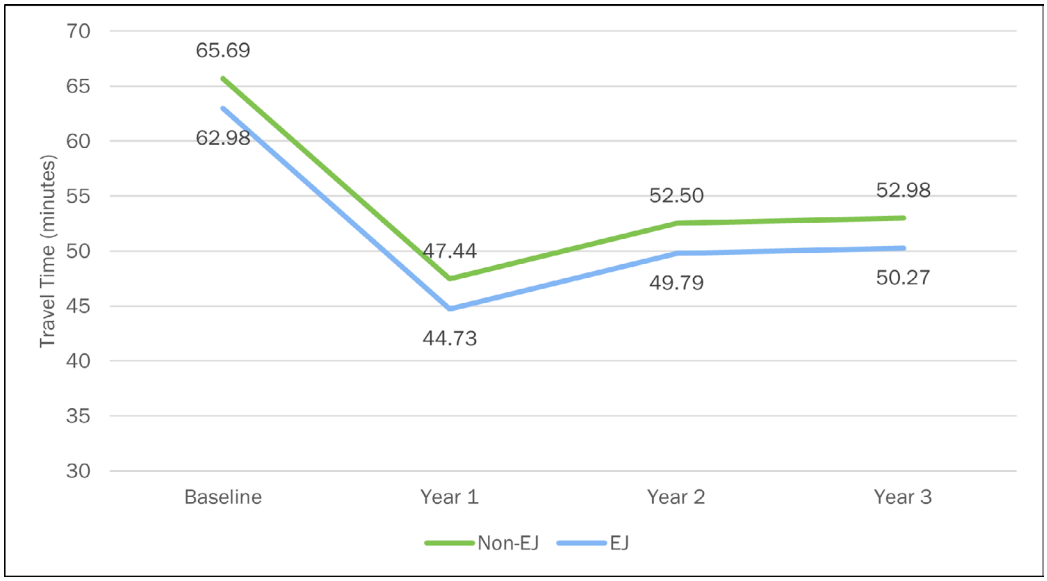
N=813	Model 1	Model 2	Model 3
Intercept	69.22 (2.73)*	64.86 (2.38)*	65.69 (4.55)*
EJ Group	-4.98 (2.19)*	-1.82 (1.90)	-2.71 (1.84)
1 Year Post-Opening (2018)	-12.84 (3.09)*	-10.13 (2.67)*	-18.25 (4.43)*
2 Years Post-Opening (2019)	-12.10 (3.22)*	-6.96 (2.80)*	-13.19 (4.46)*
3 Years Post-Opening (2020)	-10.38 (6.60)	-7.08 (2.75)	-12.71 (6.48)*
Distance Traveled (miles)		0.95 (.06)*	0.91 (.06)*
Use Express Lanes Daily			-4.55 (2.69)
Never Use Express Lanes			-8.14 (3.83)*
Commute During Evening Rush			13.648 (1.43)*
R-square	.04	.28	.33

Notes: Controlling for grid sample. Reference category: Non-EJ, baseline, use express lanes occasionally. Standard errors in parentheses.

** indicates statistical significance at the .05 level (p<.05)*

Figure 7 models the average commute times from Table 7, Model 3 for EJ and non-EJ groups. The research team finds a significant decline in commute times initially, and they remain lower than pre-opening commute times through Years 2 and 3. Differences between EJ groups are statistically significant only at Year 1 post-opening of the express lanes.

Figure 7. Estimated Travel Times (in minutes) Heading Home from Work by Race & Poverty EJ Status (Model 3)



In sum, the data suggest that EJ groups have not suffered travel-time inequities due to the implementation of the I-75 South Metro Express Lanes. Commute times have improved for all commuters during the evening return home commute and times have not worsened for the morning commute to work.

3.2 Attitudes, Preferences, and Perceptions

Perceptions of inequities can be almost as important as actual inequities. Therefore, attitudes and perceptions were also addressed in the surveys. Respondents were asked if they thought their commute had improved since the opening of the I-75 South Metro Express Lanes. Table 8 provides their responses on a five-point scale that ranged from consistently worse to consistently better. A pattern started to emerge of perceived improvements in commutes from Year 1 to Year 2 post-opening of the express lanes. Year 3 had very few respondents due to COVID-19 data collection restrictions; even so, the majority do say their commute is somewhat or consistently better (54%).

Table 8. Perception of Commute Time Post-Opening of South Metro Atlanta Express Lanes

Since Opening of Express Lanes my Commute is	Consistently Worse	Somewhat Worse	The Same	Somewhat Better	Consistently Better
Year 1 Post-Opening	3%	2.4%	50.1%	23.3%	21.2%
Year 2 Post-Opening	2.8%	1.5%	18.7%	37.8%	39.2%
Year 3 Post-Opening	16.3%	0.0%	29.4%	27.4%	26.9%

Table 9 presents regressions of the perceptions of improved commute times. The first column shows results for the poverty-only EJ definition and the second column shows results for the race and poverty definition. Note that there is a difference with this analysis compared to earlier analyses in that the baseline (pre-opening year of data collection) is excluded, as the question specifically refers to post-opening perceptions. The analytic sample is smaller, and Years 1 and 2 are compared to Year 3 in this analysis.

Table 9. Regression Perception of Commute Improving Post-Opening

N=653	Poverty-Only	Race & Poverty
Intercept	2.39 (0.23)*	2.38 (0.23)*
EJ Group	-0.01 (0.09)	0.02 (0.08)
1 Year Post-Opening (2019)	0.46 (0.21)*	0.50 (0.21)*
2 Years Post-Opening (2020)	0.38 (0.22)	0.38 (0.17)*
Distance Traveled (miles)	-0.01 (0.00)*	-0.01 (0.00)*
Use Express Lanes Daily	0.67 (0.11)*	0.67 (0.11)*
Never Use Express Lanes	-0.40 (0.15)*	-0.40 (0.15)*
Commute During Rush Hours	0.10 (0.11)	0.10 (0.11)
R-square	.16	.16

Notes: Controlling for grid sample, COVID-19 restrictions. Reference category: Non-EJ, Year 3 post opening, use express lanes occasionally. Baseline data is not included in this analysis. Standard errors in parentheses.

** indicates statistical significance at the .05 level (p<.05)*

The perceptions of commuting are on a five-point scale ranging from zero to four. The value of 2.39 and 2.38 respectively for the intercepts then, can be interpreted as the average commute perception at Year 3, and which suggests that on average, respondents thought their commutes had improved slightly. There are no EJ group differences in perceptions of commute improvements for either EJ definition. Respondents

at Year 1 post-opening were significantly more likely to perceive their commute as having improved compared to respondents at Year 3. Respondents in Year 2 thought their commutes were somewhat better and this was significantly different from Year 3 under the race and poverty EJ definition only. Increase in distance traveled was associated with a decline in perception that commuting improved. Daily use of express lanes was associated with an increased perception that the commute was better compared to those who only occasionally used the express lanes.

Figures 8 and 9 present the trends in perceptions of improved commuting by the poverty-only EJ definition followed by the race and poverty EJ definition. Note that any value above a two signifies perception of improved commute. These graphs show no difference by EJ groups for either definition.

Figure 8. Perception of Improvement in Commuting Time Post-Opening of Express Lane by Poverty-Only EJ Status

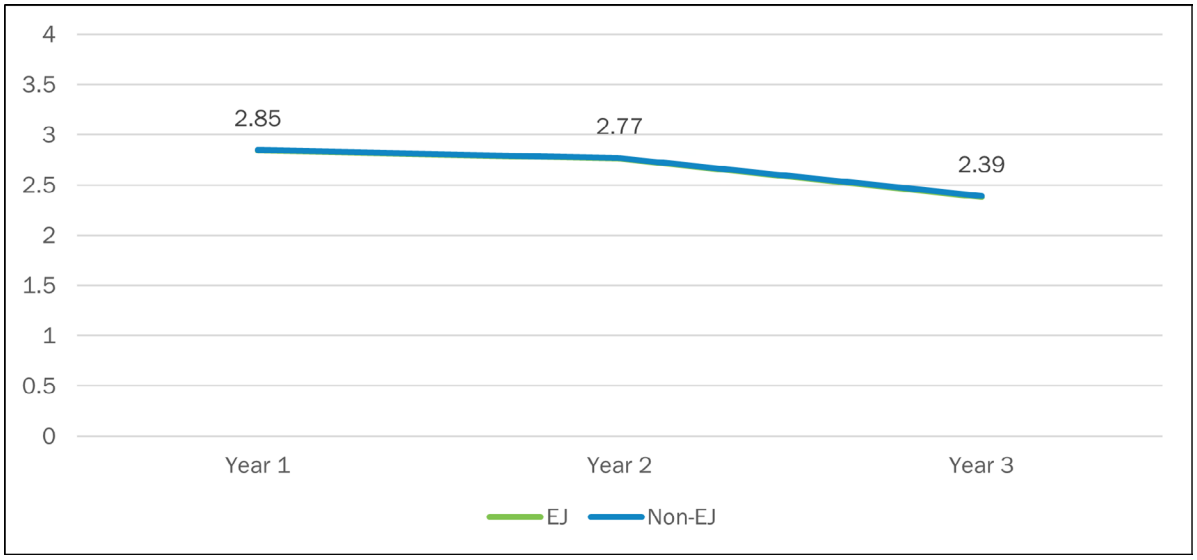


Figure 9. Perception of Improvement in Commuting Time Post-Opening of Express Lane by Race & Poverty EJ Status.

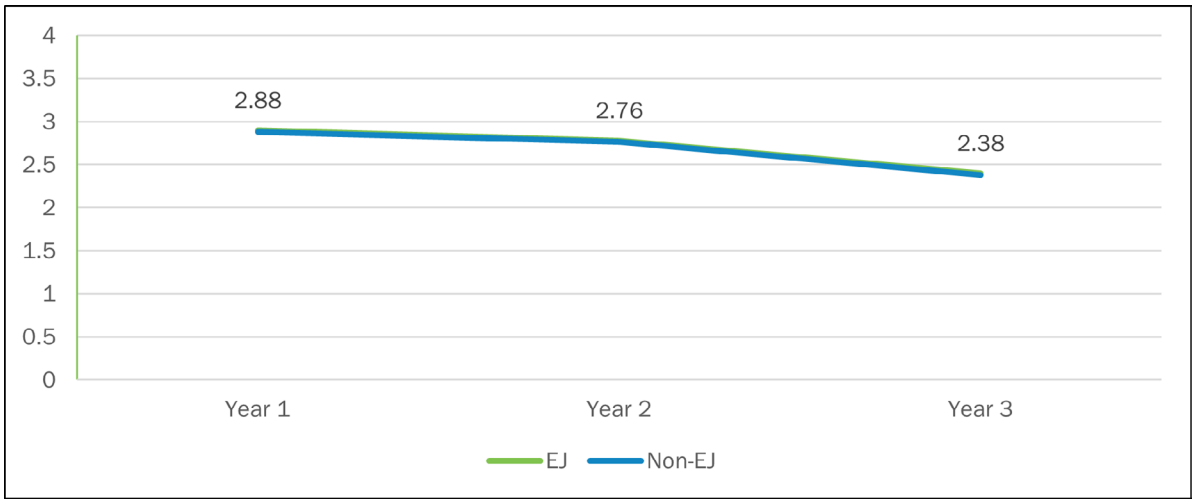


Table 10 presents five attitudinal questions regarding commuting to and from work from the South Metro Atlanta area. The five questions all have five response options: Strongly disagree; Disagree; Neither agree nor disagree; Agree; and Strongly agree. In general, well over 50% of respondents at all four time points of the trend study, agree or strongly agree that they spend too much time in traffic, commuting is stressful, frustrating, and they are often late due to heavy traffic.

The first step in understanding these types of attitudinal questions is to determine if they are all addressing the same concept. The researchers assess this first with Cronbach's alpha, a measure of how well questions reliably hang together. If they do, researchers then assess their validity through factor analysis.

The Cronbach's alpha, a measure of reliability that ranges from 0 (completely unreliable to 1.0 completely reliable, for the five questions was .71. This is low but acceptable. One question, "I'd be willing to pay a toll to lessen my commute," did not correlate well with the other questions. Dropping that question from the analysis, Cronbach's alpha improved to .82.

The next step was to run factor analyses. The first factor analyses run included all five questions. The model did not fit a single attitudinal concept very well at all and only explained 52% of the total variance (it should explain 60% minimum to be considered acceptable). Again, the question about tolls was dropped from the analyses and re-run. This time a clear single factor emerged that explained over 65% of the total variance—an acceptable level. This provides evidence that four questions reliably and validly represent participants' attitudes towards Atlanta's traffic congestion. Empirically, this demonstrates what is easy to see: that this question is hypothetical whereas the other four questions are based on concrete experiences.

Table 10. Attitudes towards South Metro Atlanta Commute (Means or Percent)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I spend too much time in traffic.	1.4%	10.1%	9.2%	34.3%	45%
I find commuting to be stressful.	2%	19%	12.7%	32.8%	33.5%
I'd be willing to pay a toll to lessen my commute.	13.4%	21.5%	12.5%	36.6%	16.1%
I find commuting to work to be frustrating.	2.5%	22.9%	14%	33.5%	26.9%
I often get home late from work due to heavy traffic.	4.3%	28.1%	10%	27.6%	30.1%

The attitude factor generated by the factor analyses is a standardized continuous variable. This means it has a mean (average) of zero and a standard deviation of one. Higher values will indicate worse attitudes towards commuting in South Metro Atlanta. Table 11 presents regression analyses of the attitudes towards Atlanta's traffic for both the poverty-only EJ definition and the race and poverty EJ definition.

Findings are similar across EJ definitions in Table 11. There are no differences in attitudes towards traffic in South Metro Atlanta between EJ and non-EJ groups across either definition. Attitudes towards traffic improved after the express lanes opened for all South Metro commuters. Distance traveled to work and commuting during rush hours worsened attitudes towards South Metro Atlanta traffic. Finally, those who never use the express lanes expressed more tolerant attitudes towards traffic compared to those who occasionally use the express lanes.

Table 11. Regressions Attitudes towards Atlanta Traffic

N=813	Poverty-Only	Race & Poverty
Intercept	0.23 (0.19)	0.20 (0.18)
EJ Group	0.01 (0.07)	0.08 (0.07)
1 Year Post-Opening (2018)	-0.64 (0.17)*	-0.64 (0.16)*
2 Years Post-Opening (2019)	-0.39 (0.17)*	-0.40 (0.17)*
3 Years Post-Opening (2020)	-0.14 (0.21)	-0.13 (0.20)
Distance Traveled (miles)	0.01 (0.00)*	0.02 (0.00)*
Use Express Lanes Daily	-0.14 (0.10)	-0.14 (0.10)
Never Use Express Lanes	-0.46 (0.15)*	-0.46 (0.15)*
Commute During Rush Hours	0.36 (0.09)*	0.35 (0.09)*
R-square	.08	.09

Notes: Controlling for grid sample, COVID-19 restrictions. Reference category: Non-EJ, Year 3 post opening, use express lanes occasionally. Baseline data is not included in this analysis. Standard errors in parentheses.

** indicates statistical significance at the .05 level ($p<.05$)*

Figures 10 and 11 present trends in attitudes towards Atlanta's traffic by the poverty-only EJ definition followed by the race and poverty EJ definition. The trends show that attitudes improved greatly immediately after the opening of the express lanes. Gradually, as area residents acclimated to the change in transit infrastructure, attitudes, while still more positive than prior to the opening, began to slowly return to their starting place. Additionally, these graphs make it clear there are no differences in attitudes towards Atlanta's traffic by EJ groups for either definition.

Figure 10. Attitudes towards Atlanta Traffic by Poverty-Only EJ Status

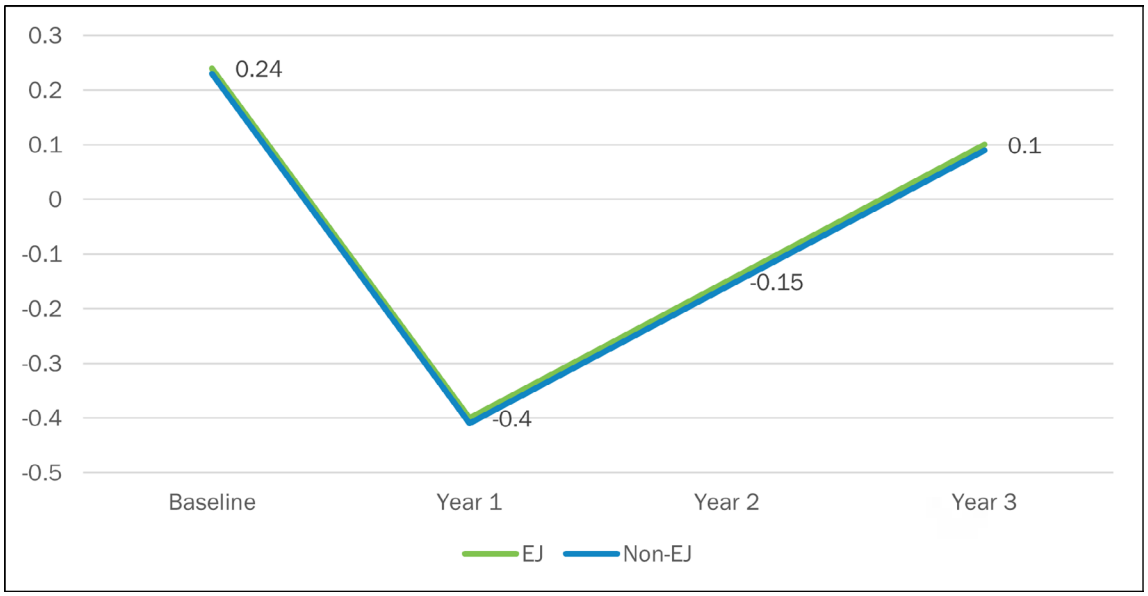


Figure 11. Attitudes towards Atlanta Traffic by Race & Poverty EJ Status

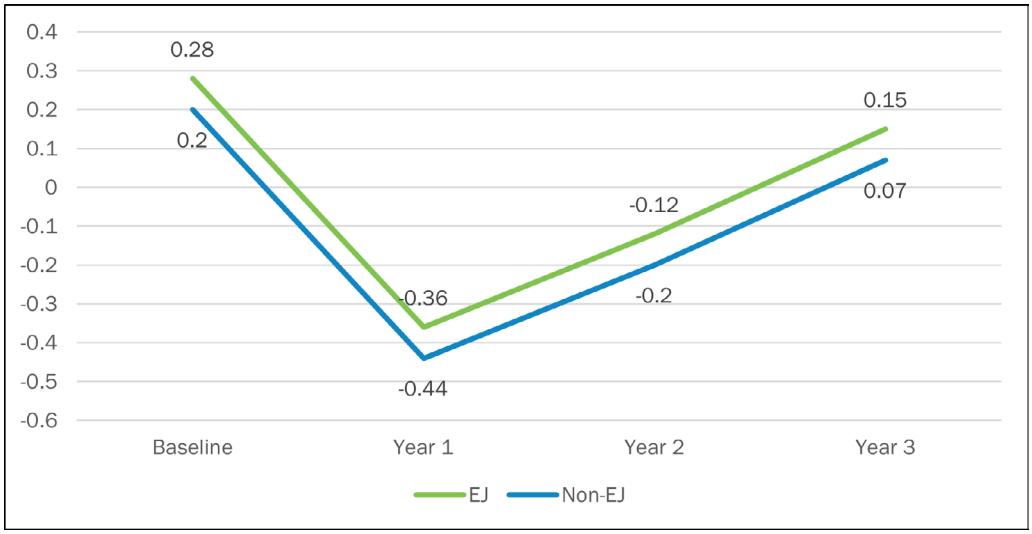


Table 12 presents seven perception and attitudinal questions regarding express lanes. In general, few agree or strongly agree that they cannot afford to use express lanes (11% and 6.1% respectively). Few also agree or strongly agree that express lanes benefit low-income commuters (~11% and 1.4% respectively). There is more agreement that express lanes are fair (55% agree, 11% strongly agree), improve traffic for all

(~31% agree or strongly agree), and 55% agree or strongly agree that express lanes benefit higher income commuters. Less positively, 46.6% of commuters agree or strongly agree that while they can afford express lanes, they probably would not take them, and 52% agree or strongly agree that there are too few access points.

Table 12. Perceptions of Express Lanes (Means or Percent)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I can't afford to take express lanes.	16.4%	48%	18.5%	11%	6.1%
Express lanes benefit low-income commuters.	22.1%	37.8%	27.8%	10.8%	1.4%
Express lanes are fair because they charge tolls only to those who choose to use them.	9.1%	12.6%	12.3%	55.2%	10.8%
Express lanes improve traffic for all commuters.	17.5%	31.8%	20.1%	25.5%	5.2%
Express lanes benefit higher-income commuters.	2.4%	19.2%	23.2%	37.8%	17.3%
I can afford to pay to take express lanes, but I probably would not take them.	7.5%	26.7%	19.3%	31.8%	14.8%
There are too few places to enter and leave the express lanes for my commute.	8%	23.8%	15.9%	32.8%	19.5%

The seven perception and attitude questions listed in Table 12 do not belong to a single concept. Three questions do reliably and validly fit together: Express lanes benefit low-income commuters, Express lanes are fair, and express lanes improve traffic for all commuters. The factor explains 66% of the variability in these three questions. This concept is called Perception of Express Lanes Benefits. As with the attitudes expressed in Tables 10 and 11, the mean of express lanes benefits is zero with a standard deviation of one. Higher values signify perceptions of greater benefits.

Table 13 presents regression analyses of the attitudes toward express lanes benefits for both the poverty-only EJ definition and the race and poverty EJ definition. First, there does not appear to be much difference in these perceptions based on EJ definition. Under either definition, there are no statistically significant differences between EJ and non-EJ groups.

Table 13. Regressions Perception of Express Lane Benefits

N=813	Poverty-Only	Race & Poverty
Intercept	-0.25 (0.19)	-0.24 (0.19)
EJ Group	0.05 (0.08)	0.02 (0.07)
1 Year Post-Opening (2018)	0.55 (0.17)*	0.53 (0.17)*
2 Years Post-Opening (2019)	0.46 (0.17)*	0.46 (0.17)*
3 Years Post-Opening (2020)	0.05 (0.21)	0.04 (0.21)
Distance Traveled (miles)	0.00 (0.00)	0.00 (0.00)
Use Express Lanes Daily	0.15 (0.11)	0.16 (0.11)
Never Use Express Lanes	-0.12 (0.15)	-0.12 (0.15)
Commute During Rush Hours	-0.18 (0.09)*	-0.18 (0.09)*
R-square	.07	.07

Notes: controlling for grid sample, COVID-19 restrictions. Reference category: Non-EJ, baseline, use express lanes occasionally. Standard errors in parentheses.

** indicates statistical significance at the .05 level (p<.05)*

Figures 12 and 13 present trends in Perceptions of Express Lanes Benefits by Poverty-only EJ definition and Race & Poverty EJ definitions respectively. Again, there are no differences between EJ groups based on either definition. The same curvilinear pattern of initial improvement followed by a slow return to the original perception is found in both figures.

Figure 12. Perceptions of Express Lane Benefits by Poverty-Only EJ Status

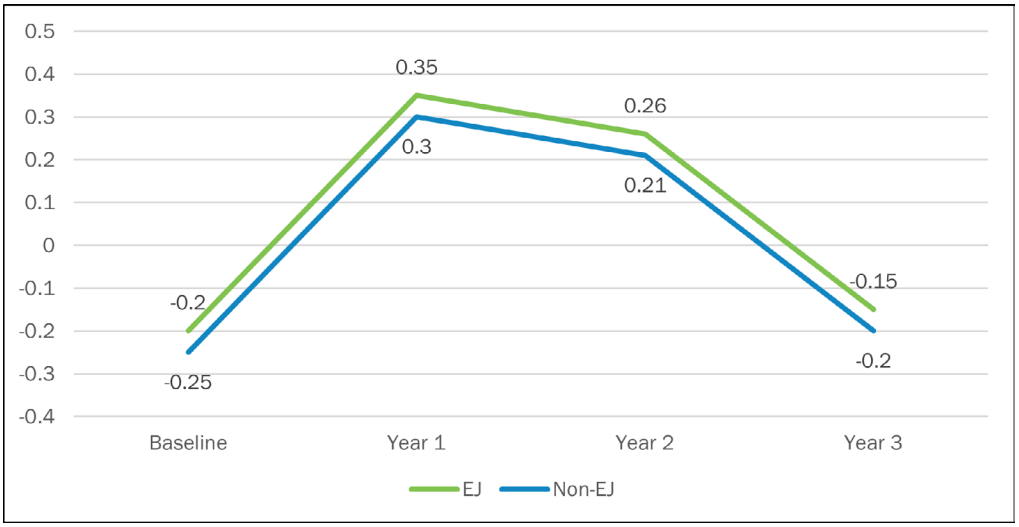


Figure 13. Perceptions of Express Lane Benefits by Race & Poverty EJ Status

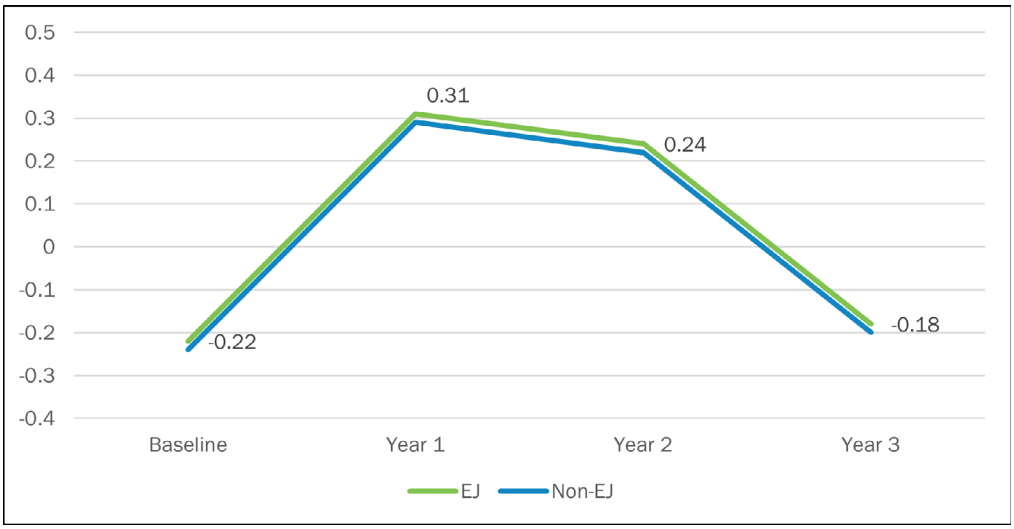


Table 14 examines three remaining perceptions for the poverty-only EJ definition since patterns are similar for poverty-only EJ definitions and race and poverty EJ definitions. The first column regressed perceptions of being unable to afford express lanes. There are no EJ group differences in perception of the affordability of express lanes. The trend over time is for perceptions to change to believing express lanes are more affordable. This change is statistically significant. Those who use the express lanes daily are more likely to think the express lanes are affordable. Those who drive during rush hours are less likely to perceive the express lanes as affordable.

The second column regressed perceptions of being able to afford, but refusing to use express lanes. Here there is a statistically significant EJ group difference. EJ group members are less likely to say they can afford to take express lanes but are unwilling to use them. There are no statistically significant changes over time in these attitudes.

The third column regresses perception of too few access points to the express lanes. Again, there are no EJ group differences. At the first-year post-opening of the express lanes, respondents' perceptions of too few access points declined significantly. This decline was not statistically significant in Years 2 and 3 post-opening of the express lanes. Those who use the express lanes daily were less likely to perceive too few access points on the express lanes.

Table 14. Regressions Perception of Express Lanes by Poverty-Only EJ Definition

N=813	Can't Afford Express Lanes	Can Afford but won't Take Them	Too Few Access Points
Intercept	3.24 (0.20)*	3.45 (0.22)*	3.83 (0.23)
EJ Group	0.09 (0.08)	-0.23 (0.08)*	-0.03 (0.09)
1 Year Post-Opening (2018)	-1.12 (0.18)*	0.12 (.020)	-0.81 (0.21)*
2 Years Post-Opening (2019)	-0.93 (0.18)*	-0.28 (0.20)	-0.09 (0.21)
3 Years Post-Opening (2020)	-0.95 (0.22)*	-0.40 (0.25)	-0.46 (0.26)
Distance Traveled (miles)	0.00 (0.00)	-0.01 (0.00)*	0.00 (0.00)
Use Express Lanes Daily	-0.28 (0.11)*	-0.61 (0.12)*	-0.57 (0.13)*
Never Use Express Lanes	-0.59 (0.16)*	-0.03 (0.18)	-0.20 (0.18)
Commute During Rush Hours	0.21 (0.09)*	0.01 (0.11)	0.19 (0.12)
R-square	.07	.09	.09

Notes: controlling for grid sample, COVID-19 restrictions. Reference category: Non-EJ, baseline, use express lanes occasionally. Standard errors in parentheses.

** indicates statistical significance at the .05 level (p<.05)*

Figures 14, 15, and 16 graphically present the perceived attitudes over time. Figure 14 shows us that the initial perception that the express lanes are unaffordable declines post-opening and then remains steady at about that same level for Years 2 and 3. Figure 15 shows perceptions that respondents will not use the express lanes are quite consistent over time. Lastly, Figure 16 shows that there are no linear trends in perceptions that there are too few access points.

Figure 14. Can't Afford Express Lanes by Poverty-Only EJ Status

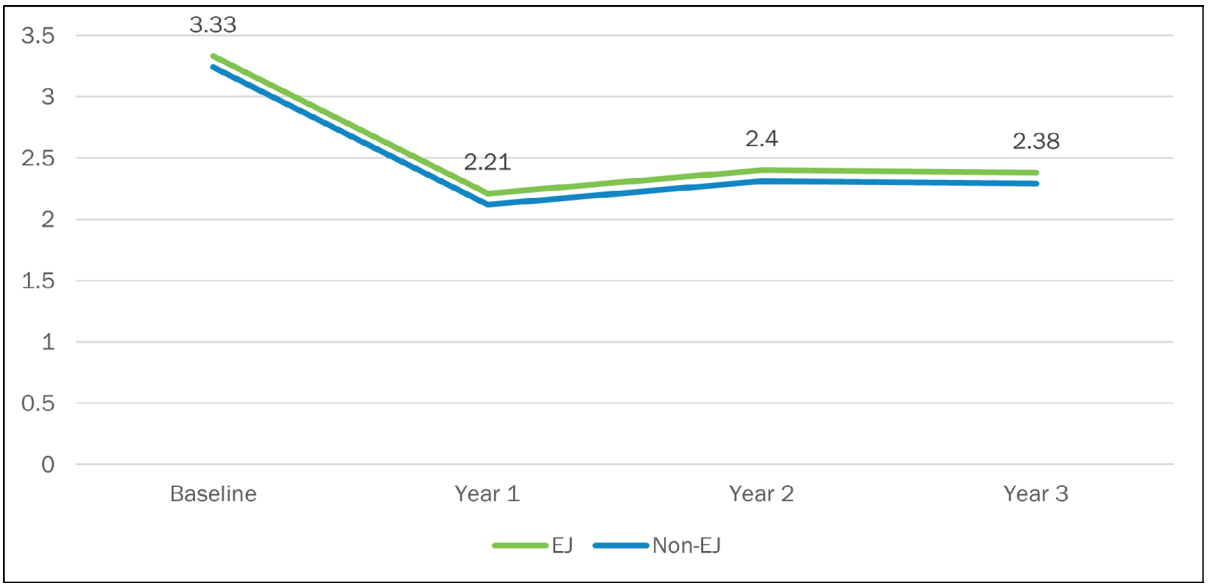


Figure 15. Can Afford Express Lanes but Won't Take Them by Poverty-Only EJ Status

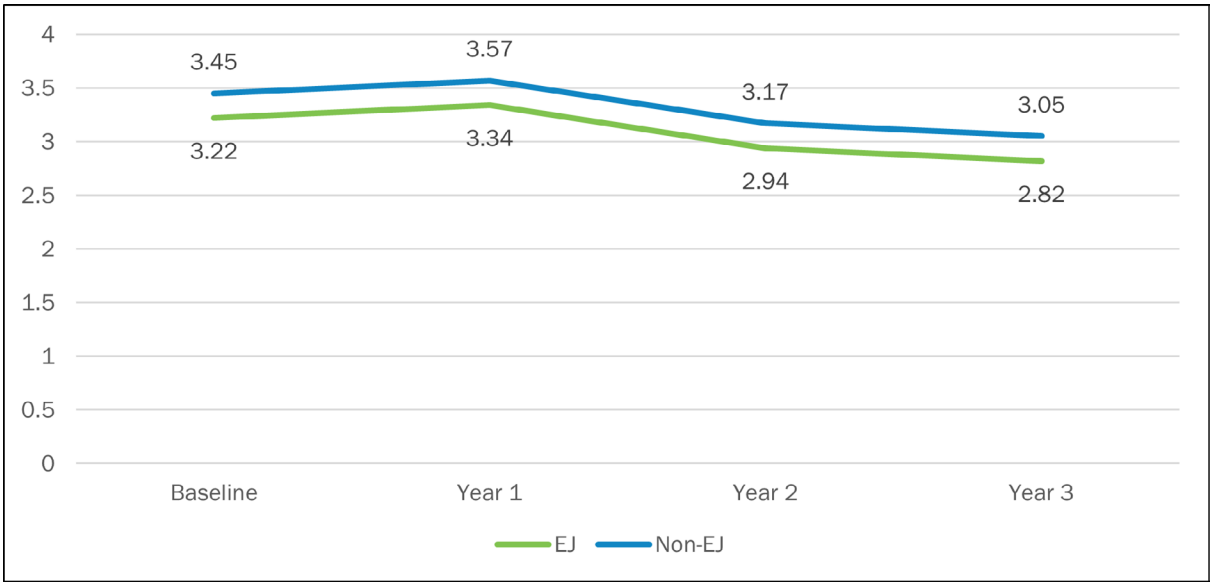
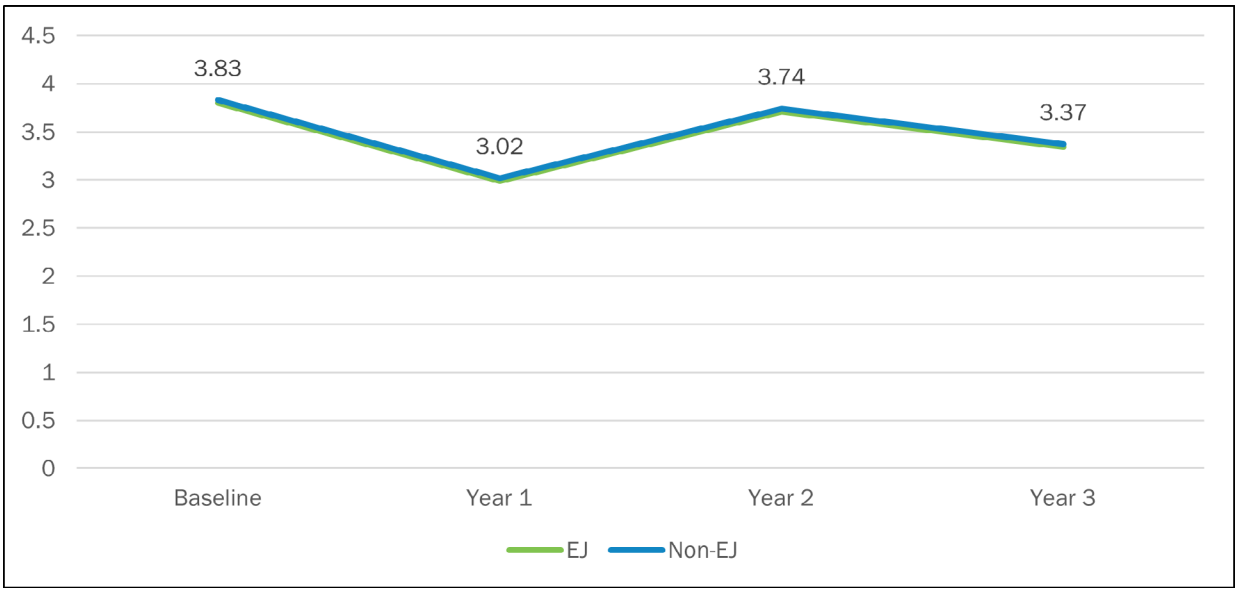


Figure 16. Too Few Access Points by Poverty-Only EJ Status



4 Conclusion

In 2018, the Georgia Department of Transportation opened the I-75 South Metro Express Lanes.

The I-75 South Metro Express Lanes were Georgia's first reversible toll lanes, extending 12 miles from SR 138/Stockbridge Highway in Clayton County to SR 155/McDonough Road in Henry County. The reversible lanes are primarily open to northbound traffic in the mornings and southbound traffic in the afternoons during peak-travel hours.

Researchers at Georgia State University (GSU) with support from the Georgia Department of Transportation (GDOT) conducted annual surveys over a four-year period (2017-2020), to determine if there is an unequal distribution of burdens or benefits for environmental justice (EJ) groups by the creation of the I-75 South Metro Express Lanes, and if the express lanes improved commutes for all South Metro Atlanta travelers.

This report finds that EJ group members had a statistically shorter commute time both before and after the opening of the I-75 South Metro Express Lanes. Difference in commute times between EJ groups did not vary over time. In other words, the opening of the express lanes did not disadvantage EJ group members with regard to commute times on I-75 in the South Metro region. This finding holds regardless of EJ definition used. Furthermore, a significant proportion of residents use the express lanes daily, the majority use it occasionally, and less than 20% never use it. This usage has led to actual declines in commute times.

Perceptions of inequities can be almost as important as actual inequities. No attitudes or perceptions of the new I-75 South Metro Express Lanes were found that demonstrated a potential source of inequity for EJ groups.

In conclusion, the researchers' data and analysis reveal that there are no discernible EJ group inequities arising from the I-75 South Metro Atlanta Express Lanes.

APPENDIX A. The Survey

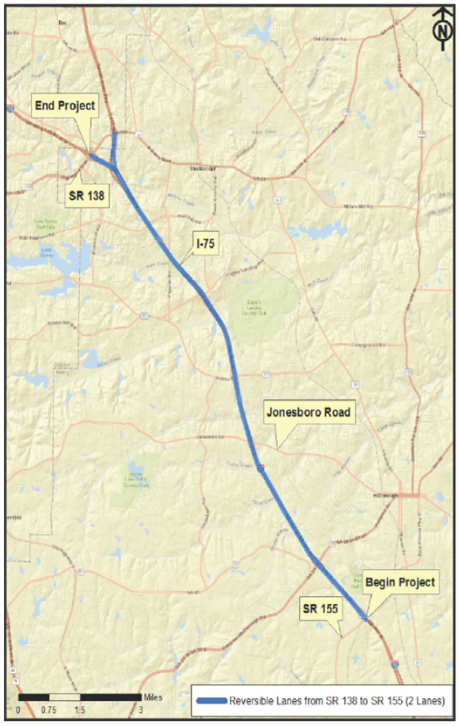
I. Travel To and From Work

This set of questions assesses your travel experience on the days you go to work. Transportation planners are interested in workplace location because travel to work activity often affects other daily travel. Please answer all questions that follow. Check the box that best represents your answers to the question posed, or fill in the blank as specified.

1. On a typical day going to or from work, do you travel (driving, bus, vanpool, carpool, etc.) on the Interstate 75 (I-75) corridor heading towards Atlanta's downtown? (See map below) ☐ YES *(Skip to Q3)* ☐ NO

2. If no, why not? ☐ I don't drive. ☐ I am retired. ☐ I take an alternate route to Atlanta. ☐ I work in the suburbs. ☐ Other _____

If no, thank you very much for your time. We are interested in those who travel I-75. You can stop here. Please put this in the self-addressed, stamped envelope and mail it.



This section assumes that you have a single job. If you have more than one job, please answer for the job for which you travel I-75 toward downtown Atlanta. Consider this your primary job. Only answer for the days you travel to work for the primary job, which means you will not be traveling more than 7 days in a typical week.

3. Did you travel on I-75 toward Atlanta to get to work last year?
   ☐ YES *(Skip to Q4)* ☐ NO

3a. If no, what changed that you now drive on I-75 toward Atlanta for work? (Choose one response)
   ☐ Changed job or got a job
   ☐ Construction on usual route to work
   ☐ I-75 Express Lanes improved time to work
   ☐ Other; please specify _____

4. What is the zip code of your employer? __ __ __ __ __

5. How many days per week do you travel to work? _____ (number of days)

6. In miles, how far is your primary workplace from your home? _____ (miles)

7. In a typical week, how do you generally get to work? (choose one answer)
   ☐ I work at home ☐ I drive by myself ☐ I carpool ☐ I ride in a vanpool
   ☐ I take public transit (bus) ☐ Ride share (Uber or Lyft) ☐ Other _____

8. On a typical day, when do you leave to go to work?
   ___ (hour) ___ (minute) ___ (am / pm)

9. On a typical day, about how many minutes is your commute to work?
   ____ (minutes) (enter 0 if you work at home)

10. If there was little to no traffic, how many minutes would it take you to get to work? ____ (minutes) (enter 0 if you work at home)

11. On days when you know there is heavy traffic, how much additional commuting time do you give yourself in order to get to work on time? ____ (minutes) (enter 0 if you work at home)

12. On a typical day, when do you leave work at the end of your day or shift? ___ (hour) ___ (minute) ___ (am / pm)

13. On a typical day, about how many minutes is your return commute home from work? _____ (minutes) (write 0 if you work at home)

OVER

14. In a typical week, how many days do you consistently get to work on time? (Circle the best answer)
None One Two Three Four Five Six Seven

15. Do you usually make additional stops on your way to or from work (for example, dropping off or picking up children, spouse, or friend)?
☐ **YES** ☐ **NO** ***(Skip to Q17)***

16. If yes to Q15, on average, about how many minutes does this add to your commute time? _____ (minutes) (enter 0 if you work at home)

II. Commute Preferences

Express Lanes are toll lanes built alongside the existing roads, adding a travel option for motorists. They support transit by providing free access for buses and vanpools. In addition, individual drivers can use these lanes by paying a toll using a Peach Pass Transponder. Toll rates will increase and decrease based on demand, ensuring travel speeds of 45 mph. These Express Lanes are reversible, allowing drivers to use the lanes to get into downtown Atlanta during weekday morning commute times, and out of, or away from, downtown Atlanta during the evening rush hours.

17. Do you have a Peach Pass Transponder?
☐ **YES** ☐ **NO** ***(Skip to Q23)***

18. In a typical month, how often do you use the Express Lanes to get to work?
☐ Daily ☐ A few times per week ☐ Once or twice a week ☐ A few times per month ☐ About once per month ☐ Never

19. In a typical month, how often do you use the Express Lanes to get home after work?
☐ Daily ☐ A few times per week ☐ Once or twice a week ☐ A few times per month ☐ About once per month ☐ Never

20. Do you use the Express Lanes for other travel needs?
☐ **YES** ☐ **NO**

21. How has your commute time changed now that the Express Lanes are in operation?
☐ Commute time is consistently worse
☐ Commute time is somewhat worse
☐ Commute time is same
☐ Commute time is somewhat better
☐ Commute time is consistently better

22. Under what circumstances do you tend to use the Express Lanes the most? (Choose all that apply)
☐ Personal reason (e.g. running late)
☐ Traffic is particularly heavy to or from work
☐ Weather is bad
☐ Traffic is particularly heavy due to downtown event
☐ Traffic is light, so toll is inexpensive
☐ Other; please specify _____

23. How much do you agree or disagree with the following statements? (Check the box that matches your level of agreement)	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
23a. I spend too much time in traffic.	☐	☐	☐	☐	☐
23b. I find commuting to be stressful.	☐	☐	☐	☐	☐
23c. I'd be willing to pay a toll to lessen my commute time.	☐	☐	☐	☐	☐
23d. I find commuting to work to be frustrating.	☐	☐	☐	☐	☐
23e. I often get home late from work due to heavy traffic.	☐	☐	☐	☐	☐

24. How much do you agree or disagree with the following statements about Express Lanes?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
24a. I can't afford to take Express Lanes.	☐	☐	☐	☐	☐
24b. Express Lanes benefit low-income commuters.	☐	☐	☐	☐	☐
24c. Express Lanes are fair because they charge tolls only to those who choose to use them.	☐	☐	☐	☐	☐
24d. Express Lanes have improved traffic for all commuters.	☐	☐	☐	☐	☐
24e. Express Lanes benefit higher income commuters.	☐	☐	☐	☐	☐
24f. I can afford to pay to take Express Lanes, but I probably would not take them.	☐	☐	☐	☐	☐
24g. There are too few places to enter and leave the Express Lanes for my commute.	☐	☐	☐	☐	☐

25. How much do you agree or disagree with the following statements about why you live where you do? I choose to live where I do because:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
25a. It is an easy commute to work (for me or someone in my household).	☐	☐	☐	☐	☐
25b. It is affordable.	☐	☐	☐	☐	☐
25c. It is in a good school district.	☐	☐	☐	☐	☐
25d. I know the area well.	☐	☐	☐	☐	☐
25e. It is near my family or friends.	☐	☐	☐	☐	☐
25f. It is convenient to public transportation.	☐	☐	☐	☐	☐
25g. Other (write in): _____	☐	☐	☐	☐	☐

III. Socio-Demographics

To understand how the Express Lanes will affect individuals and households in the different communities who live near the new lanes, we need to understand the types of people who live in these communities. Your household was chosen to represent others in your community; therefore, ***it is really important that you answer ALL the following questions****. Your answers will help us to understand how your community currently uses the highway and how the new Express Lanes are being used.*

Please remember that we are keeping your personal information confidential. Only the researchers at Georgia State University will ever see individual responses. We will not share this data, nor will it be used for any purpose other than to understand the effect of toll lanes on nearby communities.

All responses to these questions will be grouped by community, and analyses will be focused on averages - not on individual responses.

26. How many people, including yourself, live in your household? _____ (number of persons)

27. How old are you? ☐18-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ 56-65 ☐ 66-75 ☐ Over 75

28. What is your gender? ☐ Male ☐ Female

29. Which racial/ethnic group best represents you? ☐ (non-Hispanic) Black or African American ☐ (non-Hispanic) White or Caucasian ☐ (non-Hispanic) Asian or Asian American ☐ Latino/a, Hispanic American ☐ Multiracial ☐ Other, please specify _____

30. What is the primary language spoken in your home? ☐ English ☐ Spanish ☐ Portuguese ☐ Mandarin Chinese ☐ Other _____

31. What is the highest degree or level of schooling you have completed? ☐ Not a high school graduate ☐ High school graduate (includes GED) ☐ Some college ☐ Associate degree or technical school degree ☐ Bachelor's or undergraduate degree ☐ Graduate degree (includes professional degree like MD or JD) ☐ Other, please specify _____

OVER

32. Which of the following best describes your current situation? ☐ Employed full-time at one job ☐ Employed part-time ☐ Employed at several jobs ☐ Regular volunteer ☐ Retired ☐ Full-time homemaker ☐ Full-time student ☐ Disabled ☐ Unemployed looking for work ☐ Unemployed not looking for work ☐ Other, please specify _____

33. How many years have you lived at your current address (round up or down to nearest year)? _____ (years)

34. What was your total household income last year? ☐ Less than $10,000 ☐ $10-$19,999 ☐ $20-$29,999 ☐ $30-$39,999 ☐ $40-$49,999 ☐ $50-$64,999 ☐ $65-$79,999 ☐ $80-$99,999 ☐ $100,000 or more

35. What could the Georgia Department of Transportation (GDOT), State Road and Tollway Authority (SRTA), Georgia Regional Transportation Authority (GRTA), or other agencies do to improve your commute?

_____

_____

_____

_____

_____

_____

_____

That's it! Thank you so much for taking the time to answer our questions.

The information you shared will be very helpful for evaluating commuting on I-75.