

Chapter 10

Community Impact Assessment

10.1 Overview

MVRPC conducts a Community Impact Assessment to take into account the impacts and benefits of LRTP projects to the Region’s residents. The analysis includes identifying populations that might be more affected by projects or are not well served by the Region’s automobile centric transportation system. As such, MVRPC undertakes extensive measures to identify locations where vulnerable populations are concentrated in the Region and to extend additional public outreach efforts to these communities.

Technical analyses – travel time to work; travel time to basic services such as grocery stores, medical centers, and community centers; and transit and regional bikeway accessibility – were performed, and the findings indicate that vulnerable populations and the general population see similar outcomes.

The following sections of this chapter document the results of MVRPC’s strives towards addressing the needs of vulnerable populations in the 2050 LRTP.

10.2 Background

MVRPC, as an MPO, receives federal funding to support many of its programs and activities, and must comply with federal law as a condition of receiving those funds.

Regulatory Framework

Under Title VI of the 1964 Civil Rights Act and related statutes, each federal agency is required to ensure that no person is excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, national origin, age, sex, disability, or religion. Title VI bars intentional discrimination as well as disparate impact discrimination (i.e., a neutral policy or practice that has a disparate impact on a protected group).

The National Environmental Policy Act of 1969 (NEPA) stressed the importance of providing for, “all Americans a safe, healthful, productive, and aesthetically pleasing surroundings,” and provided a requirement for taking a “systematic, interdisciplinary approach” to aid in considering environmental and community factors in decision-making.

This approach was further emphasized in the Federal-aid Highway Act of 1970: 23 United States Code 109(h). It established a further basis for equitable treatment of communities affected by transportation projects. It requires consideration of the anticipated effects of proposed

transportation projects upon residences, businesses, farms, accessibility of public facilities, tax base, and other community resources.

The Americans with Disabilities Act of 1990 (ADA) aims to ensure that pedestrians with disabilities have an equal opportunity to use the public right-of-way in the transportation system. Title II of the ADA and Section 504 of the Rehabilitation Act of 1973 (Section 504) includes oversight of state and local entities and recipients of federal funds that are responsible for roadways and pedestrian facilities to ensure that they do not discriminate on the basis of disability in any highway transportation program, activity, service, or benefit they provide to the public. In accordance to Title II of the ADA, MVRPC ensures that individuals with disabilities have equal access to its services, programs, and/or activities.

10.3 MVRPC's Approach to the Community Impact Assessment

MVRPC employed both quantitative and qualitative methods to analyze the impact of the 2050 LRTP to the Region's residents.

MVRPC's approach included:

- Defining vulnerable populations;
- Identifying vulnerable areas;
- Conducting tests for adverse impacts; and
- Taking extra public participations efforts to fully engage diverse population groups.

10.4 Defining Vulnerable Populations

MVRPC's vulnerable population groups include racial and ethnic minorities, persons in poverty, persons with disabilities, persons 65 and over, and households without automobiles.

Data Sources

MVRPC used the 2020 Census and 2018-2022 American Community Survey (ACS) as primary data sources for analyzing vulnerable population groups. The 2020 Decennial Census block level data were aggregated to the traffic analysis zone (TAZ) level using GIS for minorities, persons 65 and over, and Hispanic population data. For the remaining populations (persons in poverty, persons with disabilities, and zero-car households), 2018-2022 ACS 5-Year Estimate block group data were used by converting block group estimates to the TAZ level using spatial analysis techniques.

Definition of Population Groups

MVRPC defined the vulnerable populations as follows:

Persons in Poverty

Persons in poverty are defined as the sum of the number of persons in families with an income below the poverty threshold and the number of unrelated individuals with incomes below the poverty thresholds. The set of poverty thresholds varies by family size and composition and age of householder. MVRPC defined the poverty population based on available ACS data tabulated for total household population plus non-institutionalized group quarters.

Persons with Disabilities

In 2010, the ACS began using a new definition for persons with disabilities, focusing on the impact conditions have on basic functioning rather than the presence of conditions. Consistent with this new definition, MVRPC defined the population of persons with disabilities based on available ACS data tabulated for the household population 18 years of age and over. A person was considered as having a disability if they met any of the following conditions. A brief description of each disability category is as follows:

- Hearing difficulty — deaf or having serious difficulty hearing.
- Vision difficulty — blind or having serious difficulty seeing, even when wearing glasses.
- Cognitive difficulty — because of a physical, mental, or emotional problem, having difficulty remembering, concentrating, or making decisions.
- Ambulatory difficulty — having serious difficulty walking or climbing stairs.
- Self-care difficulty — having difficulty bathing or dressing.
- Independent living difficulty — because of a physical, mental, or emotional problem, having difficulty doing errands alone such as visiting a doctor’s office or shopping.

Zero-Car Households

Zero-Car Households are households with no automobiles at home and available for the use of household members.

Minority Population

All persons of races other than Caucasian were considered minorities, including American Indian or Alaska Native; Asian; Black or African American; Native Hawaiian or Other Pacific Islander; some other race alone; and persons of two or more races. It is important to note that the population of Hispanic origin was not counted as a race since the U.S. Census Bureau treats persons of Hispanic origin as an ethnic group, not a race.

Hispanic Population

Persons who classified themselves in one of the specific Spanish/Hispanic/Latino origin categories listed, such as Mexican, Mexican-American, Puerto Rican, or Cuban, as well as those who indicated

that they were of other Spanish/Hispanic/Latino origin. Persons of Hispanic origin may be of any race.

Older Adults

The older adult population is defined as all persons 65 years of age and older.

10.5 Identifying Vulnerable Areas

MVRPC identified vulnerable areas by examining the concentration of the vulnerable populations at the TAZ level using Geographic Information Systems (GIS).

Population Thresholds

Population thresholds were calculated for each population demographic group being examined in order to locate the areas of high concentration. Each population group (e.g., older adults) was aggregated to the county level and a county average percentage calculated. The areas of high concentration were then identified for each population group with the county average being used as the threshold. Then, the areas of high concentration were identified as seen in Table 10.1.

- *Persons in Poverty* — Montgomery County has the highest percentage of persons in poverty (15.57%) and Warren County has the lowest percentage of persons in poverty (5.14%).
- *Persons with Disabilities* — Montgomery County has the highest percentage of persons with disabilities in the Region (18.39%) and Warren County has the lowest county percentage of persons with disabilities (14.05%).
- *Zero-Car Households* — Montgomery County has the highest percentage of households without access to cars. Almost one in ten households (9.04%) reported having no cars in the 2018-2022 ACS. Warren County has the lowest percentage of households without access to cars (2.69%).
- *Minority Population* — Montgomery County has the highest minority population in the Region (32.05%). Miami County has the lowest minority population in the Region (10.25%).
- *Hispanic Population* — Montgomery County has the highest percentage of persons of Hispanic descent (3.94%) in the Region. Miami County has the lowest Hispanic population (2.02%).
- *Older Adult Population* — Miami County has the highest percentage of persons 65 or older in the Region at 19.30%, meaning nearly 1 in 5 people in Miami County is 65 or older. Warren County has the lowest percentage of older adults (15.46%).

Table 10.1 — Vulnerable Population Thresholds

	County	Total	Threshold
People in Poverty	Greene	17,729	10.65%
	Miami	8,840	8.19%
	Montgomery	82,772	15.57%
	Warren	12,208	5.14%
Population with Disabilities	Greene	21,520	16.23%
	Miami	12,154	14.56%
	Montgomery	77,335	18.39%
	Warren	25,599	14.05%
Zero-Car Households	Greene	2,919	4.37%
	Miami	2,150	4.88%
	Montgomery	20,651	9.04%
	Warren	2,396	2.69%
Minority Population	Greene	30,820	18.35%
	Miami	11,152	10.25%
	Montgomery	172,232	32.05%
	Warren	42,264	17.44%
Hispanic Population	Greene	5,216	3.11%
	Miami	2,199	2.02%
	Montgomery	21,179	3.94%
	Warren	7,738	3.19%
Older Adults	Greene	30,076	17.91%
	Miami	20,996	19.30%
	Montgomery	99,435	18.51%
	Warren	37,472	15.46%

Sources: 2020 Census and 2018-2022 American Community Survey

Distribution of Vulnerable Areas

Using the county’s threshold for each vulnerable population, TAZs were examined and coded as either “Above County Average” or “Below County Average.” It is important to note here that a specific TAZ could be a vulnerable area for several vulnerable population groups.

MVRPC used GIS to produce a series of maps showing the geographic distribution of vulnerable areas for each population group in the Region. The maps are shown in Figure 10.1.

- *Distribution of Persons in Poverty* — The distribution of persons in poverty is highly concentrated in the central city areas of Montgomery County. Greene and Miami counties also had higher concentrations of persons in poverty around their central city areas as well as in the outlying areas.
- *Distribution of Persons with Disabilities*— The distribution of persons with disabilities showed no particular pattern. Persons with disabilities were spread throughout the entire Region.
- *Zero-Car Households Distribution* — The distribution of households with no cars shows a general clustering pattern in city centers. This is particularly evident in Montgomery County where there is fixed-route transit.
- *Minority Population Distribution* — TAZs with an above average amount of minority persons are concentrated around urban areas or cities.
- *Hispanic Population Distribution* — In contrast with the distribution patterns for minority populations and persons in poverty, the Hispanic population in the Region appears to be located away from city centers and closer to rural areas and large employment centers—especially Wright Patterson Air Force Base.
- *Older Adult Population Distribution* — No strong patterns were identified with the older adult population, aside from a small but perceptible lack of concentration near urban centers. In general, the older adult population appears to be spread evenly throughout the Region and has increased since 2010.

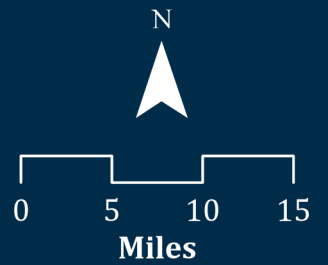
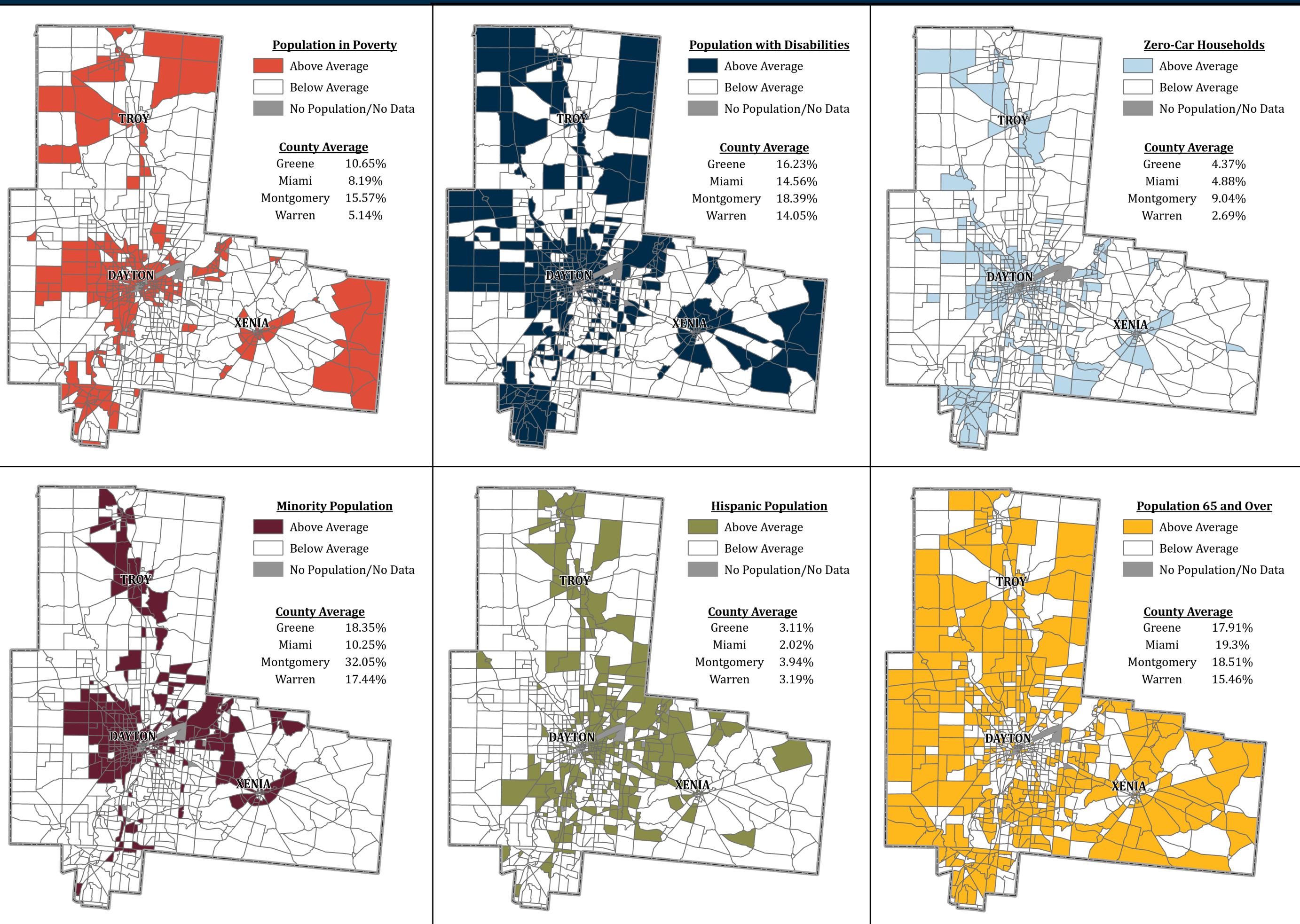
10.6 Community Impact Analysis

Accessibility to Basic Services

MVRPC conducted the accessibility analysis by measuring travel time from TAZs to basic service facilities for driving and transit. Micro Analysis Zones (MAZs) based on U.S. Census blocks are used for analyzing access to basic service facilities via walking. The facilities included in this analysis were grocery stores, medical centers, and community centers (including schools) located in the Region based on inventories conducted in the summer of 2018. The analysis will be repeated periodically as facilities’ locations shift over time and the location of the facility is the principal determinant of accessibility.

MVRPC calculated the travel time from each TAZ to the closest facility using the Transportation Demand Forecasting Model (TDFM) with 2010 based conditions, and walking time from each MAZ was calculated assuming a constant walking speed of 3 mph. TAZs and MAZs were then determined

**Figure 10.1
Vulnerable Populations**



Source: 2018-2022 ACS
and 2020 U.S. Census
May 2026

to have driving, transit, or walking access to each facility type based on travel time thresholds. From there, the percentage of each vulnerable group with access was compared to the percentage of the general population with access for each travel mode and each facility type. More information is available on the [Accessibility Analysis webpage](#).

Travel Time to Work

MVRPC analyzed the travel time to work (Home Based Work, or HBW Trips) as a community impact evaluation measure of the 2050 LRTP projects. This measures the travel time to work for persons in vulnerable areas compared to the general population in regards to employment locations as a result of the Plan projects.

The average travel time to work for each TAZ was derived using MVRPC’s TDFM for all three scenarios (2020 Base, 2050 E+C, and 2050 Plan). The average HBW travel time for each TAZ was calculated for areas with an above average amount of persons in a vulnerable population and the general population. The results of the analysis can be seen in Table 10.2 below.

Table 10.2 — Average Travel Time to Work in Minutes

	2020	2050 E+C	2050 Plan
General Population	9.73	13.02	13.00
Persons in Poverty	9.48	12.65	12.64
Population with Disabilities	9.49	12.86	12.85
Zero-Car Households	9.41	12.84	12.82
Minority Population	9.78	12.95	12.93
Hispanic Population	9.95	13.37	13.34
Older Adult Population	9.95	13.41	13.37

Source: MVRPC

The differences in HBW travel time between the vulnerable areas and the general population vary based on the vulnerable population group. The Persons in Poverty, Persons with Disabilities, and Zero-Car Households groups all fare better in travel time to work compared to the general population in all scenarios. In contrast, the Minority Population fared worse than the general public in 2020, but is projected to fare better than the general population in both 2050 scenarios. The Hispanic and Older Adult Populations had longer travel times than the general population in all scenarios. The longer travel times for these groups are likely due to these populations being more dispersed in suburban and rural areas in tandem with being less concentrated in urban centers. But regardless, travel times for all analyzed groups vary by less than one minute.

A comparison of HBW travel times between the 2050 E+C and 2050 Plan scenarios show that implementing the 2050 LRTP slightly decreases HBW travel times for all population groups, despite discrepancies in how each population group individually fares compared to the general population. Due to all populations having faster HBW travel times in the 2050 Plan scenario compared to the 2050 Existing + Committed Project scenario, it is fair to say the Plan projects do benefit all population groups.

Transit Accessibility Analysis

MVRPC conducted a Transit Accessibility Analysis as a second measure of community impact for the 2050 LRTP. The analysis was conducted using GIS to identify how much access each vulnerable population group has to public transit in the Region. Furthermore, this analysis evaluates how much transit access various vulnerable population groups have in comparison to the general population.

With the exception of limited portions of Greene County (Wright Patterson Air Force Base and Wright State University), Montgomery County is the only county in the MPO area that is served by regularly scheduled fixed transit routes through the Greater Dayton Regional Transit Authority (GDRTA).

Therefore, the analysis in this section focuses on Montgomery County (see Figure 10.2). Miami and Greene counties have demand-responsive transit services that are open to the general public.

Due to the close proximity of transit stop locations—less than $\frac{1}{4}$ mile apart on most routes and relatively comprehensive time/location coverage—bus routes, not bus stops, were used as the basis for the analysis. The analysis utilized the September 2024 GDRTA transit routes and RTA Connect Zones. GDRTA began using RTA Connect service in 2018, which designates Connect Zones within which ride-hailing service can be utilized to connect to a bus or travel within a zone for the cost of bus fare.

Transit route buffers were overlaid on TAZ and census block boundaries to determine the area covered by the buffer with respect to the overall population and target population groups. RTA Connect Zones were then added to the buffers to account for service provided within the zones. Using the assumptions that population is evenly spread throughout underlying census blocks and target population proportions are consistent within TAZs, the percentage of the general population and target population groups covered in the combined buffer was calculated.

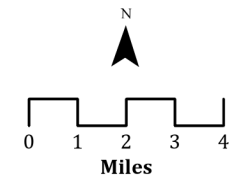
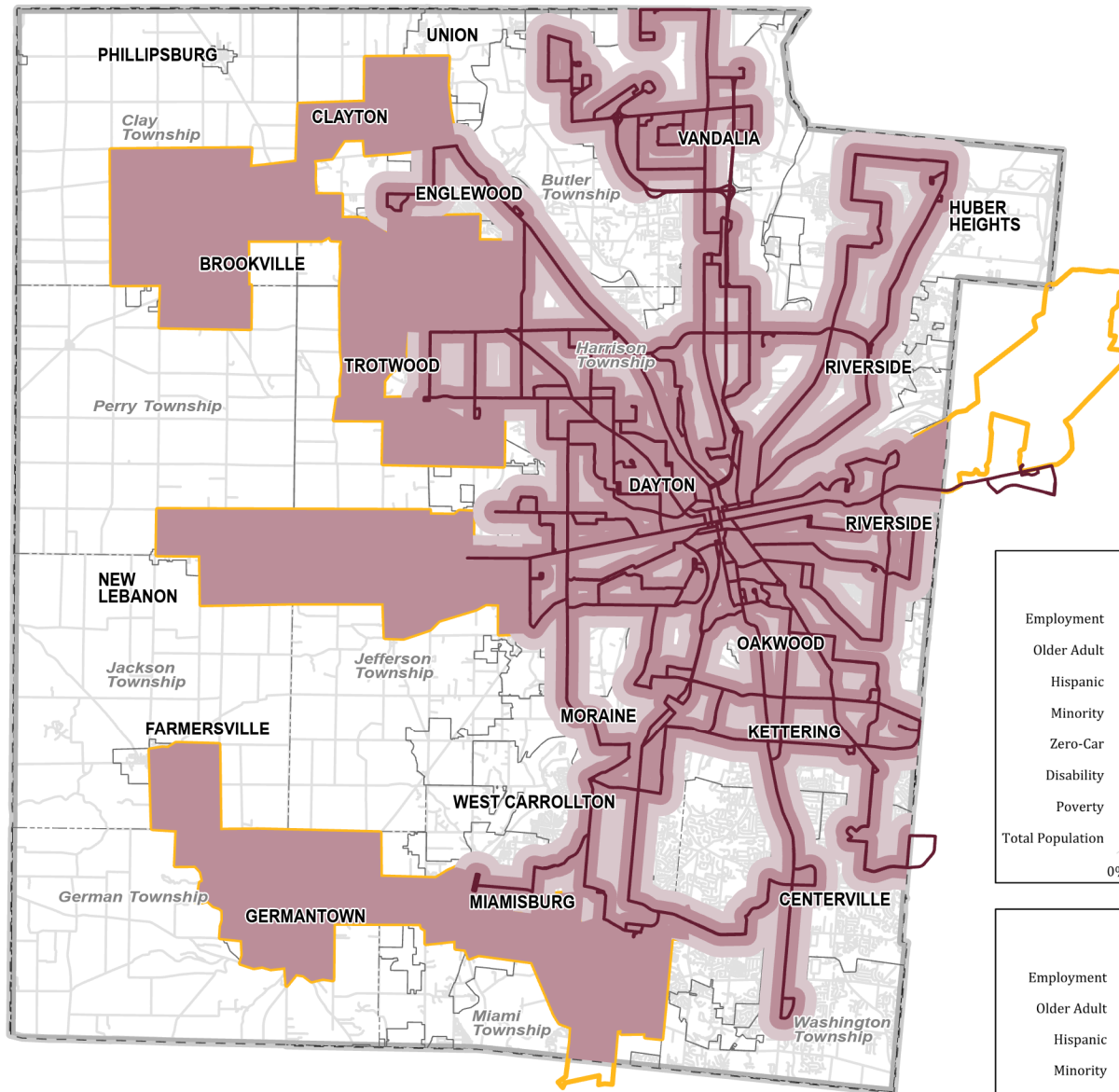


The results of the analysis are presented in two charts in Figure 10.2. The first chart shows the percentage of the general population and target population groups within $\frac{1}{4}$ mile of a transit route. The second chart shows percentages within $\frac{1}{2}$ mile.






The results reveal that nearly 66 percent of the total population of Montgomery County lives within $\frac{1}{4}$ mile and 82.6 percent within $\frac{1}{2}$ mile of a transit route and that high percentages of vulnerable

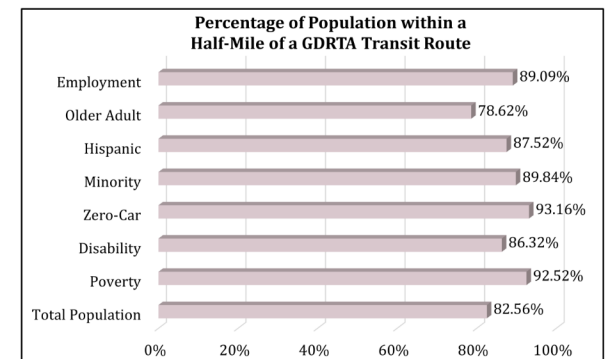
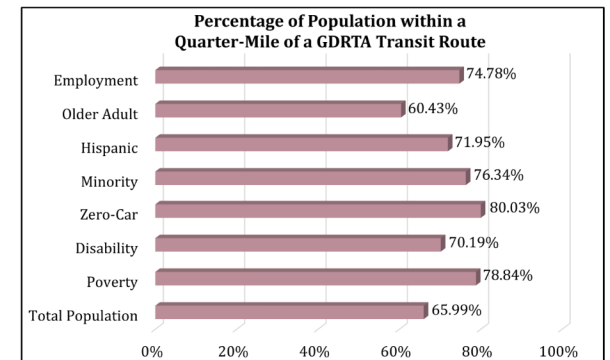
populations have good access to public transportation. Furthermore, the results show that vulnerable population groups, with the exception of the older adult population, are better served than the general population in both the ¼ mile and ½ mile buffer analyses. This is seen in 76.3 percent of minorities, 78.8 percent of persons living in poverty, 70.2 percent of persons with a disability, 72.0 percent of persons of Hispanic origin, and 80.0 percent of zero car households living within ¼ mile of a transit route, compared to 66.0 percent for the general population in the same area. As expected, the older adult population has slightly less coverage than the general population at 60.4 percent, being more evenly spread out throughout the county and noticeably less present in the urban core. However, older adults with mobility limitations have access to demand response transit systems. The transit accessibility analysis indicates that, in general, vulnerable population groups have better accessibility to transit compared to the general population.

Figure 10.2 Transit Accessibility in Montgomery County



Source: GDRTA, U.S. Census 2020, ACS 2018-2022, and MVRPC

-  GDRTA 2024 Transit Routes
-  GDRTA Connect Zones
-  1/4 Mile Buffer
-  1/2 Mile Buffer
-  Roadway



Regional Bikeway Accessibility Analysis

The importance of measuring the accessibility of the Region’s bikeways for vulnerable population groups has become an important focus as investment in the system has increased over time. Unlike GDRTA’s fixed route transit service, the regional bikeway network extends throughout the MPO Region and continues to grow as new sections are designed and constructed. Only existing regional bikeways — bike paths or bike routes — were included in the analysis.



Bike path facilities are typically grade separated, paved trails intended for non-motorized vehicles; while bike routes are designated portions of the surface roadway network that serve both motorized and non-motorized vehicles. Bike routes are typically identified through signs and/or pavement markings.

Currently there are roughly 237 miles of bikeways in the Region—approximately 12 miles of bikeways were added to the Region since 2021.

As in the transit analysis, regional bikeway buffers were overlaid on TAZ and census block boundaries to determine the area

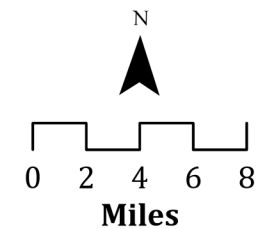
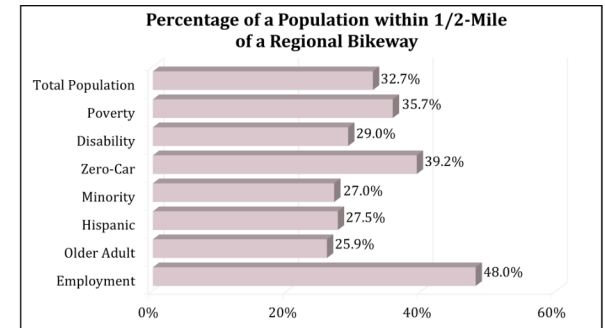
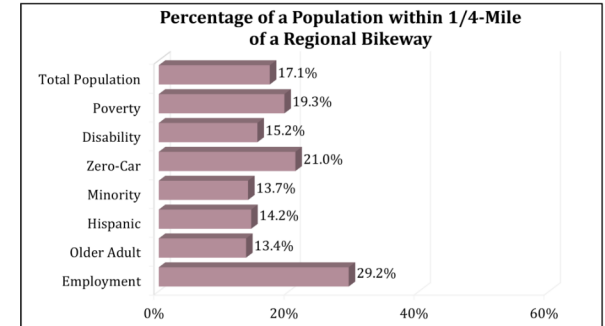
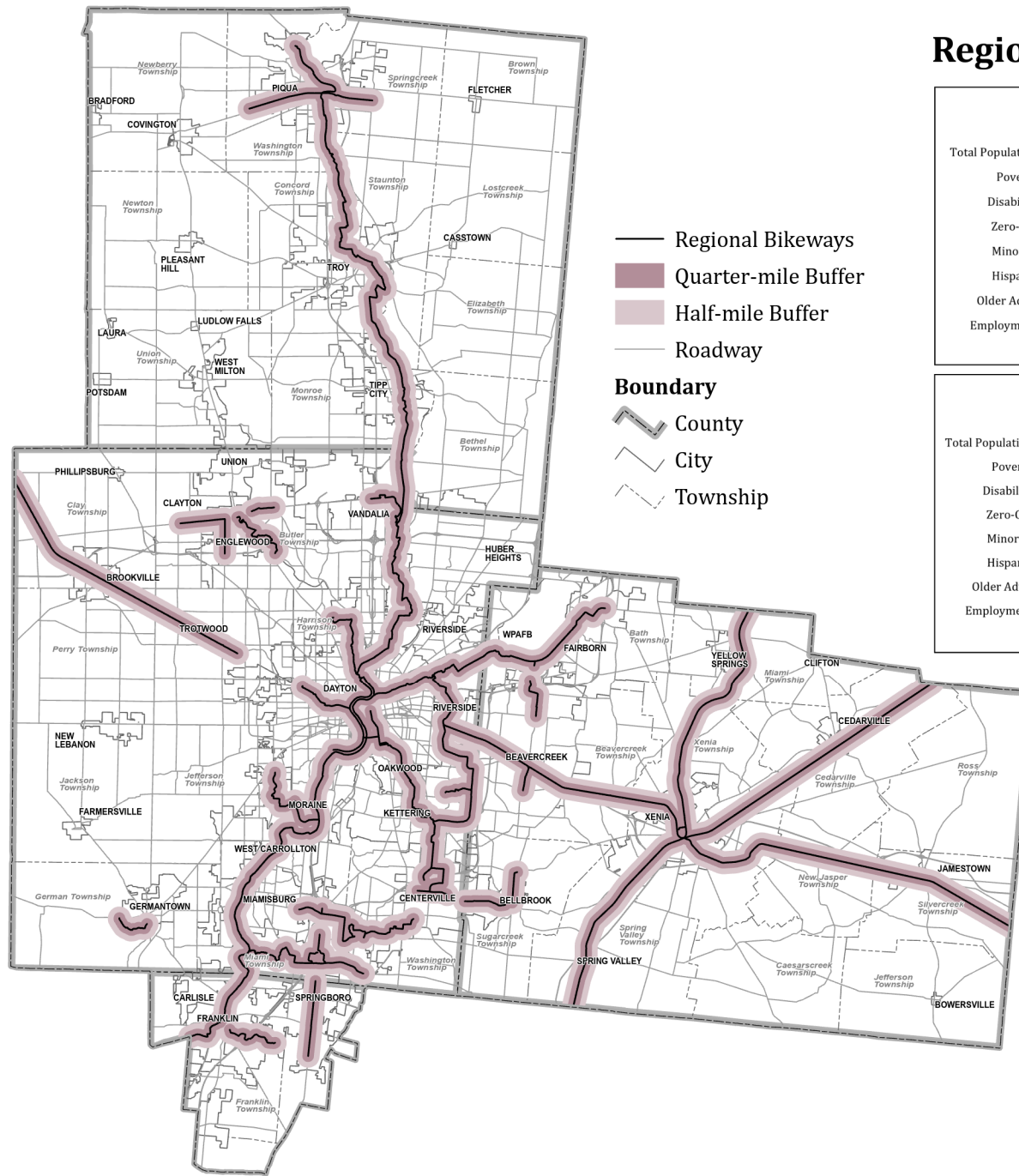
covered by the buffer with respect to overall population and vulnerable population groups. Using the assumptions that population is evenly spread throughout underlying census blocks and vulnerable population proportions are consistent within TAZs, the percentage of the general population and vulnerable population groups covered in the buffer were calculated.

The results of the analyses are presented in two charts in Figure 10.3. The first chart shows the percentage of the general population and vulnerable population groups within $\frac{1}{4}$ mile of a regional bikeway. The second chart shows percentages within $\frac{1}{2}$ mile.

The analysis shows that only 17.1% and 32.7% of the general population live within $\frac{1}{4}$ and $\frac{1}{2}$ mile of a regional bikeway, respectively. Access for vulnerable populations varies in comparison to the general population, with the largest deficit being the 6.8% difference between 25.9% bikeway access for older adults at the $\frac{1}{2}$ mile distance compared to the 32.7% bikeway access for the general population. Deficits were also observed in the Minority (5.8%), Hispanic (5.2%), and Disability (3.7%) population groups compared to the general population.

Persons in Poverty and Zero-Car Households populations experience the greatest access, with 2.25% and 3.93% more access than the general population at the $\frac{1}{4}$ mile distance. At the $\frac{1}{2}$ mile distance, these populations had 3.0% and 6.5% respectively more access compared to the general population. In addition, 48% of the Region’s employment opportunities are located within half of a mile of a regional bikeway.

Figure 10.3 Regional Bikeway Accessibility



May 2026
Source: U.S. Census 2020, ACS 2018-2022, and MVRPC

The Regional bikeway accessibility analysis indicates that vulnerable population groups have variable accessibility to regional bikeway facilities compared to the general population. While persons in poverty and zero-car household populations have higher access compared to the general population, the Disability, Hispanic, Older Adult, and Minority communities have less access compared to the general population. This was especially concerning due to the fact that all of these populations had worsening gaps in access compared to the general population than was seen in the 2010 Census-based accessibility analysis. This worsening access is likely due to these populations, and the general population as a whole, slightly shifting out from urban centers where bikeways tend to be located. For example, the Older Adult population tends to live in suburban areas (75%) and also saw a slight increase in rural areas (where 9% of the population is situated). Only 16% of the Older Adult population lives in an urban area.



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While the deficits several vulnerable populations are facing in bikeway access compared to the general population is likely due to those populations being less situated in urban areas where bikeways are clustered, MVRPC will keep a close eye on bikeway accessibility and work to improve accessibility for vulnerable populations. To that end, there are several planned bikeways in the Region that will improve bikeway access in rural and suburban areas. Several proposed trails—like the Springboro Central Greenway, Iron Horse Trail, Great Miami River-Centerville Connector, and New Trebein to name a few—will substantially increase suburban access to the Regional bikeway system.

10.7 Community Impact Assessment and Public Participation

Refer to Chapter 11 — Public Participation and Consultation, for a discussion of additional public participation efforts to reach vulnerable populations.

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