



# Technical Memorandum

To: Durham County  
From: STV Engineers  
Date: 9/26/2022  
CC:  
2022 Grant Application: **RCE Durham REPAIR Grant**  
Subject: Equity Analysis

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## Introduction

On January 20, 2021, President Biden signed Executive Order (EO) 13985, “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government.” At the same time, the United States Department of Transportation (USDOT) has undertaken a comprehensive approach to advance racial equity for all, including individuals who have been historically underserved and adversely affected by persistent poverty or income inequality. The term “equity” means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Hispanic/Latino, Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. The term “underserved communities” refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied the full opportunity to participate in aspects of economic, social, and civic life, as exemplified by the list in the preceding definition of “equity.”

Transportation policy has enormous potential to catalyze the development of healthy communities of opportunity. Transportation impacts health directly; it affects air quality, injury risk, physical activity levels, and access to necessities such as grocery stores. Transportation is also one of the largest drivers of land use patterns; it thus determines whether communities have sidewalks and areas to play and be physically active as well as whether communities are connected to or isolated from economic and social opportunities.

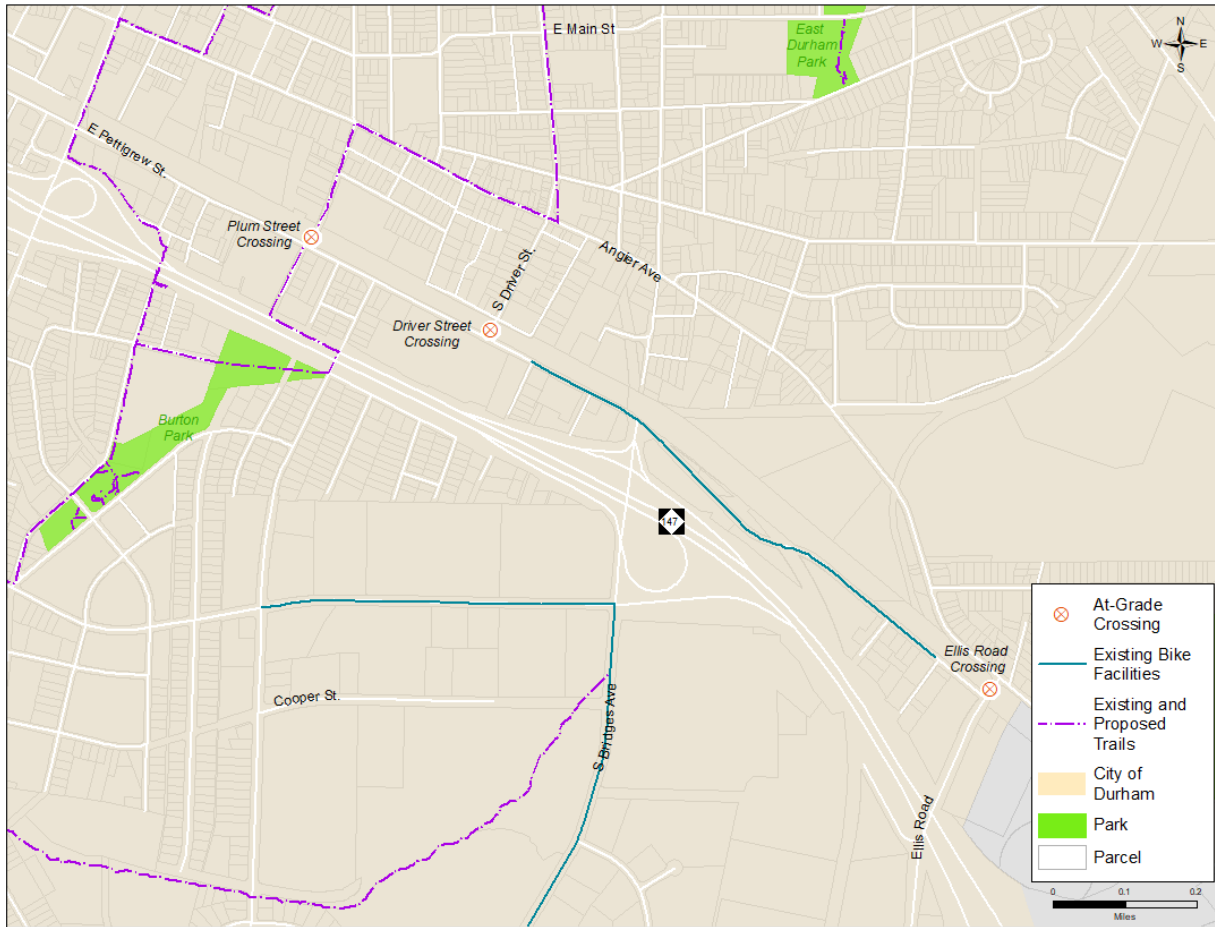
The Equity Analysis was conducted as part of the FRA RCE **Durham Rail-crossing Engagement, Planning, And Innovative Revitalization (Durham REPAIR)** grant application to analyze the potential closure and/or grade separation of three at-grade crossings along the North Carolina Railroad (NCR) corridor. The at-grade crossings in question include crossings 630472K (Plum Street), 630471D (Driver Street) and 735236Y (Ellis Road) in East Durham, North Carolina. The potential closure and/or grade separation of these crossings will improve first and foremost safety in prominent bicyclist and pedestrian areas in East Durham.

## Project Description

The Federal Railroad Administration (FRA) Railroad Crossing Elimination (RCE) Program provides funding for highway-rail or pathway-rail grade crossing improvement projects that focus on the improvement of safety and the mobility of people and goods. The three existing at-grade crossings in East Durham, NC along the existing rail line (Plum Street, Driver Street, and Ellis Road) would likely need to be closed or grade-separated to address safety concerns. The existing Plum Street, Driver Street and Ellis Road at-grade

crossings pose a safety hazard to motorists, bicyclists, and pedestrians, due to growing vehicular traffic, several daily trains and geometrical challenges that increase the likelihood of accidents. Durham REPAIR includes planning and environmental efforts of the potential closure or grade separation of the three at-grade crossings, as well as preliminary design. Studying the potential closure or grade-separation of the three at-grade crossings meets the purpose of the FRA RCE Program by eliminating at-grade crossings, improving safety and enhancing mobility throughout the East Durham region.

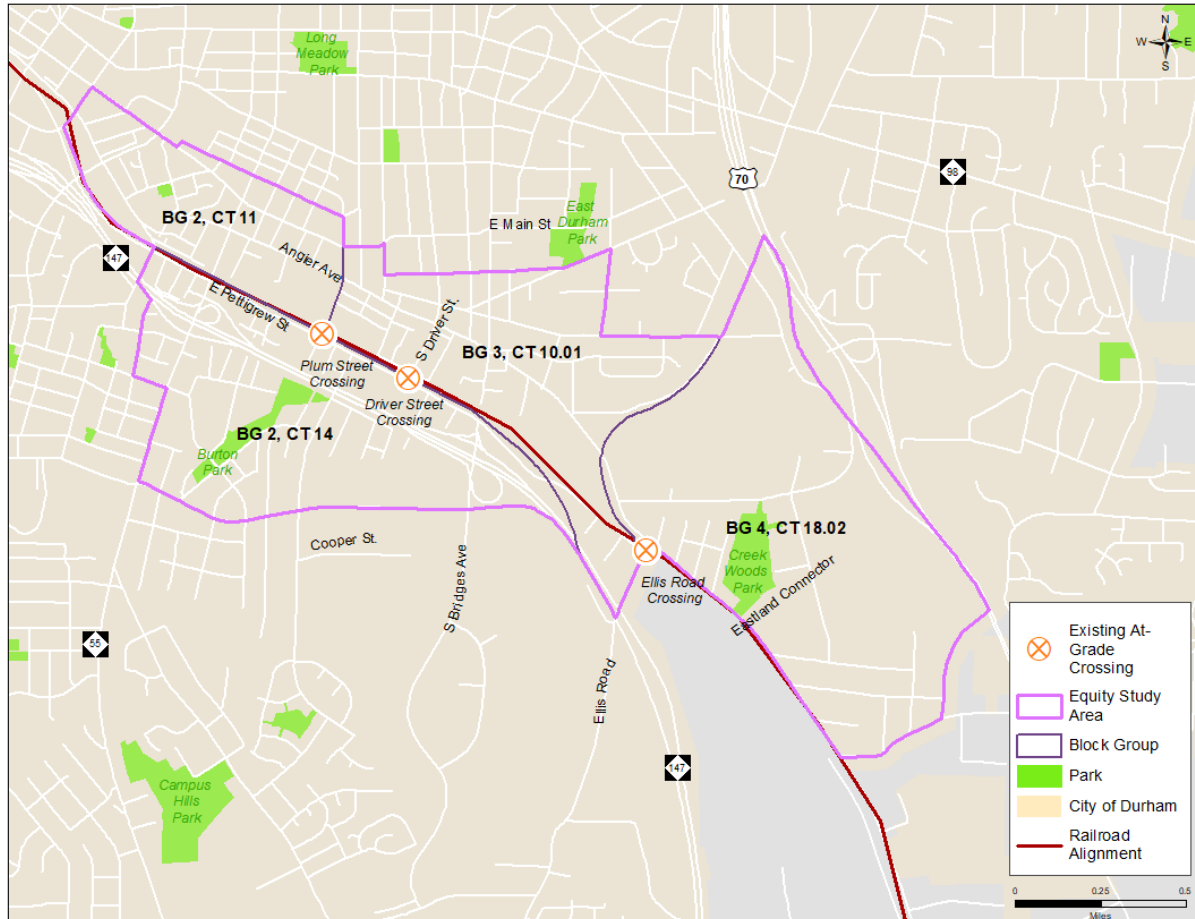
Figure 1: Project Location



## Area Assessed

For ease of data collection, this analysis encompasses the U.S. Block Group boundaries that intersect with the crossing locations. These include Census Tract (CT) 11 Block Group (BG) 2, CT 14 BG 2, CT 10.01 BG 3 and CT 18.02 BG 4, which are shown in Figure 2; CT 20.27 BG 1 touches the Ellis Road crossing but was not included in the analysis due to the majority of the block group extending far beyond the area surrounding the crossing. Throughout this analysis, these four Block Groups are compared with Durham County, as well as the state of North Carolina to contextualize the data presented.

Figure 2: Census Tracts Immediately Affected by the Project



## Minority and Low-Income Populations

Title VI Statute, FHWA Title VI program and Environmental Justice (EJ) guidance (and their application to transportation and infrastructure investments) establish that investments should promote access and opportunity to low-income and minority communities.<sup>1</sup> Durham REPAIR will involve evaluating safety and improved mobility in the immediate vicinity of the existing three at-grade crossings. Through analysis of the 2015-2019 American Community Survey (“ACS”) Five-Year Estimates, the demographic composition of the Equity Study Area is compared to Durham County and the state of North Carolina. USDOT Order (5610.2) on EJ provides clear definitions of the four minority groups addressed by Executive Order 12898 (see Table 1 for racial demographic data). These groups are:

- **Black** – a person having origins in any of the black racial groups of Africa;
- **Hispanic/Latino** – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
- **Asian American** – a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands; and

<sup>1</sup> Environmental Justice, Title VI, Non-Discrimination, and Equity webpage; U.S. Department of Transportation Federal Highway Administration ([https://www.fhwa.dot.gov/environment/environmental\\_justice/equity/](https://www.fhwa.dot.gov/environment/environmental_justice/equity/)).



*Table 1: Demographic Profile by Geography*

Geography	Total Population	White		Black or African American		American Indian and Alaska Native Alone		Asian		Native Hawaiian/Pacific Islander		Some Other Race		Two or More Races		Total Non-White	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
<b>CT 11, BG 2</b>	1,423	408	29%	974	68%	0	0%	0	0%	0	0%	35	2%	6	0.4%	1,015	71%
<b>CT 14, BG 2</b>	2,044	219	11%	1,645	80%	0	0%	0	0%	0	0%	144	7%	36	1.8%	1,825	89%
<b>CT 10.01, BG 3</b>	1,421	315	22%	1,106	78%	0	0%	0	0%	0	0%	0	0	0	0.0%	1,106	78%
<b>CT 18.02, BG 4</b>	1,359	771	57%	205	15%	0	0%	0	0%	0	0%	227	17%	156	11.5%	588	43%
<b>Equity Study Area</b>	6,247	1,713	27%	3,930	63%	-	-	-	-	-	-	406	6%	198	3%	4,534	73%
<b>Durham County</b>	311,848	161,919	52%	113,682	36%	779	0%	15,279	5%	129	0.04%	10,519	3%	9,541	3.1%	149,929	48%
<b>North Carolina</b>	10,264,876	7,049,919	69%	2,200,761	21%	123,952	1%	292,992	3%	7,213	0.07%	316,763	3%	273,276	2.7%	3,214,957	31%

Source: US Census Bureau, American Community Survey 5-year Estimates (2015-2019), Table B02001, "Race."

- **American Indian and Alaskan Native** – a person having origins in any of the original people of North America and who maintain cultural identification through tribal affiliation or community recognition.

To determine the total number of minority residents in each geography analyzed, the number of Black, Hispanic/Latino, Asian American, and American Indian or Alaskan Natives were totaled. Because Hispanic/Latino residents may be of any race, people of any ethnic group could categorize themselves as Hispanic or non-Hispanic. Thus, the total minority population encompasses all individuals except non-White Hispanics. With regards to low-income populations, this analysis calculates low-income populations by adding the below poverty population and the near poor population between 100 percent and 149 percent of poverty level as prescribed by the US Health and Human Services Poverty Guidelines.

Table 2 provides a breakdown of minority, Hispanic/Latino, and low-income populations. The analysis shows that minority populations are particularly prevalent throughout the study area and are higher than the County and State averages. Minority populations are above 90% in CT 11 BG 2, CT 14 BG 2, and CT 18.02 BG 4, significantly higher than the County (57.5%) and the North Carolina (36.9%) average minority populations. The higher concentrations of low-income populations can be found in CT 14 BG 2 and CT 11 BG 2, at 69% and 70% respectively. All block groups in the Equity Study Area are higher than both the County and State low-income averages. There is a high concentration of Hispanic/Latino population within CT 18.02 BG 4.

*Table 2: Minority and Low-Income Populations*

Geography	Total Population, 18 years and older	% Minority	% Hispanic/Latino	% Low Income
CT 11, BG 2	1084	92.2%	23.3%	70%
CT 14, BG 2	1117	98.2%	16.3%	69%
CT 10.01, BG 3	990	89.7%	11.8%	53%
CT 18.02, BG 4	830	94.6%	77.9%	53%
Equity Study Area	4,021	93.7%	32.3%	61%
Durham County	246,027	57.5%	13.5%	15.2%
North Carolina	7,968,262	36.9%	9.4%	14.7%

Source: U.S. Census Bureau American Community Survey (2015-2019), Table S0601.

## Environmental Justice Communities

EJ analyses address disproportionately high and adverse human health or environmental effects of a project’s activities on minority populations and low-income populations to achieve an equitable distribution of benefits and burdens. This objective is to be achieved, in part, by actively adhering to the principles and practices of both Title VI and the National Environmental Policy Act (“NEPA”) during the development and implementation of transportation activities. Title VI prohibits the discrimination on the basis of race, color or national origin in programs receiving Federal assistance. Durham County, GoTriangle, and NCDOT are committed to nondiscrimination in the conduct of its business. In addressing the requirements of these orders and laws, agencies identify potential EJ populations (i.e., minority and low-income) and evaluate potential effects resulting from transportation projects.

Potential EJ communities were identified as those census tracts with either a large concentration of minority residents or low-income households (i.e., those block groups for which the minority or low-income population exceeds 50 percent and/or is higher than the county in which they are located). As depicted in Table 3 all of the block groups within the Equity Study Area are meet the low-income and minority thresholds, defined above.

Table 3: Potential Environmental Justice Communities

Census Tract (CT), Block Group (BG)	Total Population	Population for Whom Poverty Status is Determined	Minority Population		Low Income Level		EJ Block Group	
			#	%	#	%	Minority	Low Income
CT 11, BG 2	1,423	1,423	1,312	92%	994	70%	●	●
CT 14, BG 2	2,044	2,044	2,007	98%	1,403	69%	●	●
CT 10.01, BG 3	1,421	1,421	1,274	90%	751	53%	●	●
CT 18.02, BG 4	1,359	1,359	1,286	95%	726	53%	●	●
Equity Study Area	6,247	6,247	5,879	94%	3,874	61%	●	●
Durham County	298,040	298,040	179,399	57.5%	45,221	15.2%		
North Carolina	9,984,891	9,984,891	3,790,188	36.9%	1,467,591	14.7%		

Source: U.S. Census Bureau American Community Survey (2015-2019), Table S0601.

## Historically Disadvantaged Communities and Opportunity Zones

According to the USDOT’s Areas of Persistent Poverty and Historically Disadvantaged Communities tool,<sup>2</sup> all Block Groups within the Equity Study Area are Federally designated as Areas of Persistent Poverty (“APP”), as shown on Figure 3. Historically disadvantaged communities are defined as such based on the following categories:

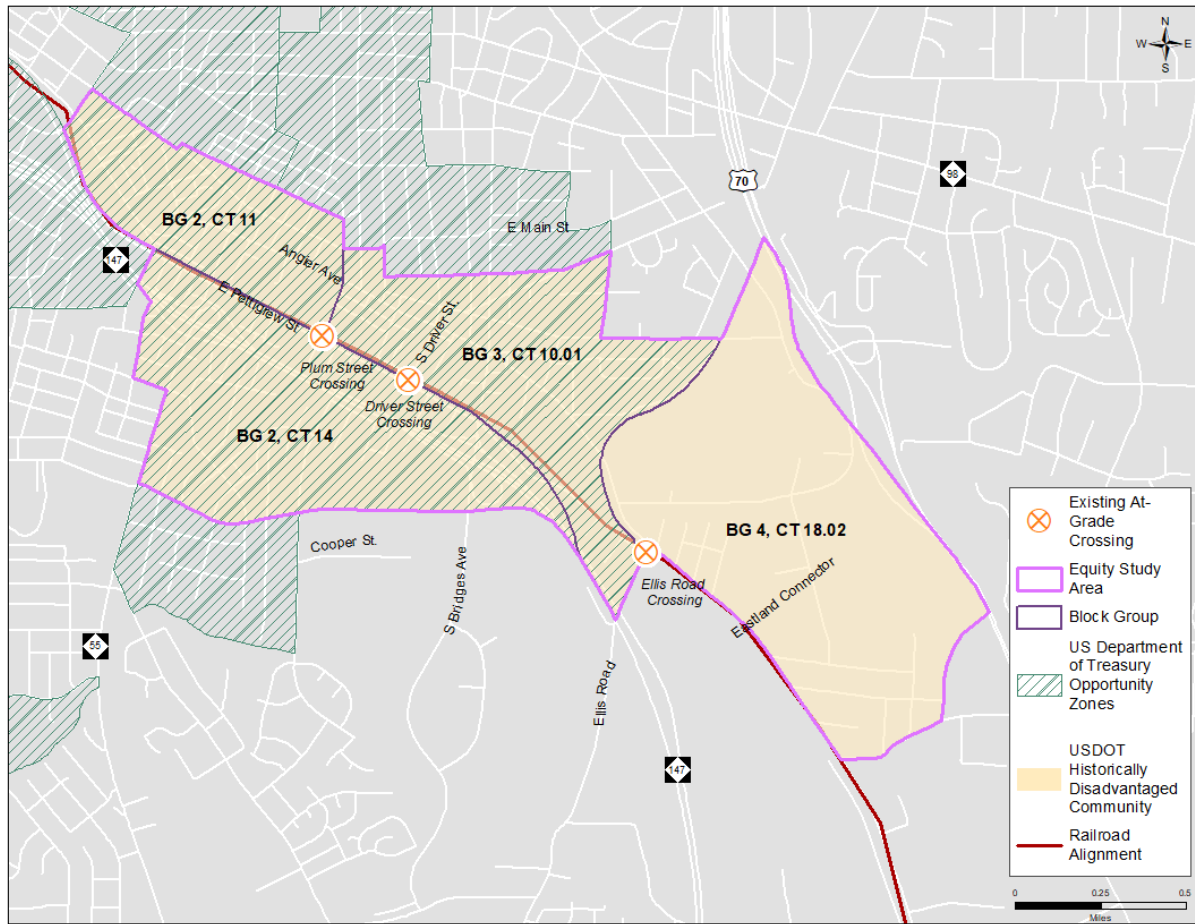
- **Transportation Access** – communities and places that spend more, and longer, to get where they need to go);
- **Environmental** – communities with disproportionate pollution burden and inferior environmental quality);
- **Economic** – areas and populations with high poverty, low wealth, lack of local jobs, low homeownership, low educational attainment, and high inequality; and
- **Resilience** – communities vulnerable to hazards caused by climate change.

Additionally, the three at-grade crossings are located within Federally designated Opportunity Zones (Census Tracts 10.01, 11 and 14). This is a classification that serves as an economic development tool allowing and encouraging people to invest in economically distressed low-income communities, especially those that have suffered from disinvestment over many years. By improving safety, reducing delays in vehicle traffic, enhancing reliability, and improving community connectivity, Durham REPAIR increases the area’s attractiveness as a place to do business and improves the quality of life for nearby residents, which directly aligns with the goals of the Opportunity Zone.<sup>3</sup>

<sup>2</sup> USDOT Areas of Persistent Poverty and Historically Disadvantaged Communities (<https://www.transportation.gov/grants/mpdg-areas-persistent-poverty-and-historically-disadvantaged-communities>).

<sup>3</sup> USDOT Opportunity Zone (<https://datahub.transportation.gov/stories/s/Opportunity-Zones/s6m7-dg9c/>)

Figure 3: Historically Disadvantaged Communities and Opportunity Zones in the Project Area



## Other Equity Considerations

Beyond minority and low-income populations additional groups are often considered as protected classes for equity considerations, including age and disability.<sup>4</sup> While not a direct consideration, these groups are included here for additional context on the equity implications of the project. The concentration of these population groups is much lower within the Equity Study Area than in the County and State. While these groups are not expected to benefit disproportionately, they are not expected to be excluded from any benefits (see Tables 4, 5 and 6).

<sup>4</sup> [https://www.fhwa.dot.gov/environment/environmental\\_justice/equity/](https://www.fhwa.dot.gov/environment/environmental_justice/equity/).

Table 4: Other Equity Considerations: Age

Geography	Total Population	Under 18 Years		65 Years or Older	
		#	%	#	%
CT 11, BG 2	1,423	339	23.8%	203	14.3%
CT 14, BG 2	2,044	927	45.4%	107	5.2%
CT 10.01, BG 3	1,421	431	30.3%	123	8.7%
CT 18.02, BG 4	1,359	529	38.9%	69	5.1%
Equity Study Area	6,247	1,795	28.7%	379	6.1%
Durham County	311,848	65,821	21.1%	39,266	12.6%
North Carolina	10,264,876	2,296,614	22.4%	1,628,013	15.9%

Source: US Census Bureau, American Community Survey 5-year Estimates (2015-2019), Table B01001, "Sex by Age."

Table 5: Other Equity Considerations: Disability

Geography	Civilian Noninstitutionalized Population	Persons with Disability		Persons without Disability	
		#	%	#	%
CT 11	3,167	564	17.8%	2,603	82.2%
CT 14	2,397	262	10.9%	2,135	89.1%
CT 10.01	3,706	621	16.8%	3,085	83.2%
CT 18.02	8,116	1,198	14.8%	6,918	85.2%
CT Total	17,386	2,645	15%	14,741	85%
Durham County	306,362	29,623	9.7%	276,739	90.3%
North Carolina	10,060,249	1,352,783	13.4%	8,707,466	86.6%

Source: US Census Bureau, American Community Survey 5-year Estimates (2015-2019), Table B18101, "Sex by Age by Disability Status."

Table 6: Zero Car Households

Geography	Occupied Housing Units	No Vehicle Available		One Vehicle Available		Two or More Vehicles Available	
		#	%	#	%	#	%
CT 10.01, BG 3	486	29	6.0%	214	44.0%	243	50.0%
CT 11, BG 2	629	206	32.8%	275	43.7%	148	23.5%
CT 14, BG 2	657	180	27.4%	367	55.9%	110	16.7%
CT 18.02, BG 4	299	0	0.0%	72	24.1%	227	75.9%
Equity Study Area	2,071	415	20.0%	928	44.8%	728	35.2%
Durham County	125,953	9,888	7.9%	48,052	38.2%	68,013	54.0%
North Carolina	3,965,482	230,276	5.8%	1,255,017	31.6%	2,480,189	62.5%

Source: US Census Bureau, American Community Survey 5-year Estimates (2015-2019), Table B25044, "Tenure by Vehicles Available."



An aerial photograph of an urban area in Durham, North Carolina, showing streets, buildings, and green spaces. A red dot is placed on a street in the upper-middle part of the image. In the top-left corner, there is a circular railroad crossing sign with a black 'X' and the letters 'R' and 'P' on either side.

## Conclusion

With high concentrations of low-income and minority communities in Durham REPAIR area, a potential at-grade rail crossing closure or grade separation would increase safety and mobility in East Durham for motorists, bicyclists, and pedestrians. The planning, engagement, environmental documentation, and preliminary design for potential closure or grade-separated facilities benefit mainly the minority community.