May 2012

2012-2035 Metropolitan Transportation Plan

Appendix D:

Environmental Justice Technical Analysis

morpc

Mid-Ohio Regional Planning Commission

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I. INTRODUCTION TO ENVIRONMENTAL JUSTICE

A. Definition of Environmental Justice

The U.S. EPA's Office of Environmental Justice defines environmental justice as follows:

"*The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic, or socio-economic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies*."

B. Regulatory Framework for Environmental Justice

Recognizing that the impacts of federal programs and activities may raise questions of fairness to affected groups, President Clinton, on February 11, 1994, signed Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. MORPC has extended this target population to also include people with disabilities.

Environmental justice, while not a new requirement, amplifies the provisions found in the three-decade old Title VI of the Civil Rights Act of 1964. Title VI of the Civil Rights Act of 1964 prohibits discriminatory practices in programs and activities receiving federal funds. The transportation planning regulations, issued in October 1993, require that metropolitan transportation planning processes be consistent with Title VI. MORPC complies with Title VI by preparing and submitting Title VI documentation reports, as directed by ODOT. MORPC also has a Title VI assurance resolution currently in force, which states that MORPC complies with Title VI and US DOT-related requirements. Finally, MORPC operates a Disadvantaged Business Enterprise Program per US DOT requirements and provides periodic reporting to ODOT.

The executive order also refocuses attention on the National Environmental Protection Act (NEPA), a 30-year-old law that set policy goals for the protection, maintenance, and enhancement of the environment.

Environmental justice strengthens Title VI by requiring federal agencies to make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The Ohio Department of Transportation developed DOT Order 5610.2 to address environmental justice and to respond to Executive Order 12898.

The Policy of DOT Order 5610.2 is to:

"*Promote the principles of environmental justice through the incorporation of those principles in all DOT programs, policies, and activities. This shall be done by fully considering environmental justice principles throughout planning and decision-making processes in the development of programs, policies, and activities, using the principles of the National Environmental Policy Act of 1969 (NEPA), Title VI of the Civil Rights Act of 1964, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and other DOT statutes, regulations, and guidance that address or affect infrastructure planning and decision-making; social, economic, or environmental matters; public health; and public involvement*."

C. MORPC's Approach to Environmental Justice

MORPC in its response to this very important challenge devised a process to assess the impacts of the transportation planning process, the regional transportation plan and the Transportation Improvement Program on the target populations. MORPC identified three principles to ensure environmental justice considerations were properly integrated into the transportation planning process.

- Adequate public involvement of low-income and minority populations in regional transportation decision making.
- Assess whether there were disproportionately high and adverse impacts on low-income and minority populations resulting from federal programs.
- Assure that the low-income and minority populations receive a proportionate share of benefits of federal transportation investments.

MORPC assembled an Advisory Task Force and completed an initial preliminary assessment in April 2000, which addressed each of the three principles. This initial assessment also established EJ analysis as an ongoing aspect of MORPC's planning work program and that each Transportation Improvement Program (TIP) and Metropolitan Transportation Plan (MTP) update will include a quantitative environmental justice analysis.

This appendix provides demographic information for the MORPC area and the results of applying the quantitative measures to the set of projects included in the 2012-2035 Metropolitan Transportation Plan (MTP). The public involvement environmental justice issues are discussed in the public participation components of the MTP.

II. DEMOGRAPHICS

The population of Central Ohio is diverse. To protect people from being overlooked or taken advantage of in the course of regional transportation planning, special populations are identified to protect them from disproportional impact from transportation projects. This effort is part of the Environmental Justice process that MPO's use in preparing regional transportation plans. The special populations include minorities, Hispanics, elderly, disabled, people in poverty, and households without cars.

Demographic data were sought regarding characteristics of these target populations for the MORPC Transportation Study Area. The selected data were distributed into MORPC's Traffic Analysis Zones (TAZs). This was done so that the data could be further analyzed through the travel demand model. The analysis resulted in the identification of planning measurements that were used to identify a geographic target area of high densities of these target populations to test effects of changes to the transportation system on these special populations.

A. Data Set Review

The 2005-2009 American Community Survey from the U.S. Census contains comprehensive information detailed for pertinent data sets at low geographical levels. The 2005-2009 American Community Survey (ACS) was used to calculate Environmental Justice Populations which include the Hispanic population, people in poverty, minority population, people over 65 years, and 0-car households. These data are reported at the census tract level (2000 geography). An equivalency table was created between the census tracts and the MORPC Traffic Analysis Zone (TAZ) geography to transfer data from census tract to TAZ geographies. Characteristics of the Census Tract data available from the ACS were applied to 2010 populations of the TAZ. The 2010 population were estimated based on building activity since the 2000 Census. MORPC tracks residential building permits and estimated 2010 population were calculated at the TAZ level by applying household sizes derived from the ACS census tract file to the 2010 TAZ population estimates through the equivalency table. Disability characteristics were not available from the ACS. Consequently, the characteristics reported in the SF3 2000 census files were used as the ratio for this population. Disabled populations used included people who reported themselves as having transportation disabilities, and those with sensory disabilities. The ratios were applied to the 2010 estimated population. Averages of regional totals for the various target populations were calculated to identify concentrations of these populations in the study area. Using the breakpoint at which areas fall above or below the average for the study area alerts planners to special areas of consideration when analyzing the effects of changes to the transportation system.

B. Special Populations

Demographic data for the special populations used in the Environmental Justice analysis were estimated for year 2010 using the methodology mentioned above. An equivalency between the census block group and MORPC Traffic Analysis Zone (TAZ) geographies was developed to report the data at TAZ level. The totals and averages for the demographic variables identified for measuring environmental justice are shown on Figures II-1 through II-6. The data are displayed in two ways on each map. They are density maps, where dots on the map represent people or households. These graphics show concentrations of the target populations. These dots are overlaid on a thematic display in which the traffic zones are shaded based on how the characteristics of the traffic zone compare the threshold for that specific variable.

Details regarding the special populations that include minorities, Hispanics, people in poverty, the elderly, disabled and households without access to a car are described below. Table II-1 is a comparison between the percentages of these special populations in MORPC MPO area and the entire state of Ohio.

Table II-1: Environmental Justice Population in Central Ohio and State Totals

Special Population	MORPC MPO Area	State of Ohio
Minority Population	24.5%	16.0%
Hispanic Population	3.1%	2.9%
Elderly Population	10.6%	13.5%
Population in Poverty	13.4%	15.2%
Disabled Population	8.6%	10.8%
Zero Car Households	7.2%	16.6%

Sources: 2005-2009 ACS and US Census

Minority and Hispanic Populations

People considered minorities are identified in the census as people of African-American, Hispanic, Asian, American Indian, Hawaiian, Alaskan Native origin or other race. People of Hispanic origin are technically an ethnic group and are themselves divided among various racial groups. The Hispanic population of Central Ohio increased from nearly two percent of the total population in 2000 to more than three percent by 2010.

Most higher percentages of minority populations were located in the central parts of the city rather than in the outlying areas including neighborhoods in and around downtown Columbus, the near east side, The Ohio State University, the Short North, the Linden area, Whitehall, and in the near northeast. In addition, neighborhoods around Eastland shopping center and in the south in the area of Groveport Road and SR 104 had much higher percentages of minority populations than the average for the study area. Neighborhoods around Polaris and Dublin have seen much growth in minority populations.

Low-Income Population

Low-income population was identified as people living below the level of poverty. The national poverty guidelines are issued annually by the Department of Health and Human Services. National poverty thresholds vary based on family size. From 2000 to 2010, poverty in the MORPC study area increased from 9.8 percent to 13.4 percent. Approximately 50 percent of the people in poverty were concentrated in areas that exceeded the threshold. The highest concentration of people living in poverty was in the communities near the Columbus central business district, including The Ohio State University area. Areas along Cleveland Avenue, West Broad Street, and East Main Street west of the city of Bexley also showed high concentrations of people living below the poverty level.

Elderly Population

The U.S. Census Bureau defines the elderly population as people 65 years and older. In 2010, there were estimated 151,000 people 65 years old and over in the MORPC study area. The elderly population for the area constituted 10.6 percent of the total population, increased from 9.9 percent in 2000. The distribution of seniors in our study area is evenly distributed.

People with Disabilities

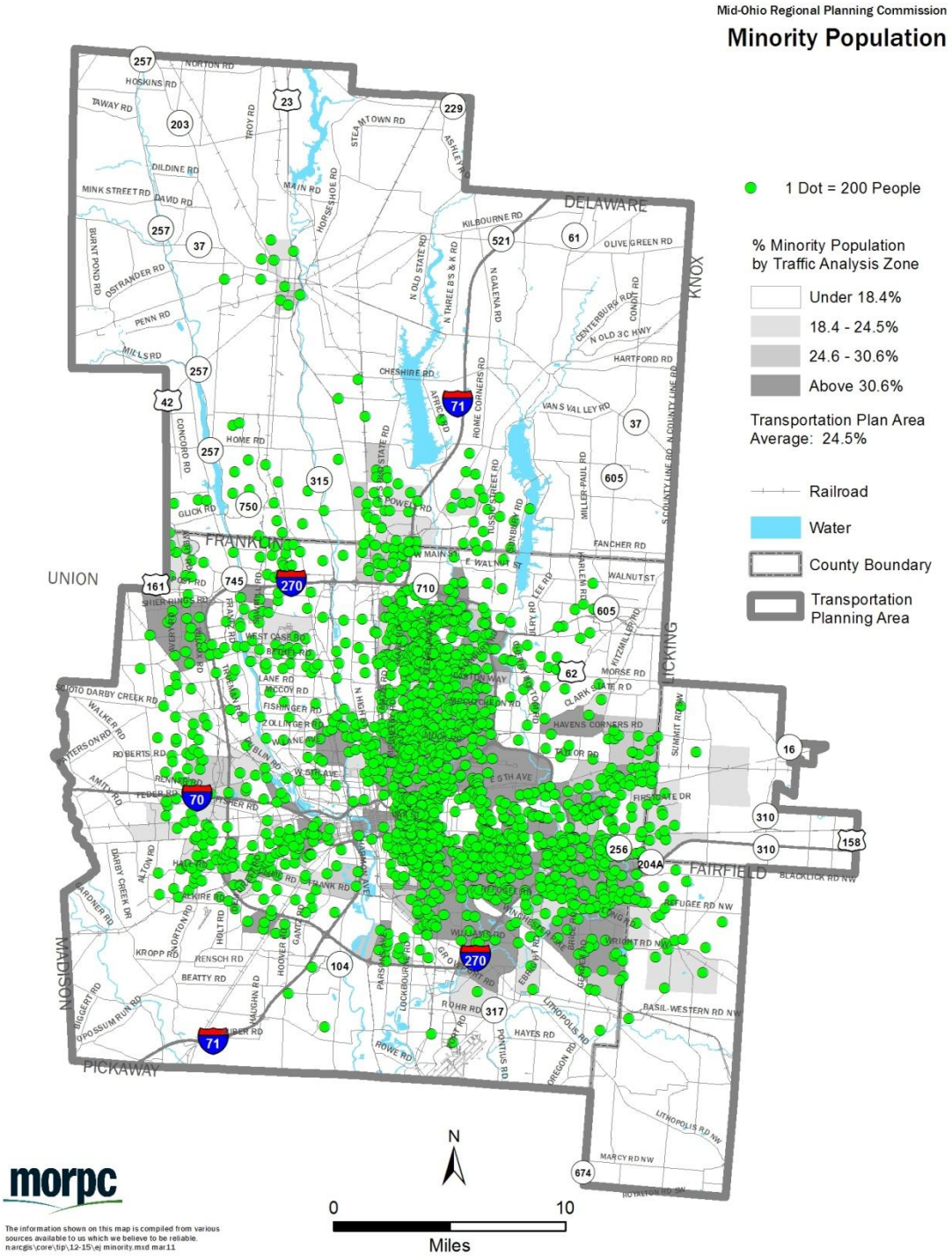
Disability characteristics were not available from the 2005-2009 ACS. Consequently, the characteristics reported in the SF3 2000 census files were used as the ratio for this population. This analysis uses two types of disabilities recognized in the 2000 U.S. Census. These include people who suffer from blindness, deafness, or a severe vision or hearing impairment (sensory disability) and/or people who suffer from a condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting, or carrying (physical disability). These statistics were available only for the segment of population over 16 years of age, but were expanded to be representative of the total population. In 2010, there were estimated 121,500 people with sensory and/or physical disabilities. This represented approximately 8.6 percent of the population of the MORPC transportation study area. People with disabilities are distributed throughout the region, although similar to minority and poverty target populations, higher concentrations occur within the I-270 outer belt and in the neighborhoods in and immediately adjacent to downtown Columbus.

Zero Car Households

Most households in the greater Columbus area have access to at least one vehicle. Approximately 7.2 percent of the households with MORPC transportation study area did not have a vehicle. Neighborhoods in the downtown and near the downtown showed higher concentrations of zero car households. OSU campus area, as well as neighborhoods such as Linden and the Near South Side also showed high concentrations of zero car households.

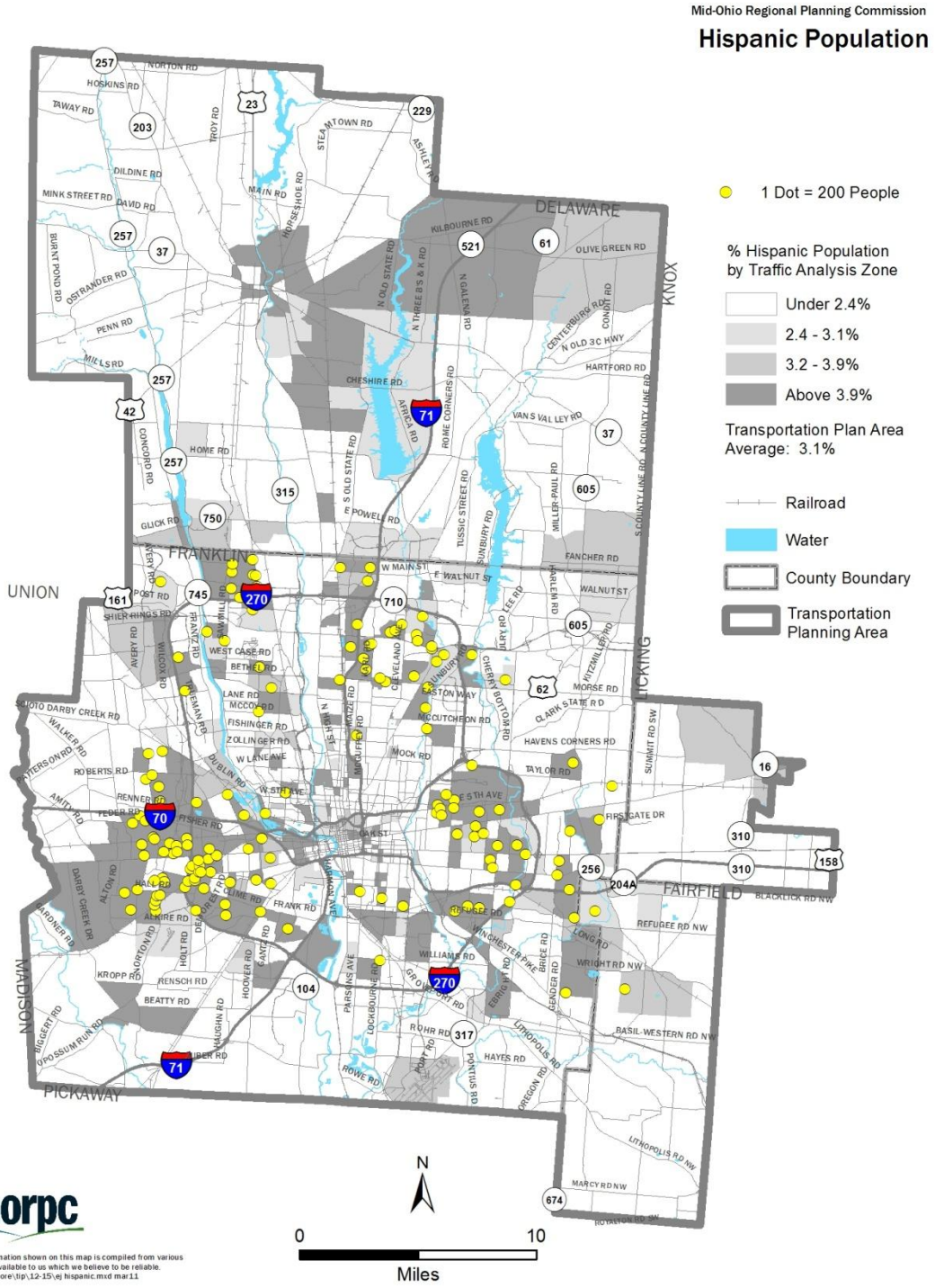
C. Distribution of Selected Populations

Figure II-1: Environmental Justice Distribution of Minority Population by TAZ (2010)



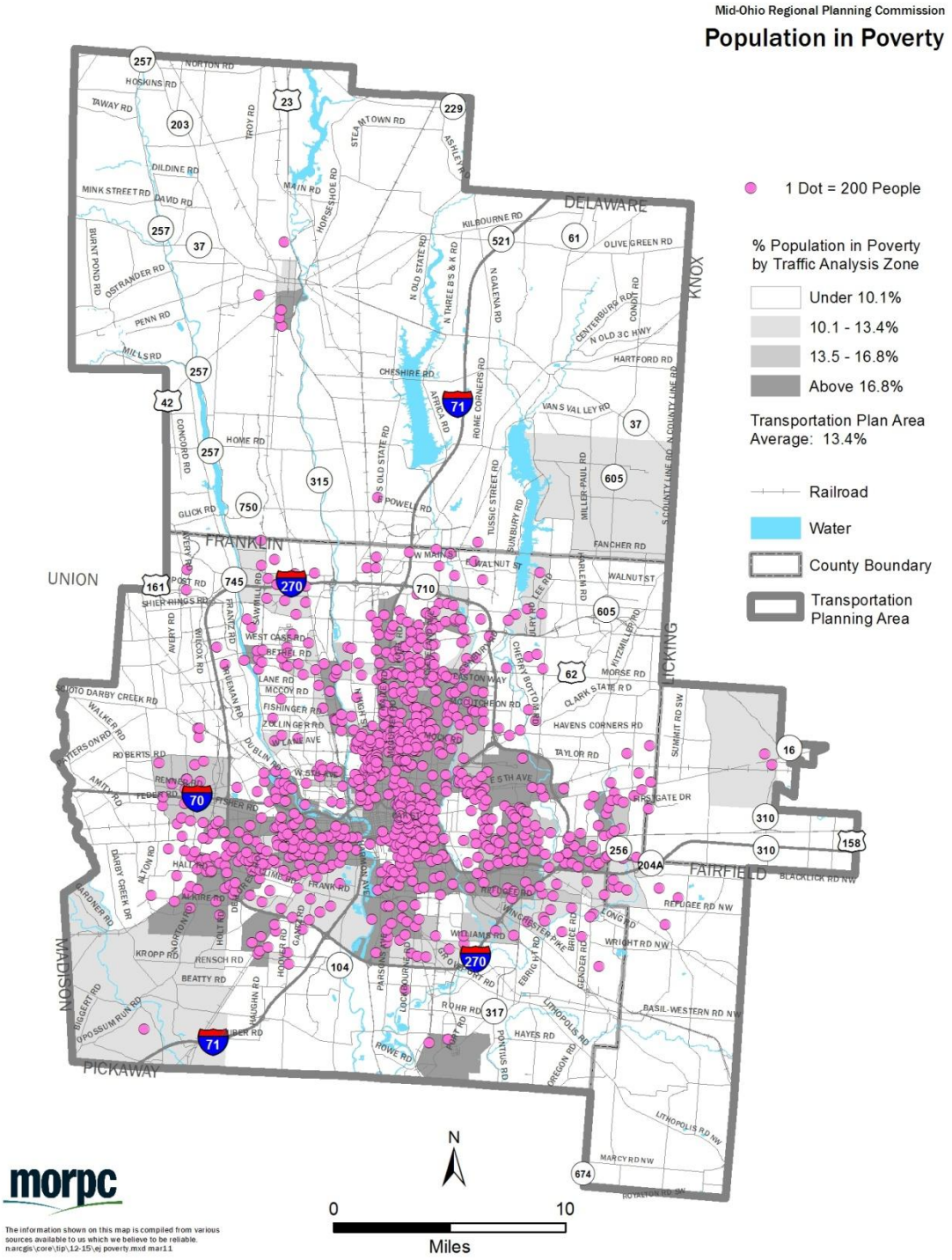
Sources: 2005-2009 ACS and US Census

Figure II-2: Environmental Justice: Distribution of Hispanic Population by TAZ (2010)



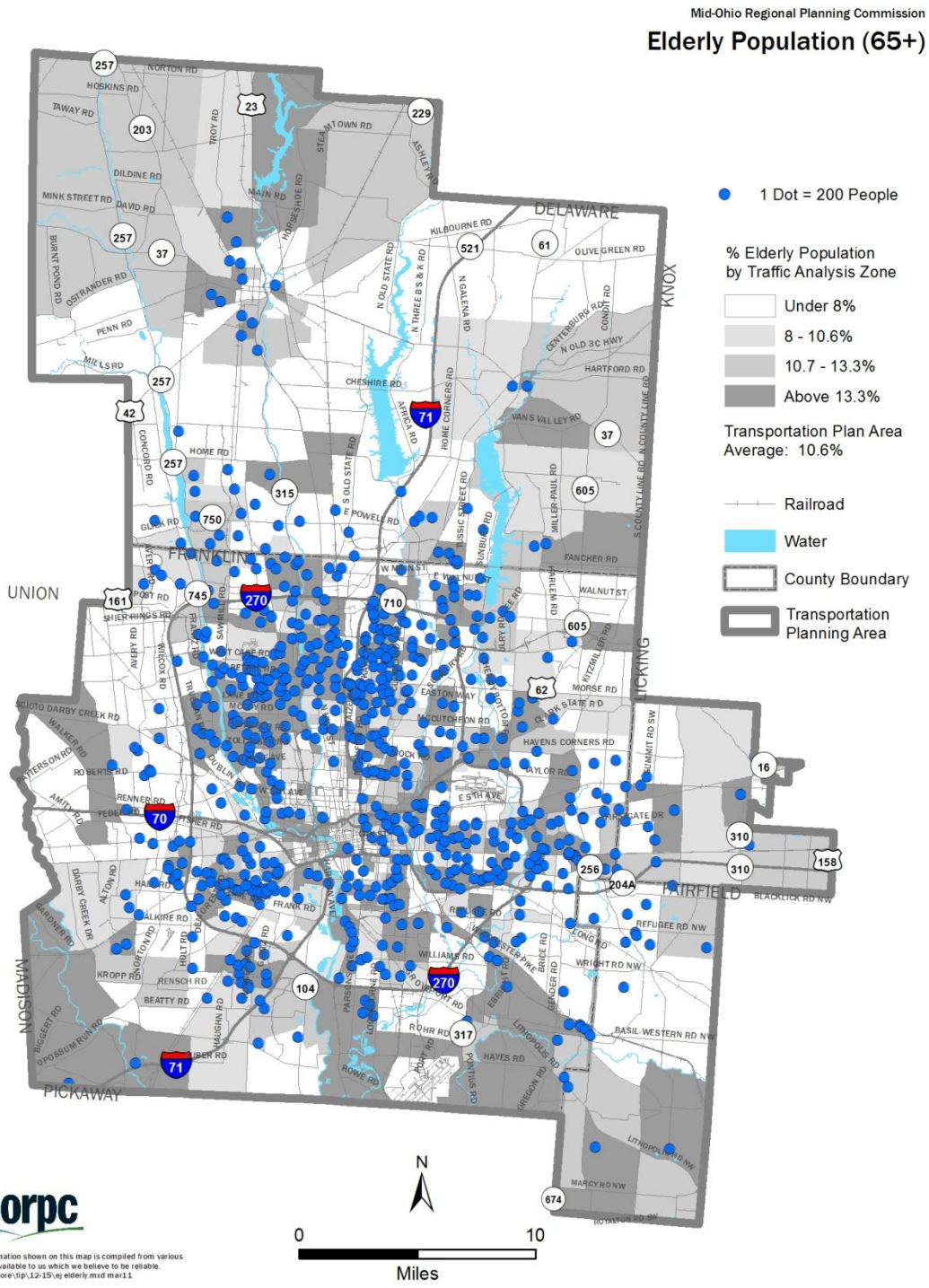
Sources: 2005-2009 ACS and US Census

Figure II-3: Environmental Justice: Distribution of Population in Poverty by TAZ (2010)



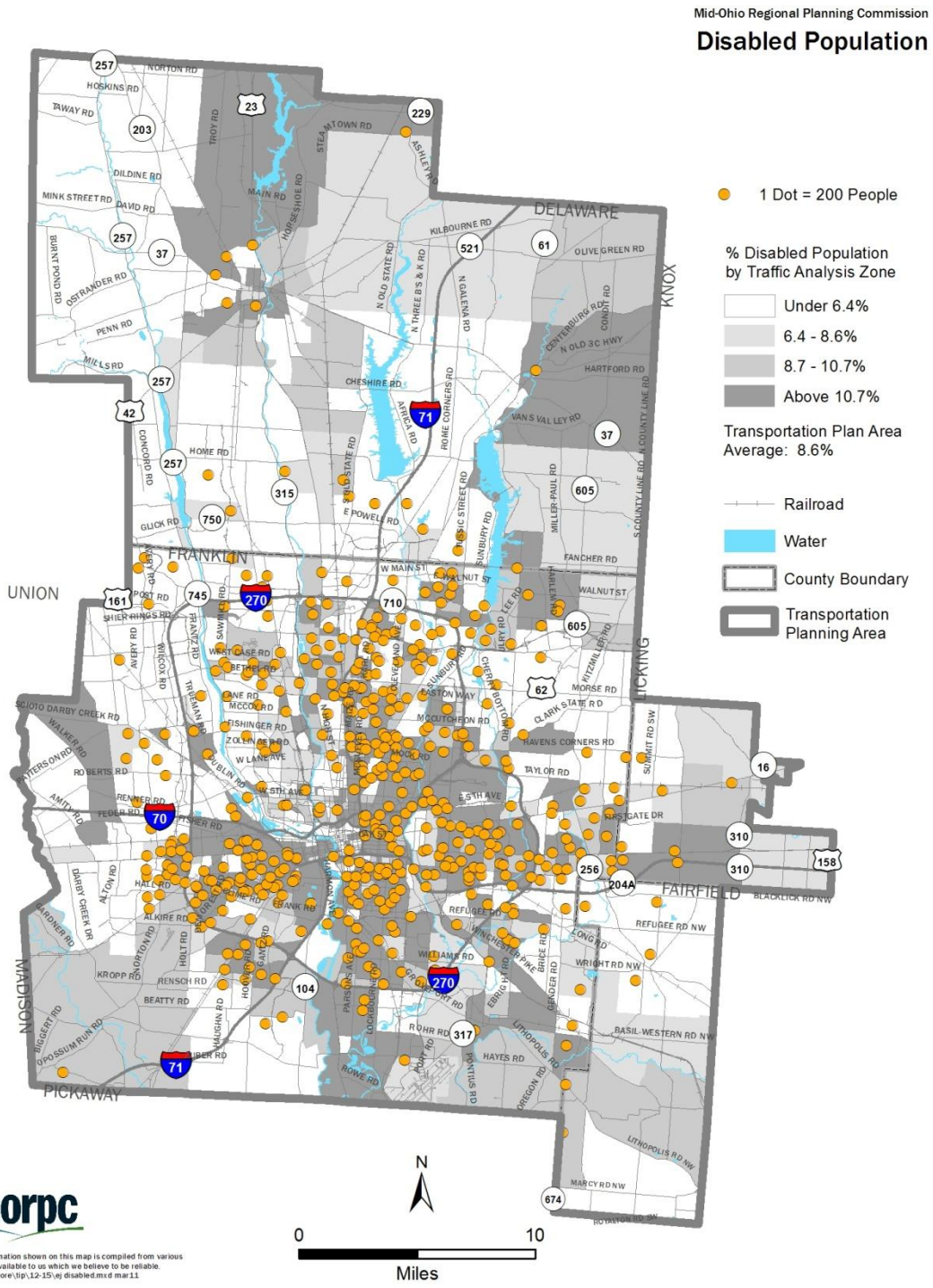
Sources: 2005-2009 ACS and US Census

Figure II-4: Environmental Justice: Distribution of Population Older than 65 Years by TAZ (2010)



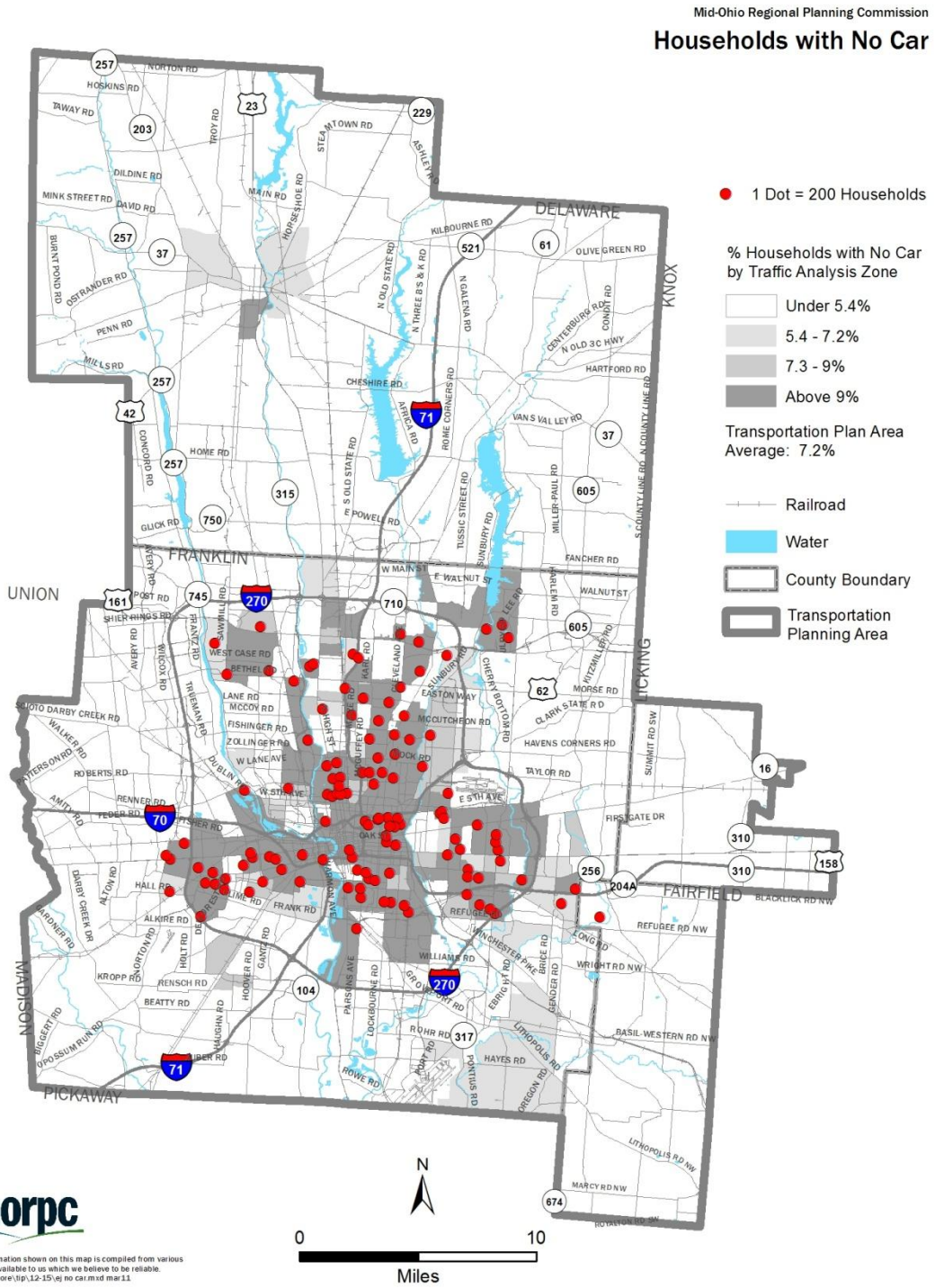
Sources: 2005-2009 ACS and US Census

Figure II-5: Environmental Justice Distribution of Population with Disabilities by TAZ (2010)



Sources: 2005-2009 ACS and US Census

Figure II-6: Environmental Justice: Distribution of Households with No Cars by TAZ (2010)



Sources: 2005-2009 ACS and US Census

III. QUANTITATIVE MEASURES METHODOLOGY

This section describes the environmental justice measures MORPC has identified and applied to the set of projects in the Metropolitan Transportation Plan. These measures should provide some information on whether or not the transportation investments being made in the region are having disproportionate adverse impacts on the target populations and if the benefits from these investments are equitably distributed.

A. Identification of Measures

In order to identify if there are any adverse or disproportionate impacts on the target populations, measures are needed. Measures compare the relative treatment of the target populations and non-target populations in the planning process and the Metropolitan Transportation Plan. They are not intended to measure how the implementers carry out the plan.

Characteristics of Measures:

- should be meaningful
- should be able to be applied or determined
- may be quantifiable or qualitative
- may be applied to compare targeted areas to other areas or to compare target populations to the other populations throughout the region
- some may be mode specific (they are either unavailable for some modes or have little meaning)

B. Measures considered

While developing the list of possible measures it seemed that there were different types of measure data that could be developed. The types of measure data are:

- Population based
- Geographic based
- Visual

Population-based measures best address the environmental justice definition in that they provide information on the target population regardless of where they are located. Population-based measures take into consideration small pockets of target populations within non-target populations.

Geographic-based measures, on the other hand, provide information specific to a geographic area. Some information such as congested vehicle miles of travel can only be reported for an identified geographic area. The data reported within these areas are applicable to all of the populations that reside in the particular area. Thus, for an environmental justice analysis identification of the geographic area(s) of interest is very important. The geographic area(s) should have higher than average percentages of the target population and in total account for a large majority of the target population.

The goal of the population- and geographic-based measures is to be able to provide a series of numbers that can be compared to determine if there are environmental justice concerns. There are, however, some data that just can't be boiled down to a number for comparison. These can be classified as visual data. The visual data are usually in the form of maps.

It is not possible to identify one measure that will determine if there are environmental justice issues. However, it is necessary to look at a variety of measures that provide information on different issues. Likewise some measures may only be applicable for autos while others may be transit measures.

Some measures are accessibility measures while others reflect estimated travel. For example, the number of jobs within 20 minutes is a measure of accessibility to jobs. However, average work trip length is based on the estimated pattern of trip making. Estimates of congested vehicle miles of travel are another example of a travel measure.

Some measures could be either an accessibility measure or a travel measure depending on how they are calculated. For example, average travel time to CBD, if based on the estimated pattern of trip making, would be a travel measure. However, if it were calculated based on the average as if everyone made a trip to the downtown, it would be an accessibility measure.

C. Measurements Identified for Application

During the preliminary environmental justice completed in 2000 various measures were identified as appropriate environmental justice measures. Based on the data and methodologies available now, the measures were narrowed down for application in the EJ analysis, which will be described in more details in the next section. Over time additional measures may be developed depending on the available data and methodology.

D. Measurement Methodology

All of the measures described in this section were developed from MORPC's tour-based travel demand forecasting model process. The travel demand forecasting process takes basic land use and transportation system information and estimates travel patterns and volumes on the transportation system.

The tour based model needs land uses and socioeconomic data aggregated at traffic analysis zones (TAZs). There are 1426 TAZs in MORPC's transportation planning area. From this information the number of trips generated by each TAZ is estimated. In the travel demand modeling chain, the model micro-simulates daily trips at the tour-level for each individual household. A tour is a closed chain of trips starting and ending at the same base location rather than elemental trips. Each tour has a primary destination and possible intermediate stops. These tours for each person are then aggregated into the trips by modes at the TAZ level. Then trips made in a vehicle are "assigned" to the highway network taking into account the characteristics of the highway network. Similarly, trips made by transit are assigned to the transit network. The results provide estimates of the daily number of vehicles or passengers on the network facilities.

MORPC currently compiles comprehensive land use sets every five years. The most current set is for 2010. In addition, MORPC reviews local land use plans, regional population

projections and other information to create future horizon year estimates of the data. Our horizon year is 2035.

For most measures, data for three different scenarios are presented. The first represents the 2010 conditions. The next two represent projected 2035 conditions under two transportation system assumptions. The first scenario is the No-Build condition that means no other projects are completed except for those currently in construction today. The other scenario assumes all of the projects in the Metropolitan Transportation Plan are constructed.

The following describes measures in more detail and the methodology used to develop the value of the various measures. Section IV presents the results of the measures.

Estimating 2035 Target and Non-Target Populations by Zone

In order to create the population-based measures, it is necessary to estimate the target and non-target population within each TAZ. However, in the land use variables for 2035 only total population by TAZ is developed. The most recent data are from the 2005-2009 ACS and US Census. Thus, it was necessary to develop a procedure to estimate 2035 target populations by zone.

In estimating the target populations by traffic zone, it was assumed that the total regional percentage for each population would be the same percentage as the 2010 percentage. For example, the regional percentage in poverty in 2010 was 13.4 percent. Thus, for the forecasted 2035 populations, it was assumed that the regional poverty percentage would remain at 13.4 percent.

In the model, a complete population is synthesized by sampling from the PUMS (Public User Micro Sample) data for the horizon year. By linking the synthesized population to the PUMS data, the target population percentage in each zone can be derived for the current and horizon year. By using these percentages as a starting point, adjustments were made to zones throughout the region in order to achieve the same regional percentage as in 2010. The adjusted population was spread throughout the region based on this starting distribution of the particular target population. For example, assume 10,000 additional poverty population is needed for the horizon year 2035 to achieve the same 13.4 percent as in 2010. If, in the starting 2035 distribution, one TAZ had 1 percent of the total poverty population, an additional 100 (=10,000*.01) poverty persons were added to the zone. Likewise, a zone with 0.1 percent of the total poverty population received an additional 10 (=10,000*0.001) poverty persons. During this process, it was ensured that total target population did not exceed the total population of each zone.

Average Number of Job Opportunities Close

This measure estimates the average number of jobs there are within a specified travel time. The number of jobs by TAZ is one of MORPC's standard variables. First, the model was used to estimate peak period auto travel times and peak and off-peak transit travel times from each TAZ to every other TAZ. This is commonly referred to as a travel-time skim. Next, for each TAZ based on the skim, the total number of jobs within 20 minutes by auto and 40 minutes by transit were calculated. Finally, a weighted average of the number of jobs was calculated based on the number of each population group within each TAZ.

Average Number of Shopping Opportunities

This measure estimates the average number of shopping attractions there are within a specified travel time. Shopping attractions is an item that is estimated through the modeling process. As stated previously, in the new model, the base travel unit of modeling is tour that is a closed chain of trips starting and ending at the same base location rather than elemental trips. Each tour has a primary destination and possible intermediate stops. For a shopping tour, one attraction is added to the primary destination while one attraction would be added to any intermediate stop if there is an intermediate stop. Therefore, the shopping attractions are not a measure of the number of stores, but a measure of how many trips these stores attract on a typical day. This measure is developed in the same manner as job opportunities. Auto and transit travel-time skims were first developed, the total number of attractions within various travel times was calculated and a weighted average of the number of attractions was calculated based on the number of each population group within each TAZ. A 10-minute auto travel time and a 20-minute transit travel time were selected as the thresholds.

Average Number of Non-Shopping Opportunities

This measure estimates the average number of non-shopping attractions there are within a specified travel time. These attractions are for quality-of-life trips such as doctor's appointments, going to the bank and other non-shopping errands from home (namely, the purposes of the tours are other maintenance, discretionary and eating out in the model). Once again this is an item that is estimated through the modeling process and it is not a measure of the number of places, but a measure of how many trips these places attract on a typical day. This measure is developed in the same manner as shopping opportunities. Auto and transit travel-time skims were first developed, the total number of attractions within various travel times was calculated and a weighted average of the number of attractions was calculated based on the number of each population group within each TAZ. A 20-minute auto travel time and a 40-minute transit travel time were selected as the thresholds.

Percent of Population Close to a College

This measure estimates the percentage of population groups that are within a specified time to the closest college. A travel-time threshold of 20 minutes for auto and 40 minutes for transit were selected to match the thresholds used for job opportunities. The following colleges were used: Ohio State, Columbus State, Capital, Columbus College of Art & Design, Otterbein, DeVry Institute of Technology, Franklin, Mount Carmel College of Nursing, and Ohio Dominican. The measure was developed by using the travel-time skims to identify the travel time from every zone to each college. The minimum time was then determined and the population for each group was summed for all the zones that were less than 20 minutes for auto and 40 minutes for transit.

Percent of Population Close to a Hospital

This measure estimates the percentage of population groups that are within a specified time to the closest hospital. A travel-time threshold of 20 minutes for auto and 40 minutes for transit were selected to match the thresholds used for other home-based opportunities. The following hospitals were used: St. Ann's, Riverside, OSU, Mt. Carmel West, Grant, Mt. Carmel East, Children's, Columbus Community, Doctors North, Doctors West, University East, and

Parkside Lodge. Hospitals were chosen not for the purposes of transport to emergency rooms, but because hospitals usually have complexes of medical offices in their vicinity. The original task force suggested using the various outpatient clinics and other small medical facilities, but these are too numerous and cannot be predicted into the future.

The measure was developed in the same manner as percent of population close to colleges. Travel-time skims were used to identify the travel time from every zone to each hospital. The minimum time was then determined and the population for each group was summed for all the zones that were less than 20 minutes for auto and 40 minutes for transit.

Percent of Population Close to a Major Retail Destination

This measure estimates the percentage of population groups that are within a specified time to the closest major retail destination. A travel-time threshold of 10 minutes for auto and 20 minutes for transit were selected to match the thresholds used for shopping opportunities. The following major retail destinations were used: Tuttle Mall, Sawmill & SR 161, Easton, Eastland Mall, and Polaris.

The measure was developed in the same manner as percent of population close to colleges. Travel-time skims were done to identify the travel time from every zone to each major retail destination. The minimum time was then determined and the population for each group was summed for all the zones that were less than 10 minutes for auto and 20 minutes for transit.

Average Travel Time for Mandatory (Work, University and School) Purposes

Through the modeling process, different tour purposes are defined. One of these is mandatory tours, with purposes as Work, University and School. The previous measures discussed were accessibility measures. This measure, however, is a travel estimate measure. Average travel time is based on the model's estimated tour-making pattern for 2010 and 2035.

To compute this measure, first the different-period travel-time skims are matched up with each mandatory-tour record simulated in the model according to the starting and ending time of the tour. The travel time of the tour is calculated by summing up the travel time over all trips in the tour (the closed chain of trips). Because this time is total round trip time, it is divided by two to get the average time between ones home and their work, university or school destination. Then, the average travel time for mandatory purposes originating from each zone is computed. Finally, the weighted average mandatory-purpose travel time by population group was calculated.

It should be noted that when estimating the average travel time for each mode it is calculated as if all of the tours were to be made by the particular mode. This makes it a crossover between an accessibility measure and a travel measure. Although the actual origin and destinations are predicted, exact population groups using the different modes is unknown. Thus, when calculating the measure for a particular mode, the weighted average is based on the proportion to the target and non-target population in the origin zone and that of all the tours originating from the zone are made by the particular mode. However, not all the tours can be made by the transit, so the tours that cannot be made by the transit were ignored when calculating the measure for transit.

Average Travel Time for Shopping Purposes

As in the case for average mandatory-purpose travel time, average travel time for shopping purposes is based on the model estimation of tour-making patterns for 2010 and 2035 and is a travel estimate measure.

This measure is calculated in the same manner as is average travel time for mandatory purposes. First, the different-period travel-time skims are matched up with each shopping-tour record simulated in the model according to the starting and ending time of the tour. The travel time of the tour is calculated by summing up the travel time over all trips in the tour (the closed chain of trips). Because this time is total round trip time, it is divided by two to get the average time between ones home and their shopping destination. Then, the average travel time for shopping-purposes originating from each zone is computed. Finally, the weighted average shopping-purpose travel time by population group was calculated.

Average Travel Time for Other Purposes

There are still other tours that are not either shopping or work related. These include going to the doctor, bank, restaurant, recreation and other errands. They are grouped together and defined as other tours (namely, the purposes of the tours are other maintenance, discretionary and eating out in the model). As in the case for the previous travel time averages, average travel time for other purposes is based on the model estimation of tour-making patterns for 2010 and 2035 and is a travel estimate measure.

This measure is calculated in the same manner as is average travel time for mandatory purposes. First, the different-period travel-time skims are matched up with each other-tour record simulated in the model according to the starting and ending time of the tour. The travel time of the tour is calculated by summing up the travel time over all trips in the tour (the closed chain of trips). Because this time is total round trip time, it is divided by two to get the average time between ones home and their other destination. Then, the average travel time for other-purposes originating from each zone is computed. Finally, the weighted average other-purposes travel time by population group was calculated.

Average Travel Time for All Purposes

Another measure is the average travel time for all purposes. This measure estimates the average travel time for all purposes simulated in the model. The measure is calculated in the same manner as were the three previous measures.

Average Travel Time to Columbus CBD

The average travel time to the Columbus CBD is a measure of the accessibility to the downtown. It is determined by using the travel-time skims and determining the time from each zone to the statehouse in the downtown. A weighted average for each population group was then calculated based on the population in each zone. For transit average travel time to the CBD, only the zones that have walk access to transit are included in the average.

Transit Accessibility to Columbus CBD

This measure determines the percentage of each population group that has access to the CBD by transit because the entire region does not have transit service. This measure is determined by identifying zones that have walk access to transit service. Then the population within these zones for each group is summed and the percentage of the total population for the group calculated.

Congested Vehicle Miles of Travel during Peak Hours

This measure is a geographic measure. Before preparing this measure it is necessary to define a geographic target area. The geographic target area should constitute a large portion of the target population groups, have higher than average percentages of target population groups, and be defined in such a way that it is whole with smooth boundaries. The area defined will be discussed in the application section.

This measure estimates the percentage of travel in the target and non-target areas that are either moderately or highly congested during the peak hours that includes both AM and PM peak periods.

Transportation Investments

This is also a geographic measure. The location of projects that have been included in the Metropolitan Transportation Plan was compared to the geographic target areas and the total dollar amount of these highway investments calculated.

Displacements from Highway Projects

During the preparation of the Metropolitan Transportation Plan, all projects were qualitatively assessed as to the possible number of displacements resulting from the project. There are no projects in the target area with high displacements.

IV. ANALYSIS AND RESULTS

This section presents the results of applying the measures to the three scenarios, year 2010, year 2035 No-Build and year 2035 MTP. Much of the data are presented through charts with the data tables included in Attachment A.

A. Average Number of Job Opportunities Close

Figures IV-1 through IV-3 shows the target populations on average have access to more jobs than do non-target populations by either auto or transit. Also, when compared to the 2035 No-Build, 2035 MTP populations have access to more jobs by auto and the gains appear to be relatively uniform across all of the population groups. When compared to the 2035 No-Build, 2035 MTP populations have access to more jobs by both peak and off-peak period transit travel and the gains appear to be relatively uniform across all of the groups. This increase by transit travel is mainly due to the improved service frequency and expanded service coverage area planned by COTA for 2035, and partially due to the highway improvements included in the MTP. With regard to this measure it would appear that there are no adverse impacts on the target populations and no prominent disproportionate impacts among the population groups.

Figure IV-1

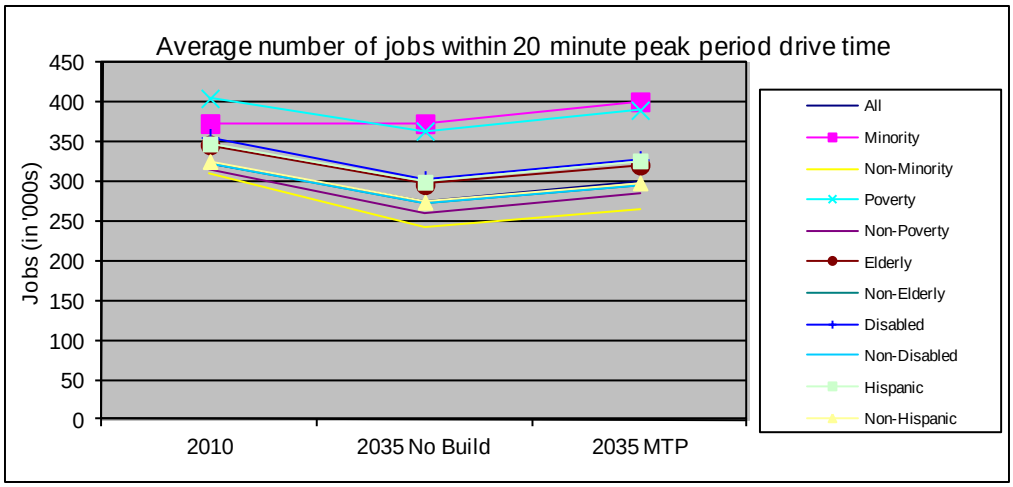


Figure IV-2

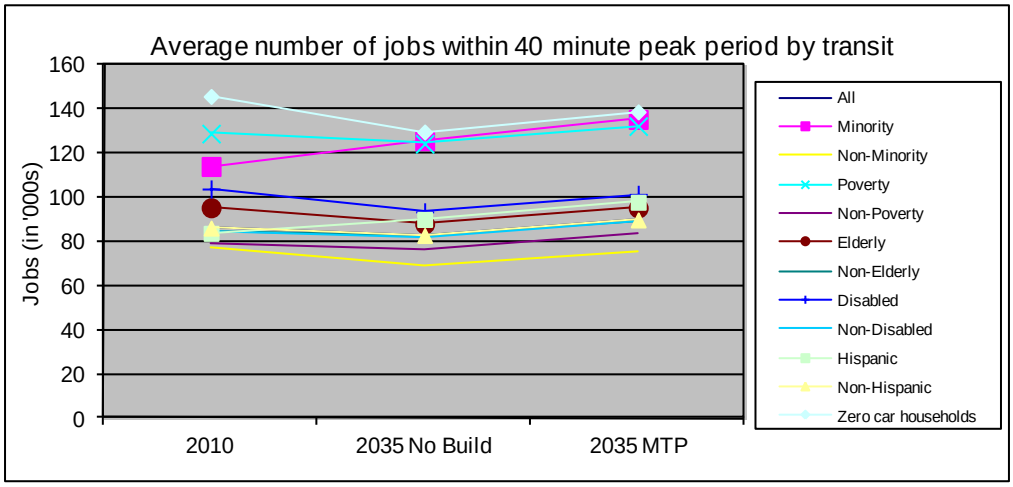
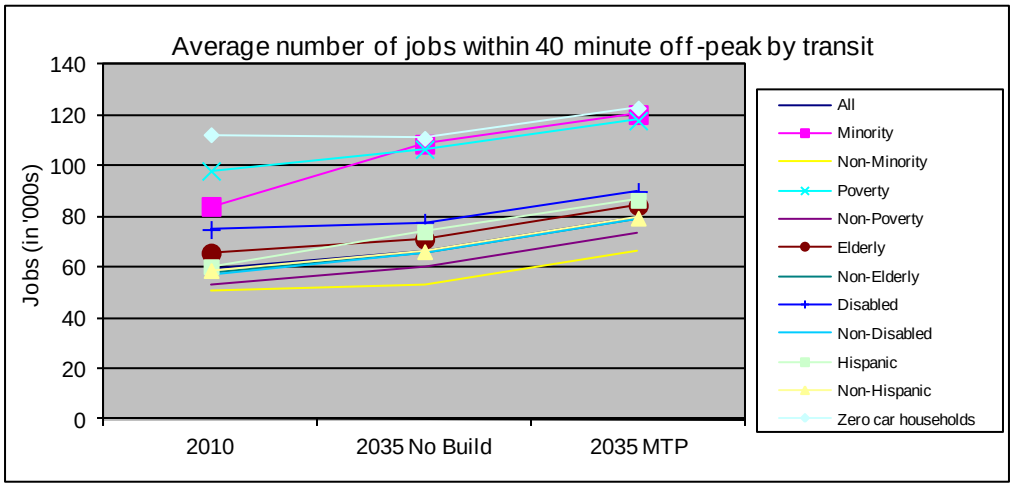


Figure IV-3



B. Average Number of Shopping Opportunities

Figures IV-4 through IV-6 show that the target populations on average have access to more shopping opportunities than do non-target populations by either auto or transit. Also, when compared to the 2035 No-Build, 2035 MTP populations have access to more shopping opportunities by auto and the gains appear to be relatively uniform across all of the population groups. When compared to the 2035 No-Build, 2035 MTP populations have access to more shopping opportunities by both peak and off-peak period transit travel and the gains appear to be relatively uniform across all of the groups. This increase by transit travel is mainly due to the improved service frequency and expanded service coverage area planned by COTA by 2035, and partially due to the highway improvements included in the MTP. With regard to this measure it would appear that there are no adverse impacts on the target populations and no prominent disproportionate impacts among the population groups.

Figure IV-4

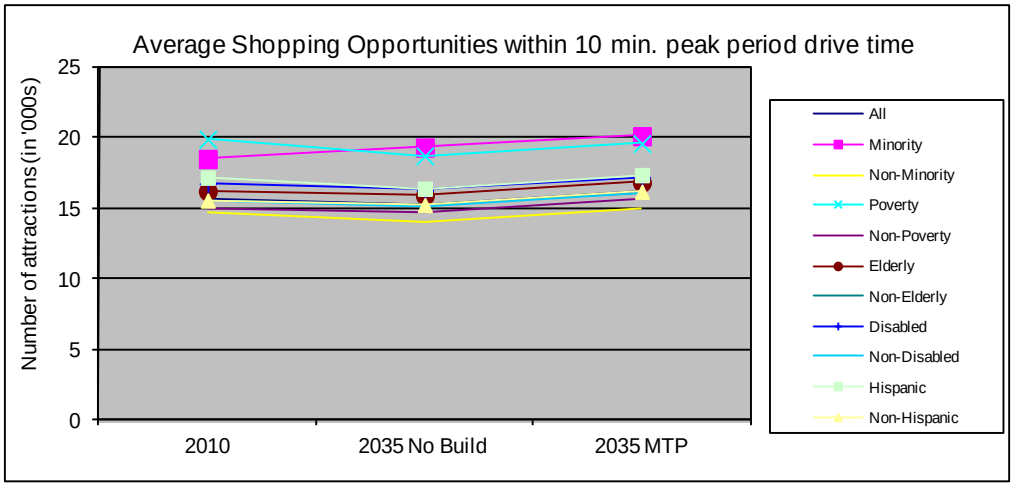


Figure IV-5

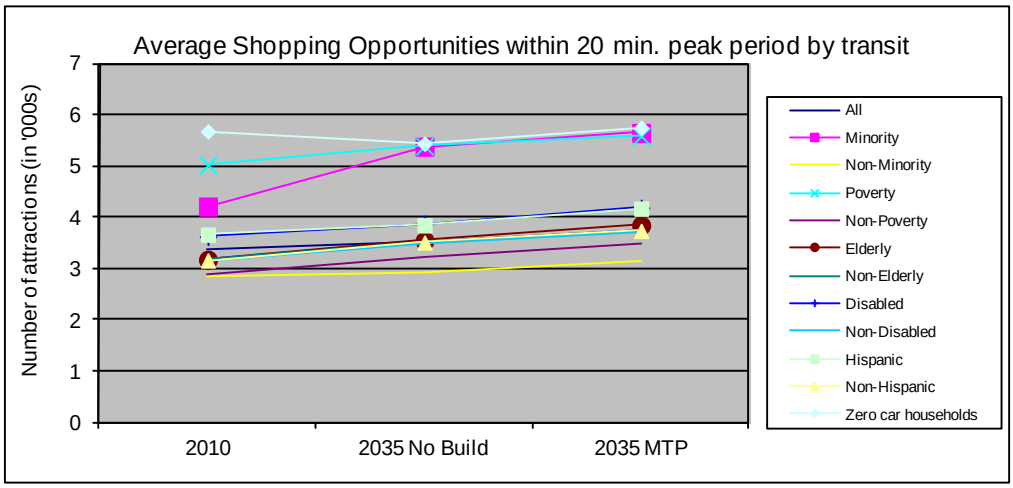
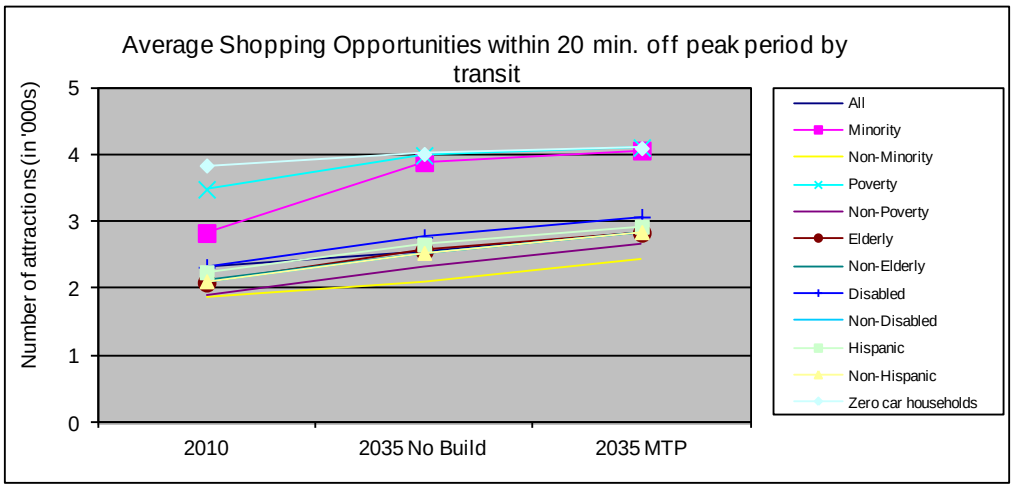


Figure IV-6



C. Average Number of Non-Shopping Opportunities

Figures IV-7 through IV-9 show that the target populations on average have access to more opportunities for non-shopping trips than the non-target populations. Also, when compared to the 2035 No-Build, 2035 MTP populations have access to more opportunities by auto and the gains appear to be relatively uniform across all of the population groups. When compared to the 2035 No-Build, 2035 MTP populations have access to more opportunities by both peak and off-peak period transit travel and the gains appear to be relatively uniform across all of the groups. This increase by transit travel is mainly due to the improved service frequency and expanded service coverage area planned by COTA for 2035, and partially due to the highway improvements included in the MTP. With regard to this measure it would appear that there are no adverse impacts on the target populations and no prominent disproportionate impacts among the population groups.

Figure IV-7

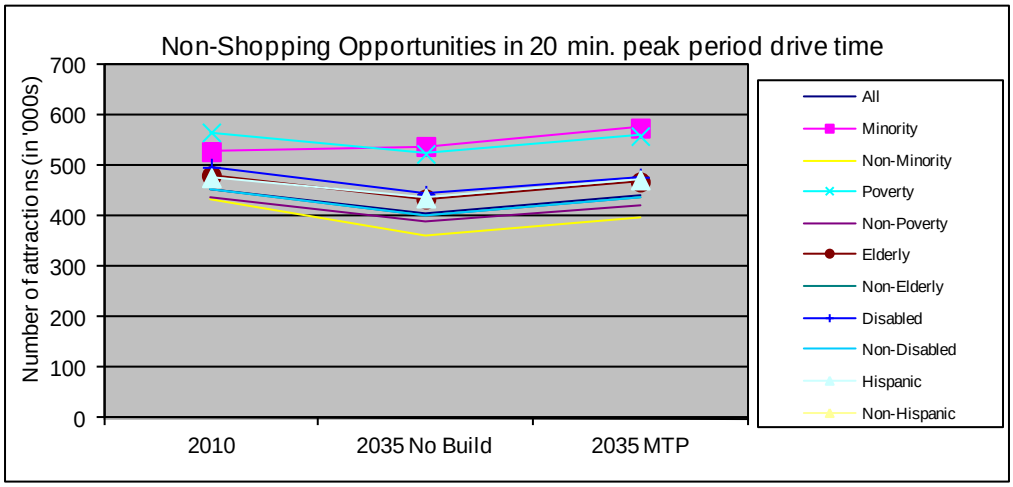


Figure IV-8

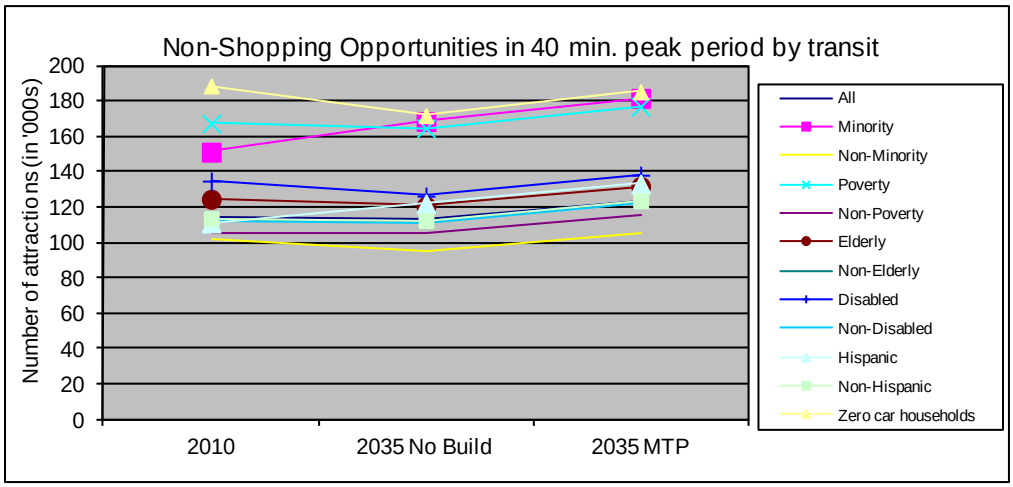
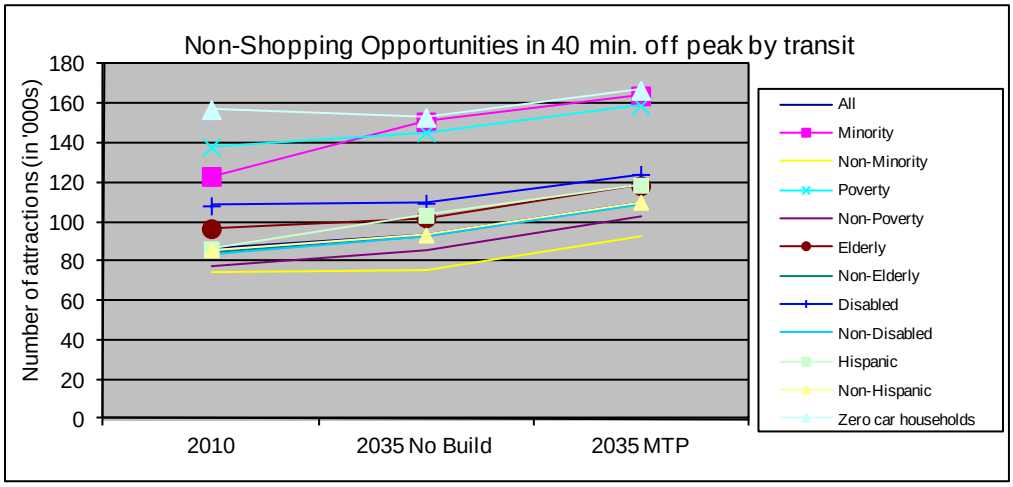


Figure IV-9



D. Percent of Population Close to a College

Figures IV-10 through IV-12 shows a higher percentage of target populations within 20 minutes of auto drive time or 40 minutes of transit time to a college than are non-target populations. When compared to the 2035 No-Build, a higher percentage of 2035 MTP populations is within 20 minutes' auto drive time to a college and the gains appear to be relatively uniform across all the population groups. When compared to the 2035 No-Build, a higher percentage of 2035 MTP populations is within 40 minutes' both peak and off-peak transit travel time to a college and the gains appear to be relatively uniform across all of the groups. This increase by transit travel is mainly due to the improved service frequency and expanded service coverage area planned by COTA for 2035, and partially due to the highway improvements included in the MTP. With regard to this measure it would appear that there are no adverse impacts on the target populations and no disproportionate impacts among the population groups.

Figure IV-10

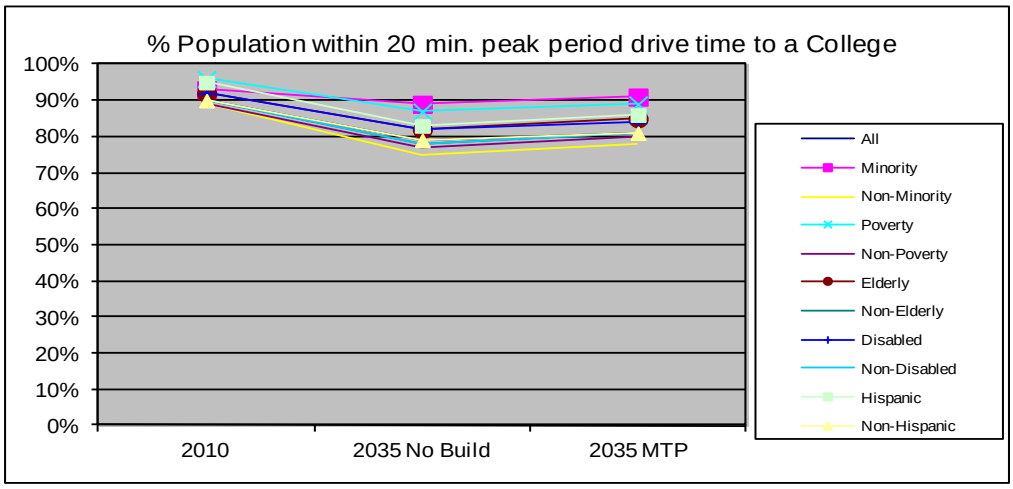


Figure IV-11

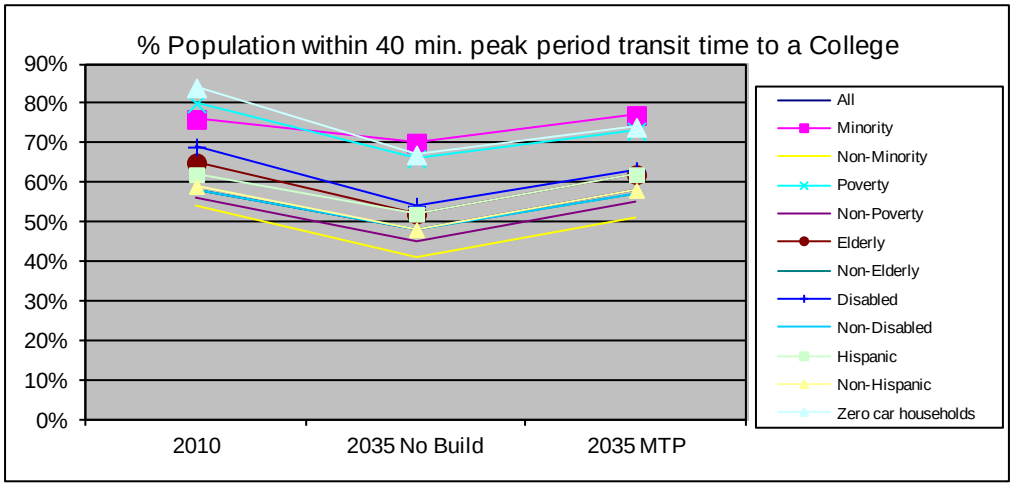
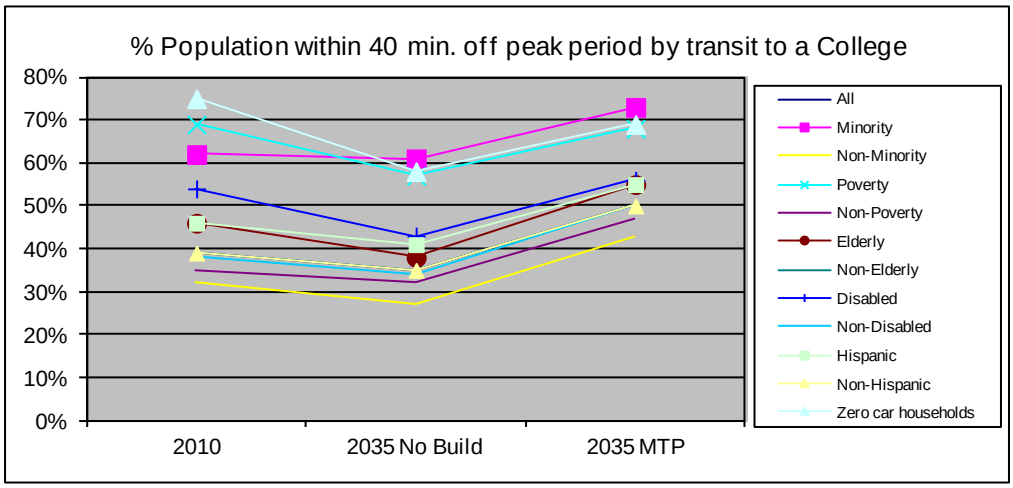


Figure IV-12



E. Percent of Population Close to a Hospital

Figures IV-13 through IV-15 shows a higher percentage of target population is within 20 minutes of auto drive time or 40 minutes of transit time to a hospital than non-target populations. Also, when compared to the 2035 No-Build, a higher percentage of 2035 MTP populations is within 20 minutes to a hospital by auto and the gains appear to be relatively uniform across all of the population groups. When compared to the 2033 No-Build, a higher percentage of 2035 MTP populations is within 40 minutes' both peak and off-peak transit travel time to a hospital and the gains appear to be relatively uniform across all of the groups. This increase by transit travel is mainly due to the improved service frequency and expanded service coverage area planned by COTA for 2035, and partially due to the highway improvements included in the MTP. With regard to this measure it would appear that there are no adverse impacts on the target populations and no disproportionate impacts among the population groups.

Figure IV-13

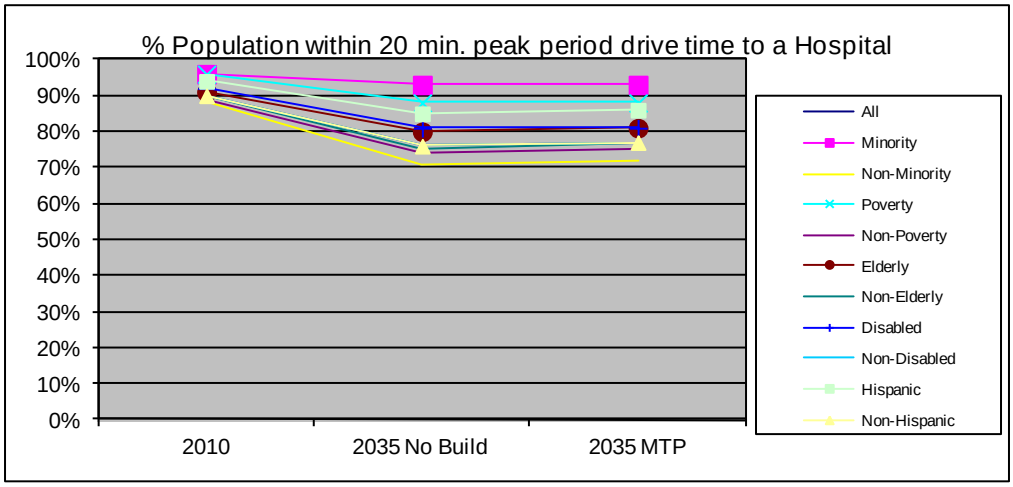


Figure IV-14

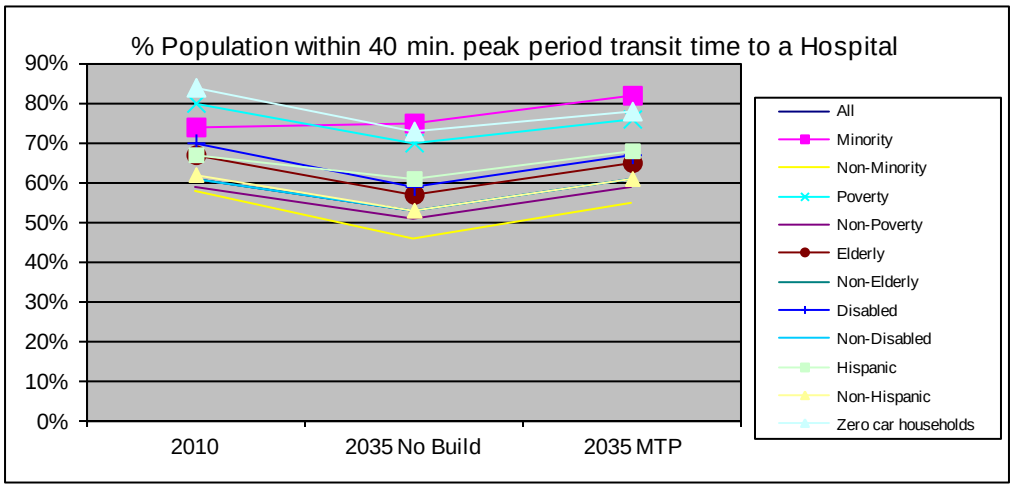
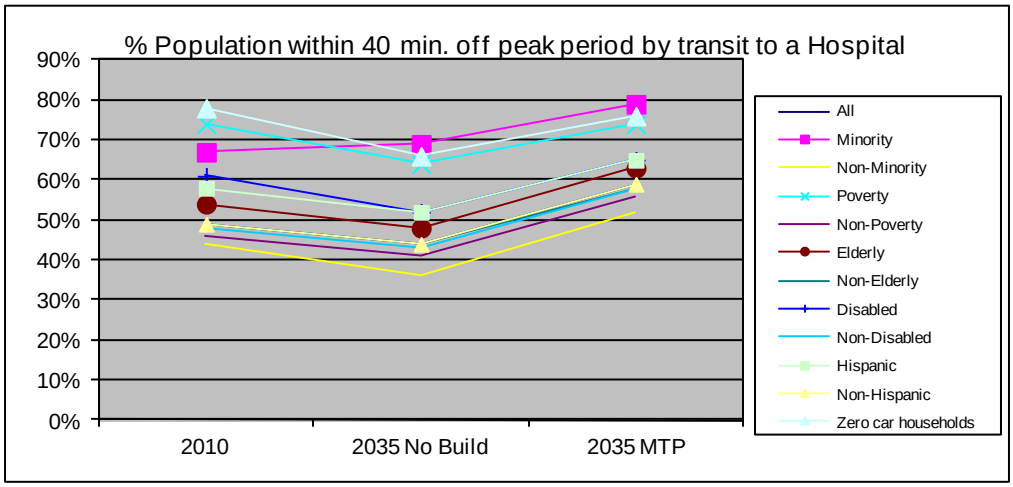


Figure IV-15



F. Percent of Population Close to a Major Retail Destination

Figures IV-16 through IV-18 shows a higher or similar percentage of Minority and Hispanic populations is within 10 minutes of auto drive time or 20 minutes of transit time to a major retail destination than are non-target populations, while a less percentage of poverty, elderly and disabled populations is within 10 minutes of auto drive time or 20 minutes of transit time to a major retail destination than are non-target populations. When compared to the 2035 No-Build, a higher percentage of 2035 MTP populations is within 10 minutes to a major retail destination by auto and the gains appear to be relatively uniform across all of the population groups. When compared to the 2035 No-Build, a higher percentage of 2035 MTP populations is within 20 minutes' both peak and off-peak transit travel time to a major retail destination and the gains appear to be relatively uniform across all of the groups. With regard to this measure it would appear that there are no adverse impacts on the target populations and no prominent disproportionate impacts among the population groups.

Figure IV-16

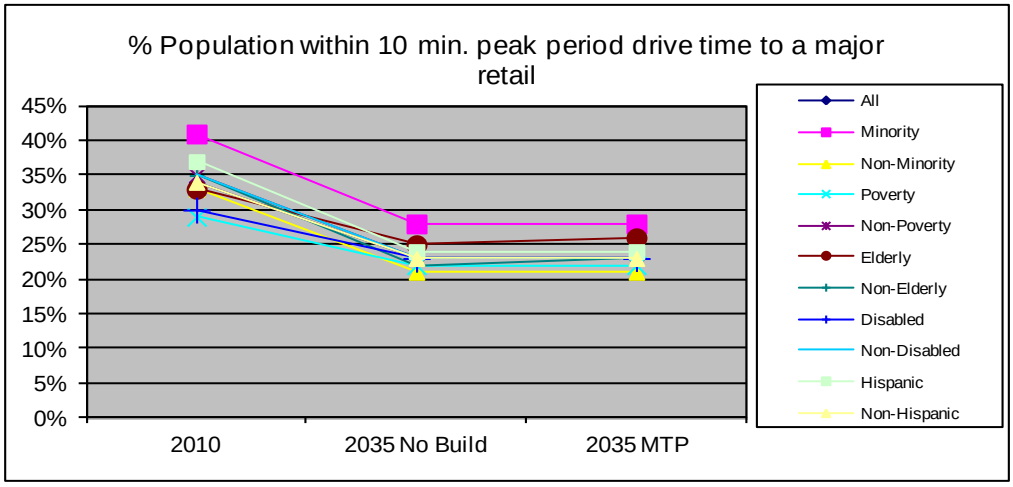


Figure IV-17

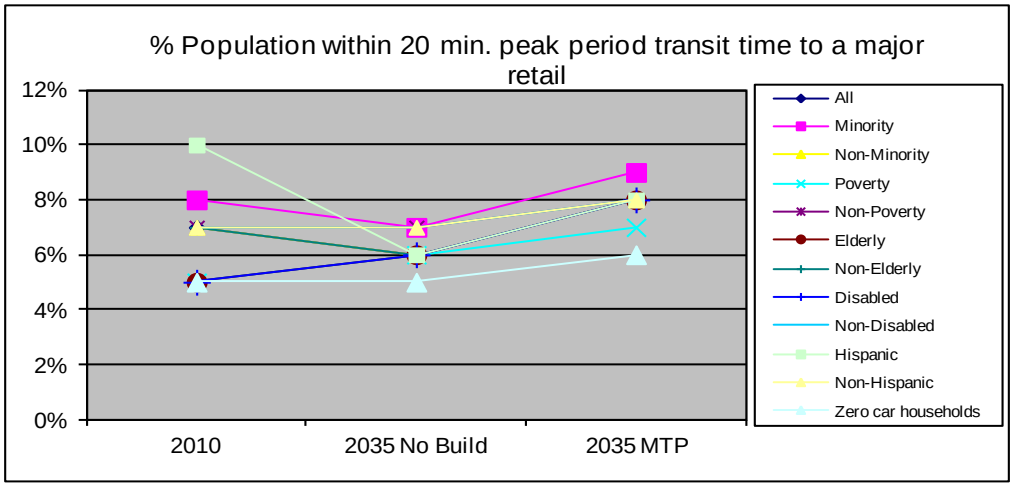
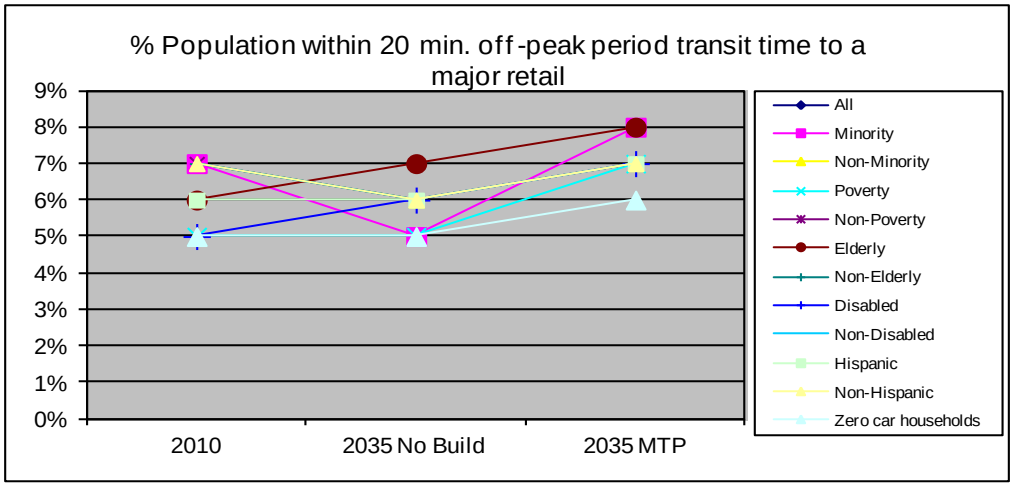


Figure IV-18



G. Average Travel Time for Work, University and School Purposes

Figures IV-19 through IV-20 shows the average travel time between ones home and their work, university or school destination for target populations is less than that for non-target populations. Also, when compared to the 2035 No-Build, auto travel time decreases for 2035 MTP populations and the improvements appear to be relatively uniform across all of the population groups. When compared to 2035 No-Build, transit time decreases for the populations and the gains appear to be relatively uniform across all the groups. With regard to this measure it would appear that there are no adverse impacts on the target populations and no disproportionate impacts among the population groups.

Figure IV-19

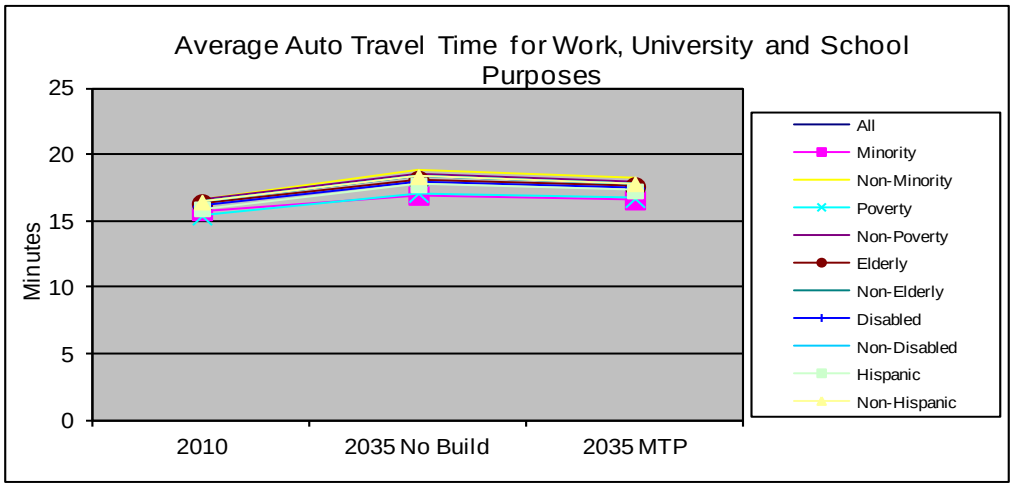
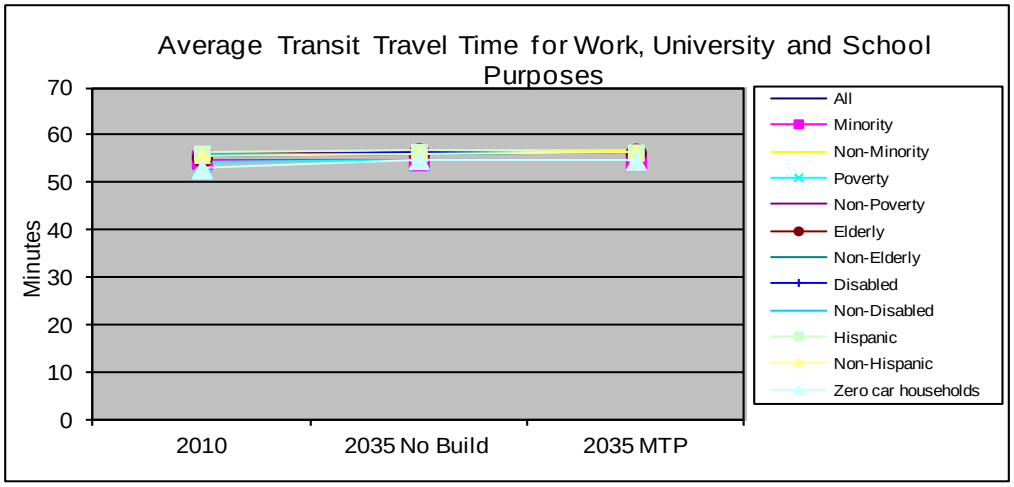


Figure IV- 20



H. Average Travel Time for Shopping Purposes

Figures IV-21 through IV-22 shows the average travel time between ones home and their shopping destination for target populations is less than or similar to that for non-target populations. Also, when compared to the 2035 No-Build, auto travel time decreases for 2035 MTP populations and the improvements appear to be relatively uniform across all of the population groups. When compared to 2035 No-Build, transit travel time decreases for 2035 MTP populations and the improvements appear to be relatively uniform across all of the groups. With regard to this measure it would appear that there are no adverse impacts on the target populations and no prominent disproportionate impacts among the population groups.

Figure IV-21

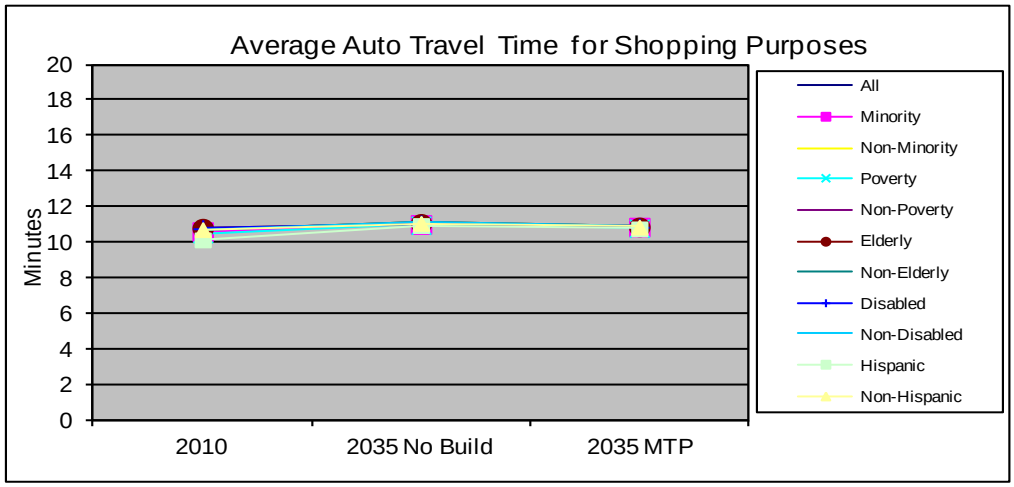
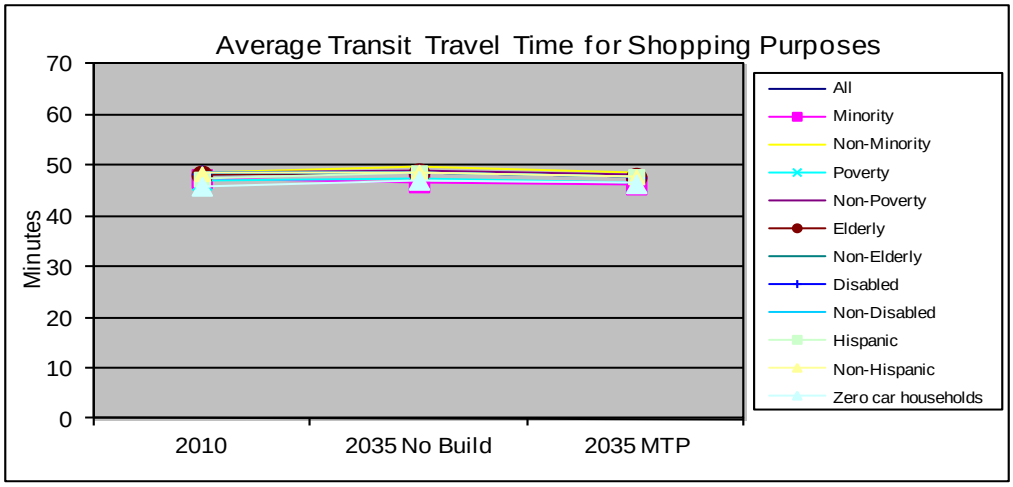


Figure IV- 22



I. Average Travel Time for Other Purposes

Figures IV-23 through IV-24 shows the average travel time between ones home and their destination for other purposes for target populations is less than or similar to that for non-target populations. Also, when compared to the 2035 No-Build, auto travel time decreases for 2035 MTP populations and the improvements appear to be relatively uniform across all of the population groups. When compared to 2035 No-Build, transit travel time decreases for 2035 MTP populations and the improvements appear to be relatively uniform across all of the groups. With regard to this measure it would appear that there are no adverse impacts on the target populations and no prominent disproportionate impacts among the population groups.

Figure IV-23

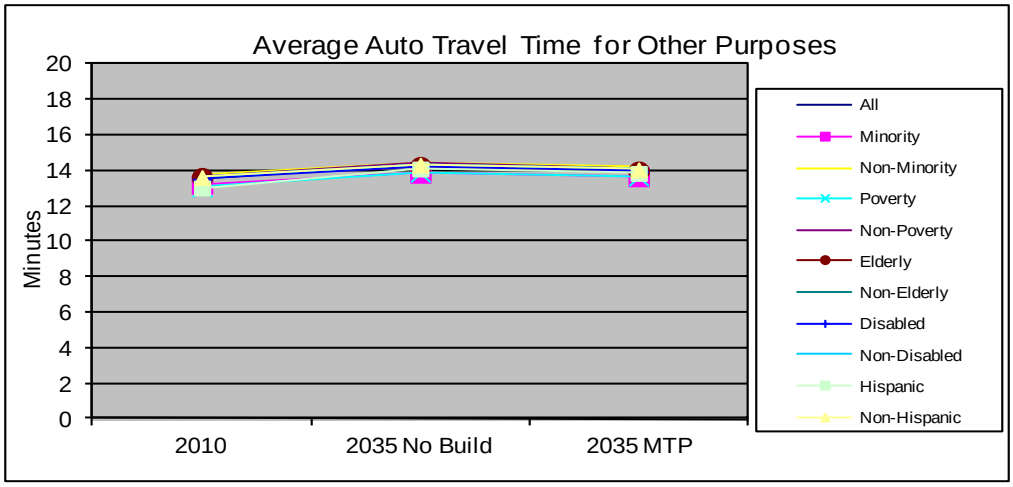
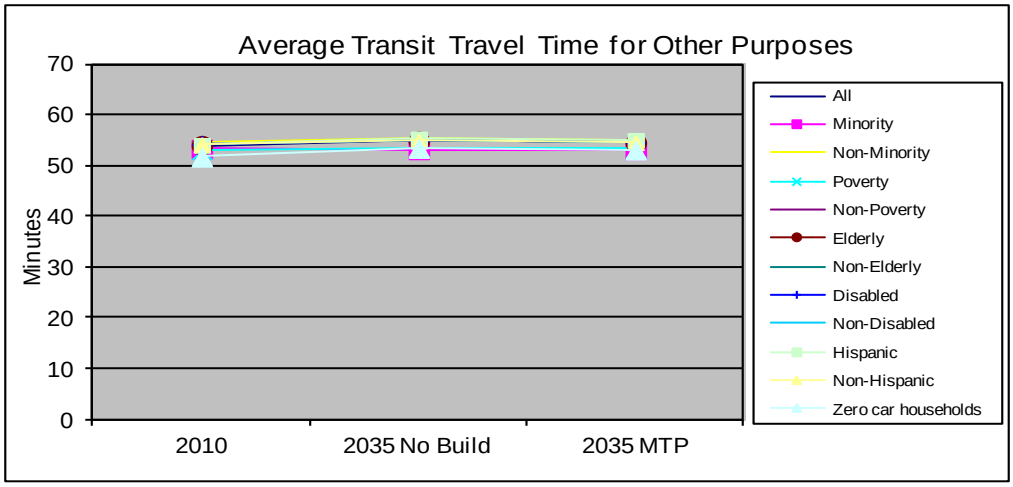


Figure IV-24



J. Average Auto Travel Time for All Purposes

Figures IV-25 through IV-26 shows the average travel time for all purposes for target populations is less than that for non-target populations. Also, when compared to the 2035 No-Build, auto travel time decreases for 2035 MTP populations and the improvements appear to be relatively uniform across all of the population groups. When compared to 2035 No-Build, transit travel time decreases for 2035 MTP populations and the improvements appear to be relatively uniform across all of the groups. With regard to this measure it would appear that there are no adverse impacts on the target populations and no prominent disproportionate impacts among the population groups.

Figure IV-25

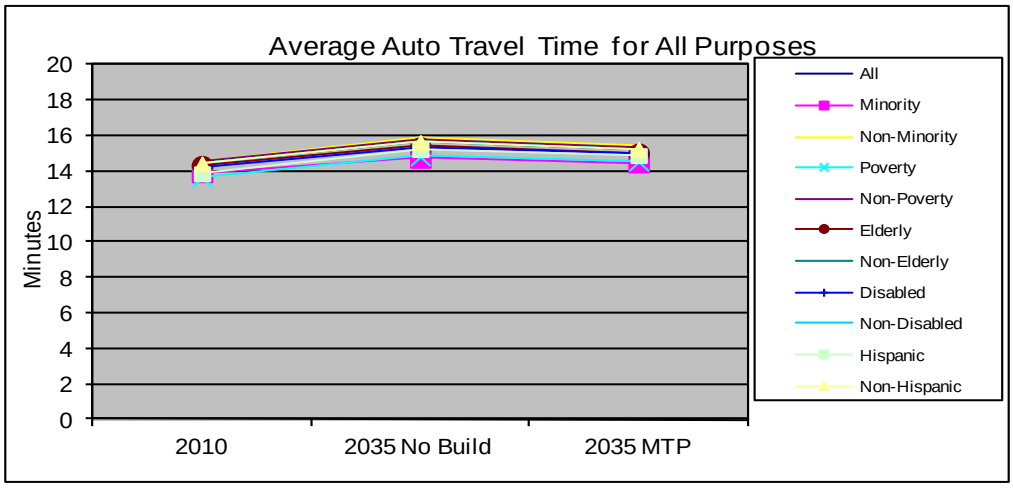
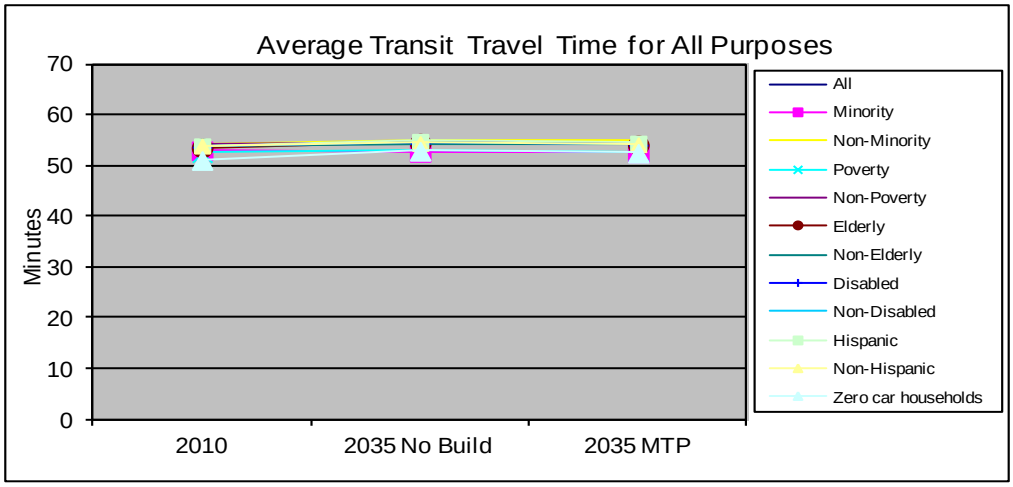


Figure IV-26



K. Average Travel Time to Columbus CBD

Figure IV-27 to IV-30 shows that for each scenario the average travel time to the Columbus CBD is less for the target populations than for non-target populations. Also, when compared to the 2035 No-Build, both peak and off-peak auto travel time to CBD decreases for 2035 MTP populations and the improvements appear to be relatively uniform across all of the population groups. When compared to 2035 No-Build, peak transit travel time decreases for 2035 MTP populations while off-peak transit travel time increases. This increase in off-peak transit travel time is a result of the expanded COTA off-peak service coverage, which provides off-peak CBD access to people who would not have access in the 2035 No-Build scenario. Therefore, off-peak average transit travel time to CBD increases for 2035 MTP populations (please also refer to Section L and Figure IV-32). With regard to this measure it would appear that there are no adverse impacts on the target populations and no disproportionate impacts among the population groups.

Figure IV-27

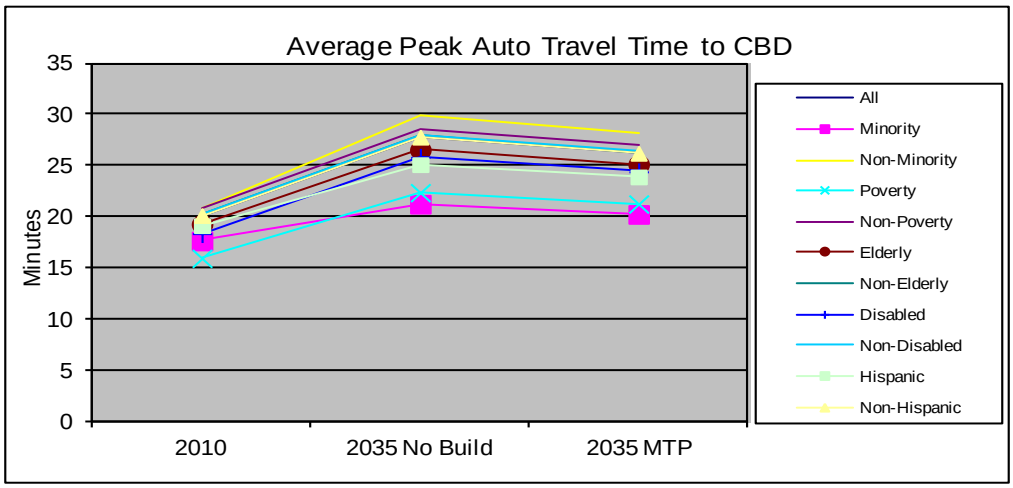


Figure IV-28

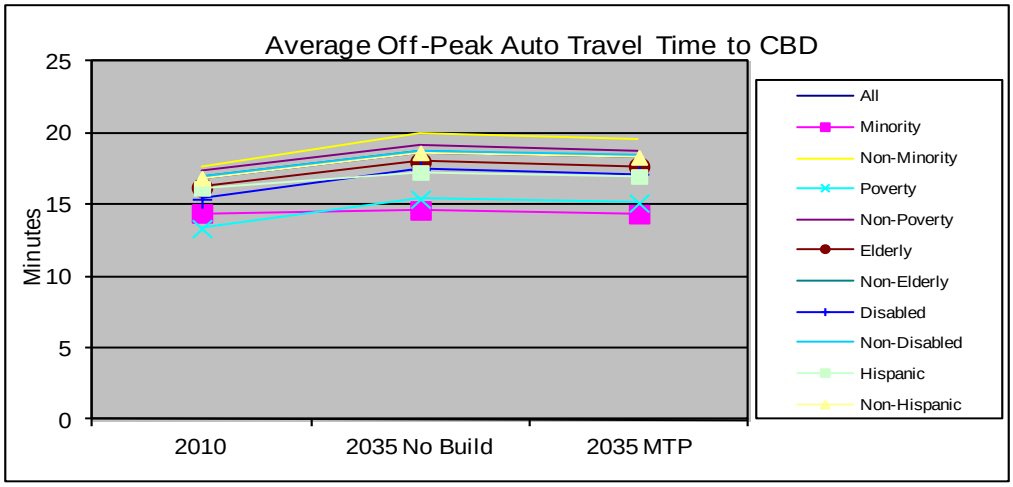


Figure IV-29

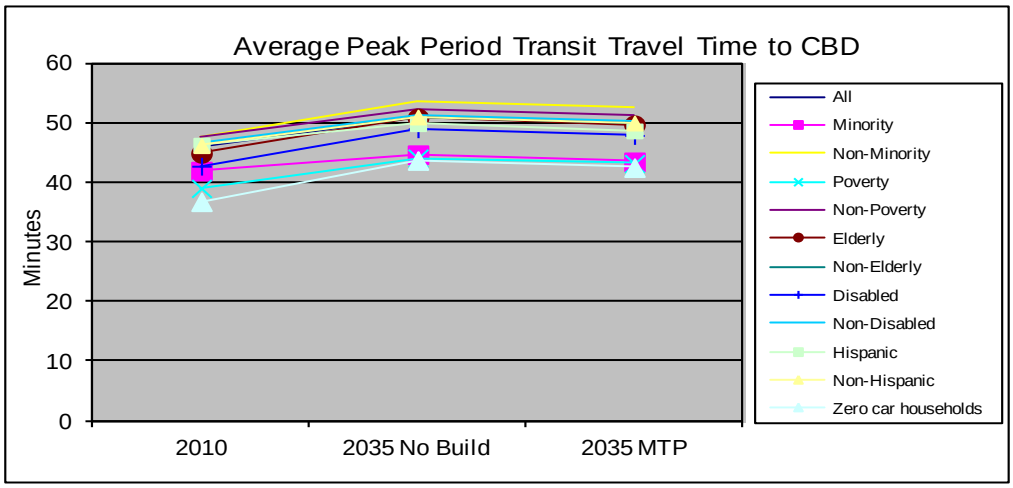
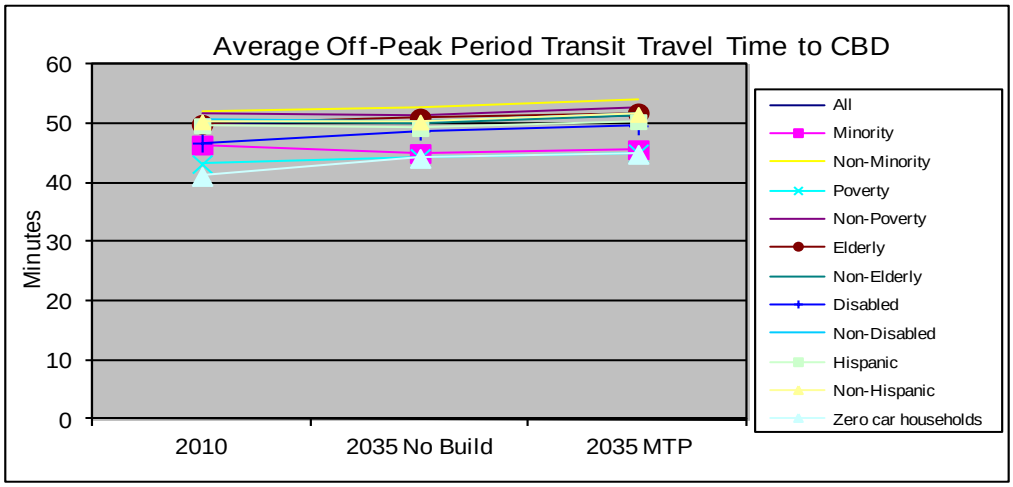


Figure IV-30



L. Transit Accessibility to Columbus CBD

Figures IV-31 and IV-32 show the percent of population that is accessible to the Columbus CBD by transit. This figure shows that for each scenario the percent of population accessible to the Columbus CBD is higher for the target populations than for non-target populations. When compared to the 2035 No-Build, a higher percentage of 2035 MTP population is accessible to the CBD and the gains appear to be relatively uniform across all of the population groups. The increase of transit accessibility is due to the expanded service coverage area planned by COTA for 2035.

Figure IV-31

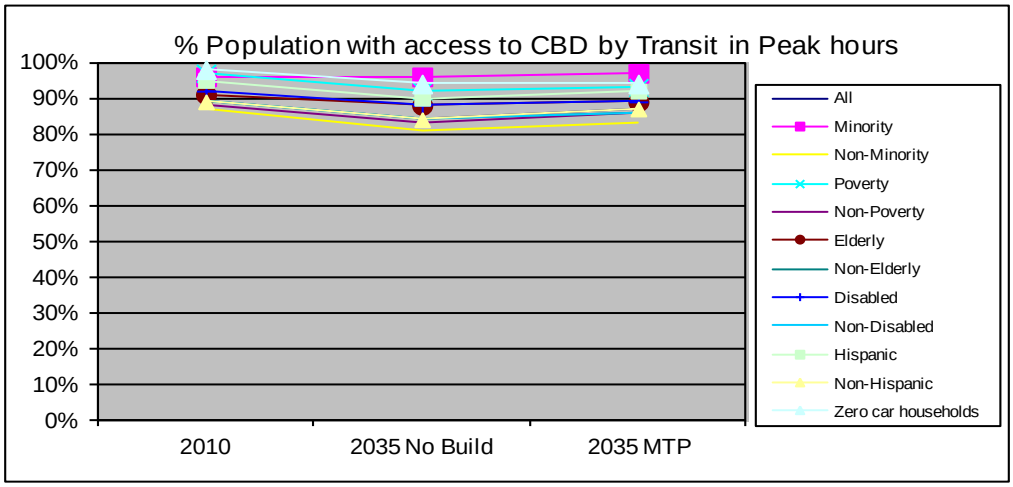
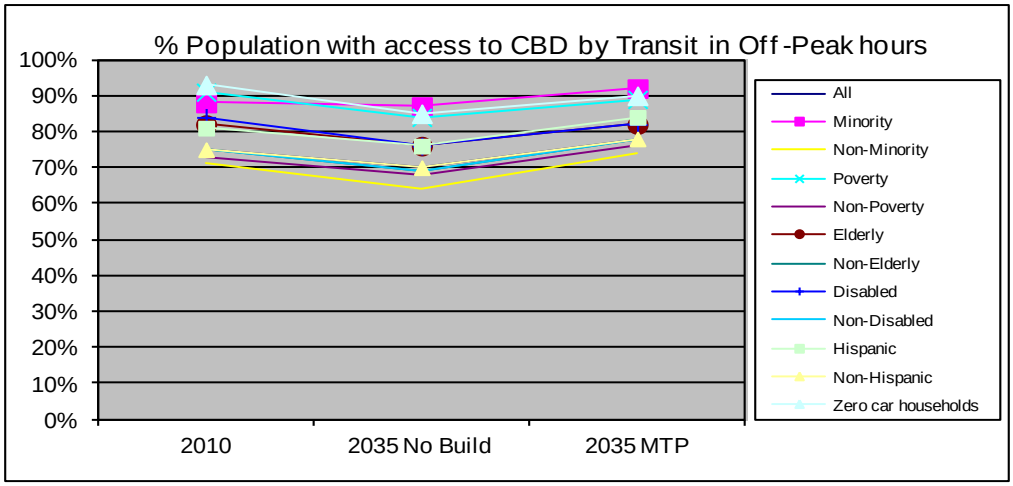


Figure IV-32

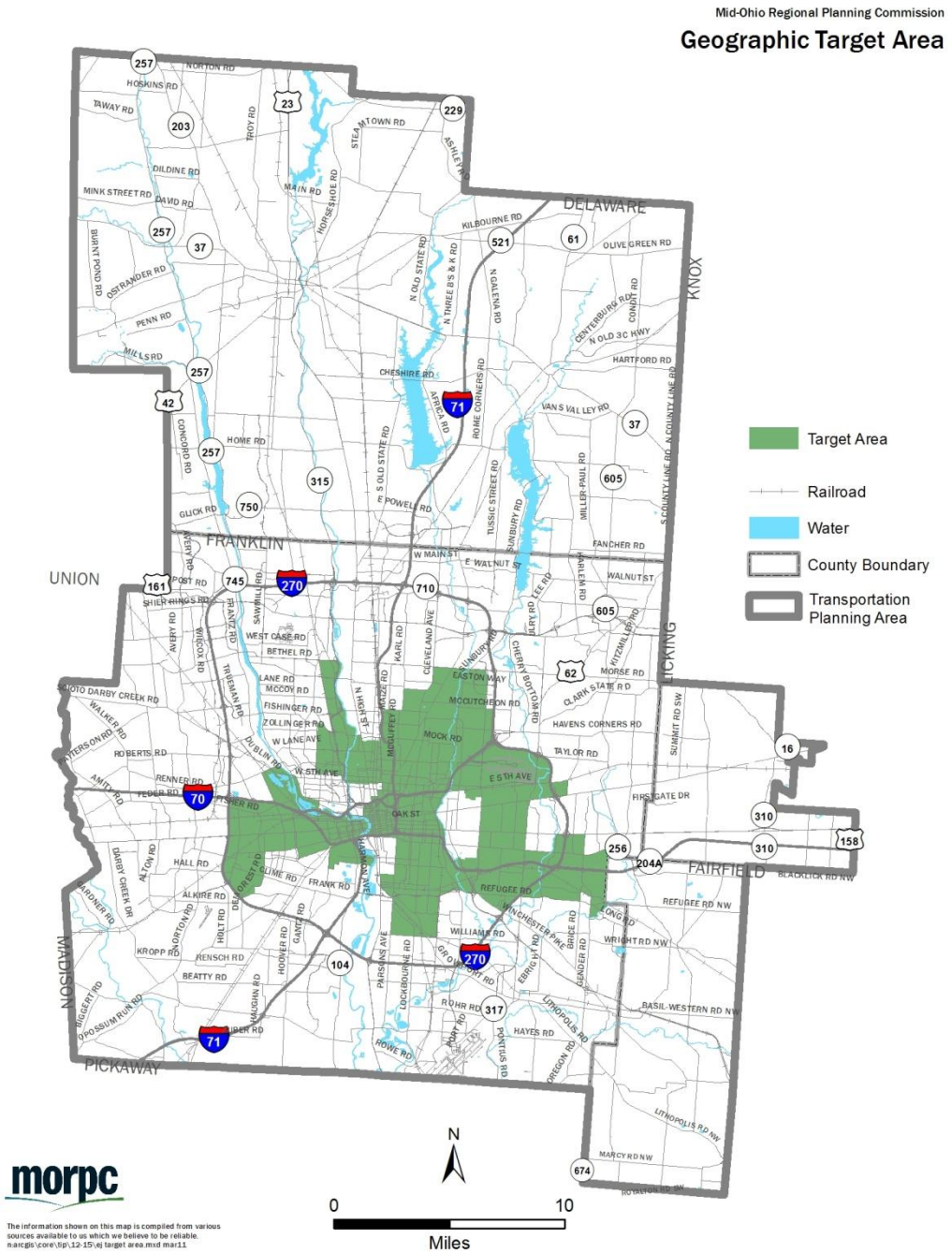


M. Congested Vehicle Miles of Travel during Peak Hours

Figure IV-33 shows the geographic target area that was identified. This target area generally includes areas that fall above twice the regional average for minority or poverty populations.

The shape of the area is irregular, falling roughly between Morse Road and Bethel Road on the north and the southern boundary follows Refugee Road going down along Alum Creek Road and following Williams Road. The western and northern edges are roughly around I-270. Bexley and neighborhoods in the near south of Columbus are excluded. This area includes the majority of the target populations in 2010.

Figure IV-33 Geographic Target Area



Figures IV-34 and IV-35 shows that for the year 2010, 2035 No-Build and 2035 MTP scenarios, the percent of congested vehicle miles during peak hours is higher for target populations than for non-target populations. When comparing all three scenarios together, percent of congested VMT and the respective scenario improvements appear to be relatively uniform for the Target and Non-target areas. Also, when compared to the 2035 No-Build, percent congested VMT traveled in 2035 MTP decreases for both Target and Non-target areas. With regard to this measure it would appear that there are no adverse impacts on the target populations and no disproportionate impacts among the population groups.

Figure IV-34

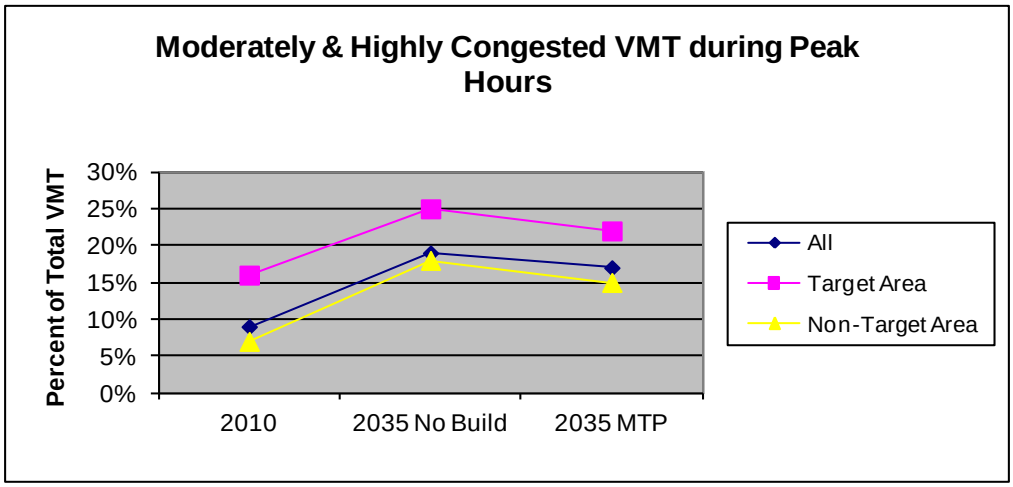
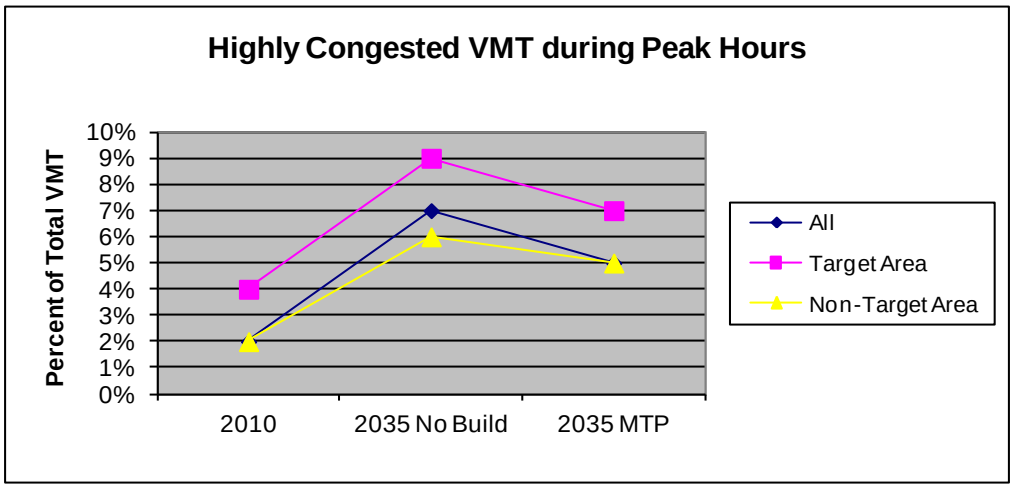


Figure IV-35



N. Transportation Expansion Investments

Millions of dollars are spent on transportation projects in the Central Ohio area. These include maintenance projects and major transportation projects are projects that add capacity to the transportation system. Major projects are projects that would include additional lanes and new or reconfigured interchanges.

Table IV-2 shows the amount of estimated transportation funding included in the Metropolitan Transportation Plan. Only location-specific projects are classified into two groups based on the geographic target area: Target Area, and Non-Target Area. Most of the population growth in the Columbus area is occurring outside the outer belt, especially in Delaware County. To accommodate the growth in the outer areas, more transportation projects are needed and expected in these growing areas.

Table IV-2

		Plan Funding	Proportion
Location-Specific Projects*	Target Area	$ 2,003,175,000	12%
	Non-Target Area	$ 4,054,254,000	25%
Region-Wide Projects/Activities**		$ 10,340,803,000	63%
	Total	**$ 16,398,232,000**	**100%**

*related to highway capacity expansion

**including COTA service expansion and other general funding (e.g., maintainance and studies) which would be used throughout the whole region

It is important to note that the Location-Specific cost estimates include only the capacity expansion projects. Local agency and ODOT routine maintenance costs are in the Region-Wide activities. Because a significant portion of the target area is heavily developed, there are fewer capacity expansion projects in the area. Furthermore, it is worth noting that transportation investments in a particular area may provide increased benefits beyond that area. Therefore, it may be more worthwhile to assess the benefits and the displacements and disruptions of a transportation project to a particular area than the amount of dollars spent.

O. Displacement from Projects

During the preparation of the Metropolitan Transportation Plan, all projects were qualitatively assessed as to the possible number of displacements resulting from the project. There are no projects in the target area with high displacements.

V. Summary

A variety of quantitative measures was presented in the previous section. Many measures are provided because one measure cannot capture all aspects of an environmental justice analysis. And in fact, these measures in total cannot take into account all things that can be considered with regard to environmental justice issues. These measures, however, are developed to provide some insight on whether significant environmental justice issues are present.

In general, the measures when applied at the regional level did not indicate environmental justice issues. It is important to keep in mind that this was done at a systems level and additional refinement will be made as the various projects go through additional project development process steps.

Attachment A- Data Tables

Average Number of Jobs within 20 minute peak period drive time

	2010	% of Total	2035 No Build	% of Total	2035 MTP	% of Total	% Over No Build
All	323,921	43%	274,866	28%	299,251	30%	9%
Minority	373,799	50%	373,626	38%	401,278	41%	7%
Non-Minority	311,196	41%	242,796	25%	266,120	27%	10%
Poverty	405,587	54%	364,407	37%	390,684	39%	7%
Non-Poverty	314,291	42%	261,087	26%	285,186	29%	9%
Elderly	346,863	46%	296,671	30%	321,434	32%	8%
Non-Elderly	324,122	43%	272,269	28%	296,610	30%	9%
Disabled	356,320	47%	303,067	31%	328,296	33%	8%
Non-Disabled	323,754	43%	272,230	28%	296,536	30%	9%
Hispanic	348,068	46%	299,800	30%	326,739	33%	9%
Non-Hispanic	325,843	43%	274,494	28%	298,864	30%	9%

Average Number of Jobs within 40 minute peak period time by transit

	2010	% of Total	2035 No Build	% of Total	2035 MTP	% of Total	% Over No Build
All	86,374	11%	82,969	8%	90,025	9%	9%
Minority	114,123	15%	125,835	13%	135,469	14%	8%
Non-Minority	77,021	10%	69,049	7%	75,268	8%	9%
Poverty	129,030	17%	124,413	13%	132,430	13%	6%
Non-Poverty	79,464	11%	76,586	8%	83,497	8%	9%
Elderly	95,419	13%	88,097	9%	95,334	10%	8%
Non-Elderly	85,007	11%	82,358	8%	89,393	9%	9%
Disabled	103,906	14%	93,535	9%	101,486	10%	9%
Non-Disabled	84,450	11%	81,982	8%	88,954	9%	9%
Hispanic	83,822	11%	90,117	9%	97,919	10%	9%
Non-Hispanic	86,190	11%	82,841	8%	89,877	9%	8%
Zero car households	145,873	19%	129,739	13%	138,878	14%	7%

Average Number of Jobs within 40 minute off-peak period time by transit

	2010	% of Total	2035 No Build	% of Total	2035 MTP	% of Total	% Over No Build
All	59,728	8%	66,469	7%	79,634	8%	20%
Minority	84,139	11%	108,706	11%	120,402	12%	11%
Non-Minority	50,635	7%	52,753	5%	66,396	7%	26%
Poverty	98,135	13%	106,744	11%	118,003	12%	11%
Non-Poverty	52,760	7%	60,258	6%	73,727	7%	22%
Elderly	65,725	9%	71,163	7%	84,487	9%	19%
Non-Elderly	58,029	8%	65,909	7%	79,056	8%	20%
Disabled	74,993	10%	77,862	8%	90,011	9%	16%
Non-Disabled	57,336	8%	65,404	7%	78,665	8%	20%
Hispanic	60,339	8%	74,076	7%	86,537	9%	17%
Non-Hispanic	58,800	8%	66,256	7%	79,495	8%	20%
Zero car households	112,446	15%	111,022	11%	122,958	12%	11%

Total Jobs 2010 = 752,519 2035 = 989,728

Average Number of Shopping Attractions within 10 minute peak period drive time

	2010	% of Total	2035 No Build	% of Total	2035 MTP	% of Total	% Over No Build
All	15,634	7%	15,269	5%	16,207	5%	6%
Minority	18,515	8%	19,325	6%	20,131	7%	4%
Non-Minority	14,679	7%	13,952	5%	14,933	5%	7%
Poverty	19,917	9%	18,737	6%	19,607	7%	5%
Non-Poverty	14,954	7%	14,736	5%	15,685	5%	6%
Elderly	16,221	7%	15,918	5%	16,838	6%	6%
Non-Elderly	15,548	7%	15,192	5%	16,132	5%	6%
Disabled	16,754	8%	16,291	5%	17,216	6%	6%
Non-Disabled	15,513	7%	15,174	5%	16,113	5%	6%
Hispanic	17,189	8%	16,404	6%	17,370	6%	6%
Non-Hispanic	15,569	7%	15,254	5%	16,195	5%	6%

Average Number of Shopping Attractions within 20 minute peak period time by transit

	2010	% of Total	2035 No Build	% of Total	2035 MTP	% of Total	% Over No Build
All	3,352	2%	3,519	1%	3,749	1%	7%
Minority	4,211	2%	5,381	2%	5,647	2%	5%
Non-Minority	2,839	1%	2,914	1%	3,132	1%	8%
Poverty	5,021	2%	5,391	2%	5,589	2%	4%
Non-Poverty	2,890	1%	3,230	1%	3,465	1%	7%
Elderly	3,173	1%	3,546	1%	3,844	1%	8%
Non-Elderly	3,176	1%	3,515	1%	3,737	1%	6%
Disabled	3,623	2%	3,873	1%	4,185	1%	8%
Non-Disabled	3,134	1%	3,485	1%	3,708	1%	6%
Hispanic	3,664	2%	3,845	1%	4,171	1%	8%
Non-Hispanic	3,160	1%	3,508	1%	3,737	1%	7%
Zero car households	5,677	3%	5,439	2%	5,748	2%	6%

Average Number of Shopping Attractions within 20 minute off-peak period time by transit

	2010	% of Total	2035 No Build	% of Total	2035 MTP	% of Total	% Over No Build
All	2,316	1%	2,540	1%	2,847	1%	12%
Minority	2,833	1%	3,892	1%	4,066	1%	4%
Non-Minority	1,884	1%	2,101	1%	2,451	1%	17%
Poverty	3,486	2%	3,993	1%	4,111	1%	3%
Non-Poverty	1,904	1%	2,316	1%	2,652	1%	15%
Elderly	2,093	1%	2,571	1%	2,837	1%	10%
Non-Elderly	2,119	1%	2,536	1%	2,848	1%	12%
Disabled	2,322	1%	2,769	1%	3,073	1%	11%
Non-Disabled	2,097	1%	2,518	1%	2,826	1%	12%
Hispanic	2,247	1%	2,661	1%	2,928	1%	10%
Non-Hispanic	2,112	1%	2,536	1%	2,847	1%	12%
Zero car households	3,842	2%	4,015	1%	4,102	1%	2%

Shopping attractions 2010 = 220,601 2035 = 297,769

Average Number of Non-Shopping Attractions within 20 minute peak period drive time

	2010	% of Total	2035 No Build	% of Total	2035 MTP	% of Total	% Over No Build
All	453,857	42%	406,864	28%	440,471	30%	8%
Minority	529,489	49%	539,670	37%	576,088	40%	7%
Non-Minority	432,872	40%	363,738	25%	396,433	27%	9%
Poverty	567,634	52%	524,792	36%	560,149	38%	7%
Non-Poverty	439,340	40%	388,714	27%	422,057	29%	9%
Elderly	482,078	44%	435,554	30%	469,364	32%	8%
Non-Elderly	453,516	42%	403,447	28%	437,030	30%	8%
Disabled	498,277	46%	444,491	30%	478,657	33%	8%
Non-Disabled	452,649	42%	403,348	28%	436,902	30%	8%
Hispanic	477,774	44%	437,481	30%	473,393	32%	8%
Non-Hispanic	455,866	42%	406,443	28%	440,049	30%	8%

Average Number of Non-Shopping Attractions within 40 minute peak period time by transit

	2010	% of Total	2035 No Build	% of Total	2035 MTP	% of Total	% Over No Build
All	113,794	10%	112,616	8%	123,817	8%	10%
Minority	151,157	14%	168,547	12%	181,602	12%	8%
Non-Minority	101,206	9%	94,453	6%	105,053	7%	11%
Poverty	167,341	15%	164,708	11%	176,956	12%	7%
Non-Poverty	105,098	10%	104,598	7%	115,644	8%	11%
Elderly	124,516	11%	120,552	8%	131,753	9%	9%
Non-Elderly	112,132	10%	111,671	8%	122,872	8%	10%
Disabled	134,803	12%	126,294	9%	138,127	9%	9%
Non-Disabled	111,451	10%	111,338	8%	122,481	8%	10%
Hispanic	111,070	10%	121,927	8%	133,157	9%	9%
Non-Hispanic	113,528	10%	112,448	8%	123,655	8%	10%
Zero car households	188,605	17%	171,811	12%	185,274	13%	8%

Average Number of Non-Shopping Attractions within 40 minute off-peak period time by transit

	2010	% of Total	2035 No Build	% of Total	2035 MTP	% of Total	% Over No Build
All	86,341	8%	93,615	6%	110,206	8%	18%
Minority	123,142	11%	150,831	10%	164,062	11%	9%
Non-Minority	73,842	7%	75,036	5%	92,718	6%	24%
Poverty	138,098	13%	145,465	10%	159,054	11%	9%
Non-Poverty	77,841	7%	85,624	6%	102,691	7%	20%
Elderly	96,619	9%	102,118	7%	118,438	8%	16%
Non-Elderly	84,653	8%	92,602	6%	109,226	7%	18%
Disabled	108,225	10%	109,530	8%	124,177	9%	13%
Non-Disabled	83,839	8%	92,128	6%	108,902	7%	18%
Hispanic	86,436	8%	103,374	7%	118,701	8%	15%
Non-Hispanic	85,910	8%	93,350	6%	110,037	8%	18%
Zero car households	157,063	14%	153,154	11%	166,887	11%	9%

Total Non-Shopping Attractions 2010 = 1,089,710 2035 = 1,458,241

Percent of Population within 20 minute peak period drive time to a College

	2010	2035 No Build	2035 MTP
All	90%	79%	81%
Minority	93%	89%	91%
Non-Minority	89%	75%	78%
Poverty	96%	87%	89%
Non-Poverty	89%	77%	80%
Elderly	92%	82%	85%
Non-Elderly	90%	78%	81%
Disabled	92%	82%	84%
Non-Disabled	90%	78%	81%
Hispanic	95%	83%	86%
Non-Hispanic	90%	79%	81%

Percent of Population within 40 minute peak period time to a College by transit

	2010	2035 No Build	2035 MTP
All	58%	48%	58%
Minority	76%	70%	77%
Non-Minority	54%	41%	51%
Poverty	80%	66%	73%
Non-Poverty	56%	45%	55%
Elderly	65%	52%	62%
Non-Elderly	58%	48%	57%
Disabled	69%	54%	63%
Non-Disabled	58%	48%	57%
Hispanic	62%	52%	62%
Non-Hispanic	59%	48%	58%
Zero car households	84%	67%	74%

Percent of Population within 40 minute off-peak period time to a College by transit

	2010	2035 No Build	2035 MTP
All	39%	35%	50%
Minority	62%	61%	73%
Non-Minority	32%	27%	43%
Poverty	69%	57%	68%
Non-Poverty	35%	32%	47%
Elderly	46%	38%	55%
Non-Elderly	39%	35%	50%
Disabled	54%	43%	56%
Non-Disabled	38%	34%	50%
Hispanic	46%	41%	55%
Non-Hispanic	39%	35%	50%
Zero car households	75%	58%	69%

Colleges included are:

THE OHIO STATE UNIVERSITY
COLUMBUS STATE COMMUNITY COLLEGE
CAPITAL UNIVERSITY
COLUMBUS COLLEGE OF ART & DESIGN
OTTERBEIN COLLEGE
DEVRY INSTITUTE OF TECHNOLOGY
FRANKLIN UNIVERSITY
MOUNT CARMEL COLLEGE OF NURSING
OHIO DOMINICAN COLLEGE

Percent of Population within 20 minute peak period drive time to Hospital

	2010	2035 No Build	2035 MTP
All	90%	76%	77%
Minority	96%	93%	93%
Non-Minority	88%	71%	72%
Poverty	96%	88%	88%
Non-Poverty	89%	74%	75%
Elderly	91%	80%	81%
Non-Elderly	90%	75%	77%
Disabled	92%	81%	81%
Non-Disabled	90%	76%	77%
Hispanic	94%	85%	86%
Non-Hispanic	90%	76%	77%

Percent of Population within 40 minute peak period time to Hospital by transit

	2010	2035 No Build	2035 MTP
All	61%	53%	61%
Minority	74%	75%	82%
Non-Minority	58%	46%	55%
Poverty	80%	70%	76%
Non-Poverty	59%	51%	59%
Elderly	67%	57%	65%
Non-Elderly	61%	53%	61%
Disabled	70%	59%	67%
Non-Disabled	61%	53%	61%
Hispanic	67%	61%	68%
Non-Hispanic	62%	53%	61%
Zero car households	84%	73%	78%

Percent of Population within 40 minute off-peak period time to Hospital by transit

	2010	2035 No Build	2035 MTP
All	49%	44%	59%
Minority	67%	69%	79%
Non-Minority	44%	36%	52%
Poverty	74%	64%	74%
Non-Poverty	46%	41%	56%
Elderly	54%	48%	63%
Non-Elderly	49%	44%	58%
Disabled	61%	52%	65%
Non-Disabled	48%	43%	58%
Hispanic	58%	52%	65%
Non-Hispanic	49%	44%	59%
Zero car households	78%	66%	76%

Hospitals included are:

St. Ann's, Riverside, OSU, Mt. Carmel West, Grant, Mt. Carmel East, Children's Columbus Community, Doctors North, Doctors West, University East, Parkside Lodge

Percent of Population within 10 minute peak period drive time to Major Retail

	2010	2035 No Build	2035 MTP
All	34%	23%	23%
Minority	41%	28%	28%
Non-Minority	33%	21%	21%
Poverty	29%	22%	22%
Non-Poverty	35%	23%	23%
Elderly	33%	25%	26%
Non-Elderly	35%	22%	23%
Disabled	30%	23%	23%
Non-Disabled	35%	23%	23%
Hispanic	37%	24%	24%
Non-Hispanic	34%	23%	23%

Percent of Population within 20 minute peak period time to Major Retail by Transit

	2010	2035 No Build	2035 MTP
All	7%	6%	8%
Minority	8%	7%	9%
Non-Minority	7%	6%	8%
Poverty	5%	6%	7%
Non-Poverty	7%	7%	8%
Elderly	5%	6%	8%
Non-Elderly	7%	6%	8%
Disabled	5%	6%	8%
Non-Disabled	7%	7%	8%
Hispanic	10%	6%	8%
Non-Hispanic	7%	7%	8%
Zero car households	5%	5%	6%

Percent of Population within 20 minute off-peak period time to Major Retail by Transit

	2010	2035 No Build	2035 MTP
All	7%	6%	7%
Minority	7%	5%	8%
Non-Minority	7%	6%	7%
Poverty	5%	5%	7%
Non-Poverty	7%	6%	7%
Elderly	6%	7%	8%
Non-Elderly	7%	6%	7%
Disabled	5%	6%	7%
Non-Disabled	7%	6%	7%
Hispanic	6%	6%	7%
Non-Hispanic	7%	6%	7%
Zero car households	5%	5%	6%

Major Retail Locations included are:
Tuttle Mall, Saw mill & SR 161, Easton, Eastland Mall, Polaris

Average Auto Travel Time for Work, University and School Purposes (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2035 No-Build Min Saved	v.s. 2035 No-Build %Saved
All	16.4	18.3	12%	17.8	9%	0.5	3%
Minority	15.8	16.9	7%	16.6	5%	0.4	2%
Non-Minority	16.6	18.8	13%	18.2	10%	0.6	3%
Poverty	15.4	17.1	11%	16.7	9%	0.4	2%
Non-Poverty	16.6	18.5	12%	18.0	9%	0.6	3%
Elderly	16.3	18.1	11%	17.6	8%	0.5	3%
Non-Elderly	16.4	18.4	12%	17.8	9%	0.5	3%
Disabled	16.1	18.0	11%	17.5	8%	0.5	3%
Non-Disabled	16.4	18.4	12%	17.8	9%	0.5	3%
Hispanic	15.9	17.7	11%	17.3	8%	0.5	3%
Non-Hispanic	16.4	18.3	12%	17.8	8%	0.5	3%

Average Transit Travel Time for Work, University and School Purposes (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2035 No-Build Min Saved	v.s. 2035 No-Build %Saved
All	55.6	56.1	1%	56.2	1%	-0.1	0%
Minority	54.9	54.6	0%	54.6	-1%	0.0	0%
Non-Minority	56.1	56.6	1%	56.8	1%	-0.2	0%
Poverty	54.2	54.5	1%	54.5	1%	0.0	0%
Non-Poverty	56.0	56.3	1%	56.5	1%	-0.2	0%
Elderly	55.4	56.4	2%	56.3	2%	0.1	0%
Non-Elderly	55.8	56.0	0%	56.2	1%	-0.2	0%
Disabled	55.4	56.2	1%	56.2	1%	0.1	0%
Non-Disabled	55.8	56.1	1%	56.2	1%	-0.2	0%
Hispanic	56.3	56.7	1%	56.5	0%	0.1	0%
Non-Hispanic	55.7	56.1	1%	56.2	1%	-0.1	0%
Zero car households	52.9	54.9	4%	54.6	3%	0.3	0%

Average Auto Travel Time for Shopping Purposes (minutes)

	2010	2035 No Build	% Inc	2035 MTP	% Inc	v.s. 2035 No-Build	
			Over 2010		Over 2010	Min Saved	%Saved
All	10.7	11.1	4%	10.9	2%	0.2	2%
Minority	10.6	11.0	4%	10.9	2%	0.2	1%
Non-Minority	10.7	11.1	3%	10.9	1%	0.2	2%
Poverty	10.5	11.0	5%	10.8	3%	0.2	2%
Non-Poverty	10.7	11.1	3%	10.9	1%	0.2	2%
Elderly	10.8	11.1	3%	10.9	1%	0.2	2%
Non-Elderly	10.7	11.1	4%	10.9	2%	0.2	2%
Disabled	10.8	11.0	3%	10.8	1%	0.2	2%
Non-Disabled	10.7	11.1	4%	10.9	2%	0.2	2%
Hispanic	10.1	10.9	8%	10.8	6%	0.2	2%
Non-Hispanic	10.7	11.1	3%	10.9	1%	0.2	2%

10.72

Average Transit Travel Time for Shopping Purposes (minutes)

	2010	2035 No Build	% Inc	2035 MTP	% Inc	v.s. 2035 No-Build	
			Over 2010		Over 2010	Min Saved	%Saved
All	48.3	48.7	1%	47.8	-1%	0.9	2%
Minority	47.5	46.6	-2%	46.2	-3%	0.4	1%
Non-Minority	48.7	49.6	2%	48.4	-1%	1.2	2%
Poverty	47.0	47.2	0%	46.6	-1%	0.6	1%
Non-Poverty	48.7	49.0	1%	48.0	-1%	1.0	2%
Elderly	48.2	48.6	1%	47.7	-1%	0.9	2%
Non-Elderly	48.4	48.8	1%	47.8	-1%	0.9	2%
Disabled	48.4	48.6	0%	47.7	-2%	0.9	2%
Non-Disabled	48.4	48.8	1%	47.8	-1%	0.9	2%
Hispanic	47.4	48.6	3%	47.9	1%	0.8	2%
Non-Hispanic	48.4	48.7	1%	47.8	-1%	0.9	2%
Zero car households	46.0	47.1	3%	46.4	1%	0.7	1%

Average Auto Travel Time for Other Purposes (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2035 No-Build Min Saved	v.s. 2035 No-Build %Saved
All	13.6	14.3	6%	14.1	4%	0.3	2%
Minority	13.2	13.9	5%	13.7	3%	0.2	1%
Non-Minority	13.7	14.5	6%	14.2	3%	0.3	2%
Poverty	13.0	13.9	6%	13.7	5%	0.2	2%
Non-Poverty	13.7	14.4	5%	14.1	3%	0.3	2%
Elderly	13.6	14.3	5%	14.0	3%	0.3	2%
Non-Elderly	13.6	14.3	6%	14.1	3%	0.3	2%
Disabled	13.5	14.2	5%	14.0	3%	0.3	2%
Non-Disabled	13.6	14.3	5%	14.1	3%	0.3	2%
Hispanic	13.0	14.1	8%	13.9	6%	0.3	2%
Non-Hispanic	13.6	14.3	5%	14.1	3%	0.3	2%

Average Peak Transit Travel Time for Other Purposes (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2035 No-Build Min Saved	v.s. 2035 No-Build %Saved
All	53.9	54.8	2%	54.5	1%	0.3	1%
Minority	53.3	53.1	0%	53.1	0%	0.0	0%
Non-Minority	54.5	55.5	2%	55.1	1%	0.4	1%
Poverty	53.0	53.6	1%	53.3	1%	0.2	0%
Non-Poverty	54.3	55.1	1%	54.7	1%	0.3	1%
Elderly	54.0	54.9	2%	54.5	1%	0.4	1%
Non-Elderly	54.2	54.8	1%	54.5	1%	0.3	1%
Disabled	54.2	54.9	1%	54.5	1%	0.3	1%
Non-Disabled	54.1	54.8	1%	54.5	1%	0.3	1%
Hispanic	54.0	55.3	2%	55.0	2%	0.3	1%
Non-Hispanic	54.1	54.8	1%	54.5	1%	0.3	1%
Zero car households	51.7	53.4	3%	53.0	3%	0.3	1%

Average Auto Travel Time for All Purposes (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2035 No-Build Min Saved	v.s. 2035 No-Build %Saved
All	14.4	15.6	9%	15.3	6%	0.4	2%
Minority	13.9	14.7	6%	14.5	4%	0.3	2%
Non-Minority	14.6	15.9	9%	15.5	6%	0.4	3%
Poverty	13.7	14.8	9%	14.6	7%	0.3	2%
Non-Poverty	14.5	15.8	8%	15.4	6%	0.4	3%
Elderly	14.4	15.4	7%	15.1	5%	0.4	2%
Non-Elderly	14.4	15.7	9%	15.3	6%	0.4	3%
Disabled	14.2	15.4	8%	15.0	5%	0.4	2%
Non-Disabled	14.4	15.7	9%	15.3	6%	0.4	3%
Hispanic	13.9	15.2	10%	14.9	7%	0.3	2%
Non-Hispanic	14.4	15.6	8%	15.3	6%	0.4	2%

Average Transit Travel Time for All Purposes (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2035 No-Build Min Saved	v.s. 2035 No-Build %Saved
All	53.8	54.4	1%	54.1	1%	0.2	0%
Minority	52.9	52.6	-1%	52.5	-1%	0.1	0%
Non-Minority	54.2	55.0	2%	54.8	1%	0.3	0%
Poverty	52.4	52.9	1%	52.7	0%	0.2	0%
Non-Poverty	54.1	54.6	1%	54.4	0%	0.2	0%
Elderly	53.5	54.4	2%	54.1	1%	0.3	1%
Non-Elderly	53.9	54.4	1%	54.1	0%	0.2	0%
Disabled	53.7	54.4	1%	54.0	1%	0.3	1%
Non-Disabled	53.9	54.4	1%	54.1	0%	0.2	0%
Hispanic	53.9	54.8	2%	54.5	1%	0.4	1%
Non-Hispanic	53.9	54.4	1%	54.1	0%	0.2	0%
Zero car households	51.0	52.8	4%	52.4	3%	0.4	1%

Average Peak Auto Travel Time to CBD (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2035 No-Build Min Saved	%Saved
All	20.1	27.7	38%	26.2	30%	1.6	6%
Minority	17.6	21.2	20%	20.2	15%	1.0	5%
Non-Minority	20.9	29.9	43%	28.1	35%	1.8	6%
Poverty	15.9	22.4	40%	21.2	33%	1.1	5%
Non-Poverty	20.7	28.6	38%	26.9	30%	1.7	6%
Elderly	19.3	26.5	38%	25.1	30%	1.4	5%
Non-Elderly	20.2	27.9	38%	26.3	30%	1.6	6%
Disabled	18.3	25.8	41%	24.4	33%	1.4	6%
Non-Disabled	20.3	27.9	38%	26.3	30%	1.6	6%
Hispanic	19.1	25.1	31%	23.9	25%	1.2	5%
Non-Hispanic	20.1	27.8	38%	26.2	30%	1.6	6%

Average Off-Peak Auto Travel Time to CBD (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2035 No-Build Min Saved	%Saved
All	16.9	18.6	10%	18.3	9%	0.3	2%
Minority	14.4	14.6	1%	14.4	0%	0.3	2%
Non-Minority	17.6	20.0	13%	19.6	11%	0.3	2%
Poverty	13.4	15.4	15%	15.1	13%	0.3	2%
Non-Poverty	17.4	19.1	10%	18.8	8%	0.3	2%
Elderly	16.2	18.0	11%	17.7	9%	0.3	2%
Non-Elderly	16.9	18.7	11%	18.4	9%	0.3	2%
Disabled	15.4	17.5	13%	17.2	11%	0.3	2%
Non-Disabled	17.0	18.8	10%	18.4	8%	0.3	2%
Hispanic	16.2	17.3	7%	17.0	5%	0.3	2%
Non-Hispanic	16.9	18.6	10%	18.3	9%	0.3	2%

Average Peak Transit Travel Time to CBD (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2035 No-Build Min Saved	%Saved
All	45.9	50.9	11%	49.9	9%	1.0	2%
Minority	41.9	44.7	7%	43.5	4%	1.2	3%
Non-Minority	47.7	53.6	12%	52.5	10%	1.1	2%
Poverty	39.0	44.1	13%	43.2	11%	0.9	2%
Non-Poverty	47.4	52.2	10%	51.1	8%	1.1	2%
Elderly	44.9	50.8	13%	49.7	11%	1.2	2%
Non-Elderly	46.3	50.9	10%	49.9	8%	1.0	2%
Disabled	42.7	49.0	15%	47.9	12%	1.1	2%
Non-Disabled	46.5	51.1	10%	50.1	8%	1.0	2%
Hispanic	46.3	49.9	8%	48.6	5%	1.2	2%
Non-Hispanic	46.2	51.0	10%	50.0	8%	1.0	2%
Zero car households	36.8	43.7	19%	42.5	16%	1.2	3%

Average Off-Peak Transit Travel Time to CBD (minutes)

	2010	2035 No Build	% Inc Over 2010	2035 MTP	% Inc Over 2010	v.s. 2030 No-Build Min Saved	%Saved
All	49.9	50.3	1%	51.6	3%	-1.3	-3%
Minority	46.5	45.0	-3%	45.7	-2%	-0.6	-1%
Non-Minority	52.0	52.8	2%	54.2	4%	-1.4	-3%
Poverty	43.2	44.3	2%	45.1	4%	-0.8	-2%
Non-Poverty	51.8	51.5	-1%	52.8	2%	-1.3	-3%
Elderly	50.0	51.0	2%	51.9	4%	-0.9	-2%
Non-Elderly	50.4	50.2	0%	51.5	2%	-1.3	-3%
Disabled	46.8	48.8	4%	49.7	6%	-0.9	-2%
Non-Disabled	50.7	50.4	-1%	51.7	2%	-1.3	-3%
Hispanic	49.7	49.2	-1%	50.4	1%	-1.2	-2%
Non-Hispanic	50.4	50.3	0%	51.6	2%	-1.3	-3%
Zero car households	41.1	44.2	7%	44.9	9%	-0.7	-2%

Percent of Population with Access to CBD by Transit in the Peak Hours

	2010	2035 No Build	2035 MTP
All	89%	84%	87%
Minority	96%	96%	97%
Non-Minority	87%	81%	83%
Poverty	97%	92%	93%
Non-Poverty	88%	83%	86%
Elderly	91%	88%	89%
Non-Elderly	89%	84%	86%
Disabled	92%	88%	89%
Non-Disabled	89%	84%	86%
Hispanic	95%	90%	92%
Non-Hispanic	89%	84%	87%
Zero car households	98%	94%	94%

Percent of Population with Access to CBD by Transit in the Off Peak Hours

	2010	2035 No Build	2035 MTP
All	75%	70%	78%
Minority	88%	87%	92%
Non-Minority	71%	64%	74%
Poverty	91%	84%	89%
Non-Poverty	73%	68%	76%
Elderly	82%	76%	82%
Non-Elderly	75%	69%	78%
Disabled	84%	76%	82%
Non-Disabled	75%	69%	78%
Hispanic	81%	76%	84%
Non-Hispanic	75%	70%	78%
Zero car households	93%	85%	90%

Percent of Vehicle Miles Traveled by Level of Congestion during Peak Hours

	Level of Congestion	**2010**	**2035 No Build**	**2035 MTP**
All	Moderate + High	9%	19%	17%
	High	2%	7%	5%
Target Area	Moderate + High	16%	25%	22%
	High	4%	9%	7%
Non-Target Area	Moderate + High	7%	18%	15%
	High	2%	6%	5%