Socioeconomics Technical Report

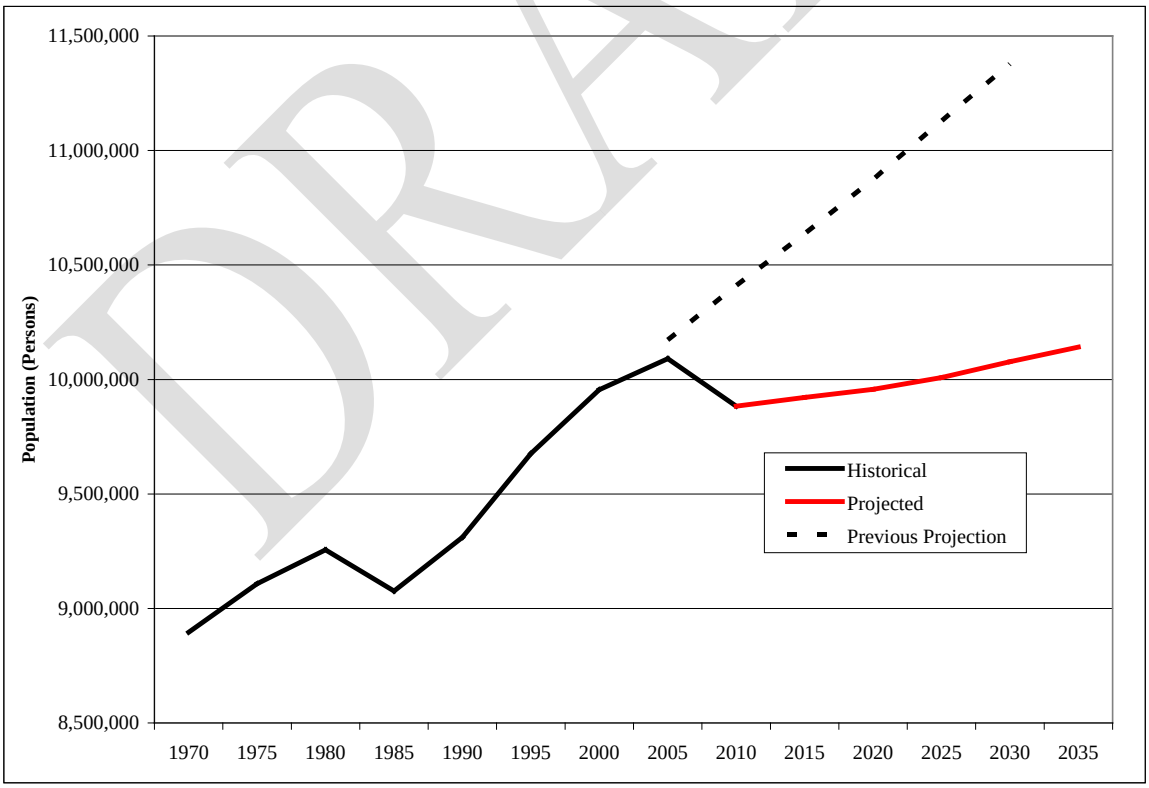
The *Socioeconomics Technical Report* (August 2006) identified historical, existing, and projected conditions relative to population, employment, households, income, vehicle availability, migration, and environmental justice. The purpose of this white paper is to identify significant changes in trends and projections of state-level socioeconomic variables since the 2005-2030 MI Transportation Plan (MITP) was completed. Specifically, this update will examine the forecast period 2010-2035.

Trends changed significantly between 2000 and 2010, as Michigan experienced a major recession/economic collapse that included major restructuring of the domestic automobile industry, traditionally a mainstay of the Michigan economy. These changes resulted in dramatic employment losses. Although we see growth for the state in the future, the growth forecast is lower now than our predictions for MITP analysis.

Total Population

After peaking in 2005, total population declined. The 2010 Census data shows that the state lost approximately 65,000 people between 2000 and 2010. Census 2010 data shows a population of 9.88 million for Michigan.

Figure 1: Michigan Population 1970-2035



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Census

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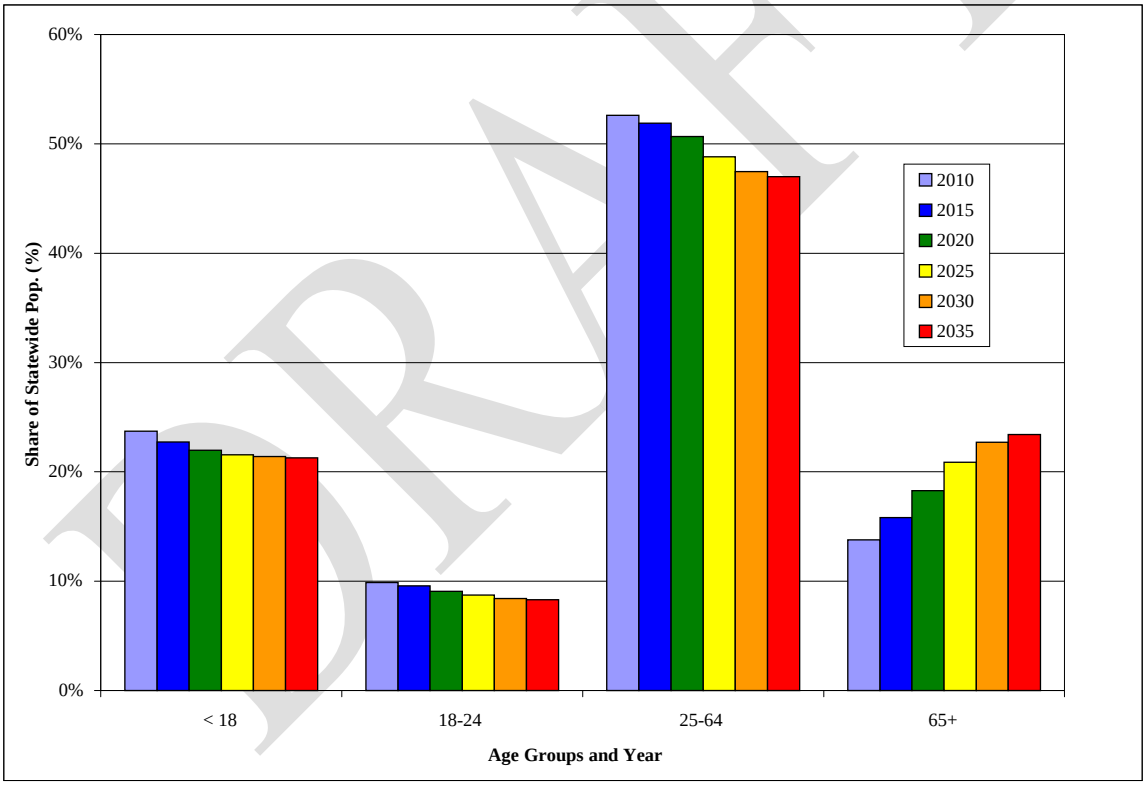
A recently completed Michigan Department of Transportation (MDOT) forecast, finds that population is expected to grow 2.6% over 2010-2035 with a projected population of 10.1 million in 2035 (Figure 1 above)1.

The estimated long-term population growth for MITP was estimated to be about 12% between 2005 and 2030. This is a major difference, as these estimates did not foresee the state's economic collapse of 2008-2010 and the related effect of population loss.

Population by Age Group

The population of Michigan in 2010 remained relatively young, with a great majority (86%) of the population under the age of 65. As shown in Figure 2 below, about 53% of the population in 2010 was between 25 and 64 years old and about 34% of the population was under the age of 25.

Figure 2: Share of Statewide Population by Age Group 2010-2035



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Census

[1] The University of Michigan over the past eighteen years has produced five sets of long-term economic and demographic forecasts for the Statewide and Urban Travel Analysis Section at MDOT (1994, 1998, 2003, 2008, and 2012). The official forecasts used for the state long-range transportation plan (2005-2030 MI Transportation Plan) were from the 2003 forecasts.

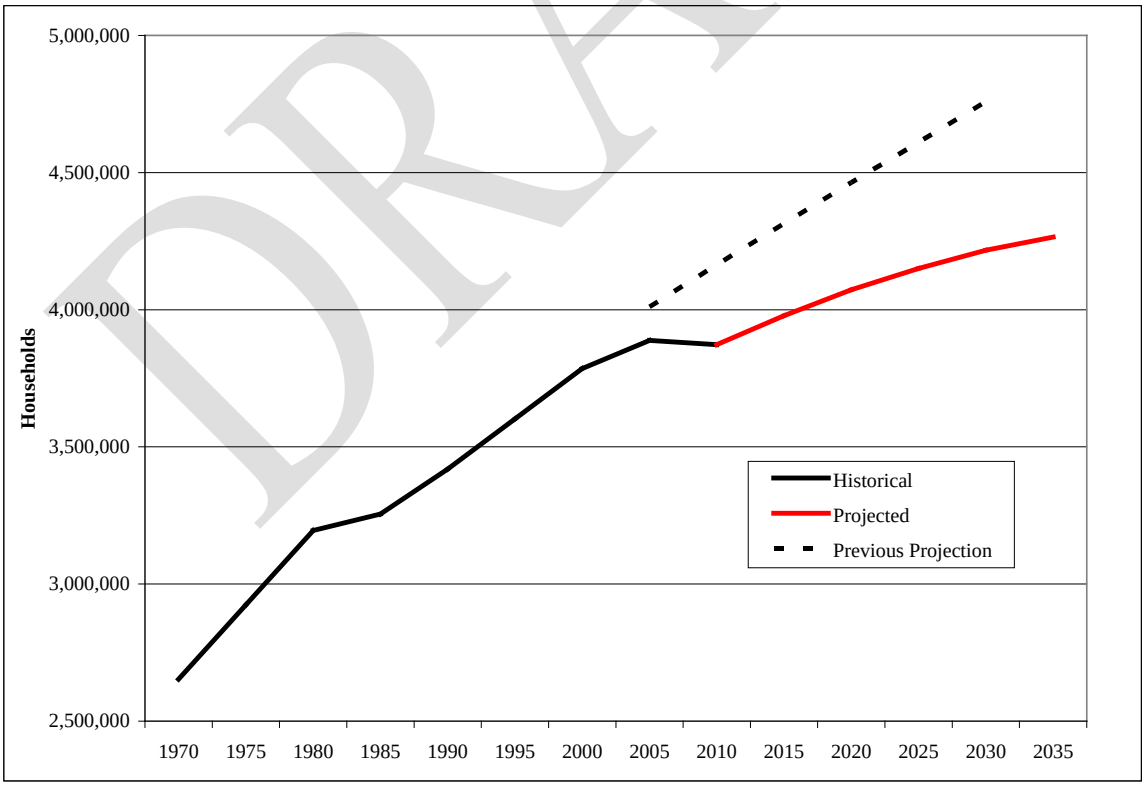
Michigan has a disproportionately large share of baby boomers, people aged 45 to 64, constituting 27.8% of the population in 2010. Those under the age of 45 comprise a smaller share accounting for 24.8% of the state's population. As noted in the 2006 report, the age profile for the state will change significantly over the next 25 years. However, unlike the forecast for population growth, the current forecast of changes in age distribution remains consistent with those in the 2006 report:

- The senior population (age 65+) will dramatically increase from 14% (2010) to 23% of the population by 2035 (1.36 million in 2010 to 2.37 million in 2035).
- The prime working age population (25-64) will shrink from 53% (2010) to 47% of the population by 2035 (5.2 million in 2010 to 4.76 million in 2035).
- The share of population under age 25 will slightly decrease from 34% (2010) to 30% by 2035 (3.32 million in 2010 to 3.0 million in 2035).

Households

Census 2010 data shows a count of 3.87 million for Michigan. Overall, the number of households is projected to increase about 10% over 2010-2035 (Figure 3 below). However, the previously estimated long-term household growth was 19% between 2005 and 2030. This difference is also attributed to the state's economic collapse.

Figure 3: Michigan Households 1970-2035



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Census

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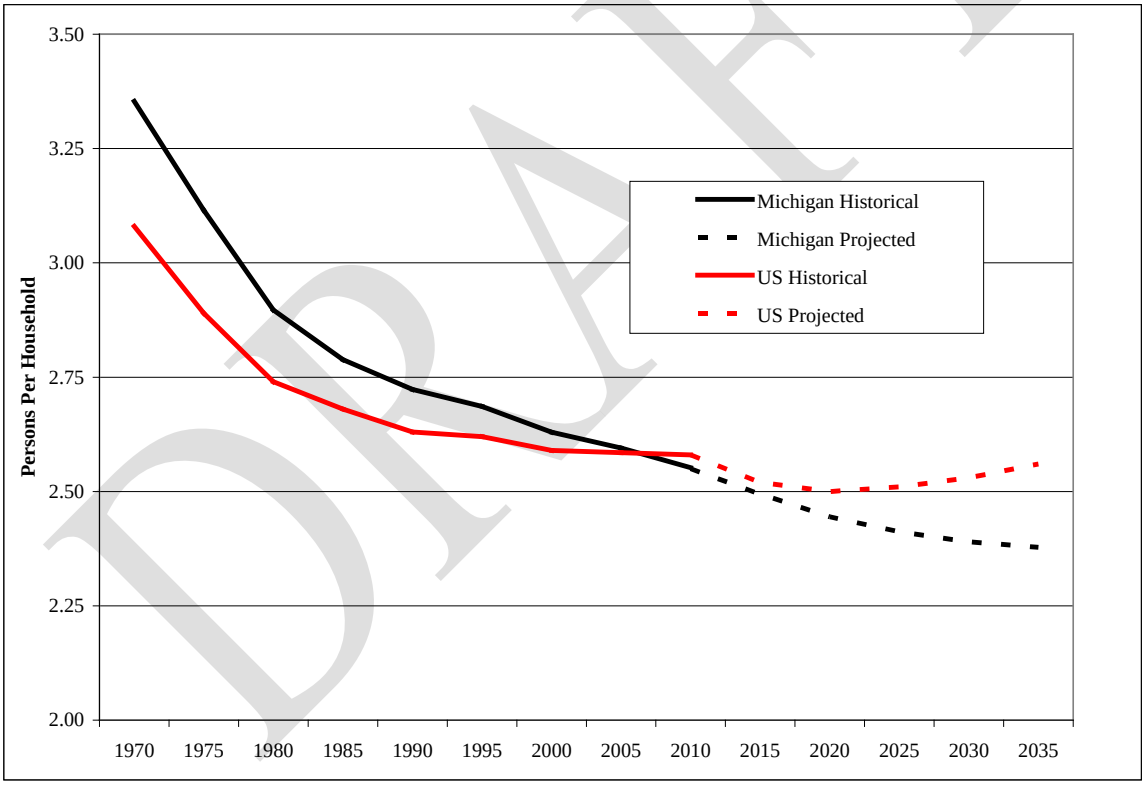
The fastest growth is expected to occur in one-person households, which are projected to increase 26% during the 2010-2035 forecast period compared to 37% estimated for 2005-2030. For two-person households, long-term growth is expected to be about 12% versus the 28% from the 2005-2030 MITP estimates. Conversely, the number of relatively larger households (those with 4+ persons) is projected to decline by about 3% over 2010-2035 (compared to just 0.5% in the previous 2005-2030 estimates).

Household Size

The average number of persons per household in Michigan has declined significantly over time; from about 3.3 in 1970 to about 2.55 in 2010. This trend generally mirrors what has occurred nationally (Figure 4 below). Moreover, average household size is expected to continue declining long-term, largely due to the aging of the population and the tendency of older residents to prefer smaller households.

Figure 4: Average Household Size, 1970-2035 (Michigan vs. US)



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Census

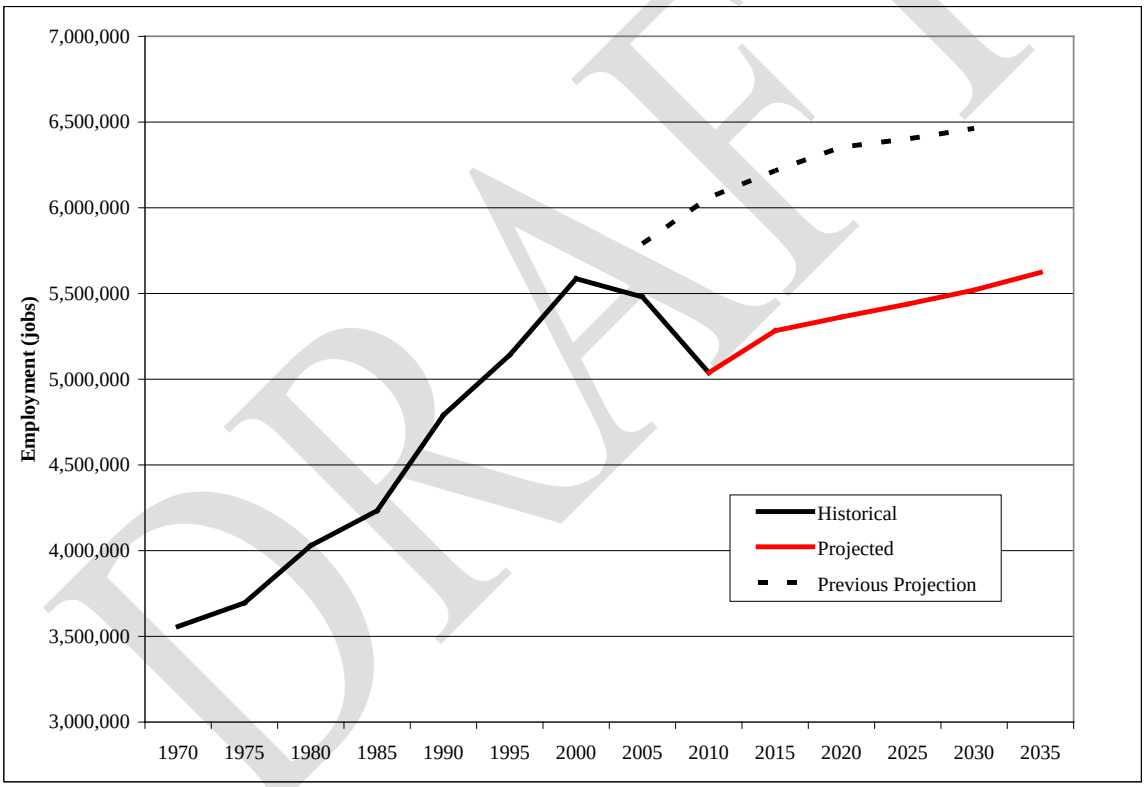
Total Employment

As shown below in Figure 5, employment growth from 1970 to 2000 was relatively strong at 57% with an average annual growth rate of 1.9% for the period. Of course, that trend changed significantly between 2000 and 2010, as Michigan experienced a major recession/economic collapse that resulted in dramatic employment losses of about

549,000 jobs or an average decline of about 1% per year. This is in marked contrast to the previous MITP, which forecasted continued, but slowed growth over 2000-2010 and beyond. Obviously, the previous forecasts could not foresee the full extent of the recent economic collapse and its related employment losses over 2000-2010.

Employment for the state as a whole is expected to reverse the decline of the past decade with a projected average annual growth rate of 0.6% during 2010-2020. After 2020, this increase is expected to slow to about 0.3% per year as sluggish labor force growth becomes a constraint on employment gains. Overall, Michigan is projected to return to 2000 peak employment levels by 2034, with expected employment growth of 12% over the 2010-2035 forecast period. Measured in the number of jobs, employment climbs from 5.04 million in 2010 to 5.62 million in 2035, an addition of about 586,000 jobs.

Figure 5: Michigan Total Employment, 1970-2035



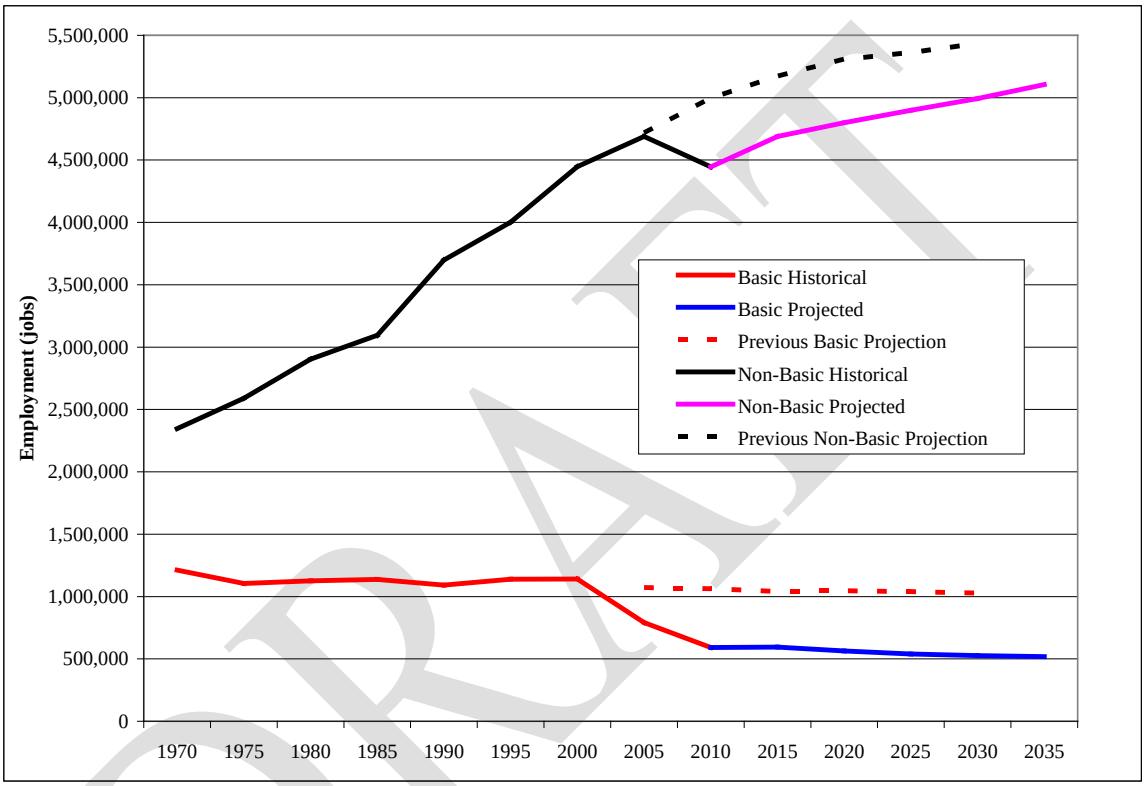
Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Bureau of Economic Analysis (USBEA)

Basic & Non-Basic Employment

One way to examine employment growth is to consider it in terms of basic and non-basic growth. Basic industries include manufacturing, farming/agriculture, mining, forestry, and fishing. Non-basic industries include retail, construction, services, government, wholesale, transportation and public utilities, and finance/insurance/real estate. As noted in our previous report, basic employment has been relatively flat to declining in the past 40 years, and the same trend is projected for the next 25 years.

The growth in Michigan's employment has been primarily driven by non-basic industries. This will continue over the next 25 years. Non-basic employment has historically (1970-2010) grown at about 1.7% per year and is projected to slow to a pace of 0.6% annually over the next 25 years. Basic and non-basic employment trends and projections are shown below in Figure 6.

Figure 6: Basic vs. Non-Basic Employment, 1970-2035

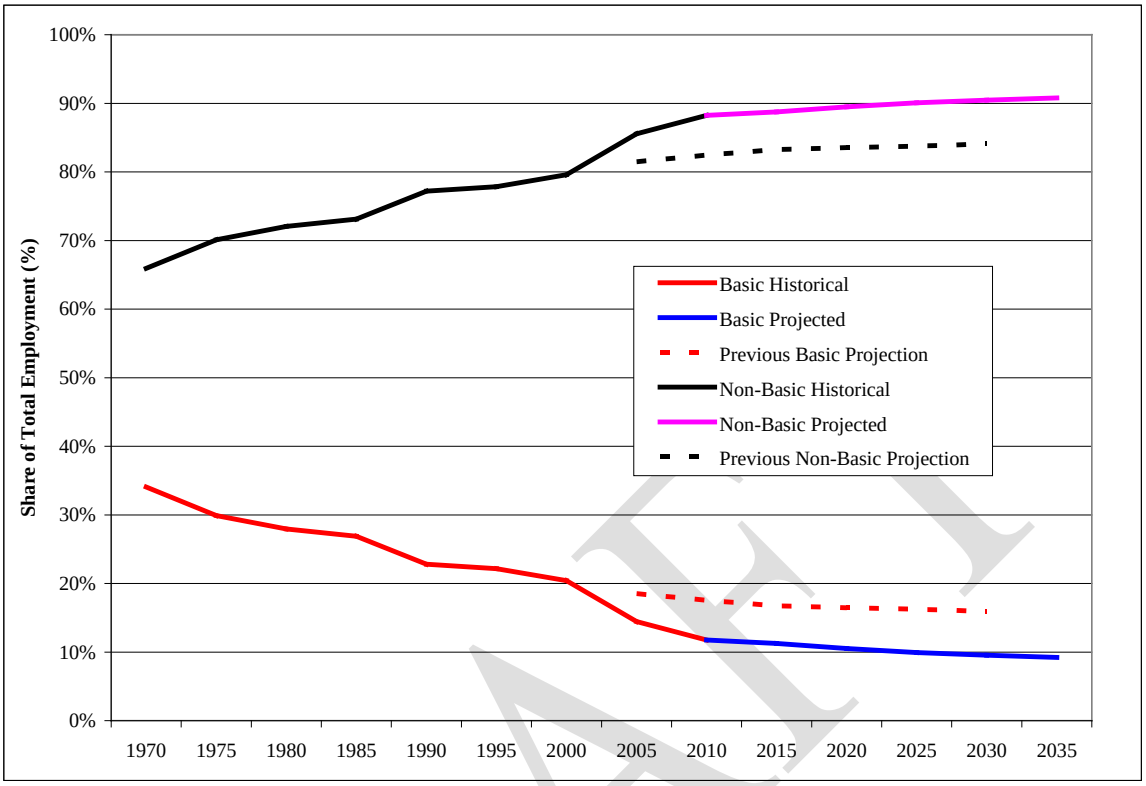


Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Bureau of Economic Analysis (USBEA)

Note: In 2000-2001, USBEA changed its industry coding from the Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS). However, this change did not significantly influence the overall trends above.

Declining basic and increasing non-basic employment will also influence changes in the share of basic vs. non-basic jobs. From 1970 to 2010, the non-basic employment share grew from about 66% to 88%. As Michigan slowly recovers from its recent economic collapse, this share is projected to increase to about 91% by 2035, as shown below in Figure 7. The continuing national shift from a manufacturing economy to an increasingly service-oriented economy will accentuate the role of non-basic jobs, markets, and activities in Michigan to the year 2035. This trend was also identified in our previous report, and the currently projected changes are consistent with those earlier projections.

Figure 7: Share of Basic and Non-Basic Employment, 1970-2035



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Bureau of Economic Analysis (USBEA)

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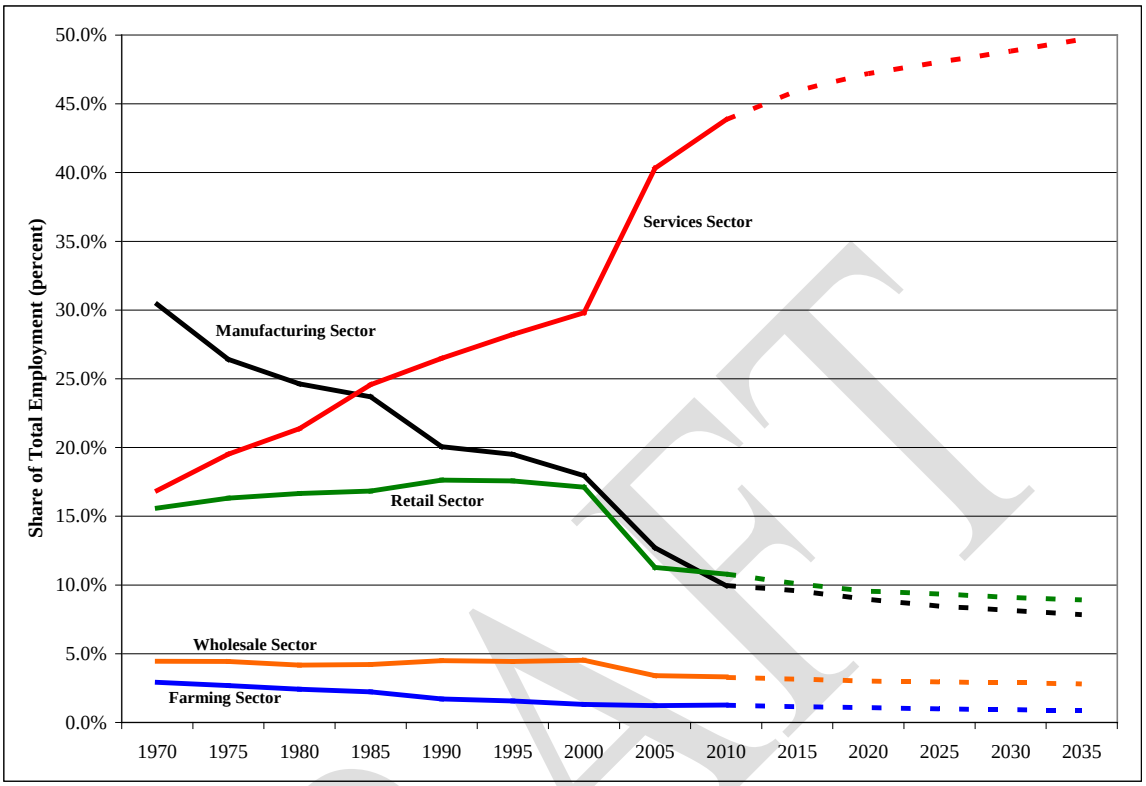
Employment by Sector

The composition of employment in Michigan has changed significantly over the last 40 years and will continue to change during the 2010-2035 forecast period (Figure 8 below). The manufacturing sector's share of the employment base has dropped sharply and steadily from 30% in 1970 to just 10% by 2010. It will continue to decline to about 8% by 2035. The services sector, however, has increased dramatically from about 17% in 1970 to about 44% in 2010. It will continue to grow to almost 50% by 2035. While the retail sector saw moderate growth over 1970-2000, it experienced a sharp drop during the 2008-2010 recession. It is expected to continue a slight, though steady, decline to 2035. Meanwhile, the wholesale and farming sectors of the state's employment base have remained relatively stable to declining (historically), and both are expected to slightly decline over the long term.

These patterns are quite different from the previous forecasts for the 2005-2030 MITP (see Figure 18 in previous MITP), which did not foresee the overall economic stagnation of the 2000-2010 period and the specific economic collapse of 2008-2010. Thus, the previous analysis could not predict the sharp declines in manufacturing and retail employment associated with that period. Moreover, given those declines, the already growing services sector, by default, saw a significant spike (2000-2005) in its share of the employment base, which the previous estimates could not account for at the time.

Figure 8: Share of Employees in Five Key Sectors, 1970-2035



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Bureau of Economic Analysis (USBEA)

Labor Force

As shown below in Figure 9, the state's labor force grew by about 524,000 between 1990 and 2000 (about 1.1% annually). However, over the subsequent decade (2000-2010), the labor force experienced a major decline of about 397,000. Not surprisingly, this was aligned with the state's decade-long economic stagnation capped by the 2008-2010 recession/collapse. This is a significant difference with the previous MITP estimates, which could not foresee the deep recession of 2008-2010; it predicted labor force recovery after 2005.

Compared to the relatively high growth of the labor force of the 1990s, and coming out of the recent economic collapse, Michigan's labor force growth will slowly recover by about 360,000 people during 2010-2035 with an average annual growth rate of only 0.3%. This is projected to result in a tighter labor force over the long-term. As noted in our previous report, these expected labor shortages will largely be due to the projected declines in both the share of working-age population and the share of population under the age of 25. Relative to the latter, this is an important factor since that cohort is the age group from which employers recruit entry-level workers.

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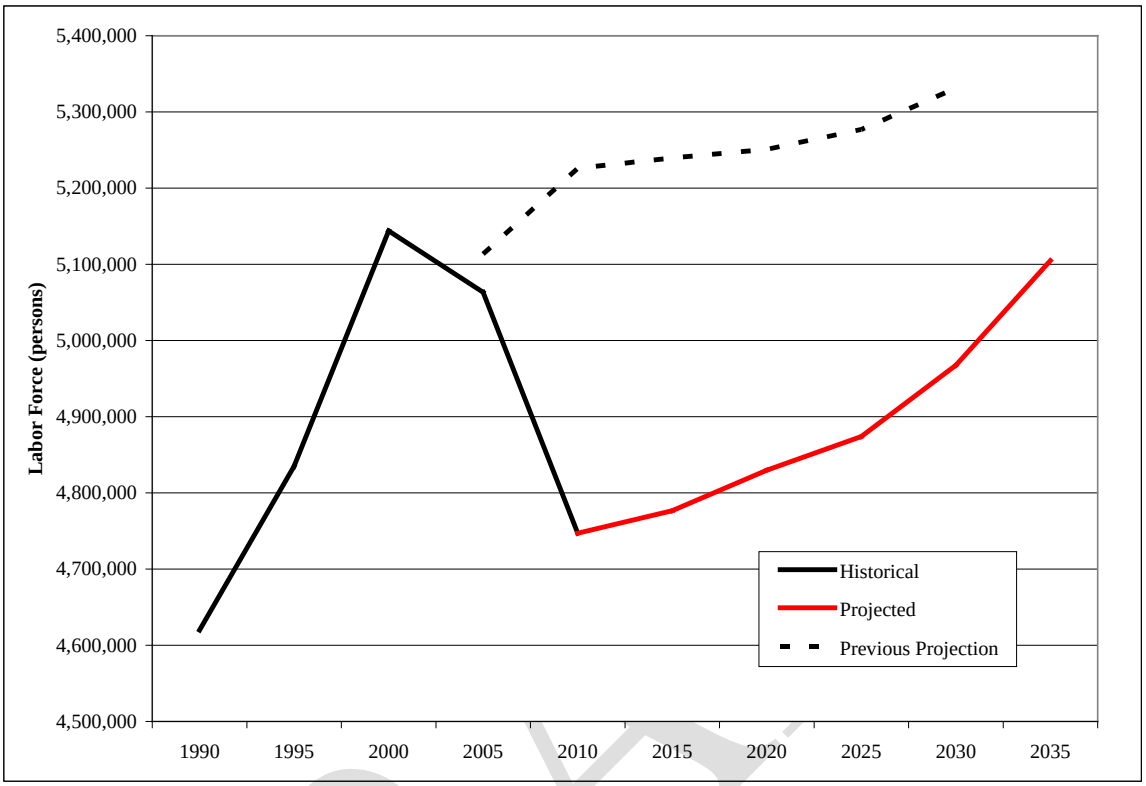
Figure 9: Michigan Labor Force, 1990-2035

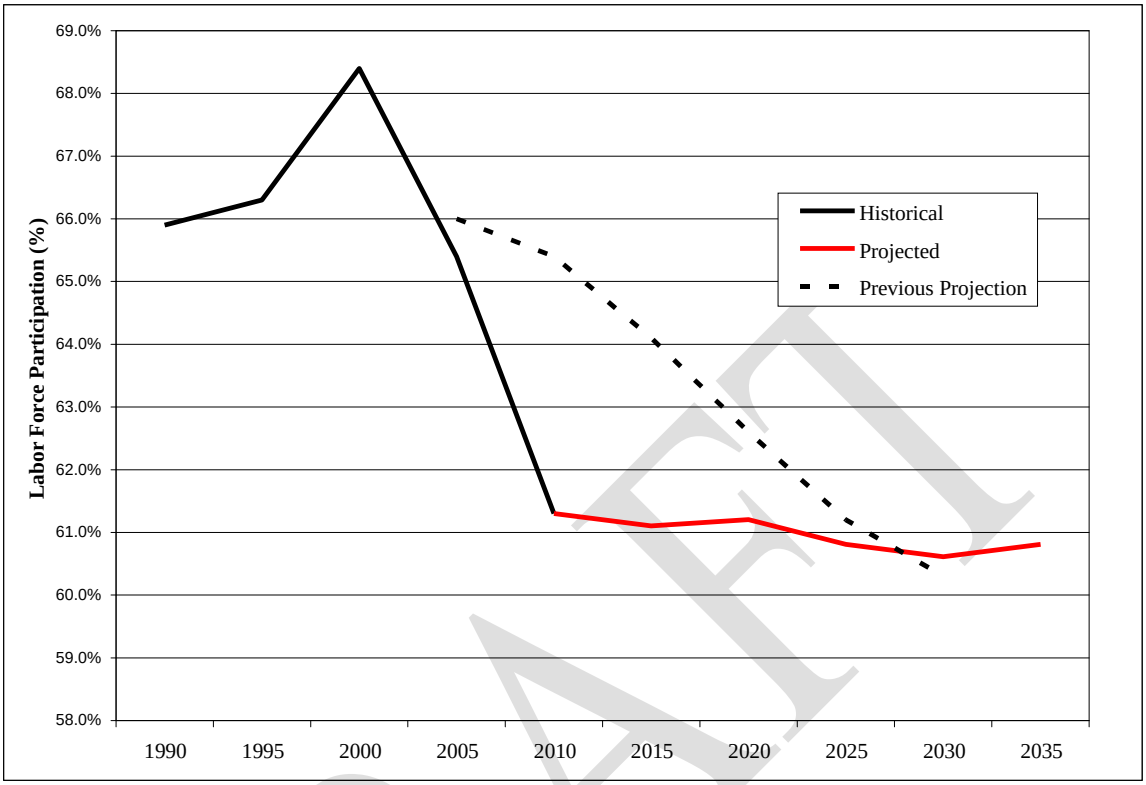


Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Bureau of Economic Analysis (USBEA)

Labor Force Participation

During the past 20 years, labor force participation rates in Michigan fluctuated between 61% and 68%, and generally paralleled recent patterns of economic growth (1990-2000) and decline (2000-2010). Over the long-term (2010-2035), however, labor force participation rates are expected to settle into a relatively stable pattern hovering just above or below 61% (Figure 10 below). This contrasts somewhat significantly with the previous estimates, which foresaw participation rates declining steadily during 2005-2030 from 66% to 60%. One of the unanticipated consequences of the 2008-2010 collapse was a major and rapid restructuring of the domestic automobile industry over several *months* instead of the slow and gradual restructuring over several years that was expected in the previous report. The currently projected stable rate of labor force participation is partially due to a major reshaping of the Michigan economy that occurred during the 2008-2010 collapse and may also, in part, be due to speculation that a greater than usual share of the aging *baby boomer* population will choose to remain active in labor markets after reaching traditional retirement years.

Figure 10: Michigan Labor Force Participation, 1990-2035



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Bureau of Economic Analysis (USBEA)

Migration

As shown in Table 1 below, Michigan lost over 571,000 people to net migration during the 1980s, gained back nearly 60,000 in the 1990s, and then lost over 479,000 people during the 2000-2010 recession period. The latter decade's net migration loss is significantly higher than what the previous MITP estimated due to the dismal economy of that period. The previous analysis could not have foreseen the full extent of the 2000-2010 recession and its related effects of population and employment loss.

The economic downslide of 2000-2010 has also generated a significantly different forecast of the state's migration patterns relative to the previous 2030 estimates Whereas, the former MITP forecasts expected overall net migration to be positive after 2010, this update shows that net migration will remain negative until 2030 with a slight positive recovery afterwards. Specifically, net domestic migration remains negative over the long run, but at a slower rate over the decades. Net international migration continues to show moderate growth during the forecast period. As a response to forecasted labor shortages, international migration is offsetting the out-migration of the work force-age population. Without international migration, Michigan's population would be declining at an accelerating rate over the next 25 years, which would also result in a weaker employment profile.

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Table 1: Domestic and International Migration – Michigan, 1980s-2030s

	1980s	1990s	2000s	2010s	2020s	2030s
International Migration	100,700	113,600	256,213	235,405	294,921	364,405
Domestic Migration (aged 65+)	-13,400	-20,400	-45,307	-35,091	-46,768	-44,172
Domestic Migration (aged < 65)	-658,500	-33,900	-690,100	-421,174	-291,795	-231,655
Total Migration	***-571,200***	***59,300***	***-479,195***	***-220,860***	***-43,642***	***88,578***

Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section

Statewide Environmental Justice (EJ) Populations

An environmental justice (EJ) analysis, at the statewide level, should examine the total negative and positive outcomes of transportation program of projects to see whether there is a disproportionate effect in EJ areas. This process involves establishing a baseline, geographic representation of the location of EJ populations, and then examining MDOT's program as a whole, as it relates to these areas. (Please refer to Environmental Justice Guidance for Michigan Transportation Plans, Programs and Activities for background on MDOT's EJ requirements.)

As noted in our previous Technical Report, in Michigan, the EJ population and application in the metropolitan areas are defined by the metropolitan planning organizations (MPOs). The non-MPO areas' EJ populations and applications are defined by MDOT. This report focused only on the MDOT areas.

Based on Census 2010 data, this section displays updated baseline EJ maps relative to the 2005-2030 MITP. Figures 11 through 14, respectively, show the four minority populations as they relate to EJ: Asian-American, Hispanic, African-American, and Native American (see following pages). Unfortunately, this update does not include an EJ map based on the distribution of low-income populations. Whereas, the 2005-2030 MITP analyzed Census 2000 block group data on the share of population below the poverty line, such data is now available only at the tract level drawn from ACS 2006-2010 *period* data, so a direct comparison of change is not possible at this time.

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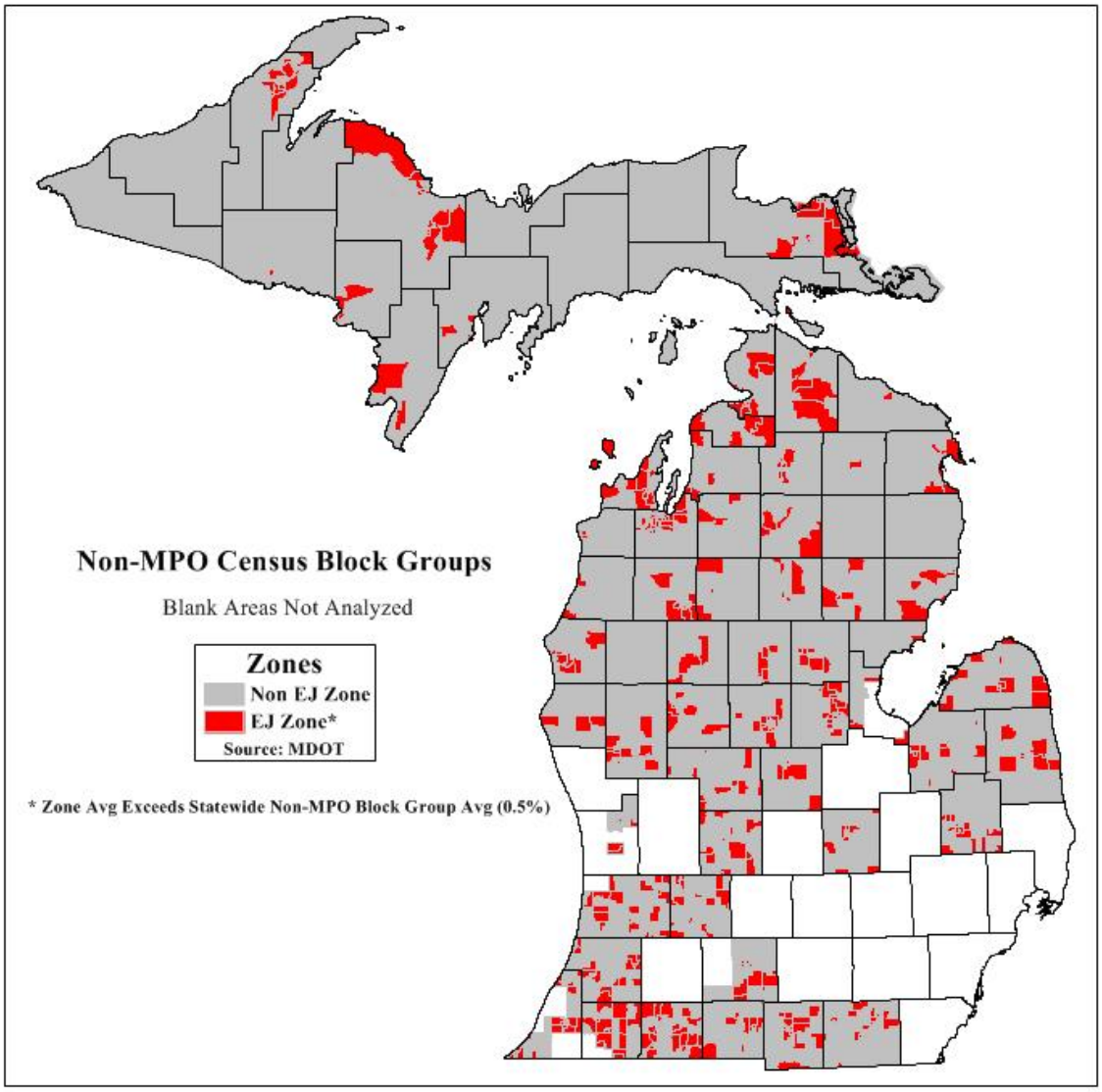
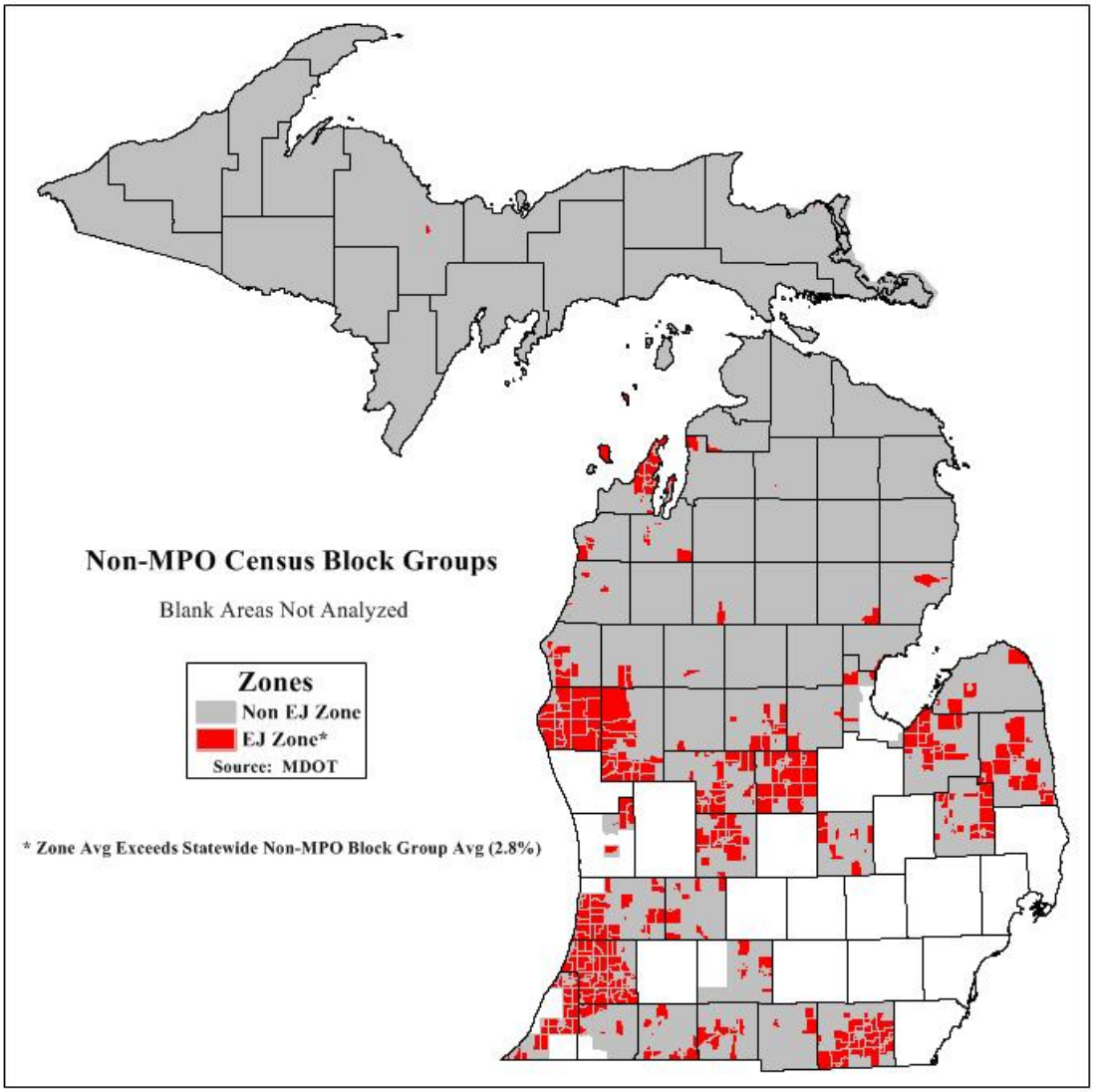
Figure 11: Asian-American EJ Population (2010)



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Census

The 2010 distribution of Asian-American EJ zones has changed very little from the previous plan, except in the Upper Peninsula where there are fewer and relatively smaller EJ concentrations. Moreover, MDOT's block group threshold for Asian-American EJ designation (0.5%) has not changed since 2000.

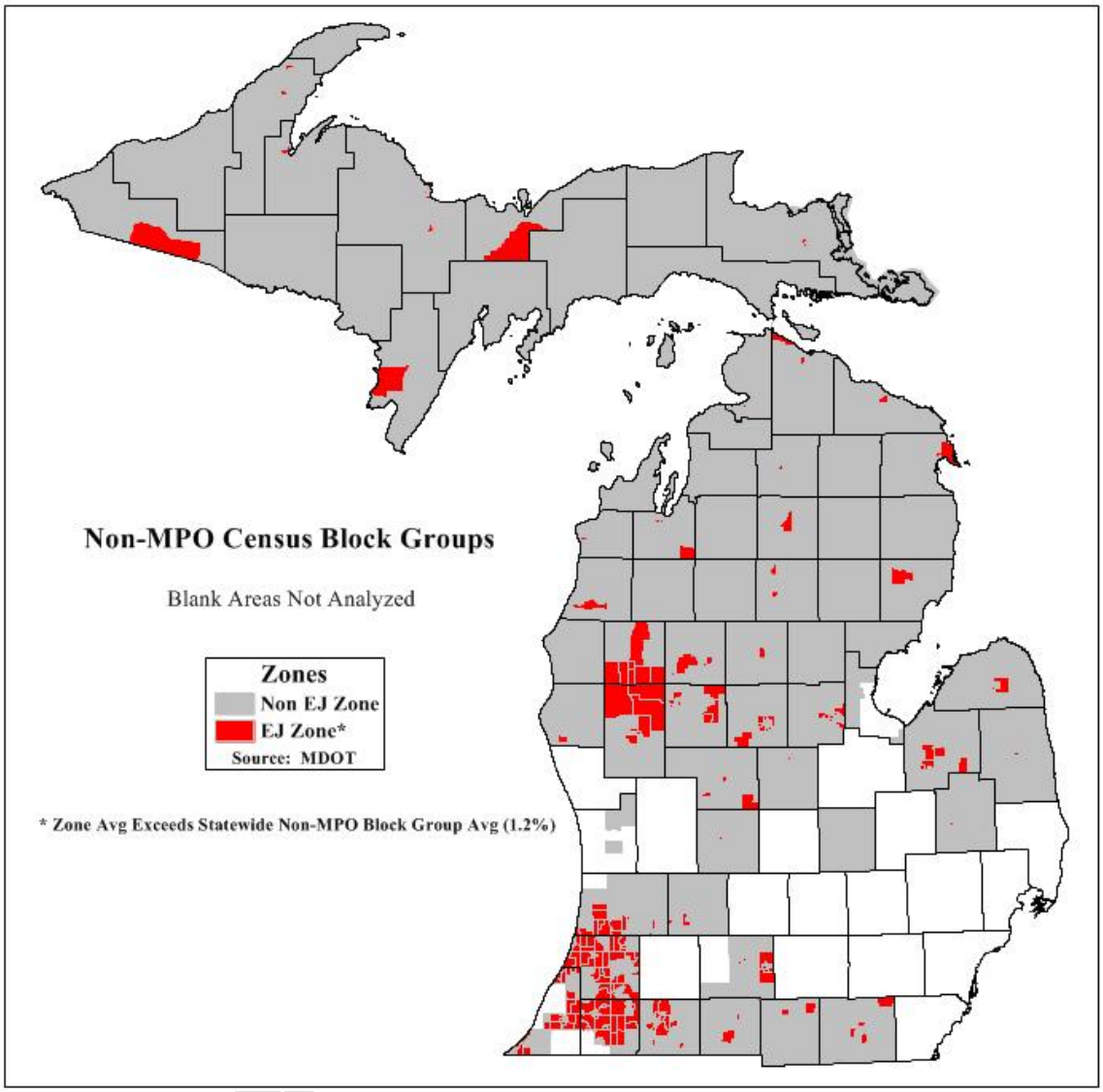
Figure 12: Hispanic EJ Population (2010)



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Census

The 2010 distribution of Hispanic EJ zones has changed very little from the previous plan, except in the Upper Peninsula, where there is no longer an EJ concentration in Gogebic County. There has been a slight increase in MDOT's block group threshold for Hispanic EJ designation (2.8%) compared to 2000 when it was (2.5)%.

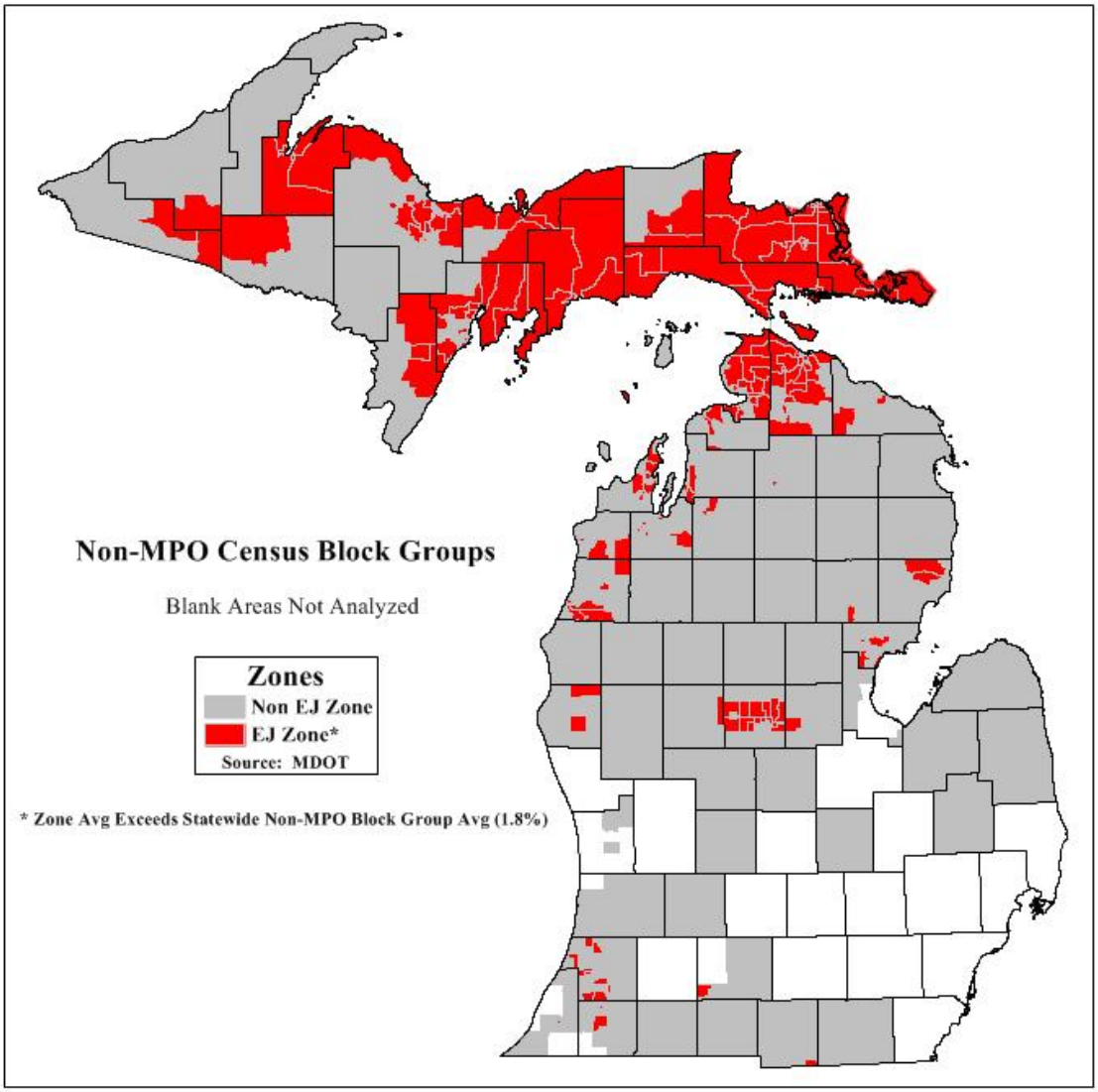
Figure 13: African-American EJ Population (2010)



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Census

The 2010 distribution of African-American EJ zones has changed very little from the previous plan, except in the Upper Peninsula, where there are no longer EJ concentrations in Keweenaw, Houghton, and Menominee Counties. There has been a slight decrease in MDOT's block group threshold for African-American EJ designation (1.2%) compared to 2000 when it was (1.5)%.

Figure 14: Native American EJ Population (2010)



Sources: Michigan Department of Transportation Statewide and Urban Travel Analysis Section
US Census

The 2010 distribution of Native American EJ zones is generally the same as it was in the previous plan, except in the northern Lower Peninsula where there are fewer and smaller EJ concentrations. There has been a slight increase in MDOT's block group threshold for Native American EJ designation (1.8%) compared to 2000 when it was (1.2)%.

Transportation Implications of Demographic and Socioeconomic Changes

The demographic and socioeconomic characteristics of the population can have a substantial effect on changes in transportation behavior. Therefore, it is very important that these socioeconomic changes are well understood as policies are developed for MITP. The following subsections discuss several implications for transportation in Michigan based on the foregoing analyses for population, households, employment, labor force, migration, and environmental justice.

Population and Age Groups

It is important to note that, while Michigan's population is expected to grow at a slower rate to the year 2035, the population will still increase in the time horizon of MITP. Increases in population growth will continue to place greater demands on a relatively static transport system. These demands may lead to increased congestion in urban and suburban regions and longer trip lengths that may extend peak commuting periods.

While overall population growth is expected to slow, major life cycle and demographic shifts are anticipated by the year 2035. As described in this technical report, the dominant socioeconomic change in Michigan is expected to be the dramatic increase in aging and retired populations. Consequently, transport to health, recreational, and other activities will increase in importance as this segment transitions from the daily commute to different travel patterns characteristic of retirees and older travelers.

Some of the effects of the overall changing age profile are likely to include:

1. An aging population may require changes in road design, traffic engineering, and road signage, and possible changes in driver re-testing at certain ages.
2. Bicycle and pedestrian access to activities for aging population segments.
3. Transit and specialized transportation services to ensure mobility for aged travelers, especially those age groups that become unwilling or unable to drive.
4. Senior population will remain in the labor force longer, thereby contributing to a greater midday peak, increased vehicle miles traveled (VMT) on the system, and possibly increased congestion.
5. Increasing need for senior-related transportation services (e.g., medical, personal needs) particularly during off-peak periods. This will become especially important as elderly drivers discontinue driving.
6. Aging population concentrations in urban and suburban areas will likely result in the growth of senior adult living communities and assisted living centers for seniors. This may require the state (or other authority) to consider developer incentives to make these types of facilities transit-friendly.
7. The decline in the working-age population may translate to relatively fewer trips in the traditional commuting peak periods.

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8. Continued stagnation or decline in younger age groups will affect the number of new licensed drivers in Michigan.

Households and Household Size

Because most trips are generated at the household level, it is likely that expected increases in the number of households will increase both the number of trips on the system and overall vehicle miles traveled (VMT) in Michigan. The *Travel Characteristics Technical Report* further explores trips generated at the household level and patterns such as trip chaining.

The trend towards smaller household size in Michigan could have significant implications on transportation system needs, dependent on associated changes in household composition and land use patterns. The life cycle changes associated with the aging population indicate more one and two-person households (households with no children, or where children have grown and left the home). This composition is associated with a rise in per-capita auto ownership and lower vehicle occupancy (as fewer households have working parents sharing rides to work, or transporting other family members from within the household to activities). The dispersion of travelers into smaller households can potentially increase VMT, trip lengths, and the ratio of vehicle trips to person trips. However, as retirees and persons of retirement age represent an increasing share of one and two-person households, it should be noted that the increasing trips associated with *empty nest* households may be spread throughout the day with retirees traveling less during peak periods and traveling more for other trip purposes throughout the day, or for trips potentially made using modes other than the single-occupant vehicle.

Shifts in land use will likely be a key determinant of how changes in household size and composition affect transportation system needs in Michigan. Smaller households suggest the potential for a reduction in population density and increases in trip lengths. However, the character and density of neighborhoods, zoning, and the preferred living arrangements for one and two-person households can significantly increase or decrease both the number of vehicle miles that may change with smaller households, as well as the viability of transit, walking, and other modes.

When trip origins and destinations are closer together due to land use and zoning decisions, the number of miles needed for a trip is reduced (reducing the number of vehicle miles). Higher densities also increase the number of trips that may originate or terminate within a particular area, increasing the potential transit market per revenue mile and contributing to the feasibility and productivity of transit routes. When households are located in close enough proximity to other activities to be within walking distance, walking becomes a transportation option that is not otherwise available. Living arrangements enable household members to share rides to activities and may enable one household member to make a single trip on behalf of the entire household. For example, if one person makes a weekly shopping trip for a two-person household, the number of

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shopping trips (and miles traveled for this activity) is half of what it would be if the two people each lived alone. Household size is also a key consideration in the *Land Use Technical Report*, which will further explore this trend and its potential linkages to transportation demand.

Changes in household size and composition have additional implications for the transportation system. This relationship is discussed in the *Travel Characteristics Technical Report*, which shows that members of smaller households make more trips than members of larger households. The role of "proxy trips" (trips by one person made on behalf of the entire household) is one factor in reducing vehicle trip rates for members of larger households. Another factor is the relative ease of carpooling with other members of the same household. Consequently, the expected continued decline in average household size suggests that there will be an increase in the number of vehicle trips per person with the potential for increasing VMT.

The growth in the number of households and decreasing average household sizes directly influence the number of trips and resulting VMT. Given the limited growth in road system capacity, these socioeconomic changes are expected to lead to increases in congestion and decreases in system efficiency.

Employment

Continued overall employment growth (though at slower than historical rates) is expected to increase overall trip attractions, leading to associated increases in VMT. However, with the overall tightening of the labor force, it is also possible that employers will relocate for better proximity to localized labor pools, further altering regional VMT patterns and levels. Also, as Michigan's employment continues to generally decentralize, commuting fields will likely increase resulting in longer work trips (time and distance), and increased VMT and congestion. Furthermore, provision of efficient transit service will become more difficult to achieve (due to reductions in the size of the potential transit market per revenue mile of transit service needed to reach transit markets).

The continuing shift to an increasingly service-oriented economy will generate a relatively high level of non-home-based travel between offices, clients, and customers. This will increase off-peak travel volumes and VMT, potentially exacerbating congestion in urban-suburban regions of the state. Furthermore, as service jobs and markets comprise an increasing share of Michigan's economy, their associated transportation needs could require changes in system needs. These changes include the potential for changing trip lengths, origin-destination pairs, the spreading of commuting peaks throughout the day, and increased use of other modes. Service establishments often run on more flexible schedules, and employ a smaller number of people per establishment than large factories (which run on shifts). This difference has the potential to affect both the spatial concentration and the hourly spread of trip productions and attractions. Service establishments also tend to attract more consumers to the place of business

(compared to factories, which are not consumer destinations). Consequently, the shift may result in overall higher levels of traffic and trip making.

The nature of the service establishment (such as when it operates, whether it caters to consumers on-site, and how much freight it attracts) is a key determinant of its need for roadway access, parking, and the viability of transit and other modes. The spatial location of a service establishment within a community is a key determinant of the suitability of pedestrian alternatives, as manufacturing and industrial properties are rarely located in walking proximity to residential neighborhoods (for environmental and aesthetic reasons). The implications of these changes are also discussed in other technical reports, affecting a wide range of transportation needs and alternatives, including the productivity of transit services to peak-hour roadway capacity, the efficiency of land use patterns, and the safety implications of travel at different times of day.

This continuing structural change will also affect freight and commercial transportation needs, since traditional manufacturing supply chains are complemented by service and manufacturing industry value chains with an increasing emphasis on the reliability and timeliness of deliveries for those inputs required to produce services. For example, health care services are extremely sensitive to the safe and timely delivery of medical devices, pharmaceuticals, and other commodities, which may represent less tonnage than traditional manufacturing supply chains, but for which the value and feasibility of the service depends heavily on the quality of the transportation system.

Labor Force

The aging of the population and the increase in retirees account for a significant anticipated reduction in Michigan's labor force and workforce participation. As this large and growing segment of the population moves from labor markets to consumer markets, trip purposes, time-of-day for trips, and transportation needs are expected to change as described earlier.

An issue not fully understood at this time is the degree to which the aging *baby boom* population group may continue to participate in Michigan's workforce after attaining retirement age. However, it is known that this generation represents a different set of values, preferences, and behaviors than their older age groups. For example, this generation brought unprecedented participation by women in all segments of the workforce throughout the life cycle to date, as well as changes in occupational preferences and workplace operations for many sectors of the economy.

Consequently, there is reason to believe that the aging population may demand more choices regarding workforce participation (such as phased retirement and retirement careers or businesses). Should this occur, it would require a different set of transportation alternatives relative to living and daily travel options. These may include needs for signage and infrastructure to standards found safer for older drivers, transit, and roadway

capacity in off-peak periods to accommodate more work trips for phased retirees working on a part-time basis, and pedestrian amenities (such as sidewalks or crosswalks) in areas where these populations constitute a large share of the walking population. Further research is needed to ascertain the specific requirements of this growing and changing population group. This is an important consideration for assessing future directions in other technical reports of MITP and is also a focus for ongoing research and tracking beyond the scope of this plan.

Migration

The key element of changes in the state's migration patterns is the expected (and continuing) growth of international migrants, which is off-setting the continued out-migration of Michigan's workforce-age population. The concentration of populations of foreign origin (and to some degree, non-English speaking populations) is illustrated in the Environmental Justice (EJ) portion of this report. National trends also indicate the increasing role of this segment in both workforce and travel demand. Moreover, foreign-born populations create distinctive cultural, economic, and social implications regarding transportation system needs and demands.

For instance, expected increases in international migration will require the state to communicate with more diverse segments of the population. Road signage, travel advisories, and other transportation system information may need to be designed using multiple languages. Transportation providers may need to revise customer service staffing policies by hiring workers with multilingual skills to better serve these increasing immigrant segments of the population. Moreover, foreign-born immigrants are used to a greater variety of modal choices and may rely, to a greater degree, on modes such as transit or bicycles.

Figures 11 and 12 indicate areas where Asian and Hispanic populations are concentrated. In addition to those populations, the national trend of growing foreign-born and non-English speaking populations is an important consideration for an integrated transportation system. The increasing diversity of transportation markets has implications for the accessibility, awareness, safety, and overall performance of the system across modes.

Environmental Justice

Understanding socioeconomic trends and conditions among Michigan's transportation system users is integral to achieving an environmentally just transportation system. EJ requires that no changes in the transportation system have disproportionately adverse impacts on traditionally under-served or disadvantaged population segments. These include not only low-income and minority households and businesses, but also groups like the elderly, children, and other groups with special needs or sensitivity to transportation projects.

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The socioeconomic findings of this report are important for two aspects of EJ:

1. Ensuring that the needs of all groups are adequately addressed in MITP.
2. Ensuring potential changes to transportation systems do not result in other adverse impacts to the human environment for traditionally under-served or disadvantaged groups.

Figures 11-14 provide some indication as to those areas where EJ populations are concentrated. Projects associated with changes in the human environments of these areas (including highway improvements that may affect transit or pedestrian accessibility, neighborhood quality, or general public safety and welfare) must ensure that projects enhance, and do not adversely affect, the overall status of these populations.

The increasing diversity of Michigan's population requires the involvement of EJ stakeholders early in the project development process. MITP includes an outreach to these populations throughout the overall development of the plan to complement the statistical and geographic identification of key areas in this technical report.

The *Socioeconomic Technical Report* and the results of the public involvement process for MITP are offered as resources to enable MDOT to:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process;
- Prevent the denial of, reduction, or significant delay in the receipt of benefits by minority and low-income populations.

Conclusion

This update of the Socioeconomics technical report is offered as a resource for understanding socioeconomic conditions pertaining to Michigan's transportation system, and as an input to the updating of integrated *MI Transportation Plan*. The findings highlight changes in population, household size and composition, age groups, employment, migration, and environmental justice populations.

Significant changes identified in this report clarify ways in which the aging population, the shift to an increasingly service-oriented economy, and the increasing diversity of Michigan's public are relevant for understanding Michigan's transportation system needs. Linkages between the findings of this update and updates to other technical reports of MITP are identified relative to how socioeconomic change serves as a driver for the conditions and performance of Michigan's transportation modes as well as the emerging and changing labor and consumer markets served by the system to the year 2035.

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